Can Information Strengthen Local Governance of Schools? Evidence from Pakistan

Minahil Asim*

June 11, 2019

Abstract

School councils, comprising of parents, the head-teacher and community members in primary and middle schools in 21 districts of Punjab, Pakistan receive a non-salary budget to make improvements to school inputs. However, much of the funds remain unspent at the end of the financial year. To encourage the utilization of funds given to council members, the provincial government in Punjab spearheaded the School Council Mobilization Program (SCMP), hiring a call center to make regular calls to the members to inform and mobilize them to spend money. Using administrative, survey, test scores and call center data and a difference-in-differences strategy to estimate a causal impact of the program, I find that schools where council members received the SCMP calls spent 40 percent more funds in absolute terms, compared to non-SCMP schools. However, the increased expenditure did not translate into improved outcomes for the schools or students; students in SCMP schools had lower performance in Math, English and Urdu by approximately a tenth of a standard deviation than students in non-SCMP schools. The paper offers a discussion on the mechanisms that help explain the negative results of this large-scale intervention.

*Asim: University of California Davis, masim@ucdavis.edu.

1 Introduction

In developing countries, 263 million school-aged children and youth remained out of school in 2015, and of those enrolled, half did not achieve minimum proficiency levels in reading and numeracy, even though they had spent at least four years in school (UNESCO, 2014). Pakistan is no exception to this profound education crisis. There are 22.6 million out-of-school children and quality education remains inaccessible for the most vulnerable populations, including poor communities, girls, and members of minority groups. Distance from school, high teacher absenteeism, overcrowded classrooms, lack of teaching material, and poor infrastructure are some of the obstacles faced by the public education system in the country (Andrabi, Das, Khwaja, Vishwanath and Zajonc, 2007; Aziz et al., 2014; Naviwala, 2016; UNESCO, 2018).

Many reform initiatives by the government and donor agencies in Pakistan are focused on introducing institutional changes in the management of public schools to address these constraints. One such institutional change intended to improve the financing and delivery of education services is decentralization of school management at the school level (Patrinos, Barrera-Osorio and Fasih, 2009). School councils, comprising of parents, the head teacher and some notable and literate members of the community, were established in 1994 in Punjab, Pakistans most populous province in an attempt to strengthen governance of public schools. However, evidence suggests school councils sometimes lack autonomy and capacity to participate in school improvement activities (McGinn and Welsh, 1999; Patrinos et al., 2009). Furthermore, councils are by and large uninformed about their roles and responsibilities, with particular concern around a non-salary budget given to school councils being unspent at the end of the school year (Cambridge Education, 2014; ISAPS, 2010). In 2014, approximately 68 percent of the schools were spending on average more than 25 percent of the available budget, and only 30 percent were spending more than 75 percent of the funds available to them (Annual School Census, 2015). Conversations with council members suggest that they may not only be unfamiliar with the non-salary budget given to them, but also feared audit from the government department, hence, left the money unspent at the end of the financial year.

To inform council members of their responsibilities in school management, the provincial government in Punjab, spearheaded the School Council Mobilization Program (SCMP), hiring a call center (Abacus Consulting) to make regular calls to members in primary and middle schools in 21 out of

36 districts of Punjab for 6 months in 2015. Approximately, 50 percent of all primary and middle schools in the province (13,000 schools comprising of 80,000 council members) were contacted as part of the program every month from May to December 2015. The call center used a time-varying (but integrated) script for a duration of 8 months, discussing the need for and process of conducting school council meetings every month, providing information on the bank account holding the non-salary funds and processes required to withdraw and spend the money, and encouraging members to utilize the funds transferred to each school by the government.[1] In subsequent calls, information was provided on what the money could be spent on, including admission of children, appointment of a contract or temporary teacher, and infrastructural development. The members were also informed of record keeping processes and were asked about their progress and for feedback in subsequent calls. [2]

Using a difference-in-differences quasi-experimental identification strategy that leverages the selection criteria for schools based on school size and the panel nature of the data, I estimate the impact of the SCMP on school council participation in school and expenditure, and school and student outcomes. I find that schools where council members received the SCMP calls conducted 3 percent more council meetings and spent 40 percent more funds in absolute terms, compared to schools that did not receive the calls. However, the increased expenditure did not translate into improved outcomes for the schools or students on which the money could potentially have been spent. I find that no additional contract teachers were hired and there were no significant differences in the functionality of school facilities in treated schools. I find that school outcomes, such as teacher attendance and student attendance and student enrollment worsened, albeit the magnitude of the decline is small. For example, teacher attendance went down by 0.7 percent and enrollment by 1.3 percent from baseline averages. However, the largest decline was in test scores among students in schools that received the program. Students did worse in Math, English and Urdu by approximately one-tenth of a standard deviation in treated schools compared to non-SCMP schools. In per dollar terms, the outcomes were even worse, given that expenditure went up and outcomes were adversely impacted.

[1]The budget for each school is a function of its size and existing facilities and performance on other school-based inputs

[2]All the information exchanged was aggregated and analyzed by Abacus Consulting and the School Education Department using an integrated dashboard in real time.

To help interpret the negative results on test scores, I unpack if the intervention, which aimed to strengthen participation of school council members in the school, may have been a threat to the political clout of civil service teachers Pakistan, as a result of which they may reduce effort in the classroom. I also discuss larger issues of political economy for interventions at scale that impact local governance of institutions, specifically, service delivery in education. In the next section, I review prior evidence. Then, I discuss the School Council Mobilization Program in detail, following which I describe my data and identification strategy. Finally, I present my results, followed by a discussion.

2 Theoretical Framework and Prior Evidence

Localization of authority is considered an effective way of catering to the diverse preferences for local public goods and services (Bardhan and Mookherjee, 2006). However, evidence on the effectiveness of local committees in improving school management and performance is, at best, mixed. For example, in some developing country contexts giving autonomy to school-level actors has a positive impact on process outcomes, such as improved community involvement in schools, but has no impact on student achievement (Beasley and Huillery, 2017; Blimpo, Evans, and Lahire, 2011). Other research, however, show positive effects of engagement with school committees on test scores (Duflo, Dupas, and Kremer, 2015), while some research shows no effect on intermediate or longer-term outcomes (Banerjee, Banerji, Duflo, Glennerster, and Khemani, 2008). Moreover, some researchers have found differential impacts of decentralization for subgroups, such as poor communities, which do not reap the benefits of these reforms (Gertler, Patrinos, and Rodrguez-Oreggia, 2012; Leer, 2016).

The disparate set of results from prior empirical evidence can be explained by several forces: The degree of devolution of authority to school committees (Patrinos et al., 2009), the level of engagement and targeted information disseminated to school actors (Banerjee et al., 2008; Duflo et al., 2015), local human capital and administrative capacity constraints within the councils (Pradhan et al., 2014), collective action problems, such as failure of the committee to work together, and elite capture, where school resources benefit a few individuals on the committee (Bold, Molina, Safir, 2017), the institutional structure of the education system that influences reform and

participation of local actors (Bold et al., 2017; Mansuri Rao, 2012) and the level of economic development of the country and existence of school systems with accountability through external exams (Hanushek, 2019).

The School Council Mobilization Program, discussed in detail below, has a set of compelling features that have not been explored in prior research. The SCMP has the imprimatur of the government and addresses a specific information asymmetry constraint regarding the utilization of the non-salary budget given to school councils. The program provides sustained and targeted information to council members about the budget, coupled with details on how and on what to spend the money on. The calling agents add credibility to the calls by informing members that the call is directly from the government to address their fears of audit.

