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Understanding Parental Participation to Make School Work*

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Abstract

Increasing beneficiary participation to improve public services has become increasingly popular during the last twenty years. Results from previous studies on the impact of such programs is mixed and inconsistent. We propose a simple model which explains some of those mixed results by predicting that returns to participation will vary by community characteristics. We use data from a randomized pilot project in Niger to test the model in the context of education, and find support for some of the predictions. We find that parents are generally ready to participate in ways that support the teachers or help them carry out management tasks. However, only parents with high authority are able to participate in ways that oppose the teachers, in particular in monitoring teacher attendance. We also show that demand for education (measured by enrollment) increased in response to the pilot program, and we present evidence that this increase is partly explained by the practice of participating itself, rather than by improvements in quality.

1 Introduction

Public services - clinics, schools, and infrastructure - provide a fundamentally better life for billions of people. Health care and access to clean water mean that a child is more likely to survive, roads and infrastructure mean that her world will be more connected with the towns and villages around her, and education can provide the tools to make informed decisions for herself, participate in the democratic process, and lift herself and her family out of poverty. These services are important, and the explosion in access to clinics, schools, roads and water in the last two decades represents an unprecedented increase in the number of people who have access to basic public service in poor countries.

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However, public service quality is often low, and in some cases getting worse as demand increases. Poor quality can result from poor physical infrastructure (such as crumbling roads with deep potholes), lack of recurrent inputs (clinics which lack basic medicines or delays in teacher salary), and ineffective or absent staff (Chaudhury et al (2006) surveyed attendance in six countries and found 19% of teachers absent during spot checks). Governments of poor countries must face the issue of improving quality from a perspective of resource constraints, both financial and in terms of human resources. How might policymakers improve the quality of public services in settings with resource constraints?

Recently, attention has increasingly turned to local beneficiary participation as a means to improve service quality, in part because two other principal approaches, increasing inputs or incentivizing those who provide the service (such as doctors, teachers or nurses), have not been as successful as hoped. The input-based approach, increasing inputs such as textbooks without changing management, has had little impact on test scores in several randomized evaluations. The incentive-based approach, paying doctors, teachers, or nurses based on attendance or final outcomes, is often unsuccessful and success seems to depend on context and enforceability.

Beneficiary participation in the service management may be a better option for three reasons. First, the information problems that contribute to government failures are likely to be less acute at the community level than at the central level. Second, communities have a stronger incentive to demand high quality service than the central government, since they benefit directly from that service, whereas the central government benefits only indirectly. These two first reasons make beneficiary participation likely to improve the quality of the service through a more efficient monitoring of the provider. Finally, beneficiary participation might increase uptake for the service on its own, regardless of quality improvements: in the case of education, parents who participate may gain logistical information about the school (e.g. deadlines for registration or the possibility of reduced fees), information on the returns to education, and information about school functioning which increases confidence in the school staff. While making a decision about enrolling their children or not, these informational gains would increase the benefit that parents derive from enrolling their children. Parental participation in school management can also help parent to overcome procrastination due to present-biased preferences, and make them more pro-active in their children's education. Under both channels, beneficiary participation might increase enrollment, that is uptake for the service.

Program designers envision many different kinds of beneficiary participation: beneficiaries might

be organized into committees; undertake projects themselves, such as construction or sanitation; fundraise; supervise, hire, and even fire teachers; engage in awareness campaigns; or simply provide advice to staff. One problem that we shall consider in this paper is that these different activities imply different requirements of skills, wealth and authority on the part of parents.

The extent to which participation can fulfill these expectations must depend on the willingness, ability and resources of beneficiaries: it may be costly and time-consuming to gather local information, and may be very difficult in practice to put pressure on doctors, teachers, or nurses to improve service quality. The extent to which beneficiaries will be able to surmount these difficulties is likely to depend on the characteristics of the community and in particular the dynamics of the relationship between the people who are beneficiaries and the person who is performing the service.

Nonetheless, the perception that the advantages of community participation will likely dominate these obstacles is common among many who work in public service in developing countries. The 2004 World Development Report was devoted to the idea of “putting the poor at the center of service provision” with the strong belief that “giving parents voice over their children’s education, patients a say over hospital management, making agency budgets transparent—all contribute to improving outcomes in human development”. Community-based management policies have been widely adopted throughout Africa over the past decade, based mainly on experience gained in Latin America. In countries including Kenya, Madagascar, Mali, Uganda, and Burkina Faso, governments and NGOs have organized citizens into thousands of local committees for schools, clinics, and local infrastructure, and giving these committees varying levels of power over resource allocation, monitoring, and management.

Despite the enthusiasm of policymakers for participation programs, the empirical question of whether, and under what conditions, community participation can actually make services work better remains unresolved. Programs to improve service provision from increasing participation may fail at the first stage of the process: Banerjee et al (2010) report that in one region in India, people were not even aware of the existence of school committees, and providing information and training to the community had no impact on involvement in schools. Olken (2007) found no impact of community participation in reducing corruption on village road projects. On the other hand, some studies show remarkable success of participation projects. Bjorkman and Svensson (2009) found that community-based monitoring of health centers in Uganda dramatically increased the quality and quantity of primary health care provision. In the particular case of parent participation

in schools, which we consider here, the results are contradictory and suggest that the success of participation programs is highly context dependent. Duflo, Dupas and Kremer (2009) found that school committee monitoring of contract teachers (rather than civil servant teachers) was a key factor for extra teachers to have a positive impact on student learning. Kremer and Vermeersch (2005) do not find any impact from encouraging school committees to monitor regular teachers, since regular teachers are much more job-protected, and therefore powerful, than contract teachers.

This paper contributes to this literature by as follows. We construct a basic model which explains why previous evaluations have found differences in the effectiveness of community participation in increasing the quality of public services. It suggests that the role of community participation is likely to vary greatly depending on the context, and makes explicit the role of power imbalances between the beneficiaries and the service provider. We consider different types of school participation activities: managerial, supportive, and oppositional, and examine how different community characteristics might either support or hinder these different types of participation. We then test this model using data from a randomized evaluation of cash grants to school committees in Niger intended to increase community participation and school quality. The evaluation was part of a pilot project designed and implemented by the World Bank and the Nigerien Ministry of Education. We use variables on parent participation, school functioning, and enrollment to test our predictions. In particular, we test the impact of the grant on parental participation, quality, and demand for schools with different characteristics. We also test whether increased enrollment comes from quality improvements or parental participation per se.

We find an overall positive impact of the grant program on managerial and supportive actions in all schools, and sub-group analysis supports some of the more detailed predictions of the model. We find that in situations where (i) the community has little authority relative to the school staff or (ii) the community and the school staff share important social links, the community is rather prompt to undertake managerial and supportive actions, but not oppositional actions, specifically supervising teacher attendance. Only schools with high levels of parent education are in a position to put pressure on teachers for improved quality. We also observe an increase in the demand for education for young pupils. We argue that this supports the idea that increasing parental participation in school management motivates enrollment, and we provide evidence that some part of the increased enrollment is due to the practice of participation, rather than to quality improvements. We find mixed effects on quality: improvements in school accountability and transparency, but no

improvement of teacher effort, consistent with the fact that most communities did not supervise or sanction teachers. Note that the duration of the program may have been too short to observe great changes in school quality.

There are two key policy implications of these findings. First, we find that community participation programs are most effective when local circumstances facilitate the kind of actions that the community is to perform. Second, we find support for the idea that the practice of participation itself - irrespective of improvements to quality - can increase service uptake.

The remainder of the paper is as follows. Section 2 presents some background on where we stand in our knowledge on the effect of beneficiary participation. Section 3 presents a formal model of the role of parent participation in improving school quality and increasing their demand for education. Section 4 presents some background information on education in Niger, and then describes the school grants experimental design and related research questions. Section 5 presents the data, Section 6 our estimation strategy and Section 7 the empirical results. Section 8 concludes.

2 Background on Participation

Improving public service quality is a critical challenge throughout the world, and is urgent in developing countries, and programs to increase participation are frequently evoked as a solution. Our paper is situated at the intersection of a growing literature on quality improvement and a growing literature on beneficiary participation. In particular, our paper begins to make explicit an undercurrent in much of the work on participation: how different factors influence both the level of participatory activity and its impact on quality.

Randomized evaluations of the impact of increasing inputs in schools have often given disappointing results. For example, Glewwe, Kremer and Moulin (2009) find no impact from a program to increase textbooks; Glewwe, Kremer, Moulin and Zitzewitz (2004) find no impact from flip charts; Banerjee et al. (2002) find no impact from additional teachers in India; and Duflo, Dupas and Kremer (2009) find no effect of decreasing the teacher-pupil ratio (absent other reforms) in Kenya.

In addition, randomized evaluations of programs to change provider's incentives have had mixed results. Researchers have found improvements in outcomes when modest incentives have been given to teachers by NGOs (Duflo, Hanna and Ryan, 2008; Muralidharan and Sundararaman, 2006). In Kenya, teacher incentives implemented by head teachers had no impact because teachers received the bonus irrespective of their real presence (Kremer and Chen, 2002). In India, incentives to nurses

conditional on their attendance was initially very effective, but it failed to have any impact after six months when the local bureaucracy started providing official excuses for most of the nurses' absences (Banerjee, Duflo and Glennerster, 2008).

There are a handful of existing models of community participation. Khwaja (2004) formalizes the "ownership" element of participation by modelling the interaction (planning and decision-making) between the community and the donor in a particular project. Using data from Pakistan, he demonstrates that community involvement in non-technical decisions can improve outcomes, while community involvement in technical decisions can lead to worse outcomes. We focus on the impact of ongoing participation on service quality (rather than participation in project decisionmaking itself), and our model builds heavily on one model, given in Banerjee, Iyer and Somanathan (2008), where individuals within a community are members of one or more groups within that community. Individuals then decide whether to participate in providing the public good based on their expected benefits (including the probability that their group can capture the benefits of the public good, which is influenced by their own participation level) and expected costs.

