Willing but Unable: Short-Term Experimental Evidence on Parent Empowerment and School Quality *

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Abstract

Decentralizing school management has been a common strategy to increase school quality. The findings of this paper imply that strategies to improve school quality through parent participation should take levels of community capacity into account. We test the short-term responses to a grant to school committees in a context where parents have low authority and little experience managing funds. We find that parents supplemented the grant with their own inputs and increased their participation in school management. Enrollment at the lowest grades and school resources improved. However, teachers were absent more, and there was no impact on test scores.

JEL Codes: H52, 015, I21, I28

1 Introduction

The dramatic expansion of access to schools in the last two decades is the result of an unprecedented effort to increase education in poor countries. However, the quality of education is often low, and in some cases getting worse as participation increases. One common strategy to improve quality is through improved management and oversight, and in particular by increasing involvement of parents

and the community (World Bank, 2004). Community-based management policies have been widely adopted throughout the world over the past decade[1] (see Barrera-Osorio et al, 2009 for an overview). Governments and NGOs have organized citizens into multitudes of local committees and given these committees varying levels of power over resource allocation, monitoring, and management. Parents are encouraged to participate in school management in many ways, for example, through training and facilitation, as well as formal control over decisions relevant to the school. Grants to school committees is one way that school quality may be increased due to an increase in both school resources and parent participation.

Arguments for giving parents the responsibility over school resources are generally based on three main ideas. First, the information problems that contribute to government failures at the central level are likely to be less acute at the community level. Second, communities have a stronger incentive to demand high quality service than the central government, since they benefit directly from that service. Third, parents might be less likely to substitute school resources for their own effort when they are involved in school management and decide over school resources, limiting the adverse behavioral responses observed in the literature[2].

This paper provides evidence from a program, in a context of low parent authority and capacity, that tried to encourage parent participation in school management by putting financial resources directly under parent control. We show that parent contributions were not crowded out, and, on the contrary, parents increased participation. However, this increased participation did not translate into increased quality: parents were willing, but unable, to increase quality through participation. On average, teacher attendance declined slightly and there was no impact on test scores, though there were improvements in school infrastructure and resources, and a small increase in student participation at the lowest grades. We use detailed analysis of shifts in spending, as well as an examination of heterogeneous impacts, to try to better understand the lack of impact on quality. We argue that the analysis shows that parent authority and capacity is key for parents to undertake

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[1]School-based management programs have been implemented in Argentina, Australia, Bangladesh, Canada, Guatemala, Honduras, Hong-Kong, India, Lebanon, Lesotho, Macedonia, Madagascar, Mexico, Nicaragua, the Philippines, Senegal, Serbia, Sri Lanka, the Gambia, the United Kingdom, and the United States (Duflo et al, 2012).

[2]Previous studies have found that increased school resources may have the effect of crowding out the contributions of other actors. For instance, parents in Romania decreased time spent on homework when their child gained admittance to a better school (Pop-Eleches and Urquiola, 2013). In Zambia and India, households decreased spending for education when they anticipated an increase in school funding (Das et al., 2013). In Kenya, civil-servant teachers decreased presence at school when school committee hired an extra-teacher (Duflo, Dupas and Kremer, 2012). One possibility is that parents are less likely to substitute school resources for their own effort when they are involved in school management and decisions about resouce use.

the more difficult aspects of management, that an alliance between parents and teachers may work better than an oppositional relationship, and that it should not be taken for granted that parents will always make optimal spending decisions in terms of increasing quality. We present a classical model of school quality, with two new parameters, teachers' preference for a centralized government and parents' real authority, and show that with this we can explain our results as well as the existing evidence on the effects of participatory programs.

Previous evidence on the effectiveness of programs to increase quality via increased parent participation is mixed. Banerjee et al (2010) report that providing information to parents about the role and the activities of school committee and training the community to measure educational performance in India had no impact on the activity of school committees, and therefore no impact on education outcomes. Duflo, Dupas and Kremer (2012) find that a training to empower the parents helped mitigate the negative response of regular teachers to the addition of a contract teacher; Blimpo and Evans (2011) find no impact of a training for school committees on learning except when the school committee members were educated; Pradhan et al. (2011) find that an intervention to empower parents is effective only when combined with an intervention fostering the ties between the school committee and a local governing body.

We present a model to formalize our argument that the extent to which communities can achieve the task set before them depends in no small part on the willingness, ability and authority of parents: it may be costly and time-consuming, parents may not have good information about how schools work and thus may not make optimal decisions, and it may be very difficult in practice to put pressure on teachers to improve service quality - so an alliance may be a better strategy. In contexts where communities have relatively little authority compared to the teachers, and where parents are not traditionally seen as active actors in the education system, programs that rely on community participation may be particularly likely to fail. In addition, parents vary in their capacity to manage school resources wisely and influence school decisions. This capacity depends on their power vis-à-vis teachers, or "real authority" in the terms of Aghion and Tirole (1997), who underscore the fact that formal authority (the right to make decisions) need not imply real authority (effective control over decisions)[3]. Context, including historical and cultural context, is

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[3]Policies of *de jure* autonomy do not always lead to *de facto* autonomy (King and Ozler, 2004), and so participation may not be meaningful if communities have no actual power and even increase inequality by "leaving the poor behind" (Galiani et al, 2008)

important to the success of these programs at improving education outcomes.

The data we use is from an experiment in a low authority context. In Niger, levels of education among adults are extremely low: 70% of the population age 15-44 in 2010 have no education[4], and the system for education is very hierarchical. In a controversial pilot program, the Ministry of Education of Niger gave grants, explicitly under school committee control, to schools with the aim of increase parent involvement and, consequently, the quality of education. All school committees in this experiment had been trained on how to manage schools, and the grant was randomly allocated to half of the school committes. We use detailed information on parent contributions to school and participation in school management, teacher presence in school, school infrastructure quality, pupil participation in schools and actual learning to evaluate the impact of the grant. An important limitation of the study is that it provides only short-term evidence on behavioral responses: the first grant arrived late 2007 and was meant to continue over years, but a political coup occurred in 2009 and the evaluation ended. A survey took place in April-May 2008 and administrative data was collected at the beginning of the 2008-2009 school year. This paper thus documents the short-term dynamics of an anticipated long-term program.

On average, we find that parents were willing to increase their participation and contributions, but educational quality did not improve in a meaningful way as a result of this participation. There is an overall positive impact of the grant program on parents' contributions and participation: communities with the grant engaged in more nonassertive participation actions (such as contributing money) and also more assertive actions (such as going to meetings and managing school supplies). COGES reported more spending in infrastructure, health resources, school festivals and playground equipment, and, unexpectedly, investments agricultural projects which were, probably, non-educational but intended to make a profit. There were subsequent improvements in infrastructure and increases in health resources and activities. These changes are matched by an increase in participation in the grade 1: fewer dropouts in 2007/2008 and increased enrollment in grade 2 in 2008/2009.

However, quality did not improve with these changes, at least in the short term: test scores were not changed. We also observe a small significant decrease in teacher effort in response to the grant, which we attribute to the fact that some teachers have a preference for a centralized government

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[4]World Development Indicators, World Bank, source: International Institute for Applied Systems Analysis (IIASA)

and might be reluctant to collaborate with parents, especially when parents do not invest the money to their advantage. This result contrasts with qualitative evidence that parent participation disciplines teachers in different contexts. Bryk et al. (1998) and Hess (1999) have argued that student achievement improved in Chicago after the implementation of reform involving the community in school management and Di Gropello (2006) overviews four school-based management programs in Latin America and concludes that school-based management models have led generally to greater community empowerment and teacher effort[5].

We examine heterogeneous effects along several different dimensions, and observe three interesting patterns. First, we find that in situations where the school committee is educated - which we take as a proxy for authority - they make more contributions, they took charge of monitoring teacher attendance in response to the grant, and they invested in infrastructure, actions that non-educated school committees do not do. However, teacher attendance was not found larger in response to parental monitoring. Second, in one-teacher schools, school committees increased the expenses which benefit directly to the teacher, and teacher attendance has increased in response to the grant. These results together suggest that teachers' response to parent participation is contrary when parents oppose to, or ally with, the teachers. Third, we find that while rural schools used some of the grant to invest in agricultural opportunities[6], urban schools did not but invested in school infrastructure instead.

This paper makes two contributions. First, it provides evidence on the short-term parent and teacher behavioral responses to an increase in school resources under parental control, and some aspects of school quality, using a randomized controlled trial in in a context where parents have low authority and little experience managing funds. In addition to the average treatment effect, we explore whether the impact varies along several key dimensions. Second, it provides a theoretical framework that formalizes parent and teacher behavior in school in order to clarify how a change in school resources (either under teacher or under parent control) affects school quality directly and through behavioral responses, explaining both our results and the existing results in the literature. This framework also provides some structure for the idea that power relationships between teachers and communities changes how they respond to policy. In addition, we show that empowering one

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[5]These papers rely on identification strategies that do not include random variation in treatment assignment.

[6]This difference may be related to severe credit constraints in rural areas, which are likely to be less severe in urban areas.

actor may disempower another actor, resulting on an ambiguous effect on performance depending on the marginal efficiency of the winning versus losing actors. Our paper is a first attempt to formally take into account real authority as a necessary condition for parent participation programs' success.

There are four key policy implications of our findings. First, the degree to which outside inputs are treated as complements, rather than substitutes, to a community's own contributions and efforts may depend on the degree to which the community has power over the inputs: while Pop-Eleches and Urquiola (2013) and Das et al. (2013) find that more resources in the hands of school staff crowd out parents' contributions and efforts, we find that more resources on the hands of parent committees crowd in their own contributions and efforts. Second, parent participation can reduce teacher effort when parents are not "on the same side" as the teachers, and some attention should be given to designing programs with this possible response in mind. Third, programs that encourage community participation to increase school quality should take into account the ability of the community to make the good decisions (for example, the degree to which they have information about how schools work): we find in this experiment that parents used the grant in ways that were unlikely to increase school quality. Finally, behavioral responses to programs may cancel each other out: in the case of this grant, an increase in the effort of the parents and in the quality of the infrastructure was met with a decrease in the effort (presence) of the teachers, which ultimately led to no improvement in learning.

The remainder of the paper is as follows. Section 2 presents some background information on education in Niger, and describes the school grant experiment. Section 3 presents the data and our estimation strategy and Section 4 the empirical results. Section 5 presents a model of the dynamics of school resources, parent and teacher effort in producing education that explains the existing empirical evidence. Section 6 concludes.

2 Experimental Set-Up

2.1 Background on Education in Niger

Niger had made remarkable progress in education access in the decade prior to this evaluation: the number of children enrolled in primary school had more than doubled from 656,000 in 2000 to 1,554,102 in 2008, and net enrollment had risen from 27% to 49% in the same period. However,

only 44% of children who begin primary school finished all grades, and only 43% of sixth graders who took the national exam at the end of primary school passed it.[7] Literacy rates are low, and education may be able to substantially improve livelihoods: the World Bank estimates that being able to read raises a Nigerien person's income by 150% (World Bank, 2010).

The education system in Niger has traditionally been very hierarchical and rigid. Inherited from French colonization, the system replicates the French education system itself: highly centralized, no much room for local community participation, if any. Unlike other systems, where the school might be supervised by a local governmental bodies, there was no way for the local community to determine school policy or practice. Schools depended entirely on the hierarchical chain that originated in the Ministry of Education (except for some local fundraising or user fee collection, but these efforts were undertaken only when needs were not provided for by the Ministry).

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.[8] As discussed in the introduction, the establishment of local community groups for the purpose of improving public service provision via community participation is a strategy that many country governments and civil society organizations advocate. 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.

In the districts where this program was carried out, the COGES were trained in financial management, governance (elections) and project planning - though the training was carried out by

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[7]The situation has continued to improve in terms of access to education: in 2011, net enrollment in primary school was 62%, and primary completion rates had risen to 46%.

[8]These school committees consist of 6 representatives, including the school director, who serves as secretary, and parent representatives. The parents are supposed to elect the representatives, who may also be the leaders of the Parent Association (APE), which includes all parents, and the Mother's Association (AME), which includes all mothers. In practice, the composition of the COGES varies by school. 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 APE and AME.

multiple organizations and due to COGES turnover, not all members had been trained. In 2006, a significant number of the newly created and trained 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 the quality of education, and to potentially increase enrollment rates. The pilot project was carried out as a randomized evaluation in order to provide reliable information on impact prior to national scale-up.

2.2 Experimental Design

The evaluation design included 1,000 schools in two regions of Niger, Tahoua and Zinder, 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 randomly assigned to receive the grants and became the treatment group. The other 500 schools served as a control group. Both randomizations were stratified on inspection (a geographical administrative unit), existing support for the school committee (e.g. existing programs or sponsorship by NGOs), and whether the school was indicated as being in a rural or urban area by ministry records. Strata were constructed by grouping the schools into inspection, then within each inspection into whether or not the school had existing support, and then within each of those groups, whether the school was in an rural or urban area. This gave 50 strata. Schools were assigned a random number between 0 and 1, and within each strata they were sorted by this random number, with the first half being assigned to treatment and the second to control. Data from the Administrative School Census in 2005-2006 (the school census is described below) 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.

The size of the grant was based on the size of the school (the number of classrooms), and the average was $209 per school, or $1.83 per student. The grant was a relatively modest amount

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that was determined by considerations of financial sustainability in view of a potential extension of the program by the government. On average, the control schools raised a little over $0.60 per year per student, and so the grant is relatively much larger than usual fund raising. For an idea of scale, the amount of the grant was not, except in the very largest schools, sufficient to build an additional classroom. This grant amount is smaller than grants provided to school committees in the literature: Blimpo and Evans (2010) use a grant of US$500 in Gambia. Gertler, Patrinos, and Rodríguez-Oreggia (2010) use grants of US$500 to US$700 in Mexico, and Pradhan et al. (2014) evaluate a grant of US$326 (to be completed soon with another US$544) in Indonesia. [9]

About a month before the grant arrived, 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 activity to be supported by the grants was decided on by the school committee.[10] 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. As to compliance and program execution, the grants arrived in 498 schools of the 500 program schools, 492 in the exact amount allocated to them and six in an different amount (see Appendix 3 for further details on compliance).