The program allows me to not only explore the impact of this education intervention on direct inputs targeted through calls such as council meetings and expenditure, but also explore mechanisms through which an information-based intervention to engage local councils may impact student outcomes. Research shows that the impact of an education intervention on learning outcomes depends on both the production function that includes school inputs and behavioral responses by teachers (Mbiti et al., 2019). If we think of the SCMP as strengthening localization of authority by improving the utilization of school inputs, such as school funds, teachers may derive disutility from effort as a result of changed inputs (Blimpo, Evans and Lahiri, 2015; Glewwe, Kremer and Moulin, 2009; deRee et al., 2019) and impact student outcomes. If we think of SCMP as a bottom-up accountability intervention, where school councils exert their autonomy in the school, teachers may see that as a threat to their jurisdiction within the school and respond negatively in the classroom. By estimating the impact of the program on student test scores, I am able to make inferences about both direct inputs and teacher behavior in the education production function.

3 The School Council Mobilization Prorgam (SCMP)

The School Council Mobilization Program (SCMP) [3], a mobile based engagement program for school councils, discussed in detail below, began as a pilot project in 5 districts (Phase I) in the Punjab province of Pakistan, was expanded to additional 10 districts (Phase II) after being operational for 12 months, and later rolled out in 21 districts in February 2015 (Phase III). The Punjab province comprises of almost 60 percent of the total population of Pakistan with 44 percent of the population is children aged less than 18 years. There are approximately 50,000 primary, middle, high and religious [4] public schools spread across a total of thirty-six districts (PMIU, 2018).

3.1 School Councils in Punjab

The Government of Punjab established school councils (SCs) in 1994 in both primary and middle schools as part of province-wide school-based management (SBM) reforms. These SCs consist of a head-teacher (or principal) who serves as the chairperson and 7-15 elected members, including parents (at least 50percent of the SC membership), and notable individuals from the community, such as shopkeepers. The members mostly belong to low-income backgrounds with limited education, and serve on the council for a year. The School Council Policy 2007 (official government guidance document for SCs) states that members are required to meet monthly, keep records of their meetings and ensure two-thirds of the members attend them. The SC members are also responsible for monitoring teacher, staff, and student attendance, making efforts to increase enrolment, reducing dropouts, monitoring and assisting the provision of textbooks, hiring temporary teachers and staff, managing the SC Fund, planning infrastructural development, and keeping records of all transactions (Government of Punjab, 2007).

SC performance has,remained uneven in the province,, specifically around utilization of a funds given to school council members., In 2014, approx-

[3]The program is a component of the Punjab Education Sector Reform Program (PESRP), a highly visible province-wide program endorsed by the head of the provincial government to improve access, quality, and governance in the education sector, funded by the World Bank.

[4]Religious schools or Madrassas are usually situated within mosques and have their own religious curriculum instead of the one prescribed by the provincial government.

imately 68 percent of the school councils were spending on average more than 25 percent of the available funds, and only 30 percent were spending more than 75 percent of the funds available to them (Annual School Census, 2015). Low performance, combined with substantive implementation challenges (and comparatively high cost) associated with in-person training [5], provided an important motivation for the phone-based SCMP pilot. Another motivation was that, on average, 71 percent of Punjabs households own a mobile phone (MICS, 2007-08), and this average ownership rate is likely to be higher among those serving on school councils.

3.2 Program Description

The SCMP began call-center operations under Phase I in April of 2013. The call center was located in the provincial capital Lahore. [6] Calling agents placed monthly informational phone calls to individual SC members, each lasting approximately 6 minutes.. The members received calls from the same calling agent for the entire duration of the intervention. In light of the cultural context, SC members were assigned same-sex agents.

In the scaled up Phase III of the program (i.e., May 2015 to December 2015), which I evaluate in this paper, the calls focused on improving the utilization of funds given to SCs under the Non-Salary Budget (NSB) program. [7] All primary and middle schools in the province were transferred an amount to the schools bank account, which was a function of the schools size, existing facilities and performance on other school-based inputs, . Conversations with council members suggested that they may not only be unfamiliar with the money given to them, but also feared audit from the government department, hence, left the money unspent at the end of the financial year. This phase of SCMP attempted to specifically address this information asymmetry; the calling agents provided information on how to access the funds, spend them, and document their expenditure. The council members were required to

[5]The government conducted an in-person three-day capacity building program for school councils in 2007, following the launch of the policy document. The program cost the government 240 USD per school.

[6]Abacus consulting, a private call-center, was hired in Lahore to carry out the operations.

[7]The schools make the need based plan and submits to the government on what they expect to spend the money on. However, conversations with the department revealed that it may or may not happen in practice. Schools may not submit the plans, hence, the department would transfer them money based on their own calculations.

show their expenditure receipts to the monitors collecting data every month, who then added expenditure to the monitoring reports. Moreover, contact was sustained through subsequent calls spread across a period of 6 months to build trust with council members, with information on one aspect of the program disseminated in each call and followed up in the next call. In the first couple of calls, members were encouraged to conduct meetings, and subsequently, informed about the bank account and encouraged to spend funds. They were asked to improve enrollment and attendance and hire a temporary teacher if needed. Furthermore, the agents added credibility to the calls by informing the members that the call was made directly from the provincial governments school education department to address their fear of audit.

Finally, the structure of the calls allowed the program to address problems of collective action and elite capture. Women or members of certain castes may be excluded from making decisions about the school, but use of personalized and culturally appropriate methods to engage school councils through calls aimed to address these constraints. For example, each school had at least one conference call with an agent with all members of the school committee present in the school. All members were asked for feedback on the program.

All of the schools in the province of Punjab are segregated by sex, and the school-council members typically share the sex of the students in the school they serve. Only primary schools (i.e., grades 1 to 5) and middle schools (i.e., grades 6 to 8) were chosen for this program. School eligibility for the program was also a function of school size. Within each of the district-by-level-by-gender cells, only schools with median or higher enrollment were intended to participate. This criterion, set by the World Bank, reflected both an interest in reaching more students and in increasing the likelihood that SC members had mobile phones. However, as discussed later, there was imperfect compliance to the eligibility rule because of unavailability of phone numbers for some members in schools. The program cost the government PKR 5000 (USD 50) per school for a yearlong engagement with SC members. The earlier NGO-delivered training, which were delivered in person, cost nearly four times as much per school. As a result of the design features of the mobilization program, I investigate the following research questions:

1. What is the impact of information dissemination and engagement with school councils on school council members participation in school, as measured by school council meetings and expenditure of the school council fund?

2. Does the impact translate into improved school outcomes, as measured by hiring of contract teachers, teacher attendance, functionality of school facilitates, student enrollment and presence in schools, and student outcomes, as measured by Math, Urdu and English test scores?

3. Do treatment effects in outcomes differ by gender composition of the school, school level (i.e., primary or middle) and across time, and do these heterogeneous effects explain the impact on outcomes?

4 Data and Measures

I apply a rich set of data sources to this study. First, I use publicly available school-level administrative data collected monthly by the Education Department in Punjab. Approximately 900 monitoring and evaluation assistants (MEAs), hired by Punjabs provincial government, administer the monthly survey (except for in May, June, July and August) in all 36 districts (50,000 public schools). This dataset includes administrative information on total enrollment in schools, number of contract teachers in each school, and overall teacher and student attendance. The dataset also includes monthly expenditure by the school councils from the budget given to them. Data are available from September 2014 to December 2016. With no monitoring in summer months, I have 8 months of pre-intervention data and 12 months of post intervention data, out of which SCs are actively receiving phone calls in 4 months. The schools monitored by individual agents are rotated to attenuate the risk for intentional misreporting. I take up the question of whether my findings might reflect, to an unknown extent, policy-endogenous misreporting in the data.