However, many potential barriers that can prevent beneficiary participation from improving service quality. Communities may lack the necessary capacity to effectively plan or monitor teachers (Galiani et al, 2008), communities may be too fragmented along ethnic or other lines to work together effectively (Banerjee, Iyer and Somanathan, 2008; Vidgor, 2004; Miguel and Gugerty, 2005; Alesina and La Ferrara, 2000), community participation programs may counterintuitively empower local elites and enable resource capture (Olken, 2007; Reinnika and Svensson, 2004; Bardhan, 2002), and the problems of free riding might be so extreme as to prevent collective action (Olson, 1965).

Evaluations of programs to increase beneficiary participation give mixed results and hint that the success of a program is highly context-dependent. In Kenya, Duflo, Dupas and Kremer (2009) found that parent participation in teacher monitoring was ineffective when the parents had little real authority over the teacher due to civil servant status. The success of community-based monitoring of health facilities in Uganda studied by Bjorkman and Svensson (2009) also fits into this pattern. Bjorkman and Svensson (2009) found community-based monitoring of health centers in Uganda to be quite successful at improving health outcomes. In the Uganda case, participation took place in large meetings, which we feel implies a lower social and individual cost of participation, and also concerned a good (health care) which is of rather immediate concern to beneficiaries. Olken (2007) also finds that traditional top-down monitoring - e.g. increasing government audits on village

road projects - reduced corruption. However, bottom-up interventions were ineffective because individuals tasked with enforcing punishments were themselves corruptible.

3 Model

In this section, we consider a very basic model that makes the determinants of the level of parent participation in schools explicit, and considers how parent participation can determine quality of and demand for education. Our model focuses specifically on parent participation in school functioning, but it could be applied to other public services.

3.1 Set-Up

Parent Participation

We adapt the model of Banerjee, Iyer and Somanathan (2008) to the case of schools, and we exclude the possibility of competing groups within the community for simplification. We adopt the general view that participating involves costs and benefits for parents and that parents do not coordinate, and therefore parents choose the level of effort that maximizes their individual payoff.

The private benefit from participation depends on the impact of parent i 's effort on school quality, the impact of other parents' efforts on school quality, and on the benefit from education itself. The impact of effort on school quality for given level of resources is represented by $f_i(e_i)$, which we call parent i 's *efficiency*. Parents will be more efficient if their effort is more easily transformed into improvements in school quality. We assume that $f_i(0) = 0$ and that $f_i(\cdot)$ might be either increasing and concave (in cases where member i 's effort increases school quality) or decreasing and convex (in cases where member i 's effort is counterproductive and decreases school quality, for instance when meetings and questions from parents slow down the school management without improvements in the management quality). Member i is said *effective* when $f_i(\cdot)$ is increasing, whereas *ineffective* when $f_i(\cdot)$ is decreasing; The benefit from enrolling their children at school itself is denoted b_i .¹

The private cost that parent i incurs from participating is denoted $c_i(e_i)$, where $c_i(\cdot)$ is increasing and $c_i(0) = 0$. We assume that $c_i(\cdot)$ is convex, to reflect that the marginal cost of each unit of effort is increasing.

¹Banerjee, Iyer and Somanathan (2008) use the term $b_i(n)$, where n is the size of the community. The dependence on n allows for possible congestion effects which might reduce the per-member value of the public good as a community gets larger. The authors acknowledge that constant benefits across community size is a reasonable description of the situation when the community is dealing with a school, a health center or a road, the case of a public (non-rival) good.

The net utility U_i for parent i is equal to

$$U_i(e_i, e_{-i}) = b_i u(f_i(e_i) + \sum_{k \neq i} f_k(e_k)) - c_i(e_i) \quad (1)$$

where the gross utility function $u(\cdot)$ is increasing and concave, and the term $u(f_i(e_i) + \sum_{k \neq i} f_k(e_k))$, shows that gross utility depends on the individual's efficacy and the efficacy of others. While choosing how much to participate, a parent will take into account their own efficiency, $f_i(e_i)$, as well as the efficiency of others, $\sum_{k \neq i} f_k(e_k)$, since what matters for them is the overall change in school quality. The concavity of $u(\cdot)$ insures that parent participation efforts are strategic substitutes, capturing the fact that monitoring itself is also a public good and can give rise to free-riding issue (note that we won't draw testable predictions related to this issue hereafter since we will focus on a special case where parents are symmetric).

We assume that parents have perfect information about their efficiency, $f_i(\cdot)$, and the efficiency of other parents, $f_{-i}(\cdot)$. Moreover, we assume that parents derive no benefit from participating *per se* but only from the resulting improvement in school quality since $u(\cdot)$ is only associated with parents' efficiency. One extension of this model might incorporate information problems, where parents have incorrect beliefs about their own or other's efficiency; another extension could incorporate direct benefits from being involved (reputation, altruism), which we do not consider here. These extensions would allow parents participation to have negative effects on school quality in the case where parents are inefficient, which is not possible under our assumptions (see section 3.2).

School Quality

How would parental participation affect the quality of education? Denote by school quality by Q .

We propose that Q is given by:

$$Q = \left[f_0 + \sum_i f_i(e_i) \right] G \quad (2)$$

where G represents the total resources available to the school, f_0 is the school staff's efficacy per unit of resources, i.e. the ability of the school staff to transform one unit of resources into school quality (ignoring parent participation), and where $f_i(e_i)$ is parent i 's *efficacy* per unit of resources, as discussed above.

In this analytical framework, school quality is the product of two factors: the total resources available, G , and the efficiency of resource use, $\left[f_0 + \sum_i f_i(e_i) \right]$. Note that the efficiency factor is likely to be small, since increasing G alone, with no changes to efficiency, has often been found to be ineffective at improving school quality. The goal of parent participation programs is to increase school quality by increasing the term $\sum_i f_i(e_i)$.

Demand for Education

How would parental participation affect the demand for education? We do not explicitly model demand for education, but we frame our thinking by the idea that parents consider the costs and benefits of enrolling their child in school (and making sure they attend), and if the net benefit is positive, they enroll their child. The benefit of enrolling their child in school was already introduced in the parental participation equation as b_i . It will be determined by such elements as taste for education and expected wage returns. The cost of enrolling their child in school would include both the direct and indirect costs of school (uniform, supplies, opportunity costs of time spent at school), as well as any potential psychological costs (for example, of sending girls to school when this is not culturally accepted). Parents will choose to send their child to school as soon as the net benefit is positive.

Demand for education may then be increased either by increasing the benefit to education (for example, by increasing the taste for education or increasing the returns to education) or by decreasing the cost (by reducing school fees and associated out of pocket costs, the difficulty of enrolling in school, or opportunity cost of children's time). Demand for education may thus also be increased by information about the benefits of education, or by the confidence that parents have in the school staff.

3.2 Characterization of the Solution for Participation Level

In equilibrium, member i chooses e_i^* that maximizes (1), taking e_{-i} as given (Nash Equilibrium):

$$e_i^* = \text{Argmax}(U(e_i, e_{-i})).$$

Ineffective members

This model excludes the possibility that parent participation could decrease the school quality: the effect of parent participation is at least positive, otherwise ineffective members would choose not to participate.

Proof: If $f_i(e_i) \leq 0$ for all e_i positive, then $U_i(e_i, e_{-i}) \leq U_i(0, e_{-i})$ for all given e_{-i} . So $e_i^* = 0$.

Effective members

The first order condition of the equilibrium effort is given by

$$b_i f'_i(e_i) u'(f_i(e_i) + \sum_{k \neq i} f_k(e_k)) - c'_i(e_i) = 0 \quad (3)$$

from which the marginal benefit of effort equalizes its marginal cost.

At this stage, it is not possible to formulate the best-reponse function without further assumptions. We do not attempt to derive the exact optimal level of effort at the individual level, but focus on characterizing the factors determining this optimal level and test how the optimal level will vary with individual characteristics.

Communities

As we only consider school-level characteristics in our empirical test, we will make the simplifying assumption that agents are symmetric, i.e. all parents in the same community have the same parameters b , $f(\cdot)$ and $c(\cdot)$.

To conceptualize the variations of efficiency at monitoring in the community, we consider θ , a parameter of efficiency, and write $f(\cdot) \equiv \theta l(\cdot)$, where $l(\cdot)$ is a common technology of efficiency, increasing and concave and such that $l(0) = 0$. Introducing θ allows us to consider differences in efficiency without creating fundamental differences in the technology of transforming participation into school quality. Similarly, we also introduce κ a parameter of cost and write cost of monitoring as: $c(\cdot) \equiv \kappa h(\cdot)$, where $h(\cdot)$ a technology of cost, increasing convex and such that $h(0) = 0$.

Our objective is to characterize the variations of e^* with b , θ and κ . Using equation (3) and the assumption of symmetric members in the community, e^* solves:

$$b\theta l'(e) u'(n\theta l(e)) - \kappa h'(e) = 0 \quad (4)$$

The implicit function theorem allows for deriving $\frac{\partial e}{\partial b}$, $\frac{\partial e}{\partial \theta}$ and $\frac{\partial e}{\partial \kappa}$ near the solution. The concavity of $u(\cdot)$ and $l(\cdot)$, and the convexity of $h(\cdot)$, insure that $\frac{\partial e}{\partial b} > 0$, $\frac{\partial e}{\partial \theta} > 0$ and $\frac{\partial e}{\partial \kappa} < 0$ (proof in Appendix). Under classical assumptions about the utility, efficiency and cost functions, the optimal level of parent participation increases with the benefit from education quality and with efficiency,

and decreases with the cost of participation.

Considering the second derivatives, we see that the effect of increases in θ will be mediated by the initial level of θ , as well as by b and κ : $\frac{\partial^2 e}{\partial b \partial \theta} > 0$, $\frac{\partial^2 e}{\partial \theta^2} > 0$ and $\frac{\partial^2 e}{\partial \kappa \partial \theta} < 0$.

Under this simple model with minimal assumptions, in ineffective communities (where all parents have decreasing efficiency functions, that is a negative θ), nobody will choose to participate. In communities with effective members, the level of participation will depend on the three parameters: b , θ and κ . Finally, an shift in θ would produce an increase in the level of participation which would vary with initial θ , b and κ .