The school committees used the grants in a variety of ways. Eighty-five schools were randomly selected for a detailed questionnaire on grant arrival and spending. 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, representing 32% of the total amount spent (Figure 1). Construction activities included building classrooms, but communities also constructed lodging for teachers, latrines, school enclosures, and other buildings. Other projects including electrification or producing copies of exams were also undertaken. Fourteen percent 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

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[9]The school committees selected for treatment received the grants in the last months of 2007 and first months of 2008. Note that schools do not, in general, receive other financial transfers from the government. The government does provide material in kind, such as books and classrooms, and teacher salaries are paid by the government (though payment has been irregular in the past). Some schools receive support from other community organizations or NGOs, but in general the amount of cash income available to schools is very small and is obtained through parental contributions. Since governmental contribution is in kind, we do not observe school budgets, but there is no doubt that the grant was very small relative to school budgets.

[10]One 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.

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 issues with the financial transfer mechanism at the central level and the political coup that happened in 2009, the evaluation was terminated after only one year.

3 Data and Empirical Strategy

3.1 Data

3.1.1 Sources

Data come from three sources: (i) administrative data on primary schools (the Ministry of Education's annual school census, also called administrative data), (ii) an evaluation survey administered to school staff and two members of the school committee at treatment and control schools and (iii) a financial survey administered to one member of the school committee on a subset of treatment schools.

The Ministry of Education in Niger administers an annual census of all primary schools, including community schools and medersas (Koranic schools), which provide data on enrollment, teacher characteristics, school facilities and resources, and community characteristics. We use the 2005/2006, 2006/2007, 2007/2008 and 2008/2009 censuses . Each census is collected in the fall of the school year (for example, the 2008/2009 census contains the information reported by the schools in fall of 2008).

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 to the 1,000 schools included in the experiment in April/May 2008, five to six months after grant distribution, to understand the immediate 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 and personal wealth of the school committee members. Three tests were also administered at this time: a math test, a french test, and an oral exam. The oral exam was administered to the youngest (grades 1 and 2) pupils.

Finally, a financial survey was administered to 85 randomly selected treatment schools in January/February 2009, asking detailed questions about the receipt and spending of the grants, any problems with the administration of the grant, and use of the grants (including the existence of a receipt for each expenditure).

3.1.2 Outcomes

To draw general conclusions about the experiment's impact, simplify interpretation, and to guard against cherry-picking of results, we present some findings for indices that aggregate information over multiple outcome variables (following Kling et al, 2007). The aggregation also improves statistical power to detect effects that go in the same direction within a domain. Appendix 2 gives details on the methodology and the composition of the indices used in this paper.

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.

School Management

We construct on two indicies (nonassertive parent action and assertive parent action) and monitoring of and remedial action for teacher attendance. See Appendix A for details on the construction of the indicies. Summary statistics on parent participation are given in Table 4.

Nonassertive Parent Actions   Nonassertive actions are those which involve the parents either contributing to the school or executing school policy - that is, they do not require parents to exercise much authority in decision-making. We use four variables to measure nonassertive actions: financial contributions[11], a dummy for whether in kind contributions were made[12], a dummy for whether the school committee is in charge of monitoring pupil attendance, and a dummy for whether the school committee is in charge of sanctioning pupils for poor attendance. A third of school committees (30%) are in charge of collecting contributions for the school, whereas a large majority of school

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[11] The precise question used to collect this information was: "How much funds have the school raised since the beginning of the school year?". The answer to this question was divided by the number of pupils registered in 2007/2008. The variable we use is thus funds raised per pupil. In the context of Niger, the funds are essentially provided by parents since there are very few NGOs. But it is important to note that our measure of financial contributions encompass parental contributions and any other potential donors.

[12] It is not feasible to evaluate the amount of in kind contributions as we do not have information on the local market price of the items contributed.

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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)[13]. In 84% of schools the community provided in-kind contributions (such as food, building materials, or labor) to the school. Three quarters of the COGES monitor the presence of pupils, and roughly the same number have taken some kind of action against a pupil or his or her parents for absenteeism.

Assertive Parent Actions   Assertive actions are those which require the parents to take some responsibility for and exercise authority in making decisions. We use seven variables to measure assertive actions: the time elapsed since the last parent and school committee meetings, whether the mother's association was active or not, and whether the school committee is in charge of collecting fees, spending fees, supplies and infrastructure. On average, the school committee's last meeting occurred 2.65 months before the survey, and the last 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 74% are in charge of teaching materials and infrastructure.

Actions in opposition to teachers   We use two separate variables to measure actions taking in opposition to the teachers. First, whether the COGES is in charge of monitoring teacher attendance (77% of schools). Second, whether the COGES has taken remedial action against a teacher for repeated absence. Remedial actions include talking to the teacher, warning the teacher, or complaining to the teacher's supervisor. Only one third (33%) of COGES report taking remedial action.

COGES Spending and Investments   Summary statistics on COGES plans for spending and investment are given in Table 5. The April/May 2008 questionnaire asked the COGES to list projects included on the school action plan, as well as the amount budgeted for them. We coded these items into eight groups:

- Infrastructure includes expenses related to classrooms, desks, chairs, blackboards, school enclosure and security, and cleaning.

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[13]We use the average exchange rate in late 2007 (0.002 USD for 1 FCFA).

- Supplies and Texbooks includes expenses for notebooks, pens, and textbooks.

- Pupil Educational Support includes expenses like remedial courses, awareness campaigns to increase enrollment, and academic rewards.

- Pupil Health includes expenses related to nutrition and health like drinkable water, meals, latrines and drugs.

- Teacher Support includes expenses benefitting to teachers like teacher housing, furniture, supplies, guide books, and salary.

- COGES Expenses includes expenses related to COGES meetings, contributions to and travel expenses for the "COGES communal" (a regional grouping of the COGES) and inspector visits.

- Schools Festivals and Playground includes expenses like graduation ceremonies, parties, and soccer balls.

- Investments in Agriculture includes seeds, fields, crops and livestock, unrelated to education activities. For example, some schools reported the purchase of a field of peanut plants, others of a herd of goats, etc.

The summary statistics presented here are drawn only from the control schools. Infrastructure is the most common project: almost all (91%) of the control schools reported that they planned for Infrastructure projects, and this category accounted for 73% of the planned COGES expenditures. All other project types accounted for less than 10% of expenditures. About at third of schools report projects concerning Pupil Educational Support (34%), Pupil Health (29%), and Supplies and Textbooks (28%). One fifth of schools reported COGES Expenses. One tenth of schools reported spending on Teacher Support. Fewer than 5% of schools reported any spending on School Festivals and Playground or Investments in Agriculture.

School Resources and Activities

Complete descriptive statistics on school resources and activities are given in Table 6

Infrastructure   The data on infrastructure comes from the 2008/2009 annual administrative database. We create an index of infrastructure quality using data on the number of buildings and their condition, the number of blackboards, the number of desks for children, the number of teacher's desks, the number of teacher's chairs, the number of shelves, and whether or not the school has an enclosure (this is a fence or wall around the school grounds that separates the school from other public space). On average in the control groupe in 2007/2008, there are 3.6 classrooms, 50 desks, 4 blackboards, 2 teacher's chairs, 3 teacher's desks, and 2 sets of shelves. In the following year, schools added 0.27 classrooms, lost 0.7 desks (perhaps due to wear and tear), added 0.65 blackboards, and the number of teacher's desks, chairs, and shelves remained relatively stable. In 2008/09, and 34% of control schools had an enclosure. For the infrastructure index, the classroom, desks, blackboard and books figures are changes from year to year (in order to control for previous levels).

Materials   Materials include textbooks, dictionaries, geography materials (such as maps and atlases) and math materials (such as rulers, protractors, and compasses). On average in 2007/2008, schools reported 216 books, In the following year they added 6.7 books. Since there is only one variable for textbooks but multiple variables for geography and math materials, if all variables are included in the index in the same way, we would weight the importance of each type of math material the same as the importance of textbooks, which seems to give too much weight to each kind of math or geography material. To avoid this, we first construct an index of math materials and then of geography materials and include those indicies with the same weight as textbooks to construct the overall material index. We use the change in the amount of material between 2007/2008 and and 2008/2009.

Health   Health resources and activities include vitamin or micronutrient supplementation, school deworming, health information sessions (for example, on preventing malaria), availability of a first aid kit, trash disposal, number of latrines and access to water. Schools seem to engage in a fair amount of health activities: 22% of control schools have given their pupils supplements, 62% have given deworming medicine, and 31% have had at least one health information session. Resources, however, are still low: only 9% have a first aid kit, 12% have a trash disposal system, there are 1.6

latrines per school (but note that 62% of schools have no latrines at all), and 13% of schools have access to water.

School Fees and Tutoring We also examine additional variables, taken from the April/May 2008 questionnaire, on school functioning. In particular, we examine whether schools officially charge fees, and how much those fees are, and whether teachers provide extra tutoring outside of class, and if so, whether they charge a fee, and finally if teachers had any additional training during the school year. All of these variables might have been affected by the grant: the school could use the opportunity to reduce or eliminate the school fees charged to attend, they could have used the grant to pay the teacher overtime for extra tutoring, and they could have sent the teacher for additional training. Two-thirds of schools charge user fees of some kind, and the average is 656 FCFA (or 1.31 USD) per child. On average across control schools the teachers provide about one hour of extra tutoring, but note that 43% of schools report no extra tutoring at all, and almost none (3%) of those who do provide tutoring charge for it. The majority (85%) of teachers had at least one training during the previous year.

Teacher Presence The unannounced school visit in 2008 recorded how many teachers were present on the day of the visit, and how many teachers are employed at the school. We use a simple percentage of the number of teachers who were physically present at the school. To accurately represent the loss of classroom time and avoid reporting inconsistencies, this figure includes both excused and unexcused absences. 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 24% of teachers were absent.[14] 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 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%).

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[14]This 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.

Pupil Outcomes

Participation in Education We have two data points for participation in education. We use the number of dropouts reported by the school to our surveyors at the April/May 2008 questionnaire, and the change in enrollment from fall 2007 to fall 2008 reported to the Ministry of Education in the annual administrative censuses. Overall, 156 pupils per school registered 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.

Test Scores We have two limited measures of actual learning. First, we use test scores from a test administered to pupils during the April/May 2008 questionnaire. The test was administered to three grades, 10 pupils per grade. The pupils were supposed to be sampled from those who were enrolled at the beginning of the year, but in practice this does not seem to have happened, and the 10 pupils appear to have been selected from the pupils present on that day. As discussed below, this leads to concerns of attrition bias in the test scores since there is reduced dropout in the treatment group. There are further quality problems with the test scores - including identical copies submitted by some grades in some schools - that raise concerns about whether the scores can be relied upon. However, there is no evidence that the problems are correlated with treatment, and appear instead to be related to insufficient oversight of the examiners, so it is possible that the quality problems only add noise rather than biasing the results. We therefore present the results as second-order evidence. The results are nonetheless informative about the general level of education in rural Niger. In general, pupils got about 1/3 of questions correct.

- Grade 1: The interviewer asked the pupils to pick up a red crayon and a blue crayon out of a pile containing pieces of chalk of different colors: three white, one red, one blue, one yellow, and one green. 45% of pupils were able to do this.

- Grade 4: Pupils were asked to place the following numbers in order, from smallest to largest: 807 ; 708 ; 788 ; 800. 24% of pupils were able to do this.

- Grade 6: Pupils were asked to change an adjective from the masculine to the feminine form (Un nouveau maitre ==> Une _ _ _ _ _ _ _ _ _ _ _ _ _ maitresse). 29% of pupils were able to do this.

Second, annual administrative censuses report the number of candidates for the national end-of-primary school exam and the number who passed. We use results reported on the 2008/09 census, which were for the end of the 2007/08 school year. Note that the schools did not generally present all of their 6th grade students to take this exam, but could chose who to present. There is no evidence that schools were punished in any way for a low pass rate, however. On average, slightly over half of the schools presented students for the end of 6th grade test (recall that most schools do not have all grades). The average number of candidates presented was 27 [15], and 61%, on average, passed the exam.

3.1.3 Interaction Variables

The sample size was chosen to be large enough to allow for testing for heterogeneous treatment effects along community characteristics, one of the initial objectives with this the study[16]. Descriptive statistics and balance information for the interaction variables is given in Table 2.

Education We define a community as "educated" if one or both of the two interviewed members of the school committee completed primary school (excluding the director)[17]. Only 31% of school committees from control schools contain at least one member who completed primary school, which indicates an important heterogeneity across communities. These data come from the Spring 2008 Questionnaire. [18]

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[15]The number of pupils present for the exam is larger than the average size of the grade 6 class in the previous year. This is due to missing data for most of the small schools in the School Survey dataset. Most of the missing data is likely to be zeros, but we do not replace missing values with zeros. Replacing missing values with zeros does not change the results, but reduces the average number presented to 15.

[16]Unfortunately, we did not register our analysis plan in a secure independent register in 2007 when the experiment was designed, as is best practice today.

[17]When information for one of the two interviewed members is missing, we impute the value of the member for whom information is available, in order to avoid dropping observations. We thus assume that the observed member is representative of the two sampled members. Results do not vary substantially when these schools are excluded but the sample size is reduced.