The second source of data is the school census collected annually. There are three rounds of these data available: One pre-intervention round or Annual School Census (ASC) 2014 (collection begins in November and results are available by March-April) and two years of post intervention data: ASC 2015 and 2016. The census is a comprehensive survey, also conducted by the MEAs, that has information on all school, student and teacher outcomes. I use information on process outcomes for SC members, such as, number of SC meetings per year and information on school facilities including water, toilet, electricity and sewage facilities, or a boundary wall around the school. I use these individual measures of school facilities to create a composite factor of facilities using factor analysis for binary variables, which has moderate

reliability (cronbachs alpha = 0.52).

The third source of data is the student-level Punjab Examination Commission annual board examination results for grades 5 and 8 for Math, Urdu, and English, which also function as my outcome variables. I have data for exams conducted in March 2015 (prior to the intervention) and in March 2016 (after the intervention). The composite test score created through factor analysis has high reliability (a = 0.79). Using a single measure of test scores (and facilities) also addresses the multiple hypothesis-testing problems. [8] Finally, I have access to call logs between calling agents and SC members, which provide information on the details of the interactions.

Table 1 presents descriptive statistics for all the measures used in my analysis for the full sample and for the SCMP and non-SCMP groups. Across all outcome measures, such as school council meetings, total expenditure, measures of facilities, teacher and student attendance, student enrollment, Math, Urdu and English test scores, schools in the treated group in both primary and middle schools have higher averages than schools in the control group at baseline. However, as I discuss later, the trends in these variables before the treatment are similar.

5 Methods

The program was conducted among a subset of schools from 21 of Punjabs 36 districts. All of the schools in the province are segregated by sex and the school-council members typically share the gender of the students in the school they serve. Only primary schools (i.e., grades 1 to 5) and middle schools (i.e., grades 6 to 8) were chosen for this program. School eligibility was also a function of school size. Specifically, within each district-by-level-by-gender cells, only the schools with median or higher enrollment were chosen to participate. However, there are several reasons that uptake of the treatment was sometimes inconsistent with this eligibility rule. In particular, accurate mobile phone numbers were available for most but not all of the SC members in eligible schools. Furthermore, to ensure that a fixed number of schools were called every month, the district governments were instructed to add schools to the sample that had SC members with valid phone numbers. Data from call logs of council members allowed me to determine a treated

[8] As I am investigating multiple outcomes, I correct for alphas to account for multiple outcomes.

sample, a binary indicator equal to one for schools that were ever reached during the duration of the program via calls. 12,928 schools were reached out as part of the program out of 26,947 primary and middle schools in the province as of 2013. [9]

I use a difference-in-differences (DiD) quasi-experimental approach to identifying the impact of the SCMP on school and student outcomes. The strategy leverages the existence of school-by-period panel data across districts with the intervention and knowledge of schools treated as part of SCMP. The impact estimate based on this DiD approach controls for time-invariant traits unique to each school and time-varying determinants shared by all schools. The estimated impact effectively compares the change observed among treated schools before and after the introduction of SCMP to the change observed among non-treated schools. The critical identifying assumption in this approach is that the change observed over time among the non-treated schools provides a valid counter-factual for the changes that would have been observed in the treated schools if the treatment had never occurred. Following these considerations, I estimate the following regression equation:

$$Y_{st} = \beta_0 + \beta_1 Treatment_s * Post_t + \lambda_t + \alpha_s + \epsilon_{st} \quad (1)$$

where Yst is an outcome for school s observed in period t and the difference-in-differences estimator β identifies the effects unique to being a treated school (Treatment = 1) in the post-treatment (Post =1) period (Angrist and Pischke; 2015), λ represents period fixed effects, s represents school fixed effects. The term, st, is a mean-zero error that accommodates school-level clustering (Liang and Zeger 1986; Bertrand et al. 2004).[10]

The outcomes of interest are school council meetings, school council expenditure, expenditure per available balance, hiring of contract teachers, school enrollment, school-level student and teacher attendance and the func-

[9] I carefully considered but rejected using this assignment rule in a regression-discontinuity design (RDD). The lack of a crisp first-stage jump around these thresholds weakened the credibility (and statistical power) of that design for this context. Appendix A1 shows the first stage estimations for the RDD design. The rate of compliance is very small, which makes assignment to treatment a weak instrument for treatment. However, I present results for the subsample of compliers in Appendix section 1.1 as well. The differences in the results between the DiD and RDD estimation strategies are not qualitatively different.

[10] Clustering at the school level solves any dependence problems in the data. The data being used are likely to be correlated within the school overtime.

tionality of school facilities.

I also estimate the impact of SCMP on student level outcomes such as, Math, English, Urdu and a composite test score in grade 5 and grade 8 (which would reflect possible enrollment effects and student learning). [11]

$$Y_{ist} = \beta_0 + \beta_1 Treatment_s * Post_t + \lambda_t + \alpha_s + \epsilon_{sit} \quad (2)$$

where β, identifies the effects unique to students in treated schools in the post-treatment period. For both school and student level estimations, I use the full sample, restrict the sample to schools of similar size (¡=100 students per school), to the sample of schools that complied with the eligibility rule and for a balanced panel, with schools that have data for all monitoring time periods.

To explore mechanisms in the outcomes of interest, I first estimate differential effects overtime. I collapse 12 months of post-intervention monitoring data into 2 post intervention time-periods. Post period 1 refers to months September 2015 to January 2016, when the call center is actively engaged with council members; Post period 2 refers to months February to December 2016, a few months after the end of the program. Similarly, I use two post intervention census data 2015 and 2016 and estimate the impact on outcomes in each of those two time periods separately. Specifically, I estimate the following equation:

$$Y_{ist} = \beta_0 + \beta_1 Treatment_s * Post_1 + \beta_2 Treatment_s * Post_2 + \lambda_t + \alpha_s + \epsilon_{sit} \quad (3)$$

where β_1 and β_2 measure the impact of treatment across the two time periods. Finally, I estimate heterogeneity of impact across school gender and type using equations (1) and (2) for boys and girls schools and primary and middle schools respectively.

5.1 Sensitivity Checks

DD rests on the assumption of parallel trends, the claim that in the absence of treatment, treatment and control group outcomes would move in parallel. I test this assumption in the analysis by exploring pre-intervention trends in my outcomes of interest. Figures 1 to 4 show trends prior to the intervention

[11] It is important to note that it is hard to gauge the precision of a DD estimate constructed from only two cross-sectional units and two periods

in expenditure and school-level characteristics that meet the parallel trends assumption. One possible way in which my inferences might be biased is if the treatment had effects on non-treated schools. This could occur, for example, if the introduction of the SCMP led already enrolled students in non-treated schools to enroll in a treated school. The geographic dispersion of these schools suggests that such spillover effects are unlikely. Another potential bias in the analysis comes from the fact that the school-by-month monitoring data, and school-by-year census and test score data, are somewhat unbalanced, reflecting the fact that some schools in the population failed to participate in the monitoring in one or more months, census and examination in one-or more years. I present results for schools in an unbalanced panel and for schools that were monitored in all time periods and I do not observe significant differences between the two. Moreover, Appendix A section 1.2 provides a detailed discussion on the missignness patterns of the schools.