3.3 Different types of participatory actions

Parent participation may take many different forms, and some types of actions may be easier to undertake than others. We separate participatory actions into three categories:

Supportive actions are purely supportive of the school actions and policies, for example by raising money or paying fees, or by carrying out actions under the authority of the school staff. Such actions do not put parents in opposition to school staff, and they do not require any specific ability.

Management actions are those where the parents act as agents of the school staff in some capacity which requires decision-making or management, but is neither purely supportive, nor oppositional. These actions require basic literacy and may be time-consuming, for example keeping inventory of school supplies, or planning a construction project.

Oppositional actions are those which put the community in opposition to the teachers. In order to be effective, these types of actions require that the community take (to some extent) an adversarial position against the school staff. One important action of this type is measuring and demanding accountability for teacher attendance.

3.4 Characteristics of Communities that Determine the Equilibrium

In this section, we discuss the various characteristics that may determine, following our model, the capacity of a community to improve the quality of the school. This is naturally not an exhaustive list, but reflects the variables which are available.

3.4.1 Taste

Taste for education is captured by the parameter b . In our empirical exercise, we use the proportion of girls at school as a proxy for the taste for education. The justification is that the gap in girl-boy enrollment reflects parents' valuation of education. The decision of whether to send a child to school is the result of parent-specific comparison of costs (school access, fees, opportunity cost of boy's and girl's time, any disutility parents suffer because of cultural pressures against sending their daughters to school) and benefits (returns to education, and taste for education). We assume that the majority of these parameters are similar for boys and girls: international experience indicates that returns in terms of proportional increases to household and wage productivity generally do not differ appreciably by gender even when average wages or patterns of labor participation do (Schultz, 1995). In Niger, school fees do not vary by gender, and difference in the opportunity cost of a boy's or girl's time, or any disutility parents suffer because of cultural pressures against sending their daughters to school should be constant across communities. The differences in the gap in girl-boy enrollment can then be attributed to differences in parents' taste for education: when parents have a taste for education, the benefits of sending the daughter to school dominate the costs, whereas the costs dominate the benefits when the parents do not have a taste for education. For this reason, we expect the communities where the proportion of girls at school is high to have a higher taste for education and therefore to participate more than the communities where this proportion is low.

3.4.2 Real Authority

As modelled by Aghion and Tirole (1997), formal authority (the right to make decisions) need not imply real authority (effective control over decisions). The real authority of parents over the school is captured by the parameter θ . Parents with high θ are more effective at participating (for example, better able to monitor teachers), so in equilibrium they invest more effort, and each unit of effort has a greater impact on school quality, than parents with a low θ . The characteristics that we will use in our empirical framework to capture differences in real authority are the following.

Education Education may determine real authority in two ways. First, school committees with more education are able to perform tasks that require basic literacy and numeracy, like record keeping, accounting and reviewing school records. Second, education is an important determinant of social status, especially in developing countries where the average education is very low and

teachers are very respected members of the community. We define a community as “educated” if one or both of the two interviewed members of the school committee completed primary school. We expect educated communities to participate more and to be more effective than non-educated communities.

Wealth We assume that the wealthier a community is, the more real authority parents will have because they will have a higher social status relative to the teachers (teachers are relatively homogenous in terms of wealth). We therefore expect wealthier communities to participate more and to be more efficient than poorer communities. The wealth of school committee members is the first component of a principal component analysis of durable goods possessed by the two interviewed school committee members and the school director. Durable goods include transportation means, animals and housing equipment. The wealth of school committee is then the average of this wealth index for the two interviewed school committee members.

Teacher Status Regular teachers are civil servants, and are protected by powerful national unions: as such communities are generally unable to impose sanctions. Contract teachers, on the other hand, have temporary contracts and might be more responsive to sanctions. Schools with a high proportion of civil servant teachers should then have parents with lower real authority, and thus lower efficiency and lower parent participation. We measure teacher status by determining the percent of teachers in a school who are civil servants.

The seniority of the school director A brand new school director is likely to have less power relative to the community than a school director who has been assigned to (and living in) the community for many years. Parents in schools with senior school directors to participate less and to be less effective than those working with recent school directors. (As discussed below there may be an effect in the opposite direction). The seniority of school director is the number of years since the school director has been in charge at this specific school.

3.4.3 Distance

Average distance of households from the school is likely to be an important ingredient of the cost of participation, κ : distance implies both a direct cost (transportation) and an indirect cost (opportunity cost of additional time spent in participating). A community where households are

located far from the school should have lower participation when actions require transportation (going to school for a meeting, visiting pupil parents, etc.). The distance variable we use is an index between 1 and 5, 1 meaning that all students live within 3km from school, and 5 meaning that all students live farther than 3km from school.

3.4.4 Social Proximity

Communities where the school staff and the parent community share multiple social links have higher social proximity. Participation levels are likely to depend on this closeness. The direction of the impact is ambiguous: social proximity or friendship could inflict a social cost on members for oppositional actions (perhaps the personal relationship between a teacher and parent could deteriorate), but high social proximity could also inflict a cost on parents for not participating for actions that help or support the school staff. The influence of social proximity on costs of participation therefore depends on the kind of participatory actions: we expect social proximity to increase participation. The size of κ reflects social proximity and the sign will be positive when the participation requires opposition and negative when the participation requires support. The characteristics that we will use in our empirical framework to capture differences in social proximity are the following.

The seniority of the school director The seniority of the school director not only influence parents' real authority, it may also influence social proximity between the community and the school director: the more time s/he has been in charge, the more social ties between the school director and the community. We therefore expect school committees working with senior school directors to put in less effort in oppositional actions / more effort in supportive actions than those working with recent school directors.

Common language between director and community Directors who speak the same language as the community will likely have more social ties with the community, either because of common origins, or because of ease of communication. By contrast, directors who do not speak the same language as the community will probably have fewer social interactions with parents. We therefore expect parents who speak the same language as their school director to participate less in opposition actions and more in supportive actions than those working with school directors speaking a different language.

4 Experimental Set-Up

4.1 Background on Education in Niger

Niger has made remarkable progress in education access in the last decade: the number of children enrolled in primary school has more than doubled from 656,0000 in 2000 to 1,554,102 in 2008, and gross enrollment has risen from 37% to 66% in the same period. However, only 44% of children who begin primary school finish all grades, and only 43% of sixth graders who take the national exam at the end of primary school succeed.

In 2006 the Ministry of Education in Niger introduced school committees in all primary public schools in order to improve quality. These school committees (called the COGES) were designed to implicate parents and community members in the school, improve accountability, improve management, and thus enhance access to and quality of education. As discussed in the introduction, the establishment of local community groups for the purpose of improving public service provision via community participation was a strategy that many country governments and civil society organizations were (and still are) advocating. In many respects, the circumstances of Niger make a strong case for school-based management: low population density, vast distances and limited transportation and information and communications infrastructure makes supervision of primary schools by the central government (or its regional structures) very costly, and the transmission of timely, local information to the central authorities for planning purposes is challenging.

These school committees consist of 6 representatives, including the school director, who serves as secretary. School committees are supposed to be responsible for the management of personnel resources (e.g. monitoring of teacher attendance and performance), financial resources (e.g. school meal funds) and material resources (e.g. purchase and management of textbooks, supplies etc.). One of the school committee's central tasks is the drafting of an annual school improvement plan that includes its projects, activities, budget, and timelines to guide its work for the school year. The school committee works parallel to the Parent Association (APE), which includes all parents.

In 2006, a significant number of the newly created school committees were not very actively engaged in school matters, nor did they develop an school improvement plan for the school year. To spur school committee involvement and activity, the Ministry of Education introduced school grants in order to give the committees an incentive to meet, plan and undertake activities. The grants were expected to improve school management through increased parental participation and

accountability; to improve school infrastructure, and ultimately, enhance access to education; and indirectly, the quality of education. The pilot project was carried out as a randomized evaluation in order to provide reliable information on impact prior to national scale-up.

4.2 Experimental Design

The evaluation design included 1,000 randomly selected schools in two regions of Niger, Tahoua and Zinder. One-thousand schools were randomly selected out of the 2,609 total public primary schools in Zinder and Tahoua. Once these 1,000 schools were determined to be representative of all the public primary schools in Zinder and Tahoua, half of the 1,000 schools, i.e. 500 schools, were assigned to receive the grants and thus constituted the treatment group. Data from the DSI Administrative School Census from 2005-2006 was used to confirm balance between control and treatment schools along various observable characteristics (data from 2006-2007 was not yet available at the time of sampling in August 2007). Table 1 shows p-values for the test of equality of means across control and treatment, from which we cannot reject any equality of means. . Both randomizations stratified on inspection (a geographical administrative unit), existing support for the school committee (e.g. from NGOs), and urban versus rural location. The other 500 schools served as a control group.

The size of the grant was based on the size of the school (the number of classrooms), and the average was US\$209 per school, or US\$2 per student. The school committees selected for treatment received the grants in the last months of 2007 and first months of 2008. The grants arrived in the 500 program schools in the amount allocated to each school, with a handful of exceptions. The grant was a relatively modest amount that was determined by considerations of financial sustainability in view of a potential extension of the program by the government.

All 500 treatment schools (and school committees) received a general letter informing them of the grant program and its objectives, and the grant amount allocated to their school. It also included general guidelines on the use of the grants, but the specific project to be supported by the grants was left open to the schools.² One copy of this letter was distributed to the school director and a second copy to the president of the school committee before the arrival of the grants. See Annex for further information on compliance and program execution.

²One randomly selected group of schools received a slightly more restrictive list of potential expenditures, and another group received a warning that their projects might be audited. Analysis of spending patterns did not show any difference between these groups.

4.3 Research Questions and Hypotheses

This paper uses data collected during the evaluation of the school grants pilot project to test the model discussed above.

Parent Participation

We interpret the randomly allocated grant as an exogenous shift in the efficiency parameter θ . The intuition behind this is that increasing the resources under the ostensible control of the community increases parent participation by increasing the efficiency of parents: parents have not only the right to decide, but also a more effective control over decisions thanks to the money that is under their control. We therefore hypothesize that schools that received the grants will have higher levels of all different types of parent participation than schools that did not receive the grants.