[18]Wealth and education are measured in the April/May 2008 questionnaire, after the treatment was implemented. We note that it would have been better to measure these characteristics before the treatment was implemented,

Experience in other organizations Parents who have experience in other organizations may be better able to engage in management of the school because they might have more experience doing so. We use data from the April/May 2008 Questionnaire to construct a variable equal to 1 if either of the COGES members interviewed belonged to another community organization that was not engaged in the school (for example, religious communities, cooperatives, savings groups, and so on). About one-fifth (21%) of the control school COGES fall into this category. The correlation between education and experience is 0.15.

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 (note that teachers are relatively homogenous in terms of wealth). These data come from the Spring 2008 Questionnaire. 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 means of transportation, animals and housing equipment. The wealth of school committee is then the average of this wealth index for the two interviewed school committee members. 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.

Urban or Rural Urban schools are more connected to the central government, and the students are likely to live somewhat closer to the school. Rural schools are schools where there is no village or settlement around. Urban schools are a marked minority: just over 10% of schools are located in urban areas.

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though this was not possible in the context of program implementation. However, these characteristics would be changed by the treatment only if the grant induced a change in the composition of the school committee, with former members replaced by new ones with different characteristics. In the data, we observe a proportion of 20% of school committee members who took their position in 2008 both in the intervention and in the control group (so no more renewal due to the grant - result not shown), and school committee members exhibit the same characteristics in both groups (Table 2). We are thus confident that the grant did not affect the composition of the school committee and that observed community characteristics are not endogenous to the grant.

One-Teacher Schools   Schools with only one teacher present a unique situation. One way that teachers have power in negotiations with communities is that they can leave if they are unhappy with conditions. When there is only one teacher, this threat may be even stronger (because there is no possibility of absorbing his or her students into another class). Seen from a different point of view, it may be easier for the parents to negotiate and work with a single teacher rather than a group of teachers, especially because if there is only one teacher that teacher is de facto a member of the COGES. In the fall of 2007, prior to the arrival of the grant, 12% of schools were one-teacher schools.

3.1.4   Internal Validity of the Experiment

Compliance   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.

Grants were distributed as follows: the Ministry of Education issued an order to the District level, which allowed the district to withdraw cash from the Treasury to distribute to the schools. The grants were distributed first to the inspectors, and then either directly to the COGES or to other officials who brought the grants to the schools. The vast majority of schools do not have bank accounts, and other mechanisms of distribution were infeasible.

The collection of grant receipts, financial questionnaires, and information from the Ministry indicated that of the 498 of the 500 treatment schools received the grant. Of the two that did not receive their grant, one school had closed, and so their grant was allocated to a school outside of the 1,000 school sample, and the other's grant was mistakenly given to a control school. Of the schools receiving the grant, our information indicates that four schools received less money than had been allocated to them (in 3 cases the schools received 500 FCFA (1 USD) less than the assigned grant

amount of 73,500 FCFA (147 USD), and in one case 10,500 FCFA (21 USD) less than the assigned grant amount of 120,500 FCFA (241 USD)), while two schools reported receiving more than had been allocated (one school received 2,000 FCFA (4 USD) more than the assigned amount of 122,500 FCFA (245 USD), and the other received 27,000 FCFA (54 USD) more than the assigned amount of 167,500 FCFA (335 USD)). All in all, the data indicate that 492 out of 500 schools received the exact amount allocated to them, and six others received the grant but not in the correct amount. This is a reasonably high compliance rate[19].

Data from the qualitative questionnaire administered to the 85 randomly selected schools indicate that the majority of those schools received the intended grant amount. Among the 85 schools, 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 (1 USD) less than the intended amount. Two schools reported paying some money to cover transport costs to the person who delivered the grant.

Attrition There is some attrition in the 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 for 3% of the schools for the infrastructure index and 1.4% of the schools for 2008/09 enrollment. The April/May 2008 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. As a result, data from the evaluation questionnaire is available for only 814 schools (81.4%).

We test for differences by treatment group in the proportion of schools with missing outcome variables as a whole and sub-divided by district, urban and rural, and whether the school had external support (for example, NGO sponsorship) prior to the project. Results are reported in Table 3. 56 tests on treatment and interaction between treatment and sub-groups yield two statistically significant differences (at the 10% level or higher), which is well within the amount that would be expected with random attrition. The comparability between treatment and control groups is thus

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[19]Note that this program was publicized within the administration and careful records were required at each step of transfer of the money. In addition, the government of Niger had recently engaged in intensive public prosecution of corrupt officials. This suggests that applications of this transfer mechanisms to other contexts might not be so effective.

intact. As to external validity, there are more schools missing in the region where security was a concern (Tahoua, in the north). In general, larger schools are 5 to 7 percentage points less likely to be missing data.

3.2 Empirical Strategy

Average Treatment Effect We 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:

$$Y_j = \beta T_j + X_j \gamma + \varepsilon_j \tag{1}$$

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.[20] 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.

Heterogeneous 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 on parent and teacher behavior varies with real authority. We run regressions of the form:

$$Y_j = \beta T_j + \theta(C_j T_j) + \sigma C_j + X_j \gamma + \varepsilon_j \tag{2}$$

where C_j denotes a proxy of parents' real authority. In this case θ is the additional (or reduction of) impact for schools with characteristic C_j. We include an indicator for urban schools and the

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[20]An alternative specification uses dummies for the strats used in random selection, which were defined using a dummy for urban, the total enrollment in 2005/06, and support by an outside NGO in 2005/06. This specification does not substantially change the results, but increases precision of some coefficient estimates and decreases precision of others.

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.

4 Results

4.1 Average treatment effects

On average, we observe that in response to the grant, the COGES increased investment in infrastructure (buildings and the school enclosure) and school festivals, and invested in agricultural projects. Parents increased their contributions to the schools and their participation in school management, but they could not go so far as to enforce rules on teacher attendance. Indeed, teacher attendance declined on average, perhaps because of resentment over parent empowerment. At the same time, children in grade 1 were less likely to drop out and more likely to enroll in grade 2 in the following year. We find no impact on test scores.

Parent Participation

We find evidence that, overall, school committee grants can increase parent participation in schools, as long as the type of participation does not challenge the teachers.

Nonassertive Actions   Column 1 of Table 9 shows the impact of grants on nonassertive actions. The overall effect of grants is that parents increased their involvement in the school in nonassertive activities. The mean of the treatment group is 0.16 standard deviations above the mean of the control group for the index of nonassertive actions, significant at the 1% level. The analysis of the component variables (funds collected per pupil, in kind donations, pupil attendance supervision and sanction) show that most of this overall effect comes from an increase in parental contributions to schools[21], which is 0.48 standard deviations higher in the treatment group than in the control group (Table A1). This represents an average increase in parental contributions of $0.66 per pupil for a grant of $1.83 per pupil, which means that parents supplemented 36% of the grant value. This result contrasts with previous studies showing that parents decreased their contributions in

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[21]Table A1 gives the impact of the program for the components of the index.

response to an increase in school resources (Das et al., 2013; Pop-Eleches and Urquiola, 2013)[22] .

Given that in some schools the grant was large enough to be used on infrastructure, and this was a permitted use, one possible explanation for the increase in parents' financial contributions is that these "top-ups" were necessary for lumpy infrastructure investments. We note that not all schools engaged in construction projects, and in fact parents could decide whether to invest in infrastructure or in many other (less) non-lumpy investments like supplies, books, repairs, equipment, extra hours of teaching etc. The fact that parents *chose* to invest in infrastructure among other options that would not require their top-up means that they were *ready* to supplement the grant, not forced to. The scope for decreasing their own contribution rather than increasing it did exist since in general the amount of cash income available to schools is obtained through parental contributions.

Assertive actions   The impact of grants on assertive actions is reported in column 2 of Table 9. The overall effect of grants is positive: the mean index of the treatment group is about 0.11 standard deviations above the mean of the control group. The analysis of detailed variables composing the index shows a 7% increase in the average number of meetings in the year following the grant (4.9 vs. 4.5), significant at the 5% level, and also 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 mothers' associations with active status[23] (from 27% to 32%). We also observe a five percent increase in the frequency of parental association and school committee meetings and in whether or not the COGES is responsible for infrastructure. Table A2 gives the impact of the program for components of the index. Aside from the number of meetings in the following year, none of the treatment impacts on the index components are statistically significant (although some of p-values are very close to conventional significance), while the effect on the index itself is significant at the 1% level.

Actions in opposition to teachers   There is no overall impact on teacher supervision or remedial action for teacher absence (columns 3 and 4 of Table 9).

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[22]An alternative interpretation would be that this result derives from the fact that we measure only the first year of the grant, and so parents did not have time to change their own contribution of inputs (see Das et al, 2013, where crowding out was greater when a school grant was anticipated than when it was unanticipated). We think this is unlikely since the parents did respond by changing their contribution to the school, and they responded by increasing their contributions to support school projects. In addition, parents were notified in advance of the grants arrival.

[23]This data comes from a question on the annual administrative survey where schools are asked to indicate whether the mothers' association is active or not.

COGES Investments

COGES in treatment schools are significantly more likely to have listed projects that involve school supplies and textbooks (44% vs. 28% in control schools), pupil health (36% vs. 29%), school festivals and activities (8% vs. 2%), and investments in agriculture (8% vs. 3%) (Table 10)[24].

Figure 2 presents the absolute and percent differences in amounts budgeted for a given type of project in treatment schools compared to comparison schools (significant differences in dark grey, non-significant in light grey). The amount budgeted for a given type of project was significantly larger for infrastructure, festivals and playground, as well as investments in agriculture (Table 11): the amount budgeted for infrastructure was larger in the treatment group (112,772 FCFA (226 USD) vs. 93,113 (186 USD), a difference of 21%, significant at the 5% level), the amount budgeted for festivals and playground was sixfold greater than in the control group (1029 FCFA (2.06 USD) vs. 166 FCFA (0.33 USD), significant at the 1% level), and the amount budgeted for investments in agriculture was fourfold greater (2401 FCFA (4.80 USD) vs. 583 FCFA (1.17 USD), significant at the 1% level). Note that the difference, while large relative to the amount spent in control schools on these activities, is small compared to the entire amount of the grant, and so while these are the only statistically significant effects this should not be interpreted as a claim that the bulk of the grant was used on these activities. For example, the size of the increase in infrastructure spending in absolute terms (19,659 FCFA, or 39.32 USD)) is much larger than the increases in agriculture and festivals and playground expenses (1819 FCFA (3.64 USD) and 865 FCFA (1.73 USD), respectively). [25]

The investments in agriculture do not seem to have been done in the interest of one person, which might be considered a theft of resources, but rather as an investment on the part of the school (since they were recorded in the school ledger). One interpretation of the investment in agricultural projects is that credit in many areas of Niger is severely constrained. There may be profit opportunities from investment in agriculture (either in terms of raising crops or arbitraging

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[24]We would urge that future researchers examining local school management and activities collect data on school festivals, as well as school business investments, as potential targets of school spending. These expenditures were not foreseen and so detailed questions on these expenditures (for example, the number and type of school festivals, or the anticipated return of investment projects) were not included in the questionnaire.

[25]Note also that while the majority (92%) of COGES across both groups are engaged in infrastructure projects (the average size of which is 117,056, or 234 USD), only 5% are engaged in festivals and playground projects (the average size of which is 12,040 FCFA or 24 USD), and 6% are engaged in investments in agriculture (the average size of which is 32,968 FCFA (66 USD)).

prices for inputs or food products), but since isolated areas suffer from low levels of credit, these profitable opportunities are unexploited. If the COGES is aware of these opportunities, and they are patient, it may be most optimal for the long-term interest of the school to invest the windfall cash grant rather than spend it on educational inputs immediately. However, we cannot be sure that these investments were made for the profit of the school and have to consider the possibility that it did not benefit to the pupils in any way.

School Infrastructure and Resources

Infrastructure In the slightly longer term (one year after the treatment) there is a small improvement in the infrastructure index of schools: a 0.04 standard deviation increase in the index for infrastructure quality (column 1 of table 12), significant at the 10% level. This is largely driven by increases in the number of classrooms and the construction of walls around the compound (columns 2 and 6 of table A3)[26]. The increase in the number of new classrooms amounts to 0.12 of a standard deviation, representing an additional 0.08 new classrooms per school in the treatment group over 0.28 new classrooms per school in the control group (a 29% increase). The increase in the proportion of schools with walls around the compound (enclosure) amounts to 0.18 of a standard deviation, with 9 percentage points more in the treatment group over 34% in the control group (a 26% increase). We should recall that we have found that the grant was supplemented by parents in terms of financial contributions and in-kind help, so the increase in the material quality derives from both the increased financial parent contributions and the grant itself.

Materials We find no overall impact on the materials available at the schools (books and classroom materials such as rulers, protractors and maps) (column 2 of Table 12).

Health Resources There is a small (0.05 standard deviations) increase in the index of health resources (column 3 of Table 13), significant at the 10% level. This increase is driven by increases in health information sessions (34% vs. 30% of schools), first aid kits (12% vs. 9% of schools), micronutrient supplementation (25% vs. 22% of schools), and deworming (64% vs. 62% of schools), though none of the individual components of the health index are significant alone (Table A4).

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[26]These items were projects that were frequently reported by the schools as projects undertaken using the grant money.

Other school activities   One possible use of the grant would have been to reduce fees charged to parents. We find no overall impact whether fees are charged or the amount of fees charged (columns 4 and 5 of Table 12). We find no increase in extra tutoring sessions offered by teachers, either in terms of the number of hours of tutoring done by teachers or whether or not the students had to pay for them (columns 6 and 7 of Table 12). We find no difference in whether or not the teachers participated in a training in 2007/08 (column 8 of Table 12)

Teacher and Student Indicators

Teacher Attendance   We find a decrease in teacher presence in the treatment group: around 4 percentage points on an average of 76% presence in the control group, significant at the 10% level (column 1 of table 13). Teachers thus responded to increased resources under the control of parents with a reduction in their own inputs. Qualitative feedback from the field suggested that those teachers who felt the central government should make education decisions disliked that the communities were in charge of the grant, and they may have felt resentful that the grants undermined their authority (as representatives of the central government). In addition, the decreased teacher presence might also be related to the fact that the average school committee did not spend the grant on expenses supporting the teachers (teacher housing, furniture, supplies, guide books, and salary).