6 Results

6.1 Main Effects

My first measures of interest are behavioral responses to the calls that provide information on the availability of money to council members, attempt to address their fear of audit by calling on behalf of the government, and encourage them to conduct school council meetings to discuss improvements needed in the school and spend money on those improvements. Table 2 presents the impact of SCMP on school council meetings and expenditure. I present results for four specifications: Column (1) presents results for the full sample, column (II) compares schools of similar size (enrollment ¡=100 students) by restricting the sample based on an RDD optimal bandwidth for each outcome, column (III) presents results for schools that complied with treatment assignment (i.e., received calls if they were above the enrollment threshold and vice versa), and column (IV) presents results for a balanced panel (i.e., schools that have monitoring, census and test scores data for all time periods). I find that council members in treated schools meet 2.4 percent more than council members in non-SCMP schools, spend 15 percent more money per pupil in treated schools and 40 percent more money in absolute terms compared to schools that do not receive the mobilizing calls. The impacts are statistically significant.

The money provided to council members can be used to improve school inputs. Specifically, members can hire temporary teachers on contract to meet teacher shortage, or spend money on improving enrollment and monitoring teacher and student attendance. [12] While I do not have actual receipts for where the money was spent, I can use administrative data for outcomes to see if council members hired additional teachers during the year and improved school infrastructural facilities, enrollment and teacher and student attendance. It is important to note that the increase of 40 percent or approximately PKR 12,000/USD 90 expenditure per year in absolute terms, is a non-trivial amount. Temporary teachers can be hired for as little as 15 USD a month and a drinking water facility, for example, can be installed in under 50 USD.

Table 3 presents results for these school outcomes. I find that on average a school has 1 contract teacher prior to the intervention (Table 1), and as a result of the program no additional contract teacher was hired. [13] There is a small and significant negative impact on a composite measure of facilities in treated schools. It goes down by one percent. [14] I also find that student enrollment goes down by 2.2 students, which is approximately a reduction of 1.3 percent from baseline enrollment. Teacher attendance also goes down by 0.7 percent from baseline teacher attendance of 88 percent on the day of monitoring. There are 0.4 percent less students present in schools with SCMP compared to control schools. While on their own, the reductions in outcomes seem small, the fact that all outcomes are adversely impacted simultaneously in treated schools, raises concern.

Finally, I estimate the impact of SCMP on student test scores. As seen from the descriptive statistics in Table 1, approximately 7 percent of the stu-

[12]Typically, members increase enrollment by making announcements at a local mosque that may require small donations. Teacher and student monitoring is also done unofficially.

[13]The unbalanced panel in Column (I) presents a statistically negative decline in the number of contract teachers. Treated schools approximately have 2.9 percent less contract teachers than non-SCMP schools relative to baseline. However, since schools only have an average of 1 contract teacher per school at baseline, this decline is fairly modest. Moreover, the results for the unbalanced panel are not robust to other specifications, which suggests that there is no impact of SCMP on contract teachers. Hence, I only discuss the non-significant results in the main text.

[14]The composite measure helps get around the multiple hypothesis-testing problem. In appendix A section 1.3, I also report the impact on individual measures of facilities and consistently find small and negative impact on whether or not the facilities are functional in schools.

dents in schools taking the examination are observed in my data. Therefore the school-level estimates for test scores are based only on the subsample of students who took the exam in treated and non-treated schools. I find that students in treated schools score 0.10, 0.08 and 0.09 standard deviations lower in Math, Urdu and English tests compared to students in schools where council members did not receive phone calls (Table 4). The decrease of 0.12 standard deviations in the composite measure of test scores is a non-trivial reduction in test scores, and the fact that the reduction per dollar spent on students is even higher, suggests that the program adversely impacted the performance of schools and students.

6.2 Mechanisms

The results of the impact of SCMP raise two substantive concerns Where was the money spent if we do not observe additional hiring of contract teachers or the likelihood of facilities to improve? And why were school outcomes such as student enrollment and attendance, teacher attendance, and student outcomes like students test scores negatively impacted? As discussed earlier, I do not have access to expenditure receipts to assess what the money was being spent on. Neither do I have access to initial criteria involving school-based inputs that was used to allocate money to schools to spend the money on. It is possible that money was spent on inputs not captured in the data, like uniforms for students or additional books for the school. It is also important to note that facilities are more or less functional in the school (i.e, approximately 95 percent of all facilities are reported functional in the data, as shown in Table 1) at baseline. So it is unlikely that the data is capturing marginal improvements, if any, on the facilities. Regardless, the negative impact on enrollment and attendance, albeit small, and a significantly large negative impact on test scores is of concern. Next, I explore possible mechanisms that may explain a negative impact of a relatively straightforward information dissemination intervention on adversely impacted outcomes in treated schools.

First I estimate if the reduction in test scores for students in treated schools are meaningfully attenuated by the corresponding reduction in student enrollment and teacher attendance and an increase in test takers. The reduction in student enrollment and teacher attendance is a mere 1.3 percent and 0.7 percent from baseline enrollment; however, 7 percent additional students are taking the test in treated schools. Back of the envelope calculations

suggest that if the new test takers added because of SCMP had test scores equal to 0, the composite test score would decline by 0.11sd compared to an actual reduction of 0.12sd), suggesting that the additional students taking the test, while of lower ability in terms of test scores, on average, only explain a reduction of 9 percent in test scores.

One potential explanation to reduced student test scores is the impact SCMP has on teacher behavior and effort they put into teaching. SCMP is informing and mobilizing school council members who are increasing their presence in the schools. As the results suggest, school council members meet 2.4 percent more per year in treated schools compared to non-treated schools. Teachers in Pakistan have a political clout because of their election related duties and hence, may see increased school council autonomy through funds and presence as a threat to their own autonomy and power within the school. They may reduce their contribution in the school as a result. While the data only suggests a modest reduction in attendance, I do not have direct measures of teacher effort like time on task, which may be reduced because of the program and explain the negative impact on test scores.

It is also possible, that there are dynamic effects of the program. That is, while the SCMP is actively engaging with council members, the teachers and members are working together within the school, but once the program ends, teachers revert to their previous behaviors or other sets of incentives are created that lead to a decline in student outcomes. Table 5 presents the results for the impact of the program across two time periods: September 2015-March 2016, when the SCMP is actively engaged with council members and immediately after the program ends, and April 2016 to December 2016, a few months post intervention. I find that treated schools spend more money per student and money as a percentage of available balance in the first time period compared to treated schools in the second time period. The reduction in enrollment and teacher attendance is of a smaller magnitude in the time period SCMP is actively engaged with council members, compared to a few months post intervention. These results suggest that outcomes may not be as adversely impacted in the time period when members were actively engaged and immediately after it (September 2015-March 2016), versus once the engagement has ended (April 2016-December 2016). These results and conversations with both calling agents and members suggest that agents are unable to build trust with council members for the duration of the intervention and therefore, unlikely to sustain the momentum once the program ends. The results also point towards the fact that teachers may not

see the SCMPs presence in school as a threat to their status within the school and cooperate in the active phase of the program. However, they resort to reducing effort in the school once the program subsides.