We deepen this analysis by investigating heterogeneous impacts. The intuition behind the subgroup analysis is that the increase in participation in response to the grant is mediated by the initial level of θ (real authority of parents prior to the grant program), as well as local b (parents' perceived benefit of enrolling their child in school) and local κ (cost of participating). The sample size was chosen large enough to allow for testing for heterogeneous treatment effects along community characteristics, one of our initial objectives with this study. We hypothesize that the impact of the grant on participation will depend on community characteristics.

One difficulty in testing the implications of the model for heterogeneous impacts is the possible correlation between community characteristics that encourage participation (real authority, taste for education) and those which discourage participation (costs). The potential correlations between these characteristics make the identification of the respective importance of each characteristic difficult. To identify the respective role of these characteristics, we take advantage of the different types of participatory actions: management actions, oppositional actions and supportive actions. Some characteristics are important for some actions but not for others.

The only characteristic that should encourage parents to get involved in all actions, whatever their nature, is the taste for education.

School Quality

We hypothesize that school quality could be positively affected by the increase in participation through the following causality chain: the increase in participation is expected to improve school

management (meetings, fees collection, accounting, teacher supervision, etc.) and school accountability and management practices, and better management should increase teacher attendance and effort.

However, there are two caveats to the school quality analysis. First, the time elapsed between the arrival of the grants and the collection of follow-up data was very short - less than one year. If parent participation does lead to improved quality, this time may not have been sufficient for participation to crystalize into quality improvement. Second, because the encouragement to participate in this experiment takes the form of money, the treatment *per se* generates an increase in resources G . Using our analytical framework, the differences in outcomes between treatment and control schools might derive from an increase in G in addition to an increase in e and θ . This design therefore uses resources and community-based monitoring as complement, with the limitation that it does not allow for testing the complementariness itself.³ In this experiment, the results should be interpreted as the impact of *combining* additional resources with increasing parent participation.

Demand for Education

As shown in the theoretical section, quality improvements could translate into an increase in the demand for education through a shift in b . On the other hand, the practice of participation can also induce a increase in the demand for education: better information about the benefits of education, or about the logistics of schools, or about the trustworthiness of teachers, can produce a shift in b . The practice of participation may also make parents feel involved in their child's education and help them to overcome procrastination due to present-biased preferences, with the idea that relationships between parents and teachers serve as a commitment tool for parents, or that parental participation might also make parents feel that they themselves are valuable in the education of their children

⁴. Alternatively, some schools may have reduced fees in response to the grant (though the data

³To do so, the ideal experimental design would have been to give grants to school committees in the treatment group, and to give the exact same grants to school directors in the control groups. With such a design, the only difference between treatment and control schools would have come from community participation. However, the grants were small (on average \$209 per school, \$2 per student) so the increase in resources *per se* is unlikely to induce important improvement in school quality. As a comparison, the textbook experiment in Kenya provided schools with grants of 2.65\$ per pupil and did not have any impact on educational outcomes (learning, enrollment and dropouts) (Glewwe and al., 2009). The extra-teacher program in Kenya, dividing the pupil-teacher ratio from 82 to 43 on average with a cost of 18\$ per pupil per year, did not have any impact on educational outcomes in the absence of any other changes (Duflo and al., 2009). (The authors report that the cost of a regular teacher is 120\$ per month, which multiplied by 12 (months) and divided by 80 (students) gives the price per student per year). More generally, impact evaluations converge to a consensus that providing extra resources has no impact on education outcomes (see Glewwe and Kremer, 2006, for a review).

⁴This hypothesis echoes the recent findings of a field experiment in France which aimed at getting parents more informed about schools and more involved through parental meetings at school (Avvisati et al., 2010): the authors find that parents were prompt to increase their participation into schools and that this leads to substantial decrease

indicate this did not happen on average), which could reduce the cost of enrolling pupils and thus the overall benefit from education. It is also possible that some school committees undertook student recruitment projects funded through the grant. For example, some schools did radio campaigns to register the grade 1 age relevant population for school. Another possibility is that parents anticipate an increase in the quality of education due to school committee empowerment and send their children ahead of such an improvement, which we cannot exclude.

5 Data

5.1 Data Sources

Data come from two sources: (i) administrative data on primary schools (the annual school census, also called DSI administrative data) and (ii) an evaluation survey administered to school staff and two members of the school committee at treatment and control schools. The Ministry of Education in Niger administers an annual census of all primary schools, including community schools and medersas. Data on enrollment, teacher characteristics, school facilities and resources, school performance, and community characteristics is collected via a written school self-administered questionnaire sent to the schools by and returned to the Ministry. In addition to the administrative data, the Ministry and the World Bank worked with a local NGO to prepare a detailed school survey to be administered in April/May 2008 to understand the effects of the grant. This questionnaire included information on school infrastructure and resources, pupil enrollment and attendance, school improvement plan, school committee functioning and membership, and school activities. It also asked detailed questions about the level of education, personal wealth, and ethnicity of the school committee members and turnover of school committee membership.

There is some attrition in both of these datasets. Each year, a handful of schools do not return the administrative data questionnaire, or the questionnaires are improperly filled out, leading to missing data. The evaluation survey was conducted on the basis of unannounced visits, which meant that many schools were closed. In addition, some schools were not visited due to security concerns, and still others closed early that year because the summer rainy season began early and so many children went to the fields with their parents to plant.

See Annex for descriptive statistics.

in student absenteeism and lack of discipline.

5.2 Participation

To draw general conclusions about the experiment’s impact, and to guard against cherry-picking of results, we present findings for indices that aggregate information over multiple treatment effect estimates. The aggregation improves statistical power to detect effects that go in the same direction within a domain. The summary index Y is defined to be the equally weighted average of z -scores of its components, with the sign of each measure oriented so that more beneficial outcomes have higher scores. The z -scores are calculated by subtracting the control group mean and dividing by the control group standard deviation. Thus, each component of the index has mean 0 and standard deviation 1 for the control group⁵. The resulting estimate gives location of the mean of the treatment group in the distribution of the control group in terms of standard deviation units.

We create two indices based on the insights from the model, in particular that different parameters may impact different kinds of participation. The *management* index averages together seven variables reflecting parents and school committee involvement in actions that imply taking some responsibility for school management: frequency of parents association and school committee meetings, whether the mothers’ association is active, and whether the school committee is in charge of collecting fees, deciding how fees are spent, supervising infrastructure, and supervising supplies. The *supportive* index averages together four variables reflecting parental support: parental financial and in-kind contributions, parent supervision of pupil attendance, and parent remedial action for pupil absenteeism. These actions are those where the parents are not making any decisions about school management or entering into (potential) conflict with the teachers, but rather are helping the school staff execute the management decisions.

The *oppositional* actions are testes separately since we observe only two variables: supervising teacher attendance and sanctioning teachers. In these cases, the community members’s interest and school staff’s interests are clearly misaligned.

5.3 Demand for Education

We measure demand using dropouts reported at the April/May 2008 questionnaire and the change in enrollment from fall 2008 to fall 2009 reported to the Ministry of Education (by class).

⁵If an individual has a valid response to at least one component measure of an index, then any missing values for other component measures are imputed at the random assignment group mean. This results in differences between treatment and control means of an index being the same as the average of treatment and control means of the components of that index (when the components are divided by their control group standard deviation and have no missing value imputation), so that the index can be interpreted as the average of results for separate measures scaled to standard deviation units.

5.4 Quality of Education

We measure school quality using teachers' and director's presence at the unannounced April/May 2008 questionnaire visit, whether the school was open on the day of the visit, and eight different measures of accountability: whether minutes were taken in the last school committee and parent meeting, existence of written school action plan, and registers for material inventory, pupil attendance, inspector visits, weekly activities, and teacher attendance.

We also create a material quality index using the number of buildings, desks, blackboards, books, and latrines, the presence of a wall around the school compound and access to water.

6 Empirical Strategy

6.1 Local Average Treatment Effect

We first estimate intent-to-treat effects as measured by the differences in the means of school outcomes between schools initially assigned to the treatment group and schools initially assigned to the control group. Let T be an indicator for treatment group assignment and let X be a matrix of stratification variables. Estimation of the intent-to-treat effect β is from the following equation:

$$Y_j = \beta T_j + X_j \gamma + \varepsilon_j \quad (5)$$

where Y_j is the outcome of school j . The covariates (X) are included to improve estimation precision and include whether the school is urban, the total proportion of girls in 2007/08, the total enrollment in 2007/08, whether the school was supported by an outside NGO in 2006/07, and the inspection (a geographic/administrative unit). All regressions use robust standard errors. The absolute magnitudes of the outcomes are in units of outcome's standard deviation, so the estimate shows the treatment effect in terms of standard deviation units over the control group. We use this equation to estimate the impact of the grant pilot program on parent participation, school quality, and demand for education.

6.2 Heterogenous Treatment Effects Along Community Characteristics

In the second step, we estimate intent-to-treat effects with an interaction term to determine whether the average treatment effect varies according to the predictions of our model. We run regressions of the form:

$$Y_j = \beta T_j + \theta C_j \times T_j + \sigma C_j + X_j \gamma + \varepsilon_j \quad (6)$$

where C_j denotes a characteristic of the community that is expected to change the impact of the grant program on the outcome variables.

Since some of these characteristics are correlated with one another, we check that the estimate of the coefficient on the interaction term is not driven by other characteristics by adding the correlated characteristics and the corresponding interactions as additional covariates as soon as the correlation between the characteristics is above 0.1. Finally, we include an indicator for urban schools and the interaction of this indicator with the treatment assignment for each characteristic whose correlation with being located in an urban area is above 0.1, to disentangle the effect of this characteristic from the effect of being located in an urban area. Being located in an urban area is actually (though not highly) correlated with some of our community characteristics of interest so we make sure to rule out an urban effect.

6.3 Identifying Channels of Impact

We generate evidence on channels of impact by including the potential channel in the regression of treatment on the outcome, and observing the change in the coefficient on treatment. We estimate the following equation:

$$Y_j = \beta_2 T_j + \phi C_j + X_j \gamma + \varepsilon_j \quad (7)$$

where C_j is the channel variable, and compare β_2 to β generated by equation (5). A reduction in the point value for β when the channel variable is included is evidence that some of the variation in Y_j which was due to variation in T_j is accounted for by the variation in C_j . Put differently, a reduction in the coefficient on treatment when the channel variable is added is consistent with the hypothesis that some of the impact flows through that channel.