Dropout and Enrollment   There is no change in enrollment or dropout overall (columns 2 and 3 of Table 13), but there is a positive impact at the lowest grade levels. The grant program reduced dropouts from grade 1 at the end of the 2007/2008 school year (2% vs. 3% in the control schools) (column 1 of Table 14), a finding which is matched by an increase in enrollment in grade 2 at the beginning of the 2008/2009 school year (33 vs. 30 pupils in the controls schools) (column 2 of Table 15).

The fact that participation increases for youngest pupils suggests that participation is more elastic when the child is young, which might reflect the fact that the cost of education increases when the child gets older, especially because of opportunity cost of time of elder children.[27]

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[27]We also take the fact that only younger grades were impacted as evidence that the change in enrollment is not due to intentional misreporting by grant schools. In addition, the finding is replicated across two different types of data collections and at two different periods.

Test Scores We find no impact on the number of candidates presented for the end of primary school exam at the end of the 2007/2008 school year, the pass rate for the end of primary school exam, or any of the math, french or oral tests administered during the April/May 2008 questionnaire visit (Table 16).

4.2 Heterogeneous Treatment Effects

We now examine the different dimensions identified above to identify heterogeneous effects. Due to space limitations, we do not present the detailed regression tables in the paper, but they are available from the authors upon request.

Education of the COGES

While all communities increased their nonassertive actions in response to the grant, communities where the COGES was educated increased their nonassertive actions even more. Non-educated COGES communities increased by 0.11 standard deviations (significant at the 10% level) and educated COGES communities increased by 0.17 standard deviations more than the overall increase (significant at the 10% level).

The most important difference in terms of parent participation along the education dimension is that communities where the school committees were educated increased their supervision of teacher attendance. Educated school committees are 9 percentage points more likely to supervise teacher presence if the school was treated, significant at the 10% level. However, the increased monitoring did not attenuate the decrease in teacher attendance, suggesting that parents were not able to put pressure on teachers.

Educated COGES budgeted more money for infrastructure (55,788 FCFA (111.5 USD), significant at the 5% level), but not uneducated COGES. However, the increases in infrastructure in the following year were felt primarily in schools with non-educated COGES: the coefficient on the interaction term of treatment and education is negative and significant at the 5% level. One possible reason for this is that the projects undertaken by educated COGES in response to the grant might have been larger and taken more time, so that they were not yet completed at the time that data on infrastructure was collected.

There is an increase due to the grant in budgeted money for Pupil Educational Support in schools

with non-educated COGES (3,566 FCFA (7 USD), significant at the 5% level), but no impact (or a possibly negative impact) for schools with educated COGES (the coefficient on the interaction term is -8,150 FCFA (16.5 USD), significant at the 5% level). The negative impact of the grant on money for Pupil Educational Support might reflect the fact that educated COGES increased expenses in infrastructure which are generally lumpy investments and might require to spend less on other items. There is also a negative impact of the grant on math and french test scores in schools with educated COGES (about one-third of a standard deviation, significant at the 5% level for math and 10% level for french). This negative impact of the grant on learning in schools with educated COGES echoes the findings in the literature that providing more-of-the-same educational inputs without changing pedagogy or accountability typically has no impact on learning, whereas remedial education and rewards proved efficient to increase learning (Kremer et al, 2013). Educated COGES may not have made the optimal choice, in terms of increasing educational quality, in focusing on infrastructure investment rather than teacher support or remedial education.

Wealth of the COGES

We find no differences for wealthy communities in terms of parent participation, school resources and activities, or teacher and pupil outcomes. This is important, as it suggests that the effects we find by education and experience are not proxies for wealth.

One-Teacher Schools

One-teacher schools seem to have made a different choice than larger schools: they budgeted more money for expenses related to Teacher Support (the coefficient on the interaction term is 8993 FCFA (18 USD), significant at the 5% level) and COGES functioning (2100 FCFA (4 USD), significant at the 5% level). Perhaps as a result, even though these are small absolute amounts, one-teacher schools are the only schools to not suffer from the negative impact of the grants on teacher attendance (the coefficient on the interaction term is 0.17, significant at the 5% level, and the coefficient on the treatment term is -0.06, significant at the 5% level). In fact, the size of the coefficient on the interaction term suggests that teacher attendance actually increased in one teacher schools. This suggests that by transferring some of the grant to teachers - or at least to investments that benefit teachers - the one teacher schools limited the reduced teacher attendance associated with the grant

in other schools and even persuaded teachers to invest more time in teaching. The alliance of parents with the teacher seems to be key in encouraging teacher effort.

At the same time, infrastructure in one-teacher schools did not improve, in contrast to other schools (and may have even degraded - the coefficient on the interaction term is -0.17, significant at the 1% level, while coefficient on the treatment variable is 0.06, significant at the 5% level). [28]

Urban Schools

Only schools located in rural areas increased their spending on agricultural investments (2030 FCFA (4 USD), significant at the 1% level). Urban schools did not increase spending on agricultural investments (the coefficient on the interaction term is -1765 FCFA (3.5 USD), significant at the 5% level). We speculate that this is because credit constraints may be less severe in urban areas, but we cannot confirm this with evidence.

Experienced COGES

Schools where the COGES has at least one member who is also a member in another community organization increased monitoring of teacher attendance in response to the grant (the interaction term is 0.11, significant at the 5% level). These COGES also increased their plans for Infrastructure projects and planned to spend less on Pupil Educational Support.

5 The Model

Our results demonstrate, first, that crowding out is not inevitable: parents responded to grants to the COGES by increasing different types of contributions and participation, which contrasts with the results in Das et al. (2013) and Pop-Eleches and Urquiola (2013) where additional resources to the school (not under parent control) decreased parental effort. We also find that only schools where parents are educated or are members in other community organizations respond to the grant by increasing teacher monitoring - the type of parent participation that is arguably the most difficult to do. Note, however, that there was no positive impact on teacher presence due to this increased monitoring. Pupil participation, at the lowest grades, increased. However, the ultimate impact

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[28]Note that since the grant was based on the size of the school, one-teacher schools recieved smaller grants. They may then have been pushed away from investment in infrastructure since the lump sum was not enough to start a project.

on education quality, at least in the short run, is unclear: teachers were absent more frequently (which echoes the result in Duflo, Dupas and Kremer (2012) in Kenya where giving parents the responsibility over an extra-teacher led to a reduction in effort from civil-service teachers), except in schools where the grant was at least partly spent in a way that benefited them directly.

Taking into account that Niger is, in general, an environment where parents have little authority, our results contribute to the literature from many other countries, and supplement the existing results with new data. There are several experiments showing that the effectiveness of participatory programs to improve school quality is related to the level of authority or empowerment of the parents: as King and Ozler (2004) demonstrate, policies of *de jure* autonomy do not always lead to *de facto* autonomy, and so participation may not be meaningful if communities have no actual power. Empowerment might be through education (Blimpo and Evans, 2011), ties with local government (Pradhan et al, 2011), training (Duflo, Dupas and Kremer, 2012), human capital (Gunnarsson et al, 2009), school-community relations and community organizational capacity (Gershberg and Shatkin, 2007), and pre-existing levels of poverty (Galiani et al, 2008).

In this section, we consider a model that formalizes the behavioral responses of parents and teachers to a change in school resources and the resulting effect on school quality. The motivation for this model is two-fold. First, the model helps to clarify how the grant program studied in this paper can affect parent participation, teacher effort and school quality. Second, we want to show that reasonable assumptions on school dynamics are able to produce predictions consistent with the evidence found in the literature.

Albornoz et al (2011) model the interaction between student, parent and teacher investments and school resources, to explain the ambiguous effect of resources on parent involvement at home. This model suggests that under some circumstances, an increase in school resources generate a decline in parent investment in education at home. Das and al (2013) also provide a model to explain the decrease in parental effort at home in response to an increase in school resources. But none of these theoretical frameworks take into account parental participation in school. The model proposed in this paper enriches our understanding of school dynamics by taking into account parents' effort both at home and at school, and the difference between giving more resources to school staff versus parents. It enlarges the set of interventions of interest and adds to our understanding of the effects of educational policies. It is an ex post exercise designed to make sense of existing evidence with

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the hope it can be tested in subsequent analyses.

5.1 Set-Up

The model involves three participants: parents, teachers and the government. Teachers decide how much time they put in teaching t_t. Parents decide how much time they invest for education at home t_h, as well as how much time they participate in school management t_p. Finally, the government chooses the level of governmental resources for the school, which decompose in two parts, $G_t + G_p$, where G_t is resources in the hands of school staff (principals and teachers), while G_p is governmental resources for the school under the control of parents (typically, resources handled by the school committee).

Here, "participation" in school management refers to the many different kinds of participation that policy makers envision, where beneficiaries might be organized into committees, undertake projects themselves, such as construction or sanitation, raise funds, provide personal contributions, supervise, hire, and even fire teachers, engage in awareness campaigns, provide advice to staff, and so on. Participation is expressed in time units (financial participation is converted in time through hourly wage).

Children's Learning

Children's learning E is the addition of learning produced at home and learning produced at school.

Learning produced at home   Learning produced at home is assumed proportional to the number of hours parents devote to education at home, t_h (making sure kids get up on time and go to school or investing in private lessons, for instance). How much each hour spent on education translates into learning depends on parent's productivity at producing learning, denoted e, reflecting for instance parents' level of education (more educated parents produce more learning for each hour spent on helping with homework) or parents' hourly wage (a higher wage can pay for a higher amount of private lessons for each working hour invested in education). Learning produced at home is thus et_h.

Learning produced at school   Learning produced at school is proportional to the time teachers spend at school, t_t. How much each hour spent at school translates into learning depends on teach-

ers' productivity, which results from school resources. Indeed, school resources encompass salaries (which should reflect both class size and teachers' quality) and school materials (infrastructure, textbooks, flip charts, blackboard, etc.) that allow teachers for producing more learning for the same amount of time spent with the children. So we assume that the level of resources is a factor of teachers' productivity.

Furthermore, we assume that parents' participation in school management interfere with school resources in the determination of teachers' productivity. Indeed, parents' participation is additional resources: parents raise funds from the community, and do administrative tasks that allow teachers for focusing on teaching and producing more learning for the same amount of time spent at school. Moreover, parents' participation should increase the allocative efficiency of school resources by preventing rent capture and making expenses closer to educational needs and common interest (Barrera-Osorio et al, 2009). We thus assume that parents' time spent on school management, t_s, is a factor that increase the effect of resources on teachers' productivity[29]. This factor apply to resources under parental control, G_p, but not on G_t in which parents do not have a say.

We thus assume that learning produced at school is given by $(G_t + t_p G_p)t_t$ and total learning is given by $E = e t_h + (G_t + t_p G_p)t_t$.

Parents' Utility

Parents' utility is the difference between the benefit they derive from children' learning E, and the opportunity cost of the time they spend on producing learning, $t_h + t_p$. The benefit from children' learning is assumed concave in E (for instance $ln(1 + E)$), so that learning produced at home and learning produced at school are substitutes.[30] The cost of time is assumed linear (for instance $t_h + t_p$), so parents' utility is given by:

$$U_p = ln(1 + e t_h + (G_t + t_p G_p)t_t) - t_h - t_p \tag{3}$$

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[29]A richer model could take into account the idea that parents' participation might not translate into greater teachers' productivity because "pushy" parents might be disruptive to teachers. For the simplicity of the model, we make the assumption that parents are not aware of this fact and would not participate if they would know that their participation would decrease teachers' productivity. This assumption is equivalent to the idea that parents do not get utility from participating per se (for example, due to reputation effect or some sort of hedonic payoff).

[30]To the extent that parent participation is a contribution to a public good, free-riding may be a problem. For simplicity we do not include this in the model, but a more complete model might address this issue.

Teachers' Utility

Similarly, teachers' utility is the difference between the benefit they derive from children' learning and the opportunity cost of their time[31]. We assume that teachers' benefit and cost take the same form as parents' ones, except that their welfare is also influenced by parents' participation in school management: teachers derive a benefit from parents' satisfaction towards their production of learning when parents can observe this production. This benefit takes the form of a social reward[32] that is proportional to the time teachers devote to school, with a factor of parents' participation: the more parents participate, the more they observe and reward each unit of time teachers devote to education.

However, teachers who have a preference for a centralized government might resent being monitored by parents because of the resulting loss of autonomy and leadership in school decisions. In this case, the effect of parents' participation on teachers' welfare can be negative, teachers' loss of welfare being also proportional to the time they devote to education, with a factor of parents' participation (the more devoted they are and the more parents participate, the more teachers are resentful). We denote δ teachers' taste for community participation in school management. A negative δ reflects a preference for a centralized government, whereas a positive δ reflects openness to collaborate with parents (a δ close to zero would reflect teachers' indifference).

As a result, teachers' utility is given by:

$$U_t = ln(1 + et_h + (G_t + t_p G_p)t_t) - t_t + \delta t_p t_t \tag{4}$$

5.2   Parents' and Teachers' Choices

The first-order condition for the teachers' problem is sufficient (U_t is infinitively differentiable and $U_t''(t_t) < 0$) and gives the optimal choice of teachers:

$$t_t = max \left\{ \frac{1}{1 - \delta t_p} - \frac{et_h + 1}{G_t + t_p G_p}, 0 \right\} \tag{5}$$

For the parents, the first-order conditions are also sufficient and give the optimal choices:

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[31] In this model, teachers are intrinsically motivated. A richer model could incorporate a broader view which would incorporate both intrinsic and extrinsic motives. We do not incorporate extrinsic motives here since it would not add to the ability of the model to explain what we seek to explain.