6.3 Heterogeneity of Impact

Next, I test for heterogeneity across school characteristics. Since schools are segregated by gender in the country, I estimate the differential impact of SCMP across gender, as shown in Table 6. About 59 percent of female schools have an all-female council, 39 percent of schools have a mixed council and 2 percent of schools have an all-male council. On the other hand, 90 percent of boys schools have an all-male council, with 9 percent of schools with a mixed council. In lieu of the cultural context, I would expect it is easier for men to meet and manage funds for the schools. I find that boys schools that received SCMP conducted 5.4 percent more meetings than non-treated schools, while SCMP and non-SCMP girls schools had no significant differences in the number of meetings. However there were no significant differences in expenditure. Both boys and girls schools experience reductions in enrollment, teacher and student attendance, however the magnitude of the decline is larger for boys schools. On the contrary, girls schools experience larger reductions in test scores than boys schools.

I conduct a similar analysis for differences across primary and middle schools. The schools are different across multiple dimensions, such as size, the authority that the teacher may exert on the councils and funds given to them. Teachers in middle schools are respected in the region because of their higher pay grade and their duties at the time of elections. They are likely to exert greater influence within the school. I find that middle schools in absolute terms spend twice as much as primary schools. However, as Table 7 suggests, middle schools fare much worse on other outcomes compared to primary schools in terms of enrollment decline. Moreover, average performance on test scores is also lower in magnitude in middle schools compared to primary schools. Middle schools are bigger, and while they have fewer administrative challenges compared to primary schools, the teachers may perceive greater autonomy for council members as a threat to their status in the school, and hence, reduce effort within the classroom.

7 Discussion and Conclusion

I evaluate a large-scale program implemented in 21 districts in Pakistan that informed and mobilized school councils, comprising of parents, community members and a head-teacher to strengthen local governance of schools. Approximately, 26000 middle and primary schools in the province received funds every quarter under the non-salary budget program for school improvement activities, including hiring of a temporary teacher or infrastructural development. Of these schools, approximately 13,000 received phone calls via a call center from the government with information to conduct council meetings and spend funds given to them (including information on the bank account, the process of spending the funds, the documentation required and potential inputs the money can be spent on). I found that absolute expenditure went up by 40 percent in schools that received the calls, since information was provided both on the what and how of expenditure, expenditure in absolute terms went up. I found that schools that received the calls also had more meetings on average than non-treated schools. However, increased expenditure, did not improve school outcomes or learning among students, rather had a negative impact on treated schools.

There are multiple explanations for why this might be. First, a large and growing body of empirical evidence has suggested a limited impact of improving school resources on student learning (Mbiti et al., 2019). If increased expenditure is like an improved resource within the school, teachers may act as agents in economic models, who reduce teaching effort with increased resources, hence having no or adverse impact on student learning (Glewwe, Kremer and Moulin, 2009). Unfortunately, I do not have measures of teacher effort within the classroom, such as time-on-task to test the hypothesis empirically in my analysis.

Secondly, there are political economy issues at play that impact large-scale interventions (Muralidharan and Neihuas, 2017). The government is galvanizing school councils into action, and that can be seen through increased expenditure of funds, directly managed by school councils. However, this also means that school councils are more involved in the school and serving a bottom-up monitoring purpose, which challenges the jurisdiction of teachers in schools. With complicated power dynamics, teachers may be averse to reforms like these and may actively oppose it. For example, Bold et al., (2013) conjecture that teachers unions actively opposed the contract teachers reform in Kenya when scaled up, hence adversely impacted student

outcomes. In this paper too, I see a greater reduction in outcomes in middle schools, where teachers have high influence within and outside the school.

In similar vein, Hanushek (2019) discusses macroeconomic institutions that influence how programs and policies impact outcomes for schools and students in developing country contexts. He argues that school-based decision-making may hurt student achievement in low-performing systems that lack basic standards and local capacity. Countries with high level of economic development and school systems with accountability through external exams, unlike Pakistan that does not participate in international tests, benefit from decentralized decision making that translates into higher student achievement.

Finally, and more introspectively, the ministries of education around the world in developing countries are embedded in an ecosystem that is closed. As Prichett (2013) argues in his book The Rebirth of Education, an organization, such as the ministry, is never under threat from a competitor, and performance is evaluated on sheer compliance. Hence, most reforms are mere cosmetic changes that are not necessarily focused on learning. This argument raises a more general question about the school council mobilization program in Pakistan, an innovation that may have been chosen and scaled up based on optics, rather than with the intention to improve student outcomes.

References

Andrabi, T., Das, J., Khwaja, A. I., Vishwanath, T., Zajonc, T. (2007). Learning and Educational Achievements in Punjab Schools (LEAPS): Insights to inform the education policy debate. World Bank, Washington, DC.

Angrist, J. D., Pischke, J.-S. (2014). Mastering'metrics: The path from cause to effect: Princeton University Press.

Aziz, M., Bloom, D. E., Humair, S., Jimenez, E., Rosenberg, L., Sathar, Z. (2014). Education system reform in Pakistan: why, when, and how?

Banerjee, A. V., Banerji, R., Duflo, E., Glennerster, R., Khemani, S. (2008). Pitfalls of participatory programs: Evidence from a randomized evaluation in education in India: The World Bank.

Bardhan, P. (2002). Decentralization of governance and development. Journal of Economic perspectives, 16(4), 185-205.

Bardhan, P., Mookherjee, D. (2006). Decentralisation and accountability in infrastructure delivery in developing countries. The Economic Journal, 116(508), 101-127.

Beasley, E., Huillery, E. (2017). Willing but unable? short-term experimental evidence on parent empowerment and school quality: The World Bank.

Bhatti, Z. K., Kusek, J. Z., Verheijen, T. (2014). Logged On: Smart Government Solutions from South Asia: The World Bank.

Blimpo, M. P., Evans, D. K., Lahire, N. (2011). School-based management and educational outcomes: Lessons from a randomized field experiment. Unpublished manuscript.

Bold, T., Molina, E., Safir, A. (2017). Clientelism in the Public Sector: Why Public Service Reforms May Not Succeed and What to Do About It: World Bank.

Callen, M., Gulzar, S., Hasanain, A., Khan, Y., Rezaee, A. (2015). Personalities and public sector performance: Evidence from a health experiment in Pakistan. Retrieved from CambridgeEducation. (2014). School Management Committees in Punjab. Retrieved from

Duflo, E., Dupas, P., Kremer, M. (2015). School governance, teacher incentives, and pupilteacher ratios: Experimental evidence from Kenyan primary schools. Journal of Public Economics, 123, 92-110.

Eisenhardt, K. M. (1989). Agency theory: An assessment and review. Academy of management review, 14(1), 57-74.

Fancy, H., Razzaq, J. (2017). Accountability in Education in Pakistan. Global Education Monitoring Report UNESCO.

Gertler, P., Patrinos, H. A., Rodrguez-Oreggia, E. (2012). Parental Empowerment in Mexico: Randomized Experiment of the" Apoyos a La Gestion Escolar (Age)" Program in Rural Primary Schools in Mexico. Society for Research on Educational Effectiveness.

ISAPS. (2010). School Councils in Punjab, Pakistan. Retrieved from

Leer, J. (2016). After the Big Bang: Estimating the effects of decentralization on educational outcomes in Indonesia through a difference-in-differences analysis. International Journal of Educational Development, 49, 80-90.

Mansuri, G., Rao, V. (2012). Localizing development: Does participation work? : The World Bank.

Masud, M. O. (2015). Calling the Public to Empower the State: Pakistans Citizen Feedback Monitoring Program, 20082014. Princeton Innovations for Successful Societies

McGinn, N., Welsh, T. (1999). Decentralization of education: why, when, what and how?