7 Results

7.1 Effect of Grants on Community Participation in Monitoring Schools

We find that communities are ready to undertake supportive and managerial actions, but have more difficulty with oppositional actions. Community characteristics exhibit some influence on

community participation in ways that are consistent with our model, although the estimates are often imprecise and confirm only some of our predictions.

Supportive Actions Table 7 shows the impact of grants on community participation in *supportive* actions. The overall effect of grants is that parents increased their support to school activities. The mean of the treatment group is 0.14 standard deviations above the mean of the control group for the index of supportive actions.⁶

The impact is larger when the school committee is educated and when the proportion of girls at school is high, which is consistent with our view that the taste for education increases the benefits to education and thus participation. When the school committee is educated parents are 9 percentage points more likely to make in-kind contributions to school in the treatment group than the control group.

The impact is somewhat smaller when families live farther from school (Column (7)). The detailed analysis reveals that distance from school actually decreases the likelihood that the community supervises pupil attendance and takes remedial actions for pupil absenteeism (usually visiting and talking to parents), which, since these actions require traveling to the school or to households, is consistent with our predictions about how cost (travel time) enters into the decision to participate.

We do not find any difference in impact by common language, director seniority, teacher status, or wealth.

Management Actions The impact of grants on parent participation in management actions is reported in Table 4. The overall effect of grants on the index of *management* actions is positive: the mean index of the treatment group is about 0.10 standard deviations above the mean of the control group, depending on the specification. The analysis of detailed variables composing the index shows a 27% increase in the proportion of school committees in charge of collecting fees (from 30% to 38%), or a 18% increase in the proportion of parental association in activity (from 27% to 32%). The effect on the frequency of parental association and school committee meetings and on the responsibility of infrastructure is lower: a five percent increase.

The average treatment effect does not vary with community characteristics, whereas our prediction was a higher response from educated school committees and from communities with a taste

⁶The analysis of detailed variables composing this index (results not shown) show that most of this overall effect comes from an increase in parental contributions to schools, which is 0.48 standard deviations higher in the treatment group than in the control group (293 FCFA in the control group versus 567 FCFA in the treatment group).

for education.

Oppositional Actions Consistent with the model, only communities where the school committees were educated increased their participation in oppositional actions (Table 5) (there is no overall impact). Teacher supervision is 0.14 standard deviations higher in the treatment group over the control group when the school committee is educated (the proportion of school committees supervising teacher attendance went up from 74% in the control group to 80% in the treatment group). The interactions of the treatment with the wealth of school committee and with the proportion of girls at school exhibit positive (though not significant) coefficients, which is consistent with the role of real authority and taste for education in community involvement; note also the negative (but not significant) coefficients on the interactions with the fact that the school director speaks the same language than the community, a proxy of social cost, and the distance from school, a proxy of direct cost.

Table 6 shows that the school committees in the treatment group were not more able to undertake remedial actions against teachers than in the control group. Again, the coefficients on education of the school committee, wealth of the school committee and the proportion of civil servant teachers, which reflect real authority, are consistent with our predictions, though not significant.

7.2 Effects of Grants on School Quality

We find the grant improved the material quality of schools of a small amount, and we find modest evidence for improvement in school managerial quality in terms of accountability and transparency, but no improvement in teacher attendance. The lack of an impact on teacher effort is in line with the fact that very few of the schools undertook any sort of teacher supervision. The negative coefficient is unexpected. Feedback from the field revealed that the 2007-2008 school year was particularly bad in terms of strikes and teacher absenteeism due to an exceptional delay in salary payments. It is possible that teachers in the treatment group may have felt particularly resentful of the delay since they knew of a cash lump sum transfer to their school. While it is not possible to test or confirm this hypothesis, it is reasonable to suspect that 2007-2008 was a year with a particular set of political events that may make this specific impact not generalizable. We find an overall increase in the use of registers for fee collection and spending. Other impacts on quality are not consistent across specifications (Table 8).

We find a small impact on (0.05 standard deviations) on the index for material quality. This

is largely driven by increases in the number of classrooms, the construction of walls around the compound, and increased access to running water.⁷

7.3 Effects of Grants on Demand for Education

The grant program increased demand for education for young children. Table 10 reports the impact of grants on pupil enrollment (top-half) and on pupil dropouts (bottom-half). Younger pupils exhibit fewer dropouts at the end of 2007-2008 for pupils in Grade 1 (though the decrease in dropout is not significant for girls), and fewer dropouts for girls in Grade 2. The decrease in dropouts represents 0.17 standard deviations, which means a decrease of two percentage points from a dropout rate of three percent (a 66 percent decrease). These findings are supported by a separate dataset from the national office of statistics (Division de la Statistique et de l'Information) which shows higher enrollment in 2008-2009 in Grade 2 for both boys and girls. The increase in enrollment represents 0.10 standard deviations, which means an increase of 1.5 students in Grade 2 from an enrollment of 12 pupils (a 12.5 percent increase). The grant thus increased retention for the youngest pupils.

7.4 Channels of impact on demand

Table 11 reports the test for channels of the impact on demand, with two competing channels: practice of participation versus quality improvements. We test for the practice of participation channel using an index of participation which is simply a combination of the supportive and managerial indices; we test for the quality improvement channel using the index of material quality. The outcome is the number of pupils enrolled in second grade in the fall of 2009. The sample is restricted to observations that have data for both potential channels. The column (1) reports the regression of enrollment on treatment alone⁸. The column (2) reports the regression of enrollment on treatment and the participation channel. The column (3) reports the regression of enrollment on treatment and the material quality channel. Finally, the column (4) reports the regression of enrollment on treatment and both the participation and the material quality channels.

The first pair of columns shows that when the participation index is added to the regression of enrollment, the coefficient on treatment drops from 0.0899 standard deviations significant at the

⁷These three items were also projects that were frequently reported by the schools on a detailed financial questionnaire which was administered to a sub-sample of treatment schools.

⁸This is slightly different from the previous estimate of the impact of treatment on enrollment because the sample is restricted to schools that have data on participation and material quality.

10% level to 0.0721 and non-significant (a 20 percent decrease in point estimate). On the contrary, adding the material quality index shows a much less important drop from 0.0899 to 0.0883 (a 2 percent decrease in point estimate), with no change in significance. Including both channels together yields the same results.

These results suggest that the increase in demand is flowing from the increase in parental participation in school activities and not from the increase in material quality. We are not able to distinguish the pure informational effect (better informed parents get a larger benefit of enrolling their child) and the psychological effect (involved parents have less problems with procrastination and are more pro-active) of participating. Yet, this result highlights that parental participation in school increases demand for education regardless of quality improvements. Such a policy can therefore pursue two independent objectives: improving quality of schools (which is not obvious when parents are not in a position to oppose to teachers), and increasing the demand for education (which is less demanding in terms of prerequisites of community characteristics).

8 Conclusion

This paper constructs a simple model of parent participation in schools, and uses data to test the predictions of the model. Building on previous research on community-based monitoring of public services, the model clarifies and makes explicit the circumstances under which participation increases quality. We identified different kinds of participatory actions (management actions, supportive actions, and oppositional actions) and considered how different community characteristics might enable, or hinder, different types of actions.

We tested this model using evidence from a pilot grant program in Niger, and found that the program increased participation along several dimensions. We find support for some, but not all, predictions of the model. In particular, communities are ready to engage in activities that support the school and help the school staff manage the school, but parents, except those who are educated, have much more difficulty taking actions that directly oppose the teachers. Our findings on management quality are inconsistently positive, and we find a small but significant improvement in material quality. We find increases in the demand for education which we attribute to the practice of participating, and support this channel by showing that participation accounts for at least some of the variation in demand induced by treatment, while improvements to infrastructure account for almost none.

Possibilities for further work are two-fold. First, this model could be tested using alternative data sources (many empirical surveys have been carried out on participation programs in different sectors). Second, this model might be adapted to give a more complete picture of the dynamics behind participation. In particular, it may be interesting to account for information problems, more subtle benefits from participating as reputation or altruism, and free-riding. It would also be interesting to make explicit the feedback between participation and demand, and to try to unpack how feelings of “ownership” might enter into the community dynamics.

We find that a program of providing grants to primary schools in order to catalyse community participation was effective. Extrapolating from the specific case of schools, there are two major policy implications of this paper. First, the type of participation envisioned by the program should match the characteristics of the community, and in particular the power dynamics in the relationship of the person providing the public service and the people benefiting from it. This is, to some extent, obvious to anyone who has worked on such programs, however this paper provides an empirical basis for this assertion. In particular, it is likely to be unrealistic to ask parents to monitor teachers in situations of asymmetries of power. Second, the evidence in this paper supports the idea that the act of participation itself can increase uptake of services, irregardless of improvements in quality, perhaps through increased familiarity with the public service institution. However, as this paper does not include any cost/benefit analysis (and note that any such analysis would need to take into account the opportunity cost of the parents’ time, as well as the other benefits to participation which are not considered in this paper), we do not speculate as to whether participation programs in general are likely to be cost-effective.

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9 Annex: Compliance with Study Protocol

The school committees, i.e. two representatives, signed a document confirming effective receipt of the grant in the intended amount. These receipts were first collected at the regional level and the information was then entered into a database at the Ministry of Education as a way to verify the actual receipt of the grants at the school level. An additional survey was conducted in 85 randomly selected schools asking detailed questions about the receipt and spending of the grants, and financial management. This questionnaire also included information about any problems with the administration of the grant and qualitative feedback and suggestions from the COGES. The use of the grants was recorded in detail, including the existence of a receipt for each expenditure.