[32] An equivalent way to put it is that teachers incur a social sanction from the community if they shirk and if parents can observe it.

$$t_h = max \left\{ 1 - \frac{1 + (G_t + t_p G_p)t_t}{e}, 0 \right\} \qquad (6)$$

$$t_p = max \left\{ 1 - \frac{G_t}{G_p} - \frac{et_h + 1}{t_t G_p}, 0 \right\} \qquad (7)$$

From the expression of t_p, we see that parents invest more time in school management when resources under their control increase and when teachers make more effort. In contrast, parents invest less time in school management when resources in the hands of teachers increase, when they spend more time for education at home and when their efficiency with education at home increase.

Symmetrically, parents devote more effort for education at home when their efficiency at home increases, whereas they reduce effort at home when school resources increase, or when teachers' or their own effort at school increase.

Finally, teachers increase time they spend at school when school resources increase, whereas they reduce it when parents' effort or efficiency at home increase. However, the response of teachers to an increase in parents' participation in school management is ambiguous: if δ is positive, the response is clearly positive too: teachers spend more time at school. But in the region where δ is negative, for large absolute value of δ, the response is negative, meaning that teachers who have a strong preference for a centralized government reduce time at school when parents' participation in school management increases.

5.3   Heterogenous Best-Responses

For the best clarity and simplicity, the model above just includes the main dynamics in the school system. In this paper, we also explore the possibility that power imbalances are likely to induce different choices. This section explicit how parental real authority influences parents' and teachers' decision.

In our model, real authority of parents over the school would be captured by a parameter θ multiplying parents' time spent in school management: learning produced at school is given by $(G_t + \theta t_p G_p)t_t$, reflecting the fact that more powerful parents make better use of resources under their control, therefore extracting more learning from teachers for each hour invested in school than weak parents. Also, it should be noticed that real authority of parents θ is unlikely to be orthogonal

to teachers' preference for a centralized government δ. On the one hand, teachers are more likely to resent being monitored by parents when teachers enjoy a high social status relative to parents, for instance when parents have a low if not no education, which is likely to coincide with parents' lack of real authority. On the other hand, teachers' preference for a centralized government largely determines the extent to which parents entitled to participate in school (have *formal* authority) are involved in decision making (have *real* authority). We thus posit that $\delta = \delta(\theta)$ with $\delta' > 0$. The best-responses with a parameter θ reflecting real authority are: $t_h = max\left\{1 - \frac{1+(G_t+\theta t_p G_p)t_t}{e}, 0\right\}$, $t_p = max\left\{1 - \frac{G_t}{\theta G_p} - \frac{et_h+1}{\theta t_t G_p}, 0\right\}$ and $t_t = max\left\{\frac{1}{1-\delta(\theta)t_p} - \frac{et_h+1}{G_t+\theta t_p G_p}, 0\right\}$.

Effect of real authority on parents' and teachers' decisions   Since their participation at school is more productive, parents with higher θ invest more time in school management and less time at home than parents with low θ. Teachers also invest more time at school because their productivity is fostered by parents' real authority. Moreover, the likelihood of δ being negative is lower when parents' real authority is larger, which adds to the general positive effect of parents' real authority on teachers' effort.

Effect of real authority on parents' and teachers' responses   Parents' response to an increase in teachers' effort or in resources under their control is amplified by real authority, just as teachers' response to an increase in resources under parental control. Moreover, teachers' response to an increase in parent's participation in school management is reduced in the negative region and amplified in the positive region by real authority. These predictions are consistent with the evidence presented in section 4.1 that the benefits of community-based interventions are larger when parents are more powerful.

5.4   The Effect of an Increase in School Resources

In the light of this model, what is the effect of an increase in governmental resources to schools? In the short run, parents won't take into account the fact that teachers will also react to the changing conditions (and reciprocally). We thus consider that parents take the teachers' actions as given (fixed at their past value) and *vice-versa*, and we determine the comparative statics and discuss the predicted behavioral trajectories. Our focus on short-term responses that do not take account of others' responses comes, first, because most empirical framework in the literature addresses such

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responses, and, second, because real-life behavioral adjustments to others' responses seem slow. Pop-Eleches and Urquiola (2013) show that responses after one year are different from responses in the longer run, reflecting the fact that it takes quite a long time for parents to adjust their behavior to others' responses. There are multiple reasons for slow adjustment to others' response. For instance, parents may not realize that teachers incur a loss of welfare from collaborating with them (formally, they have a imperfect perception of teachers' δ) because teachers do not disclose their reluctance to collaborate with parents in front of them (it would be rude). Even if teachers do give signals that they do not want parents to participate, it is also possible that parents do not take what they observe in the short run into account because they expect continuous collaboration to make δ become positive in the future.

Effect in the absence of parents' participation in school

In the short run, an increase in school resources increase teachers' time at school and decrease parents' time for education at home. The fact that parents devote less time for education at home tends to reinforce teachers' response, which comfort parents with investing less time at home, etc. The long-term effect of an increase in school resources is thus clear-cut: teachers respond positively while parents respond negatively. The final impact on school quality is a mixed bag: the increase in school resources and teachers' response tend to improve education outcomes, while parents' response tend to reduce this effect. Pop-Eleches and Urquiola (2013) and Das et al. (2013) confirm that an increase in school resources reduced parents' effort (they do not observe teachers' response). In our framework, this policy is appropriate in contexts where (i) teachers actually use resources for educational purpose, and (ii) the effect of additional resources on teachers' productivity is large. The conditions of success of this policy are thus a sound institutional environment preventing rent capture and an initial level of school resources at which marginal gains of productivity are steep[33].

Effect in contexts where parents participate in school

Teachers' and parents' responses to an increase in school resources are the same as above, but now parents' re-optimize their level of participation in school management too.

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[33]This analysis would benefit from evidence on the shape of teachers' productivity as a function of school resources to know which kind of regions would experience the larger gains in teachers' productivity. If this function is concave (resp. convex, S-shaped), gains in teachers' productivity are larger at the bottom (resp. top, middle) part of school resource distribution.

Increase in G_t If the additional resources fall in the hands of teachers, parents *decrease* their participation at school. This in turn affects teachers' effort in a way which depends on teachers' preference for a centralized government: if teachers prefer a centralized government, the decrease in parents' participation in school management amplifies teachers' positive response to the increase in school resources, so teachers make unambiguously more effort. In contrast, if teachers are motivated by the collaboration with parents, the decrease in parents' participation reduces their incentive to work hard and the policy brings a smaller benefit. The conditions of success of this policy are thus (i), (ii), plus the condition that (iii) teachers prefer a centralized government. France is an example of countries where this policy is likely to work well.

Increase in G_p If the additional resources fall in the hands of parents, parents *increase* their participation at school, which leads to the opposite situation in which teachers invest unambiguously more effort when teachers are motivated by the collaboration with parents through three positive effects: the effects of additional resources and of parents' participation in the management of the resources on their productivity, and the incentive produced by the social reward. When teachers prefer a centralized government, parents' participation creates a burden for teachers which reduces teachers' effort in a way that might be strong enough to offset teachers' positive response to school resources and to parents' management of the resources. In the long-run, this should eventually discourage parents to participate at school and encourage investment for education at home back up, but in the short-run concurrent increase in parents' participation in school management and decrease in teachers' effort can be observed, as Duflo, Dupas and Kremer (2012) find in Kenya. Our empirical results are also consistent with the situation where teachers' preference for a centralized government is strong and parents' real authority is weak, resulting in a negative short-term impact of parents' participation in school on teachers' effort. The impact on school quality can be at risk since the positive effects of school resources and parents' management of the resources are mitigated by a double decrease in parents' effort at home and teachers' effort at school.

When parents have a large real authority θ, the positive effect of parents' management of the resources is larger so parents' response is larger too, which is consistent with our empirical findings that parents contribute more and participate more in school management when they have more authority. The larger effect on parents' participation combined with the smaller likelihood of a

preference for a centralized government leads to a more favorable teachers' response. Our data do not confirm this prediction, but Duflo, Dupas and Kremer (2012) do since they observe that parents' empowerment through school committee training reduced the negative response of civil-servant teachers.

According to this framework, the conditions of success of this policy are thus (i), (ii), plus the conditions that (iii) teachers are keen to collaborate with parents, and (iv) parents have real authority on teachers. These conditions are more likely to hold in countries where the social gap between parents and teachers is small and where the education system is decentralized. The USA is an example of countries where this policy is likely to work well, whereas Niger and Kenya are not the ideal contexts for encouraging parental control over school management since (iii) and (iv) do not hold. However, one might argue that the short-term negative impact on teachers' effort is the price to pay for potential longer-term positive effect -which our results cannot exclude.

The general picture supported by existing empirical evidence and explained by our model is three-fold: first, an increase in school resources out of parental control tends to decrease parental effort. Second, an increase in school resources under parental control tends to increase parental effort. Finally, the size of the increase in parental effort and of the resulting effect on teachers' effort depends on power imbalances in school: the higher parents' real authority, the larger their response and the resulting increase in teacher's effort, with a risk of adverse effects in contexts where parents are weak. This paper is a first step that uses both formal tests and intuition to build a narrative about community participation in resource management. Our hope is that future work might build on this model to provide additional insights and rigorous empirical tests.

6   Conclusion

In Niger, parents responded to increased financial resources under their control by increasing participation on several dimensions. The implication of this finding is that the crowding out due to increased inputs found in other experiments may not be inevitable if parents are involved in the management of the funds. We also find that increased parent participation came with a small increase in young pupil participation. However, more pessimistically, while the parents were willing to try to improve quality by participating, they were not able to do so. One possible reason for this is that in this context, parents (the majority of whom did not go to school) do not have sufficient

information to make investments that are likely to improve quality. In particular, most investments focused on buildings, rather than extra lessons or materials, and these investments did not translate into improved learning (at least in the short run). We also find that on average teachers decreased their effort in response to the grant to the COGES. This finding reinforces other evidence in the literature of negative teacher reactions to participatory programs, and highlights the importance of taking this potential reaction into account in policy planning.

The heterogeneous impact analysis, while second-order, yields potentially helpful suggestions for understanding the impact of the program. The most difficult type of participation - monitoring teachers - was attempted only by educated or experienced school committees. The implication of this finding is that participation initiatives need to take the capacity and authority of the intended participators into account. In addition, we find that one-teacher schools, which invested in the teacher's working conditions and/or made some type of transfer to the teacher, actually increased teacher attendance. We take this as evidence that teachers' negative reaction to parent participation can be reversed when parents behave like allies. Finally, we find that rural school committees as well as non-educated school committees invested a small part of the grant in agriculture, which might reflect that they did not give priority to education or that they invested the money in order to get more funds for the school in the future. We highlight it so that future programs might be aware of it and collect more data to understand what schools might be doing and the role education preferences and credit constraints.

A model with a few assumptions about parents' and teachers' roles in producing education helps interpret these empirical findings along with the evidence found in the literature. Adding two key ingredients, teachers' preference for a centralized government and parents' real authority, to a classical model of school quality can reproduce the existing evidence on the effects of participatory programs. The conclusion of our analysis is that parent participation in school management is not a good strategy to improve the quality of education in contexts combining weak parents and teachers who prefer a centralized education system. In these contexts, it should be possible to involve parents in school more as partners and less as managers, in ways that would maintain parents prompt to contribute and support pupil participation as in Niger, while avoiding the side effects of weak parents asked to monitor reluctant teachers.

References

[1] Aghion, Philippe and Jean Tirole. 1997. "Formal and Real Authority in Organizations", Journal of Political Economy, 105(1): 1-29

[2] Albornoz, Facundo, Samuel Berlinski and Antonia Cabrales. 2011. "Motivation, resources and the organization of the school system," Working paper.

[3] Alesina, Roberto, and Eliana La Ferrarra. 2000. "Participation in Heterogenous Communities", Journal of Public Economics, pp.. 847-904.

[4] Banerjee, Abhijit, Rukmini Banerji, Esther Duflo, Rachel Glennerster, and Stuti Khemani. 2010. "Pitfalls of Participatory Programs: Evidence from a Randomized Evaluation in Education in India", American Economic Journal: Economic Policy, 2(1): 1–30.

[5] Banerjee, Abhijit, Suraj Jacob, Michael Kremer, Jenny Lanjouw, and Peter Lanjouw. 2002. "Promoting School Participation in Rural Rajasthan: Results from Some Prospective Trials", Unpublished.

[6] Bardhan, Pranab. 2002. "Decentralization of Governance and Development", Journal of Economic Perspectives, 16(Fall): 185-205.

[7] Barrera-Osorio, Felipe, Tazeen Fasih, Harry Anthony Patrinos and Lucrecia Santibanez. 2009. Decentralized Decision-Making in Schools, The Theory and Evidence on School-Based Management. Washington D.C.: The World Bank.

[8] Blimpo, Moussa and David Evans. 2011. "School-Based Management, Local Capacity, and Educational Outcomes: Lessons from a Randomized Field Experiment", Unpublished.

[9] Bryk, Anthony, Yeow Meng Thum, John Easton, and Stuart Luppescu. 1998. "Academic Productivity of Chicago Public Elementary Schools: A Technical Report Sponsored by the Consortium on Chicago School Research", Mimeo University of Chicago.

[10] Chaudhury, Nazmul, Jeffrey Hammer, Michael Kremer, Karthik Muralidharan, and F. Halsey Rogers. 2006. "Missing in Action: Teacher and Health Worker Absence in Developing Countries", Journal of Economic Perspectives, 20(1): 91–116.

[11] Das, Jishnu, Stefan Dercon, James Habyarimana, Pramila Krishnan, Karthik Muralidharan, and Venkatesh Sundararaman. 2013. "School Inputs, Household Substitution, and Test Scores", American Economic Journal: Applied Economics, 5(2), 29-57.