Murnane, R. J., Willett, J. B. (2010). Methods matter: Improving causal inference in educational and social science research: Oxford University Press.

Naviwala, N. (2016). Pakistan's Education Crisis: The Real Story. Woodrow Wilson International Center for Scholars.

Patrinos, H. A., Barrera-Osorio, F., Fasih, T. (2009). Decentralized decision-making in schools: The theory and evidence on school-based management: The World Bank.

Pradhan, M., Suryadarma, D., Beatty, A., Wong, M., Gaduh, A., Alisjahbana, A., Artha, R. P. (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.

Sheely, R. (2015). Mobilization, participatory planning institutions, and elite capture: Evidence from a field experiment in rural Kenya. World Development, 67, 251-266.

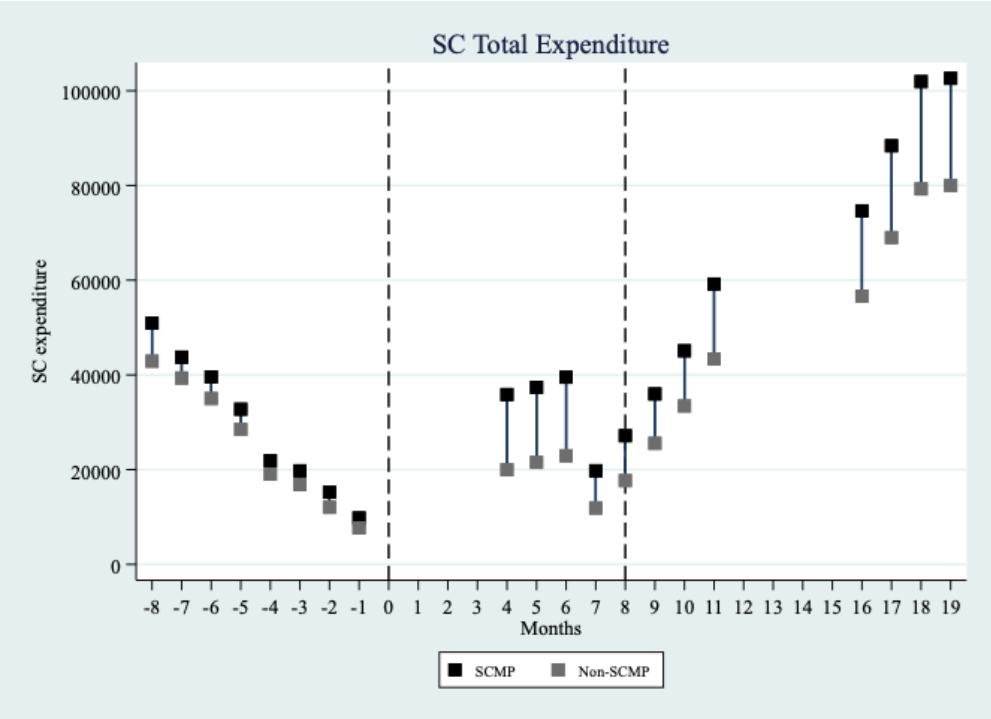
Stiglitz, J. E. (2002). Towards a new paradigm for development: strategies, policies and processes.

UNESCO. (2014). Teaching and Learning: Achieving quality for all. Education for All Global Monitoring Report.

UNESCO. (2016). What can TERCE tell us?

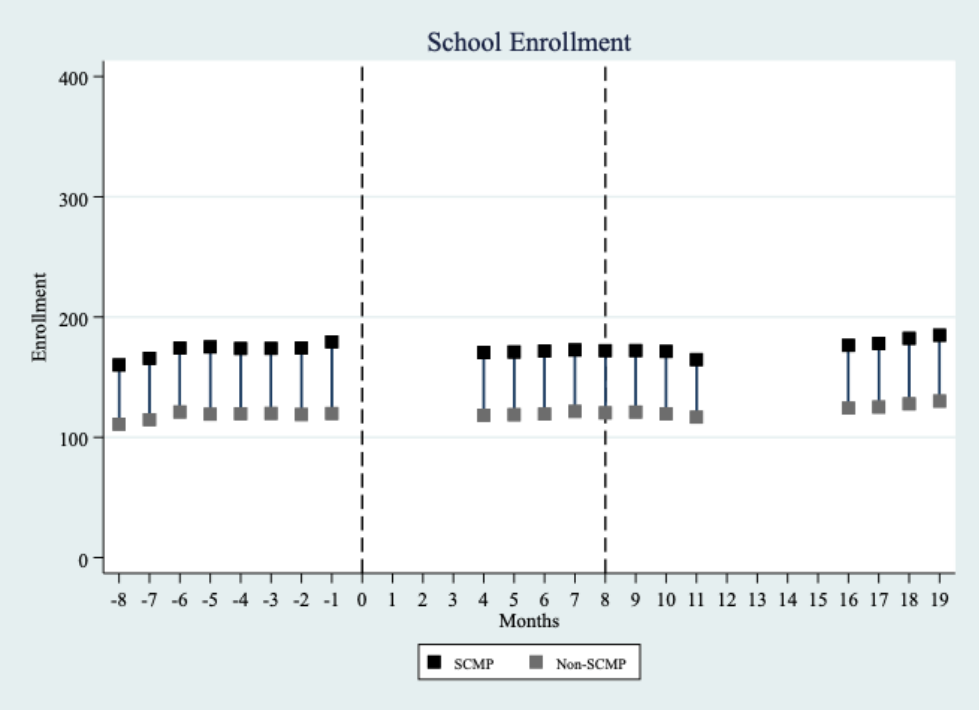
UNESCO. (2018). Global Education Monitoring Report.

Figure 1: Trends in School Council Expenditure



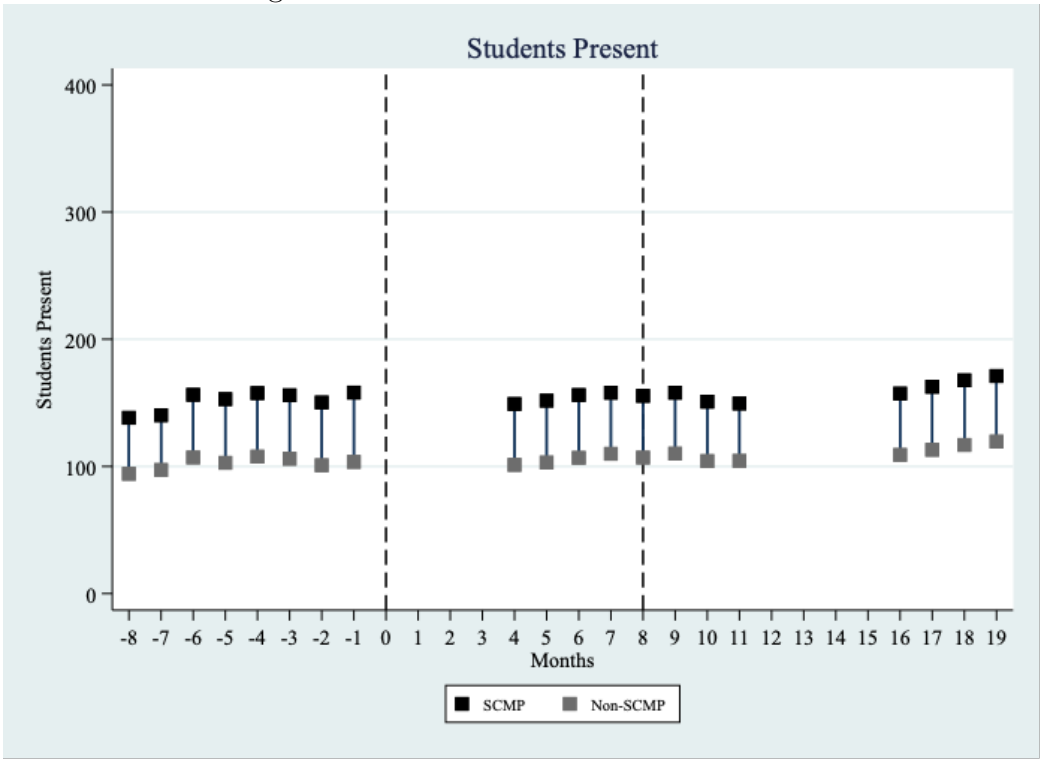
Notes: The dotted line at 0 represents the time period when school council members started receiving the phone calls. -1 to -8 represents pre-intervention months. 0 to 8 represents the duration of the intervention, out of which, data was only collected for 4 months. 8-16 are post intervention periods