The collection of grant receipts revealed that the grants arrived in the 500 program schools in December 2007-January 2008 in the amount allocated to each school, with a handful of exceptions. Data from the qualitative questionnaire administered at these visits indicate that the majority of those schools received the intended grant amount⁹. The school committees used the grants in a variety of ways. The most common use was material inputs such as construction and office supplies, and other uses included investment projects, health and sanitation projects, and transportation. Overall, the largest share of spending of the grant was in construction. Construction activities included building classrooms, but communities also constructed lodging for teachers, latrines, school enclosures, and other buildings. Twelve out of 84 schools, or 14% of schools surveyed, used at least part of the grant to make loans either to parents, the director, or to the AME at some interest rate, or purchasing grain for re-sale. It is unclear whether the loans or small business projects have been profitable.

The program was originally intended to last three years (with three cycles of grant disbursement). Due to coordination problems and issues with the financial transfer mechanism at the central level, the project was terminated after only one year. This paper uses data collected to serve as intermediate indicators.

⁹Among the 85 schools randomly chosen for the financial questionnaire, one school that had been selected for the grant had been closed at the time that the grant arrived. In another case, the grant was accidentally given to another school. In a third case, a school reported receiving 500 FCFA less than the intended amount. Two schools reported paying some money to cover transport costs to the person who delivered the grant.

10 Annex: Data and Descriptive Statistics

Only the control group schools are used to generate the following descriptive statistics in this section, with the objective for these statistics to be indicative of the pre-grant status of schools in Tahoua and Zinder.

10.0.1 Parent Participation

On average, the school committee's last meeting occurred 2.65 months before the survey, whereas parental association's last meeting occurred 3.69 months before the survey, which suggests a higher activity of school committees than parental associations. More than half of school committees are responsible for management tasks : 60% of school committees are responsible for school stationary supplies and more than 70% are in charge of teaching materials and infrastructure. Three quarters (77%) of school committees monitor the presence and punctuality of teachers and pupils, but only two thirds (66%) have taken some kind of action against a pupil for absenteeism (pupil remedials), and only one third (33%) have taken some kind of action against a teacher for absenteeism (teacher remedials). Remedial teacher actions include talking to the teacher, warning the teacher, or complaining to the teacher's supervisor. A third of school committees (30%) are in charge of collecting contributions for the school, whereas a large majority of school committees (71%) are responsible for managing expenditure of the fees. Parents participate in providing resources to schools: the average parental contribution is 293 FCFA (about 59 US cents). In 84% of schools the community provided in-kind contributions (such as food, building materials, or labor) to the school.

10.0.2 School Quality

Teacher presence Observed absenteeism among teachers is very high. On the day of the unannounced survey visit, 10% of schools were closed (the visit was carried out on a day the school was supposed to be open). Of schools that were open, 16% of school directors were absent, and 18% of teachers were absent.¹⁰To accurately represent the loss of classroom time and avoid reporting inconsistencies, this figure includes both excused and unexcused absences. Surveyors asked respondents at the school about the reasons for teacher absences. In about one third of schools, no reason was given. The fact that school committee members did not/could not indicate the reasons for teacher absenteeism is cause for concern, since it may indicate a lack of or weak attention to

¹⁰This figure is in line with observed absenteeism rates in other countries; see Chaudhury et al (2006) which surveyed attendance in six countries and found 19% of teachers absent during spot checks.

teacher management and supervision. Among schools which provided reasons for teacher absences, the most frequently cited reasons were (i) collecting salaries (34%); (ii) strike (33%); and (iii) illness (19%).

Accountability and Transparency While most schools claim to keep registers for fundraising and expenses, only about half were actually able to produce registers to be seen by the interviewers. Over half of schools, 59% of school committees and 52% of parent associations, took minutes in the last meeting. The annual school improvement plan, seen by many as the key activity of the school committees, was able to be produced for inspection in 60% of schools. Recordkeeping varies substantial by subject matter: 89% of schools use a register for material inventory, 66% to record pupil attendance, and 52% for inspector's visits, whereas only 22% use a register to record weekly activities and 17% use a register to record teacher attendance.

10.0.3 Demand for education

We use data on pupil enrollment at the beginning of the school year in 2008-2009 from administrative data as an outcome variable, whereas dropouts and attendance are from the survey visit at the end of the 2007-2008 school year. Overall, 156 pupils registered per school in 2008-2009. Attendance is measured by the ratio of pupils present the day of survey visit by the number of pupils who were registered at the beginning of the school year. An average of 69% of pupils who were enrolled at the beginning of the school year were present at school the day of visit, though this measure is based on a head count and thus may confound absence and drop out. Schools reported that about 3.4% of pupils who were registered at the beginning of the school year dropped out over the course of the year, or about 5 pupils per school on average. The dropout rate is highest in grade 6, at 5%. The dropout rate is not significantly different across boys and girls.

10.0.4 Community Characteristics

Table 2 shows descriptive statistics on the community characteristics we use as interactions with the treatment variable to test for heterogenous treatment effects of the program. These statistics are from the 2008 school survey. It is highly unlikely that these characteristics changed because of the treatment over the experiment period (December 2007-May 2008), either by construction or because the evaluation period is only in the short run (we tested for differences of the means across groups to confirm balance over groups, and p-values are reported in Table 2). They can therefore

be used as interaction variables.

The proportion of pupils who are girls is on average 39%. This measure is calculated from the pupil registers made at the beginning of the school year. The standard deviation is 0.11, which indicates some heterogeneity across communities. 10% of schools have a proportion of girls below 23%, whereas 10% have a proportion of girls above 50%.

Only 38% of school committees in the sample contain at least one member who completed primary school, which indicates an important heterogeneity across communities. Note that there is no significant difference in school committee members' seniority across control and treatment groups, which indicates that the composition of school committee did not react to the grant program in the short run. Note that the average wealth index does not have any material meaning in itself since the scale is one that measures individual's wealth relative to one another. The average wealth index is negative since the two school committee members are poorer, on average, than the school directors, whose data was included in the construction of the wealth index. The standard deviation of this wealth indicator is large (1.46), indicating an important heterogeneity of wealth across communities.

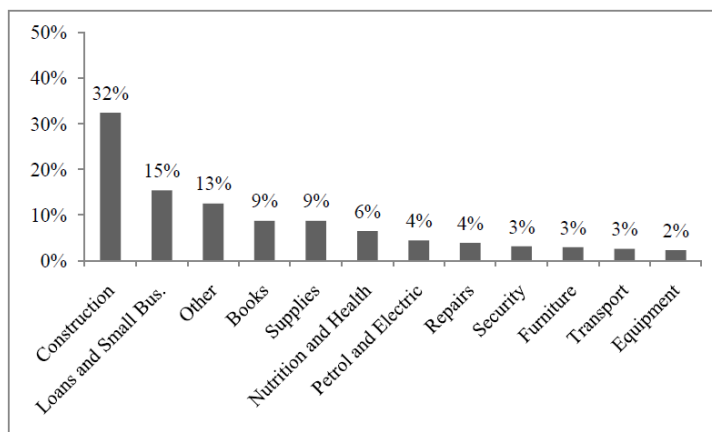
A minority (20%) of teachers in the average school are civil servants. Heterogeneity is large: 42% of schools have no civil servants and 35% have more than one third civil servants. Only 3% of schools have a majority of civil servant teachers. The typical school director has been in his or her position for 4 years. The variation of school director's seniority is not very large, with a standard deviation of 2.68 years. A very small fraction (6%) of school directors have been in charge for only one year, while 28% have been in charge for five years or more. In 82% of schools, the director speaks the same language as the majority of people in the community, as measured by a dummy equal to one when there is a common language.

The average distance index is 1.2, meaning that the typical community lives almost entirely within 3 km from school (in 77% of schools, all students living within 3 km of the school). One-fifth (20%) of schools have a significant share of students living more than 3 km from school, indicating a sparse population. Note that pupils in the control schools tend to be closer to the community than pupils in the treatment schools (significant at the 10% level), although this difference is very small.

There is therefore heterogeneity in these characteristics across communities, which will help to identify the circumstances under which community participation to school monitoring works. The heterogeneity is limited: the context of this study is characterized by low real authority of the

parents (low education and wealth) and rather high social proximity between the provider and the community (teachers most often speak the same language as the majority of the population).

Figure 1: Reported Use of Grant Money, by Total Amount Spent



Source: Financial Control over 85 randomly selected schools

Table 1: Pre-program School Characteristics, by Treatment Group

Variable	Treatment	Control	P-value
Observations	500	500	
Pupils	121.74	120.96	0.9
Girls	46.08	46.01	0.98
% Girls	37.75	38.12	0.62
<i>Infrastructure</i>			
Teachers	3.13	3.15	0.88
Classrooms	2.88	2.95	0.63
Latrines	0.16	0.17	0.93
Water	0.1	0.08	0.41
Electricity	0.01	0.01	0.97
<i>Test scores</i>			
Grade 6 exam success rate	0.69	0.71	0.48
<i>School Committees</i>			
School committee exists	0.91	0.93	0.22
Supported	0.58	0.59	0.85
<i>Accessibility</i>			
Distance to inspection	36.41	36.27	0.94
Distance to health Center	8.97	8.46	0.71

Source: 2005-2006 Administrative Data

Notes: School averages. P-values are for tests of equality of the means across groups.

Table 2: Community Characteristics, by Treatment Group

Variable	Obs	Mean	Std. Dev.	Control	Treatment	p-value
Proportion of girls in 2007-2008	984	0.39	0.11	0.39	0.39	0.93
Whether at least one member in the school committee completed primary education	599	0.38	0.49	0.39	0.38	0.67
Proportion of civil servant teachers per school	766	0.2	0.21	0.2	0.2	0.99
Seniority of school director in the school (years)	721	4.16	2.68	4.22	4.1	0.53
Distance of households from school (index from 1 to 5)	768	1.22	0.49	1.19	1.25	0.07
Wealth of school committee relatively to the school director (pca index)	718	-0.63	1.46	-0.59	-0.67	0.42
Whether school director speaks the same language as the community	709	0.82	0.39	0.82	0.81	0.7
Whether the school is urban	1000	0.11	0.31	0.11	0.11	0.92

Source: 2008 school survey

Notes: School averages. P-values are for tests of equality of the means across groups.