[12] Di Gropello Emanuela. 2006. "A Comparative Analysis of School-based Management in Central America", World Bank Working Paper, 72.

[13] Duflo, Esther, Pascaline Dupas and Michael Kremer. 2012. "School Governance, Teacher Incentives, and Pupil-Teacher Ratios: Experimental Evidence from Kenyan Primary Schools", Unpublished.

[14] Galiani, Sebastian, Paul Gertler and Ernesto Schargrodsky. 2008. "School Decentralization: Helping the good get better, but leaving the poor behind". Journal of Public Economics, 92(2008): 2106-2120.

[15] Gershberg Alec and Gavin Shatkin. 2007. "Empowering Parents and Building Communities: the Role of School-Based Councils in Educational Governance and Accountability", Urban Education, 42:582-615.

[16] Glewwe, Paul, Michael Kremer, and Sylvie Moulin. 2009. "Many Children Left Behind? Textbooks and Test Scores in Kenya", American Economic Journal - Applied, 1(1): 112-135.

[17] Glewwe, Paul, Michael Kremer, Sylvie Moulin, and Eric Zitzewitz. 2004. "Retrospective vs. Prospective Analyses of School Inputs: The Case of Flip Charts in Kenya", Journal of Development Economics, 74(1): 251–68.

[18] Glewwe, Paul and Michael Kremer. 2006. "Schools, Teachers, and Education Outcomes in Developing Countries", Handbook on the Economics of Education, edited by Erik Hanushek and F. Welch, Elsevier.

[19] Gunnarsson,Victoria, Peter F. Orazem, Mario A. Sánchez and Aimee Verdisco. 2009. "Does Local School Control Raise Student Outcomes? Evidence on the Roles of School Autonomy and Parental Participation", Economic Development and Cultural Change, Vol. 58, No. 1 (October 2009), pp.. 25-52

[20] Hanushek, Eric. 2003. "The Failure of Input-Based Schooling Policies", The Economic Journal, Vol. 113, No. 485, Features (Feb 2003), pp.. F64-F98.

[21] Hess, Alfred. 1999. "Expectations, Opportunities, Capacity and Will: The Four Essential Components of Chicago School Reform", Educational Policy, 13(4): 494-517.

[22] King, Elizabeth, and Berk Ozler. 2005. "What's Decentralization Got to Do With Learning? School Autonomy and Student Performance," Discussion Paper No. 054, Interfaces for Advanced Economic Analysis, Kyoto University, January 2005.

[23] Kling, Jeffrey R., Jeffrey B. Liebman, and Lawrence F. Katz, 2007. "Experimental Analysis of Neighborhood Effects", Econometrica, 75(1): pp. 83-119.

[24] Kremer, Michael, Conner Brannen and Rachel Glennester. 2013. "The Challenge of Education and Learning in the Developing World", Science, 340: pp. 297-300.

[25] Kremer, Michael, and Christel Vermeersch. 2005. "School Committee Empowerment: Preliminary Notes", Unpublished.

[26] Lassibille, Gérard, Jee-Peng Tan, Cornelia Jesse, and Trang Van Nguyen. 2010. "Managing Results in Primary Education in Madagascar: Evaluating the Impact of Selected Workflow Interventions", The World Bank Economic Review, 24(2): 303-329

[27] Martinez-Bravo, Monica, Gerard Padró i Miguel, Nancy Qian, and Yang Yao. 2013. "Political Reform in China: Elections, Public Goods and Income Distribution." NBER Working Paper 18101

[28] Pop-Eleches, Christian and Miguel Urquiola. 2013. "Going to a Better School: Effects and Behavioral Responses". The American Economic Review, 103(4): 1289-1324.

[29] Pradhan, Menno, Daniel Suryadarma, Amanda Beatty, Maisy Wong, Armida Alishjabana, Arya Gaduh and Rima Prama Artha. 2014. "Improving Educational Quality through Enhancing Community Participation: Results from a Randomized Field Experiment in Indonesia", American Economic Journal: Applied Economics, 6(2): 105–126.

[30] Sunstein, Cass and Thaler, Richard. 2008. Nudge: Improving Decisions on Health, Wealth, and Happiness. New Haven, CT: Yale University Press.

[31] World Bank. 2003. World Development Report 2004: Making Services Work for Poor People. New York, NY: Oxford University Press.

[32] World Bank. 2010. "Improving Education and Developing Skills for Economic Growth in Niger." Report of the Africa Region Human Development Department.

Figure 1: Reported Use of Grant Money, by Total Amount Spent
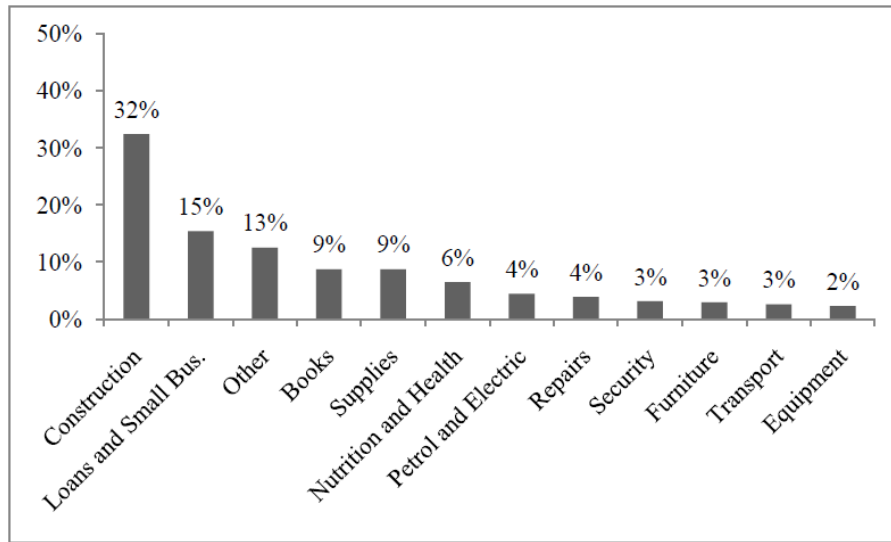
Source: Financial Control over 85 randomly selected schools

Figure 2: Differences in spending between treatment and control groups
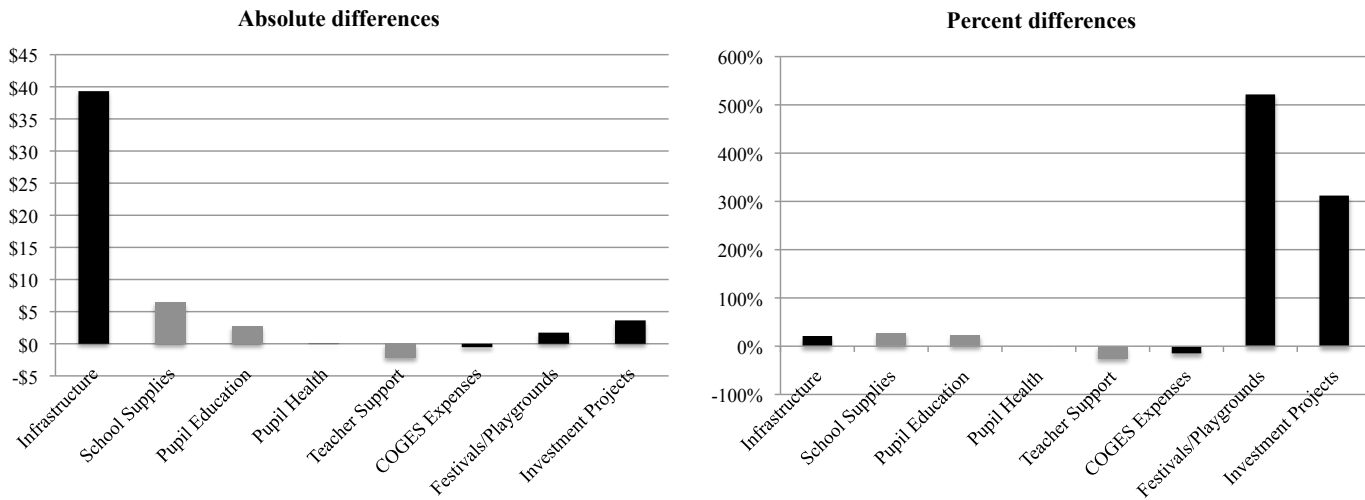
Table 1: Pre-program School Characteristics, by Treatment Group

	Treatment	Control	p-value of difference in means
Number of Schools	500	500	
Pupils			
Enrollment	149.6	141.7	0.28
% girls	0.393	0.393	0.97
Location			
Tahoua	0.520	0.514	0.85
Distance to Inspection	41.10	38.59	0.17
Distance to Health Center	8.242	8.946	0.61
Infrastructure			
Teachers	3.867	3.549	0.13
% Civil Servants	0.204	0.203	0.91
Buildings	3.908	3.680	0.17
Latrines	0.894	0.818	0.55
Water	0.0940	0.106	0.53
Electricity	0.0120	0.0220	0.22
Test Score			
% passing grade 6 exam	0.447	0.415	0.28
School Committees			
School Committee Exists	0.876	0.896	0.32
School Committee Supported	0.566	0.554	0.70

Data on latrines, water, and electricity are from School Census in 2005/06. All other variables are from School Census in 2007/08 (prior to grant disbursement).

Table 2: Community Characteristics used for Heterogeneous Treatment Effect Analysis

	Control Obs.	Treatment Obs	p-value of difference in attrition	Control Mean	Treatment Mean	Difference in means (T-C)	p-value of difference in means
Educated COGES member	369	370	0.94	0.317	0.305	-0.01	0.73
Experienced COGES member	369	370	0.94	0.209	0.227	0.02	0.55
Average wealth of school committee (PCA)	329	320	0.89	1.146	1.154	0.01	0.42
One-Teacher School	499	497	0.34	0.122	0.145	0.02	0.24
Urban School	500	500		0.108	0.110	0.00	0.92

Source: School survey conducted April-May 2008, except % of girls in 2007/08: 2007/08 administrative data.

Observations at school level. P-values are for tests of equality of the means across Treatment and Control.

Educated COGES member =1 if at least one member completed primary school. Experienced COGES member=1 if at least one member is also the member of another community organization.

The p-value of difference in attrition is calculated by creating a dummy variable equal to 1 if the data is missing for a particular school, and then calculating the p-value of the difference in this variable between groups.

Table 3: Attrition, by Treatment Group and Pre-Program School Characteristics

Dependent variable : 1 if data are missing

	(1) Supportive Index	(2) Management Index	(3) Opposition Index	(4) Infrastructure Index	(6) Teacher Presence	(7) Dropout	(8) 2008/09 Enrollment
Treatment	-0.0584	-0.119	-0.0928	0.000846	-0.117	-0.112	-0.00933
	(0.129)	(0.130)	(0.129)	(0.0385)	(0.120)	(0.130)	(0.0312)
T*Enrollment 0708	0.0257	0.0539	0.0329	0.00957	0.0534	0.0582	0.00882
	(0.0529)	(0.0537)	(0.0529)	(0.0147)	(0.0433)	(0.0487)	(0.0103)
Enrollment 0708	-0.0676*	-0.0694*	-0.0727**	-0.0145	-0.0469	-0.0728**	-0.0130*
	(0.0369)	(0.0361)	(0.0368)	(0.0126)	(0.0304)	(0.0332)	(0.00703)
T * % girl 0708	0.0184	0.0245	0.0263	0.000621	0.0289	0.0412	0.00543
	(0.0311)	(0.0310)	(0.0310)	(0.00991)	(0.0296)	(0.0313)	(0.00689)
% girl 0708	0.0201	0.00578	0.0182	0.00424	-0.00568	-0.00928	-0.00490
	(0.0220)	(0.0217)	(0.0220)	(0.00865)	(0.0202)	(0.0217)	(0.00585)
T* Urban	-0.0127	-0.0213	-0.0140	0.00158	-0.0235	-0.0480*	0.00533
	(0.0261)	(0.0257)	(0.0262)	(0.0123)	(0.0204)	(0.0267)	(0.00855)
Urban	-0.0103	0.00123	-0.00882	0.00438	-0.00250	0.0191	0.000749
	(0.0203)	(0.0199)	(0.0203)	(0.00905)	(0.0169)	(0.0210)	(0.00216)
T*Supported	-0.0179	-0.0176	-0.0141	0.00340	-0.00471	-0.00358	-0.00213
	(0.0255)	(0.0254)	(0.0255)	(0.00943)	(0.0227)	(0.0258)	(0.00697)
Supported	0.0209	0.00887	0.0193	-0.00564	0.00442	0.00802	-0.000439
	(0.0178)	(0.0177)	(0.0177)	(0.00765)	(0.0160)	(0.0177)	(0.00511)
T*Number of teachers	-0.00209	0.00666	-0.0102	-0.0146	-0.0262	-0.0316	-0.0170
	(0.0548)	(0.0545)	(0.0548)	(0.0152)	(0.0439)	(0.0513)	(0.0137)
Number of teachers	0.0189	0.0120	0.0226	0.00928	-0.00703	0.0116	0.0150
	(0.0390)	(0.0378)	(0.0389)	(0.0129)	(0.0297)	(0.0341)	(0.0113)
T*Tahoua	-0.0106	-0.0136	-0.00460	-0.0197**	-0.0138	-0.0277	-0.00577
	(0.0284)	(0.0287)	(0.0284)	(0.00983)	(0.0255)	(0.0285)	(0.00714)
Tahoua	0.170***	0.155***	0.168***	0.0198**	0.127***	0.166***	0.00849*
	(0.0200)	(0.0202)	(0.0200)	(0.00821)	(0.0178)	(0.0197)	(0.00506)
Constant	0.0411	0.117	0.0521	0.00793	0.124	0.162*	0.0227
	(0.0924)	(0.0923)	(0.0922)	(0.0330)	(0.0824)	(0.0917)	(0.0244)
Observations	1,000	1,000	1,000	1,000	1,000	1,000	1,000
R-squared	0.144	0.124	0.145	0.015	0.120	0.137	0.009
Mean in Control Group	0.242	0.232	0.240	0.030	0.172	0.236	0.014

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Supported is an indicator for whether the school reported that it was supported by an NGO or community group prior to the grant project

Tahoua is one of the two regions where the project was carried out. It is further north and the schools there experienced security concerns.