Figure 2: Trends in School Enrollment



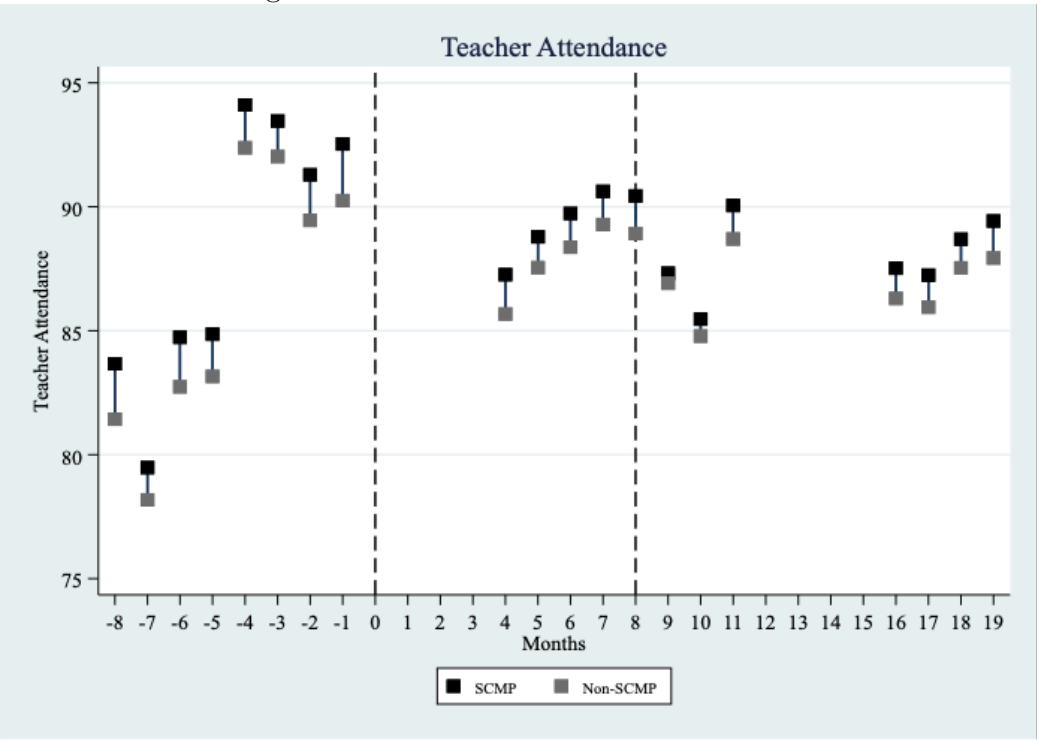
Notes: The dotted line at 0 represents the time period when school council members started receiving the phone calls. -1 to -8 represents pre-intervention months. 0 to 8 represents the duration of the intervention, out of which, data was only collected for 4 months. 8-16 are post intervention periods

Figure 3: Trends in Student Attendance



Notes: The dotted line at 0 represents the time period when school council members started receiving the phone calls. -1 to -8 represents pre-intervention months. 0 to 8 represents the duration of the intervention, out of which, data was only collected for 4 months. 8-16 are post intervention periods

Figure 4: Trends in Teacher Attendance



Notes: The dotted line at 0 represents the time period when school council members started receiving the phone calls. -1 to -8 represents pre-intervention months. 0 to 8 represents the duration of the intervention, out of which, data was only collected for 4 months. 8-16 are post intervention periods

Table 1: Descriptive Statistics

	Total Sample	SCMP	Non-SCMP
School Gender (Male)	0.48	0.52	0.45
	(0.50)	(0.50)	(0.50)
School Level (Primary)	0.82	0.81	0.82
	(0.39)	(0.39)	(0.38)
>50% Parents in Council	0.55	0.56	0.55
	(0.50)	(0.50)	(0.50)
All Male Council	0.43	0.47	0.39
	(0.50)	(0.50)	(0.49)
SC Meetings	8.51	8.79	8.23
	(3.44)	(3.43)	(3.43)
Total Expenditure	27449.42	29486.77	25400.37
	(52014.29)	(56778.71)	(46645.80)
Expenditure/Balance	32.98	33.46	32.54
	(30.75)	(30.85)	(30.65)
Expenditure/Pupil	252.53	219.63	285.83
	(616.92)	(528.02)	(693.84)
Expenditure (Spending >25% of funds)	0.66	0.67	0.66
	(0.47)	(0.47)	(0.48)
Expenditure (Spending >75% of funds)	0.31	0.33	0.30
	(0.46)	(0.47)	(0.46)
Contract Teachers	0.73	0.75	0.72
	(1.19)	(1.21)	(1.17)
Facilities Factor	1.07	1.08	1.06
	(0.17)	(0.15)	(0.18)
Teacher Attendance	87.05	87.96	86.12
	(20.99)	(19.42)	(22.44)
Student Enrollment	144.76	171.90	117.90
	(121.91)	(133.63)	(102.21)
Students Present	126.41	150.85	102.18
	(112.05)	(123.39)	(93.42)
Percent of Test Takers	7.60	7.52	7.72
	(3.07)	(2.92)	(3.27)
Math	-0.13	-0.11	-0.16
	(1.00)	(1.01)	(0.99)
Urdu	-0.02	-0.00	-0.06
	(0.99)	(0.98)	(0.99)
English	-0.09	-0.07	-0.12
	(1.03)	(1.03)	(1.02)
Test Scores Factor	-0.14	-0.11	-0.18
	(1.05)	(1.06)	(1.05)
N (Schools)	26,947	12, 928	14, 109

Table 2: Impact of SCMP on School Council Participation

	(I)	(II)	(III)	(IV)
SC Meetings	0.213***	0.045	0.408***	0.124**
	(0.047)	(0.059)	(0.059)	(0.047)
Expenditure/Balance	-0.107	-0.039	-1.490***	0.163
	(0.294)	(0.379)	(0.356)	(1.277)
Expenditure/Pupil	38.628***	15.849	75.508***	55.359***
	(6.361)	(8.779)	(8.127)	(11.891)
Total Expenditure	11732.893***	6901.357***	21233.629***	15897.460***
	(651.373)	(730.073)	(800.574)	(1359.346)
N	26,213	19,527	17,550	17,080