Table 3: Descriptive Statistics - Pupil Enrollment, Retention and Attendance

	Obs	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
<i>Pupil Enrollment in 2008-2009</i>							
		Girls		Boys		Total	
Grade 1	500	18	16	22	19	40	33
Grade 2	500	12	15	17	19	30	32
Grade 3	500	9	12	14	17	24	27
Grade 4	500	10	12	16	17	26	27
Grade 5	500	8	10	13	15	21	23
Grade 6	500	7	9	12	13	19	21
Total	493	66	57	95	71	156	116

Source: 2008-2009 Administrative Data. School averages in the control group.

	Obs	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
<i>Pupil Dropouts Rate in 2007-2008</i>							
		Girls		Boys		Total	
Grade 1	276	0,03	0,11	0,03	0,11	0,03	0,1
Grade 2	231	0,04	0,14	0,03	0,11	0,03	0,11
Grade 3	272	0,03	0,09	0,03	0,09	0,03	0,08
Grade 4	242	0,04	0,13	0,03	0,11	0,04	0,11
Grade 5	214	0,04	0,13	0,03	0,11	0,03	0,1
Grade 6	238	0,05	0,14	0,05	0,11	0,05	0,1
Total	386	0,04	0,09	0,03	0,08	0,03	0,08
<i>Pupil Attendance in 2007-2008</i>							
Boys attendance	328	0,53	0,31				
Girls attendance	328	1,06	0,69				
Total attendance	331	0,69	0,29				

Source: 2008 School Survey. School averages in the control group.

Table 3 (continued): Descriptive Statistics - Community Involvement and School Management

Variable	Obs	Mean	Std. Dev.
<i>Community Involvement</i>			
Parental contributions per pupil	312	293,48	500,66
Whether the community provides help in kind	379	0,84	0,37
Pupil supervision	377	0,77	0,31
Pupil remedials	311	0,66	0,47
Time since last parent meeting (in months) *	236	-3,69	2,19
Time since last school committee meeting (in months) *	277	-2,65	1,56
School committee in charge of collecting fees	206	0,3	0,46
School committee in charge of spending fees	206	0,71	0,45
School committee in charge of infrastructure	379	0,74	0,44
School committee in charge of furnitures	380	0,6	0,49
Active parental association	434	0,27	0,45
Teacher supervision	380	0,77	0,3
Teacher remedials	380	0,33	0,47
<i>School Accountability and Recordkeeping</i>			
Whether the school produced the register for fees collection	314	0,49	0,5
Whether the school produced the register for fees expenses	309	0,48	0,5
Whether the school uses a register for pupil attendance	311	0,66	0,47
Whether the school uses a register for teacher attendance	375	0,17	0,37
Whether the school uses a register for inspector's visits	388	0,52	0,5
Whether the school uses a register for material inventory	368	0,89	0,28
Whether the school uses a register for weekly activities	391	0,22	0,41
Whether the school produced an improvement plan	371	0,6	0,49
Whether minutes exist for the last school committee meeting	372	0,59	0,49
Whether minutes exist for the last parent meeting	367	0,52	0,5
Frequency of minutes for school committee meetings	354	0,62	0,45
Frequency of minutes for parent meetings	332	0,58	0,48
<i>Teacher effort</i>			
Proportion of present teachers	385	0,82	0,29
Whether school director is present	399	0,84	0,37
Whether school is open	405	0,9	0,31

Source: 2008 School Survey. School averages in the control group.

* Time since the last meeting is negative to reflect the fact that more time since the last meeting is negative in terms of community involvement. -3,69 means that the last meeting occurred 3,69 months ago.

Table 4: The Impact of Grants on Community Participation to School Management

Explanatory Variables	Dependent Variable: Index of Parents' Participation to Management Actions							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treatment (T)	0.0840***	0.0903***	0.173***	0.0882*	0.101**	0.107***	-0.00287	0.0778
	0.0271	0.0322	0.0604	0.0502	0.0399	0.0383	0.0787	0.108
T*Wealth of school com.		0.00812 0.0319						
T*Director same language			-0.0363 0.0266					
T*Director seniority				-0.00285 0.0257				
T*Education of school com.					-0.0233 0.0316			
T*Prop. civil servant teachers						-0.0231 0.0276		
T*Distance from school							0.0337 0.0313	
T*Prop. Girls								0.00173 0.0289
Constant	-0.230** 0.100	-0.269** 0.113	-0.284** 0.123	-0.198* 0.116	-0.266** 0.122	-0.235** 0.107	-0.232* 0.119	-0.227** 0.113
Observations	772	699	693	697	587	737	734	772
R-squared	0.054	0.058	0.060	0.061	0.064	0.058	0.058	0.054

Notes: Data source: School survey conducted in April-May 2008.

Standard errors below point estimates. ***, **, * indicate significance at 1, 5 and 10%

Management Actions entail the frequency of parents association / school committee meetings, whether the mother association is active, and whether the school committee is in charge of collecting fees / spending fees / infrastructure / furnitures

Table 5: The Impact of Grants on Community Participation to Teacher Supervision

Explanatory Variables	Dependent Variable: Whether School committee supervise teacher attendance							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treatment (T)	-0.0475	0.0361	0.0704	-0.150	-0.0952	-0.0499	0.140	-0.286
	0.0724	0.0929	0.178	0.142	0.0958	0.102	0.193	0.287
T*Wealth of school com.		0.0896 0.105						
T*Director same language			-0.0688 0.0764					
T*Director seniority				0.0306 0.0747				
T*Education of school com.					0.140* 0.0848			
T*Prop. civil servant teachers						-0.0184 0.0789		
T*Distance from school							-0.0849 0.0711	
T*Prop. Girls								0.0674 0.0769
Constant	2.787*** 0.271	2.479*** 0.289	2.835*** 0.316	2.746*** 0.305	2.475*** 0.318	2.848*** 0.286	2.599*** 0.312	2.904*** 0.307
Observations	752	695	684	683	585	720	715	752
R-squared	0.064	0.068	0.078	0.073	0.094	0.068	0.073	0.065

Notes: Data source: School survey conducted in April-May 2008.

Standard errors below point estimates. ***, **, * indicate significance at 1, 5 and 10%

Table 6: The Impact of Grants on Community Participation to Teacher Remedial

Explanatory Variables	Dependent Variable: Whether the school committee took any sanction against teachers							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treatment (T)	-0.0302 0.0723	0.0254 0.0880	-0.247 0.180	-0.127 0.142	-0.0114 0.104	0.0358 0.0987	0.0194 0.208	-0.0233 0.266
T*Wealth of school com.		0.0861 0.0853						
T*Director same language			0.0812 0.0772					
T*Director seniority				0.0587 0.0750				
T*Education of school com.					0.0370 0.0861			
T*Prop. civil servant teachers						-0.0663 0.0730		
T*Distance from school							-0.0122 0.0792	
T*Prop. Girls								-0.00196 0.0725
Constant	0.849*** 0.275	0.986*** 0.306	0.992*** 0.321	0.999*** 0.309	0.779** 0.345	0.801*** 0.292	1.056*** 0.318	0.846*** 0.303
Observations	752	695	684	683	585	720	715	752
R-squared	0.050	0.054	0.059	0.055	0.051	0.055	0.061	0.050

Notes: Data source: School survey conducted in April-May 2008.
Standard errors below point estimates. ***, **, * indicate significance at 1, 5 and 10%

Table 7: The Impact of Grants on Community Support to School Activities

Explanatory Variables	Dependent Variable: Index of Parents' Participation to Supportive Actions							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treatment (T)	0.135*** 0.0391	0.149*** 0.0504	0.167* 0.0874	0.182** 0.0750	0.0630 0.0533	0.0863* 0.0538	0.374*** 0.0982	-0.135 0.150
T*Wealth of school com.		0.0384 0.0538						
T*Director same language			-0.0193 0.0385					
T*Director seniority				-0.0468 0.0383				
T*Education of school com.					0.0853* 0.0443			
T*Prop. civil servant teachers						0.0496 0.0419		
T*Distance from school							-0.0997*** 0.0367	
T*Prop. Girls								0.0761* 0.0400
Constant	-0.166 0.145	-0.245 0.158	-0.0987 0.160	-0.140 0.161	-0.345** 0.169	-0.196 0.157	-0.344** 0.161	-0.0324 0.157
Observations	752	695	685	684	585	720	715	752
R-squared	0.110	0.123	0.118	0.104	0.123	0.113	0.124	0.115

Notes: Data source: School survey conducted in April-May 2008.
Standard errors below point estimates. ***, **, * indicate significance at 1, 5 and 10%
Supportive actions entail financial contributions, help in kind, pupil supervision and pupil remedial