Data for the supportive and opposition indices, teacher presence, and dropouts come from the 2008 World Bank Questionnaire.

Data for the management index come from the 2008 World Bank Questionnaire, except for the activity level of the mother's association, which comes from the 2008/09 DSI school census.

Data for the infrastructure index and enrollment in 08/09 come from the 2008/09 DSI school census.

Table 4: Descriptive Statistics - Parent Participation

	Control		Treatment	
	Mean	N	Mean	N
Nonassertive Index	0.00137	359	0.166	354
Funds raised per pupil	329.6	331	659.2	336
Inkind donations (0/1)	0.836	379	0.860	379
COGES responsible for pupil attendance (0/1)	0.769	377	0.761	377
COGES responsible for remedial pupil attendance (0/1)	0.713	289	0.709	292
Assertive Index	-0.00632	335	0.0928	321
COGES responsible for Supplies (0/1)	0.603	380	0.581	372
COGES responsible for Infrastructure (0/1)	0.739	379	0.781	370
Time since last COGES meeting	-2.623	276	-2.469	271
Times since last APE meeting	-3.691	236	-3.493	229
Number of COGES reunions in 2007/2008	4.541	392	4.837	410
Mother's association is active in Fall 2008 (0/1)	0.272	434	0.308	454
COGES responsible for fee collection (0/1)	0.301	206	0.385	195
COGES responsible for fee expenses (0/1)	0.714	206	0.741	197
COGES responsible for monitoring teacher attendance (0/1)	0.766	380	0.755	378
COGES responsible for remedial teacher attendance (0/1)	0.329	380	0.317	378

Table 5: Descriptive Statistics: COGES projects

	Control		Treatment	
	Mean	N	Mean	N
Action Plan includes infrastructure project	0.913	367	0.930	372
Action Plan includes buying materials	0.278	367	0.438	372
Action Plan includes pupil motivation	0.338	367	0.333	372
Action Plan includes health activities	0.294	367	0.363	372
Action Plan includes teacher resources	0.0926	367	0.102	372
Action Plan includes COGES functioning	0.193	367	0.175	372
Action Plan includes parties or sport	0.0245	367	0.0833	372
Action Plan includes agricultural investment	0.0327	367	0.0833	372
Amount allocated to infrastructure in Action Plan	93,113	360	106,357	365
Amount allocated to materials in Action Plan	11,631	364	14,897	369
Amount allocated to pupil motivation in Action Plan	6,058	363	7,476	371
Amount allocated to health activities in Action Plan	10,031	363	9,597	369
Amount allocated to teacher resources in Action Plan	4,352	365	3,250	369
Amount allocated to COGES functioning in Action Plan	1,805	367	1,593	369
Amount allocated to parties or sport in Action Plan	165.8	367	1,010	369
Amount allocated to agricultural investment in Action Plan	582.9	362	2,370	370

Table 6: Descriptive Statistics - School Resources

	Control		Treatment	
	Mean	N	Mean	N
Infrastructure Index	-2.98e-09	485	0.0334	493
School enclosure (0/1)	0.343	420	0.419	427
Change in number of blackboards	0.654	448	0.794	457
Change in number of buildings	0.274	467	0.350	480
Average of buildings in good condition (0/1)	0.670	493	0.649	495
Change in number of pupil desks	-0.724	304	-0.505	293
Change in number of teacher's desks	0.0316	443	0.0464	453
Change in number of teacher's chairs	0.0618	437	0.0661	454
Change in number of shelfs	0.0461	434	0.0326	460
Health Index	1.26e-08	462	0.0292	471
School has a first aid kit (0/1)	0.0909	462	0.117	471
School has trash collection (0/1)	0.119	462	0.115	471
School distributed micronutrient supplements (0/1)	0.223	462	0.244	471
School dewormed pupils (0/1)	0.615	462	0.637	471
School held health information session (0/1)	0.305	462	0.331	471
Number of latrines	1.600	462	1.361	471
School has running water (0/1)	0.129	443	0.132	455
Materials Index	-0.00411	408	-0.0493	418
Geographic materials index	-0.0165	363	-0.0640	372
Math materials index	-3.26e-05	415	-0.0765	426
School has a dictionary (0/1)	0.0472	424	0.0300	434
Change in number of usable textbooks	-10.75	377	-9.022	372
Percent of teachers present at unannounced visit	0.760	402	0.727	397
Amount of user fees	631.6	371	710.9	374
User fees are charged	0.656	384	0.647	388
Percent of teachers requiring payment for tutoring	0.0315	284	0.0312	273
Hours of extra tutoring	0.980	382	0.941	376
Percent of teachers receiving any training	0.853	384	0.827	378

Table 7: Descriptive Statistics - School Participation

	Control		Treatment	
Drop Out Rates (2007/2008)	Mean	N	Mean	N
Grade 1	0.0296	271	0.0162	260
Grade 2	0.0328	227	0.0294	207
Grade 3	0.0295	269	0.0212	256
Grade 4	0.0364	237	0.0317	217
Grade 5	0.0313	212	0.0313	169
Grade 6	0.0508	245	0.0533	221
Total	0.0359	380	0.0312	368
Enrollment (2008/2009)				
Grade 1	40.09	493	38.23	495
Grade 2	29.95	493	31.59	495
Grade 3	23.87	493	22.19	495
Grade 4	26.22	493	24.50	495
Grade 5	20.98	493	20.25	495
Grade 6	19.22	493	17.67	495
Total	160.3	493	154.4	495

Table 8: Descriptive Statistics - Test Scores

	Control		Treatment	
National 6th Grade Test	Mean	N	Mean	N
Number of candidates per school	27.64	290	29.39	267
Percent Admitted	0.614	290	0.582	267
Test at April/May 2008 Questionnaire Visit				
Oral: Grade 1	0.0956	83	-0.129	95
Oral: Grade 2	-0.0336	180	-0.130	162
Oral: Total	0.00828	252	-0.142	247
Math: Grade 1	-0.0500	82	0.000596	97
Math: Grade 2	-0.158	169	-0.174	152
Math: Grade 3	0.0858	110	-0.0123	104
Math: Grade 4	-0.0695	206	-0.0294	200
Math: Grade 5	0.105	41	-0.0532	48
Math: Grade 6	0.0291	229	-0.159	195
Math: Total	0.00545	382	-0.0578	381
French: Grade 1	-0.0303	83	0.119	96
French: Grade 2	-0.182	169	-0.174	147
French: Grade 3	0.0468	79	-0.119	83
French: Grade 4	-0.0572	207	-0.147	195
French: Grade 5	0.108	51	-0.166	58
French: Grade 6	0.0417	203	-0.0826	177
French: Total	0.0145	371	-0.0542	368

Table 9: The Impact of Grants Parent Participation

	(1)	(2)	(3)	(4)
	Nonassertive Participation Index	Assertive Participation Index	COGES Monitors Teacher Attendance	COGES Remedial Action for Teacher Absence
Treatment	0.158***	0.107***	-0.0126	-0.0120
	0.0439	0.0370	0.0219	0.0337
Constant	-0.152	-0.339**	0.844***	0.378***
	0.182	0.132	0.0820	0.128
Observations	713	656	758	758
R-squared	0.113	0.063	0.064	0.049
Control Group Mean	0.00137	-0.00632	0.766	0.329

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, *p<0.10. Regressions control for whether the school is in a rural or urban area, total enrollment in 07/08, proportion of girls in 07/08, whether the school had NGO support prior to the grant, and inspection fixed effects.

Nonassertive action is the unweighted average of z-scores of financial and in-kind contributions from parents, whether parents supervise pupil attendance, and whether parents take remdial action for poor pupil attendance. Assertive action is unweighted average of z-scores of the time elapsed since the last parent meeting, the time elapsed since the last school committee meeting, the activity level of the mother's association, whether the school committee was responsible for fee collection and expenditure, and whether the school committee was responsible for infrastructure and supplies.

Table 10: The Impact of Grants on COGES Project Planning

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				Dependent variable: whether COGES invested in…				
	School Infrastructure and Equipment	School Supplies and Textbooks	Pupil Educational Support	Pupil Health	Teacher Support	COGES Expenses	School Festivals and Playground	Investments in Agriculture
Treatment	0.0180	0.160***	-0.00795	0.0684**	0.00665	-0.0255	0.0600***	0.0505***
	0.0199	0.0334	0.0335	0.0342	0.0216	0.0270	0.0167	0.0172
Constant	0.941***	0.380***	0.153	0.123	0.0899	0.113	-0.0748	-0.0737
	0.0692	0.130	0.125	0.132	0.0843	0.101	0.0639	0.0596
Observations	739	739	739	739	739	739	739	739
R-squared	0.017	0.134	0.104	0.062	0.053	0.136	0.040	0.054
Control Group Mean	0.913	0.278	0.338	0.294	0.0926	0.193	0.0245	0.0327

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, *p<0.10. Regressions control for whether the school is in a rural or urban area, total enrollment in 07/08, proportion of girls in 07/08, whether the school had NGO support prior to the grant, and inspection fixed effects.

Dependent variable is whether or not the COGES indicated a project in the corresponding category of activities, as declared by the president of COGES in the April/May 2008 survey. Infrastructure and Equipement includes expenses related to classrooms, desks, chairs, blackboards, school enclosure and security, and cleaning. Supplies and Texbooks includes expenses for notebooks, pens, and textbooks. Pupil Educational Support includes expenses like additional courses, awareness campaigns to increase enrollment, and academic rewards. Pupil Health includes expenses related to nutrition and health like drinkable water, meals, latrines and drugs. Teacher support includes expenses benefitting to teachers like teacher housing, furniture, supplies, guide books, and salary. COGES Expenses includes expenses related to COGES meetings, contributions to "COGES communal" and inspector visits. Schools festivals and Playground includes expenses like graduation ceremonies, parties, and soccer balls. Investments in Agriculture includes fields, crops and livestock, unrelated to education activities.

Table 11: The Impact of Grants on COGES project expenditure

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
			Dependent Variable: Amount Spent by COGES on…					
	School Infrastructure and Equipment	School Supplies and Textbooks	Pupil Educational Support	Pupil Health	Teacher Support	COGES Expenses	School Festivals and Playground	Investments in Agriculture
Treatment	19,659**	3,222	1,384	-25.41	-1,092	-267.4	864.8***	1,819***
	9,588	1,981	1,370	2,189	1,331	386.8	285.5	658.7
Constant	-24,389	836.7	-625.8	-12,730	1,503	1,982	-1,599**	-838.3
	39,707	8,622	4,034	8,447	4,576	1,212	765.0	1,094
Observations	725	733	734	732	734	736	736	732
R-squared	0.125	0.156	0.085	0.058	0.019	0.081	0.039	0.046
Control Group Mean	93113	11631	6058	10031	4352	1805	165.8	582.9

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, *p<0.10. Regressions control for whether the school is in a rural or urban area, total enrollment in 07/08, proportion of girls in 07/08, whether the school had NGO support prior to the grant, and inspection fixed effects.

Dependent variable is the amount in FCFA spent by COGES in the corresponding category of activities, as declared by the president of COGES in the April/May 2008 survey. Infrastructure and Equipement includes expenses related to classrooms, desks, chairs, blackboards, school enclosure and security, and cleaning. Supplies and Texbooks includes expenses for notebooks, pens, and textbooks. Pupil Educational Support includes expenses like additional courses, awareness campaigns to increase enrollment, and academic rewards. Pupil Health includes expenses related to nutrition and health like drinkable water, meals, latrines and drugs. Teacher support includes expenses benefitting to teachers like teacher housing, furniture, supplies, guide books, and salary. COGES Expenses includes expenses related to COGES meetings, contributions to "COGES communal" and inspector visits. Schools festivals and Playground includes expenses like graduation ceremonies, parties, and soccer balls. Investments in Agriculture includes fields, crops and livestock, unrelated to education activities.

Table 12: The Impact of Grants on School Resources and Activities

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Infrastructure Index	Materials Index	Health Resources Index	Any Fees Charged	User Fees: Amount	Hours of Tutoring	Students pay for tutoring	Teacher training this year
Treatment	0.0414*	-0.0439	0.0469*	-0.00147	35.48	-0.0415	0.000570	-0.0250
	0.0236	0.0350	0.0270	0.0332	235.3	0.103	0.0125	0.0200
Constant	-0.454***	-0.402**	-0.396***	0.711***	1,856**	0.616*	-0.00826	0.0629
	0.0936	0.171	0.114	0.121	772.3	0.323	0.0591	0.0736
Observations	978	826	933	772	745	758	557	762
R-squared	0.164	0.174	0.238	0.100	0.038	0.041	0.072	0.321
Control Group Mean	-2.98e-09	-0.00411	1.26e-08	0.656	631.6	0.980	0.0315	0.853

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, *p<0.10. Regressions control for whether the school is in a rural or urban area, total enrollment in 07/08, proportion of girls in 07/08, whether the school had NGO support prior to the grant, and inspection fixed effects.

Infrastructure Index is the unweighted average of the number of buildings, the average condition of the buildings (good or poor), number of blackboards, number of desks for pupils, whether a school enclosure exists, the number of teachers desks and chairs, and number of shelves. The Material Index is the unweighted average of the number of textbooks, number of dictionaries, mathmatical materials (compass, ruler, square) and number of geographic materials (maps, globes). The Health Resources Index is the unweighted average of whether the school has a functioning latrine, access to water, a first aid kit, a system for collecting and disposing of trash, and whether or not the following interventions were carried out: micronutrient supplementation (any kind), deworming, and health information sessions. Teacher presence is the percent of teachers who were present at the arrival of the surveyors on the day of an unannounced visit.

Table 13: The Impact of Grants on School Quality

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				Number of Pupils Attempting End	End of Primary	Normalized Oral	Normalized	Normalized French Test
	Teacher Presence	Enrollment (08/09)	Drop out (07/08)	of Primary Test	Test Pass Rate	Test Scores	Math Test Scores	Scores
Treatment	-0.0382*	1.366	-0.00559	1.647	-0.0244	-0.0984	-0.0477	-0.0439
	0.0227	2.445	0.00520	1.107	0.0227	0.0759	0.0584	0.0582
Constant	0.937***	37.56**	0.0723***	18.96***	0.525***	0.0150	-0.0165	0.236
	0.0738	15.14	0.0165	5.473	0.0706	0.329	0.224	0.240
Observations	799	988	748	557	557	499	763	739
R-squared	0.248	0.901	0.059	0.640	0.177	0.204	0.213	0.263
Control Group Mean	0.760	160.3	0.0359	27.64	0.614	0.00828	0.00545	0.0145

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, *p<0.10. Regressions control for whether the school is in a rural or urban area, total enrollment in 07/08, proportion of girls in 07/08, whether the school had NGO support prior to the grant, and inspection fixed effects. Columns (6), (7), and (8) include dummy variables for the grades tested in a given school.

Enrollment (08/09) is from administrative data from the Ministry of Education. Drop out (07/08) is the proportion of pupils registered in the fall of 2007 who had dropped out at the visit in spring of 2008. Number of Pupils Attempting End of Primary Test refers to the number of grade 6 pupils presented by the school for the test (which determines eligibility for secondary school). The End of Primary Test Pass Rate is the percent of students from the school who passed the exam at the end of grade 6. Finally, Normalized Oral, Math and French test scores come from the World Bank administered exam in the spring of 2008. Oral test scores were given only to pupils in grades 1 and 2.

Table 14: The Impact of Grants on Drop Out: Percent of students enrolled in fall 2007 who dropped out by spring 2008

	(1) Grade 1	(2) Grade 2	(3) Grade 3	(4) Grade 4	(5) Grade 5	(6) Grade 6
Treatment	-0.0136*	-0.00646	-0.00791	-0.00778	0.00264	0.00139
	0.00758	0.0107	0.00582	0.0100	0.00849	0.00987
Constant	0.0366**	0.0613**	0.0678***	0.143**	0.115**	0.0891**
	0.0183	0.0291	0.0240	0.0570	0.0455	0.0384
Observations	531	434	525	454	381	466
R-squared	0.038	0.042	0.046	0.090	0.068	0.104
Control Group Mean	0.038	0.042	0.046	0.090	0.068	0.104

*Robust standard errors in parentheses. *** p<0.01, ** p<0.05, *p<0.10. Dependent variable is the reported proportion of the children enrolled in the fall of 07/08 who had dropped out at the time of the spring questionnaire. Regressions control for whether the school is in a rural or urban area, total enrollment in 07/08, proportion of girls in 07/08, whether the school had NGO support prior to the grant and inspection fixed effects.*

Table 15: The Impact of Grants on Enrollment in 2008/2009 (by Grade)

	(1) Grade 1	(2) Grade 2	(3) Grade 3	(4) Grade 4	(5) Grade 5	(60 Grade 6
Treatment	-0.604	3.256**	-0.471	-0.541	0.366	-0.639
	1.502	1.376	1.174	1.190	1.019	0.962
Constant	34.47***	-1.052	5.214	1.546	-1.388	-1.225
	6.267	6.441	4.881	4.534	3.911	3.925
Observations	988	988	988	988	988	988
R-squared	0.470	0.545	0.546	0.484	0.520	0.540
Control Group Mean	40.09	29.95	23.87	26.22	20.98	19.22

*Robust standard errors in parentheses. *** p<0.01, ** p<0.05, *p<0.10. Administrative Data (Ministry of Education). Regressions control for whether the school is in a rural or urban area, total enrollment in 07/08, proportion of girls in 07/08, whether the school had NGO support prior to the grant and inspection fixed effects.*

Table 16: The Impact of Grants on Test Scores (by grade)

	Dependent Variable: Math Test Scores					
	(1)	(2)	(3)	(4)	(5)	(6)
	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6
Treatment	0.127	0.0194	-0.0873	0.0704	-0.161	-0.138
	0.147	0.0987	0.124	0.0908	0.225	0.0887
Constant	-0.230	-0.264	0.0999	-0.0561	-0.534	-0.276
	0.532	0.342	0.308	0.313	0.598	0.314
Observations	179	321	214	406	89	424
R-squared	0.234	0.213	0.211	0.190	0.427	0.170
Control Group Mean	-0.0500	-0.158	0.0858	-0.0695	0.105	0.0291

*Robust standard errors in parentheses. *** p<0.01, ** p<0.05, *p<0.10. Regressions control for whether the school is in a rural or urban area, total enrollment in 07/08, proportion of girls in 07/08, whether the school had NGO support prior to the grant, inspection fixed effects, and which grade was tested.*

	Dependent Variable: French Test Scores					
	(1)	(2)	(3)	(4)	(5)	(6)
	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6
Treatment	0.148	0.0475	-0.102	-0.0576	-0.118	-0.0453
	0.134	0.0902	0.127	0.0824	0.201	0.0917
Constant	-0.273	-0.164	0.236	0.178	-0.931	-0.355
	0.333	0.319	0.285	0.280	0.573	0.322
Observations	179	316	162	402	109	380
R-squared	0.294	0.204	0.323	0.213	0.387	0.252
Control Group Mean	-0.0303	-0.182	0.0468	-0.0572	0.108	0.0417

*Robust standard errors in parentheses. *** p<0.01, ** p<0.05, *p<0.10. Regressions control for whether the school is in a rural or urban area, total enrollment in 07/08, proportion of girls in 07/08, whether the school had NGO support prior to the grant, inspection fixed effects, and which grade was tested.*

	Dependent Variable: Oral Test Scores	
	(1)	(2)
	Grade 1	Grade 2
Treatment	-0.103	-0.0598
	0.129	0.0902
Constant	0.275	-0.0928
	0.963	0.294
Observations	178	342
R-squared	0.267	0.194
Control Group Mean	0.0956	-0.0336

*Robust standard errors in parentheses. *** p<0.01, ** p<0.05, *p<0.10. Regressions control for whether the school is in a rural or urban area, total enrollment in 07/08, proportion of girls in 07/08, whether the school had NGO support prior to the grant, inspection fixed effects, and which grade was tested.*

Appendix : Description of Indices

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 group. The index is the average of the non-missing components, as long as the school has a valid response to at least two components. If only one component is available (or if no components are available), the school is dropped.

We create five indices:

- Two indices reflecting different kinds of parent participation.

  - The *nonassertive* index averages together four variables: parent financial and in-kind contributions, and parent supervision of pupil attendance and parent remedial action for pupil absenteeism.

  - The *assertive* index averages together seven variables: frequency of parent 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.

- Three indicies of school quality. The data for these indices comes from the 2008/2009 annual administrative database (around 10 months after the treatment).

  - The infrastructure index is composed of the change in the number of buildings and their condition, the number of blackboards, the number of pupil desks, the number of teacher's desks and chairs, the number of sheves, and a dummy for school enclosure (this is a fence or wall around the school grounds that separates the school from other public space).

  - The health index is composed of dummy variables on whether or not the following health activites were carried out by the school at least once: vitamin or micronutrient supplementation, deworming, and health information sessions; whether or not the school has a first aid kit, a system for disposing of trash, a water source, and the number of latrines.

– The materials index is composed of the change in the number of textbooks, whether or not the school has a dictionary, and two additional indicies of geographic materials (maps, atlases, and so on) and math materials (rulers, compasses, protractors). An index was used for these items to give them less weight in the overall materials index.

Table A1: Impact of Treatment on Components of Nonassertive Index

	(1) Nonassertive Index	(2) Total funds Collected per Pupil	(3) Parents Gave Inkind Contributio ns	(4) COGES Monitors Pupil Attendance	(5) COGES Remedial Action for Pupil Absence
Treatment	0.158***	328.6***	0.0223	-0.0100	-0.00289
	0.0439	45.32	0.0252	0.0222	0.0375
Constant	-0.152	295.0	0.634***	0.807***	0.643***
	0.182	196.6	0.102	0.0866	0.141
Observations	713	667	758	754	581
R-squared	0.113	0.135	0.077	0.063	0.062
Control Group Mean	0.00137	329.6	0.836	0.769	0.713

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, *p<0.10. Regressions control for whether the school is in a rural or urban area, total enrollment in 07/08, proportion of girls in 07/08, whether the school had NGO support prior to the grant and inspection fixed effects.

Table A2: Impact of Treatment on Components of Assertive Index

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Elapsed time since last APE meeting	Elapsed time since last COGES meeting	Mother Association is active in 08/09	Number of COGES meetings in 08/09	COGES responsible for collective fees	COGES responsible for spending fees	COGES responsible for infrastructure	COGES responsible for supplies
	Assertive Index								
Treatment	0.107***	0.182	0.162	0.0492	0.322**	0.0767	0.0164	0.0451	-0.0106
	0.0370	0.200	0.111	0.0299	0.164	0.0476	0.0437	0.0307	0.0353
Constant	-0.339**	-4.776***	-3.640***	0.113	4.555***	0.213	0.555***	0.571***	0.593***
	0.132	0.782	0.446	0.119	0.843	0.169	0.168	0.109	0.125
Observations	656	465	547	888	802	401	403	749	752
R-squared	0.063	0.051	0.139	0.066	0.062	0.065	0.090	0.064	0.063
Control Group Mean	-0.00632	-3.691	-2.623	0.272	4.541	0.301	0.714	0.739	0.603

*Robust standard errors in parentheses. *** p<0.01, ** p<0.05, *p<0.10. Regressions control for whether the school is in a rural or urban area, total enrollment in 07/08, proportion of girls in 07/08, whether the school had NGO support prior to the grant and inspection fixed effects.*

Table A3: Impact of Treatment on Components of Infrastructure Index

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Change in number of buildings from 07/08 to 08/09	Change in Condition of Buildings from 07/08 to 08/09	Change in number of blackboards from 07/08 to 08/09	Change in number of pupil desks from 07/08 to 08/09	School has an enclosure (wall around compound)	Change in number of Teacher's Desks from 07/08 to 08/09	Change in number of Teacher's Chairs from 07/08 to 08/09	Change in number of Shelves from 07/08 to 08/09
	Inf. Index								
Treatment	0.0414*	0.0766*	-0.0155	0.138	0.187	0.0866***	0.0123	0.00454	-0.0106
	0.0236	0.0452	0.0207	0.117	0.678	0.0316	0.0590	0.0332	0.0395
Constant	-0.454***	0.187	0.480***	-0.352	-0.0640	-0.135	-0.0798	-0.104	-0.161
	0.0936	0.183	0.0796	0.550	2.934	0.114	0.239	0.145	0.170
Observations	978	947	988	905	597	847	896	891	894
R-squared	0.164	0.046	0.057	0.038	0.054	0.132	0.032	0.026	0.029
Control Group Mean	-2.98e-09	0.274	0.670	0.654	-0.724	0.343	0.0316	0.0618	0.0461

*Robust standard errors in parentheses. *** p<0.01, ** p<0.05, *p<0.10. Regressions control for whether the school is in a rural or urban area, total enrollment in 07/08, proportion of girls in 07/08, whether the school had NGO support prior to the grant and inspection fixed effects.*

Table A4: Impact of Treatment on Components of Health Index

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		Vitamins or micronut. given at	Deworm. at	Health information sessions at	School has	School has system for disposing of	Number of	School has
	Health Index	least once	least once	least once	first aid kit	trash	latrines	water source
Treatment	0.0469*	0.0252	0.0220	0.0406	0.0283	-0.00198	-0.116	0.0133
	0.0270	0.0272	0.0285	0.0293	0.0196	0.0209	0.134	0.0199
Constant	-0.396***	0.131	0.474***	0.378***	-0.0331	0.00380	0.298	-0.0846
	0.114	0.115	0.118	0.113	0.0909	0.0809	0.665	0.0987
Observations	933	933	933	933	933	933	933	898
R-squared	0.238	0.061	0.219	0.096	0.062	0.048	0.343	0.220
Control Group Mean	1.26e-08	0.223	0.615	0.305	0.0909	0.119	1.600	0.129

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, *p<0.10. Regressions control for whether the school is in a rural or urban area, total enrollment in 07/08, proportion of girls in 07/08, whether the school had NGO support prior to the grant and inspection fixed effects.

Table A5: Impact of Treatment on Components of Materials Index

	(1) Materials Index	(2) Textbooks	(3) Dictionary	(4) Geographic Materials	(5) Math materials
Treatment	-0.0439	1.267	-0.0162	-0.0422	-0.0705
	0.0350	3.266	0.0281	0.0486	0.0470
Constant	-0.402**	-0.438	-0.176	-0.365	-0.413**
	0.171	13.52	0.121	0.249	0.192
Observations	826	749	858	735	841
R-squared	0.174	0.086	0.108	0.037	0.256
Control Group Mean	-0.00411	-10.75	0.0472	-0.0165	-3.26e-05

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, *p<0.10. Regressions control for whether the school is in a rural or urban area, total enrollment in 07/08, proportion of girls in 07/08, whether the school had NGO support prior to the grant and inspection fixed effects.

The dependent variables of columns (2) and (3) are the change from fall 2007 to fall 2009 (administrative data). Numbers may be negative due to loss or wear and tear.
Geographic materials is the average of atlases, maps, and globes. The Mathematical materials is the average of rulers, compasses, and squares). Further details available upon request.