Table 8: The Impact of Grants on School Quality: Accountability and Transparency

Explanatory Variables	Dependent Variable: Whether the School Uses a Register for...							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Fees Collection ¹	Fees Expenses ¹	Pupil Attendance	Teacher Attendance	Inspector's Visits	Material Inventory	Weekly Activities	Improvement Plan ¹
Treatment (T)	0.124* 0.0710	0.205*** 0.0715	-0.00978 0.0785	-0.0280 0.0727	-0.0313 0.0716	-0.0184 0.0715	-0.0570 0.0687	0.0807 0.0707
T	0.0874 0.0810	0.163** 0.0801	0.0162 0.0916	-0.00163 0.0893	-0.0558 0.0811	-0.120 0.0789	-0.189** 0.0856	0.135* 0.0800
T*Wealth of school com.	-0.0766 0.0766	-0.0606 0.0735	0.100 0.0863	0.0773 0.0871	-0.0842 0.0740	-0.0993 0.0672	-0.260*** 0.0805	0.118 0.0755
T	0.400** 0.180	0.323* 0.181	-0.0821 0.186	-0.121 0.164	-0.00197 0.182	0.129 0.168	-0.0749 0.163	0.0453 0.187
T*Director same language	-0.116 0.0774	-0.0453 0.0777	0.0280 0.0811	0.0568 0.0716	-0.00289 0.0778	-0.0582 0.0716	0.0159 0.0717	0.0282 0.0794
T	0.341** 0.133	0.460*** 0.141	-0.0279 0.149	-0.148 0.151	0.153 0.133	-0.0768 0.148	-0.214* 0.128	-0.0456 0.136
T*Director seniority	-0.126* 0.0708	-0.147* 0.0791	-0.0202 0.0818	0.104 0.0930	-0.115* 0.0694	0.0211 0.0850	0.101 0.0678	0.0954 0.0696
T	0.225** 0.104	0.254** 0.106	-0.102 0.112	-0.0718 0.0971	0.121 0.105	-0.0375 0.0948	0.0495 0.102	0.0470 0.0964
T*Education of school com.	-0.0828 0.0806	-0.0804 0.0815	0.0996 0.0912	0.00887 0.0833	-0.146* 0.0840	-0.0290 0.0785	-0.162* 0.0845	0.0638 0.0806
T	0.0708 0.101	0.165 0.101	0.0334 0.112	-0.123 0.103	0.0231 0.0998	0.0508 0.111	0.0462 0.0948	0.0287 0.101
T*Prop. civil servant teachers	0.0594 0.0753	0.0480 0.0752	-0.0535 0.0801	0.129* 0.0750	-0.0753 0.0739	-0.0853 0.0848	-0.125* 0.0685	0.0766 0.0735
T	-0.0577 0.196	0.179 0.199	0.467** 0.205	0.0183 0.180	-0.159 0.195	0.370** 0.179	0.0260 0.190	-0.327* 0.189
T*Distance from school	0.0740 0.0743	0.0102 0.0756	-0.193** 0.0751	-0.0120 0.0631	0.0436 0.0729	-0.161** 0.0653	-0.0368 0.0715	0.165** 0.0704
T	0.358 0.277	0.395 0.279	-0.273 0.316	-0.229 0.289	-0.320 0.278	-0.0642 0.293	0.129 0.258	0.0163 0.277
T*Prop. Girls	-0.0662 0.0761	-0.0539 0.0766	0.0742 0.0843	0.0567 0.0780	0.0807 0.0754	0.0127 0.0765	-0.0520 0.0716	0.0182 0.0748

Data source: School survey conducted in April-May 2008. Standard errors below point estimates. ***, **, * indicate significance at 1, 5 and 10%

¹ The register was produced to be seen by the interviewer

Table 9: The Impact of Grants on School Quality: Teacher Effort

Explanatory Variables	Dependent Variable: Proportion of teachers present the day of visit							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treatment (T)	-0.109	-0.166**	-0.130	-0.160	-0.0190	-0.119	0.0242	-0.205
T*Wealth of school com.	0.0675	0.0700	0.171	0.122	0.0873	0.0890	0.159	0.297
T*Director same language		0.0565	0.0202					
T*Director seniority			0.0725	0.0218				
T*Education of school com.				0.0582	-0.0911			
T*Prop. civil servant teachers					0.0723	0.0102		
T*Distance from school						0.0619	-0.0531	
T*Prop. Girls							0.0556	0.0269
Constant	3.211***	3.240***	3.296***	3.294***	3.158***	3.260***	2.914***	3.258***
Observations	758	677	685	713	569	758	730	758
R-squared	0.183	0.185	0.185	0.180	0.186	0.183	0.192	0.183

Notes: Data source: School survey conducted in April-May 2008.
Standard errors below point estimates. ***, **, * indicate significance at 1, 5 and 10%

Explanatory Variables	Dependent Variable: Whether the school director was present the day of visit							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treatment (T)	0.0497	0.0367	-0.164	0.0481	-0.0300	0.105	-0.108	0.461*
T*Wealth of school com.	0.0683	0.0744	0.151	0.108	0.0958	0.0932	0.180	0.276
T*Director same language		0.0634	0.107					
T*Director seniority			0.0650	-0.00319				
T*Education of school com.				0.0512	0.106			
T*Prop. civil servant teachers					0.0728	-0.0223		
T*Distance from school						0.0636	0.0646	
T*Prop. Girls							0.0674	-0.116
Constant	2.031***	1.966***	2.336***	2.334***	2.185***	2.000***	2.157***	1.826***
Observations	791	696	689	695	586	737	739	791
R-squared	0.104	0.078	0.044	0.036	0.070	0.059	0.049	0.107

Notes: Data source: School survey conducted in April-May 2008.
Standard errors below point estimates. ***, **, * indicate significance at 1, 5 and 10%

Explanatory Variables	Dependent Variable: Whether the school was open the day of visit							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treatment (T)	-0.0121	-0.0390	-0.177	-0.0338	-0.0454	0.0549	-0.0301	-0.256
T*Wealth of school com.	0.0658	0.0633	0.157	0.0994	0.0769	0.0863	0.171	0.292
T*Director same language		0.00669	0.0664					
T*Director seniority		0.0479	0.0653	0.00515				
T*Education of school com.				0.0484	0.0315			
T*Prop. civil servant teachers					0.0638	-0.0609		
T*Distance from school						0.0556	0.00964	
T*Prop. Girls							0.0708	0.0685
Constant	3.008***	2.978***	3.081***	3.094***	2.972***	3.018***	3.234***	3.128***
Observations	808	704	694	701	588	745	747	808
R-squared	0.155	0.137	0.105	0.121	0.123	0.119	0.100	0.156

Notes: Data source: School survey conducted in April-May 2008.
Standard errors below point estimates. ***, **, * indicate significance at 1, 5 and 10%

Table 10: The Impact of Grants on the Demand for Education: Enrollment and Dropouts

Explanatory Variables	Dependent Variable: Enrollment in 2008-2009, by Schools						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>Panel A: Girls</i>	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Total
Treatment	-0.0142 (0.0474)	0.104** (0.0425)	0.0127 (0.0420)	-0.0275 (0.0425)	0.00475 (0.0433)	-0.0331 (0.0456)	0.00789 (0.0228)
Constant	0.894*** (0.211)	-0.460** (0.223)	-0.362* (0.199)	-0.459** (0.193)	-0.631*** (0.204)	-0.611** (0.246)	-0.379*** (0.136)
Obs.	984	984	984	984	984	984	978
R-squared	0.461	0.569	0.579	0.561	0.551	0.510	0.881
<i>Panel B: Boys</i>	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Total
Treatment	0.00868 (0.0500)	0.100** (0.0477)	-0.0390 (0.0476)	-0.00573 (0.0504)	0.0303 (0.0488)	-0.0122 (0.0475)	0.0108 (0.0244)
Constant	1.215*** (0.208)	0.438** (0.212)	0.754*** (0.204)	0.523*** (0.198)	0.456** (0.198)	0.486** (0.190)	0.859*** (0.141)
Obs.	984	984	984	984	984	984	978
R-squared	0.404	0.455	0.462	0.389	0.429	0.466	0.866
<i>Panel B: Total</i>	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Total
Treatment	-0.00160 (0.0476)	0.107** (0.0441)	-0.0180 (0.0442)	-0.0156 (0.0466)	0.0216 (0.0452)	-0.0225 (0.0446)	0.0175 (0.0160)
Constant	1.124*** (0.207)	0.402 (0.215)	0.296 (0.197)	0.136 (0.189)	0.0271 (0.188)	0.0380 (0.200)	0.151** (0.0630)
Obs.	984	984	984	984	984	984	959
R-squared	0.458	0.533	0.535	0.473	0.509	0.524	0.940

Data source: School survey conducted in April-May 2008. Robust standard errors in parentheses.

***, **, * indicate significance at 1, 5 and 10%

Explanatory Variables	Dependent Variable: Dropout Rate in late 2007-2008, by Schools						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>Panel A: Girls</i>	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Total
Treatment	-0.0827 (0.0860)	-0.171* (0.102)	-0.124 (0.0852)	-0.0971 (0.0927)	-0.0702 (0.0994)	0.126 (0.0931)	-0.0765 (0.0731)
Constant	0.438** (0.217)	1.009** (0.459)	1.027*** (0.354)	1.396*** (0.512)	1.180** (0.466)	0.809** (0.394)	1.092*** (0.276)
Obs.	538	438	530	463	382	449	753
R-squared	0.028	0.059	0.041	0.106	0.062	0.108	0.051
<i>Panel B: Boys</i>	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Total
Treatment	-0.170* (0.0931)	0.0333 (0.107)	-0.124 (0.0832)	-0.0453 (0.0953)	0.0729 (0.0964)	-0.0473 (0.0943)	-0.0754 (0.0730)
Constant	0.320 (0.219)	0.566** (0.278)	0.754** (0.294)	1.262** (0.547)	1.232** (0.503)	0.641** (0.325)	0.849*** (0.227)
Obs.	539	440	529	462	385	463	754
R-squared	0.041	0.042	0.049	0.069	0.065	0.091	0.059
<i>Panel B: Total</i>	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Total
Treatment	-0.174* (0.0908)	-0.0649 (0.109)	-0.133 (0.0838)	-0.0706 (0.0940)	0.0261 (0.0965)	0.0135 (0.0931)	-0.0736 (0.0727)
Constant	0.396* (0.215)	0.611** (0.302)	0.886*** (0.332)	1.377** (0.548)	1.332** (0.516)	0.808** (0.363)	0.967*** (0.229)
Obs.	540	440	530	463	387	466	752
R-squared	0.038	0.041	0.045	0.084	0.069	0.103	0.053

Data source: School survey conducted in April-May 2008. Robust standard errors in parentheses.

***, **, * indicate significance at 1, 5 and 10%

Table 11: Channel of the Effect on the Demand for Education: Participation or Quality?

	(1)	(2)	(3)	(4)
Explanatory Variables	CP enrollment 2008	CP enrollment 2008	CP enrollment 2008	CP enrollment 2008
Treatment	0.0899*	0.0721	0.0883*	0.0715
	0.0488	0.0502	0.0490	0.0503
Participation Index		0.165**		0.164**
		0.0687		0.0694
Infrastructure Index			0.0256	0.0125
			0.0590	0.0595
Constant	-0.125	-0.0934	-0.124	-0.0936
	0.222	0.222	0.221	0.222
Observations	745	745	745	745
R-squared	0.592	0.595	0.592	0.595

Participation Index Data Source: School survey conducted April-May 2008.

Infrastructure Index and Enrollment Data Source: DSI survey data 2008

***, **, * indicate significance at 1, 5, and 10%