Note: standard errors in parenthesis (p<0.1, * p<0.05, ** p<0.01, ***p<0.001) Column (1) presents results for the full sample, column (II) restricts the schools to an optimal bandwidth of 50 to compare schools of similar size (enrollment ¡=100 students), column (III) presents results for schools that complied with treatment assignment (i.e., received calls if were above the enrollment threshold and vice versa), and column (IV) presents results for a balanced panel (i.e., schools that have monitoring data for all time periods

Table 3: Impact of SCMP on School Outcomes

	(I)	(II)	(III)	(IV)
Contract Teachers	-0.021*	-0.003	0.002	-0.003
	(0.010)	(0.011)	(0.013)	(0.016)
Facilities Factor	-0.011***	-0.011***	-0.021***	-0.011***
	(0.002)	(0.002)	(0.002)	(0.002)
Teacher Attendance	-0.596***	-0.637**	-0.373	-0.808**
	(0.163)	(0.220)	(0.206)	(0.297)
Student Enrollment	-2.252***	-0.990**	-5.344***	-1.854**
	(0.305)	(0.318)	(0.369)	(0.597)
Students Present	-0.696*	-0.144	-2.213***	-0.119
	(0.303)	(0.301)	(0.367)	(0.588)
N	26,213	19,527	17,550	17,080

Note: standard errors in parenthesis (p<0.1, * p<0.05, ** p<0.01, ***p<0.001) Column (1) presents results for the full sample, column (II) restricts the schools to an optimal bandwidth of 50 to compare schools of similar size (enrollment ¡=100 students), column (III) presents results for schools that complied with treatment assignment (i.e., received calls if were above the enrollment threshold and vice versa), and column (IV) presents results for a balanced panel (i.e., schools that have monitoring data for all time periods

Table 4: Impact of SCMP on Student Outcomes

	(I)	(II)	(III)	(IV)
Math	-0.105***	-0.081***	-0.124***	-0.103***
	(0.014)	(0.018)	(0.017)	(0.014)
Urdu	-0.081***	-0.075***	-0.104***	-0.080***
	(0.011)	(0.014)	(0.013)	(0.011)
English	-0.088***	-0.064***	-0.093***	-0.086***
	(0.014)	(0.019)	(0.018)	(0.014)
Composite Test Measure	-0.118***	-0.089***	-0.144***	-0.116***
	(0.014)	(0.018)	(0.017)	(0.014)
Percent of Test Takers	0.569***	0.766***	0.740***	0.551***
	(0.107)	(0.128)	(0.134)	(0.107)
N	25, 936	18,262	16,370	22, 498

Note: standard errors in parenthesis (p<0.1, * p<0.05, ** p<0.01, ***p<0.001) Column (1) presents results for the full sample, column (II) restricts the schools to an optimal bandwidth of 50 to compare schools of similar size (enrollment ¡=100 students), column (III) presents results for schools that complied with treatment assignment (i.e., received calls if were above the enrollment threshold and vice versa), and column (IV) presents results for a balanced panel (i.e., schools that have monitoring data for all time periods

Table 5: Dynamic DiD Estimates

		Post 1	Post 2	p-value
SC Participation	SC Meetings	0.210***	0.217***	0.913
		(0.052)	(0.060)	
	Expenditure/ Balance	1.463***	-0.896**	0.000
		(0.339)	(0.298)	
	Expenditure /Pupil	73.130***	12.600	0.000
		(6.977)	(6.851)	
	Total Expenditure	9585.240***	13351.009***	0.000
		(760.028)	(741.462)	
School Outcomes	Contract Teachers	-0.029**	-0.003	0.003
		(0.011)	(0.012)	
	Facilities Factor	-0.011***	-0.011***	0.821
		(0.002)	(0.002)	
	Teacher Attendance	-0.433*	-0.719***	0.076
		(0.181)	(0.182)	
	Student Enrollment	-1.710***	-2.660***	0.000
		(0.272)	(0.358)	
	Students Present	-0.047	-1.184***	0.000
		(0.278)	(0.355)	

Note: standard errors in parenthesis (p<0.1, * p<0.05, ** p<0.01, ***p<0.001). The panel is unbalanced

Table 6: Heterogeneous Impact of SCMP by School Gender/Sex

		Girls	Boys
SC Participation	SC Meetings	0.001	0.450***
		(0.067)	(0.067)
	Expenditure/ Balance	0.969*	-1.410**
		(0.399)	(0.436)
	Expenditure /Pupil	51.384***	14.683
		(8.283)	(9.613)
	Total Expenditure	11179.178***	11069.741***
		(904.573)	(937.542)
School Outcomes	Contract Teachers	-0.053***	-0.002
		(0.014)	(0.016)
	Facilities Factor	-0.003*	-0.026***
		(0.002)	(0.003)
	Teacher Attendance	-0.465*	-0.853***
		(0.228)	(0.231)
	Student Enrollment	-1.751***	-2.486***
		(0.426)	(0.444)
	Students Present	0.309	-1.410**
		(0.423)	(0.442)
Student Outcomes	Math	-0.122***	-0.088***
		(0.020)	(0.020)
	Urdu	-0.095***	-0.066***
		(0.014)	(0.016)
	English	-0.088***	-0.088***
		(0.020)	(0.021)
	Composite Test Measure	-0.132***	-0.105***
		(0.019)	(0.021)
	Percent of Test Takers	0.548***	0.477**
		(0.126)	(0.164)

Note: standard errors in parenthesis (p<0.1, * p<0.05, ** p<0.01, ***p<0.001). The panel is unbalanced

Table 7: Heterogeneous Impact of SCMP by School Level

		Primary	Middle
SC Participation	SC Meetings	0.229***	0.037
		(0.052)	(0.114)
	Expenditure/ Balance	-0.254	0.375
		(0.327)	(0.662)
	Expenditure /Pupil	38.520***	38.976***
		(7.509)	(9.843)
	Total Expenditure	9874.585***	19427.811***
		(610.727)	(2180.499)
School Outcomes	Contract Teachers	-0.053***	-0.002
		(0.014)	(0.016)
	Facilities Factor	-0.010***	-0.007**
		(0.002)	(0.002)
	Teacher Attendance	-0.608**	-0.553*
		(0.191)	(0.267)
	Student Enrollment	-1.941***	-3.546***
		(0.300)	(0.979)
	Students Present	-0.726*	-0.596
		(0.286)	(1.031)
Student Outcomes	Math	-0.047**	-0.137***
		(0.015)	(0.022)
	Urdu	-0.062***	-0.098***
		(0.013)	(0.016)
	English	-0.043**	-0.114***
		(0.017)	(0.022)
	Composite Test Measure	-0.062***	-0.154***
		(0.016)	(0.022)
	Percent of Test Takers	0.343***	0.572***
		(0.098)	(0.161)

Note: standard errors in parenthesis (p<0.1, * p<0.05, ** p<0.01, ***p<0.001). The panel is unbalanced

1 Appendix A

1.1 Regression Discontinuity Estimates

Treatment assignment was inconsistent with the eligibility rule. 35 percent of the schools that were below the threshold were contacted by SCMP and 35 percent of schools that were above the enrollment cut off that should have been contacted were not. Table 1 presents the first stage RD robust estimates from Calonico, Cattaneo and Farrell (2016). Using both equal bandwidths on both side of the enrollment threshold in column (I) and optimal bandwidths on either side in column (II), I estimate the rate the compliance. The first stage is under powered to estimate the impact of the large-scale intervention. The regression equation controls for baseline covariates: school gender, school level, pre-intervention expenditure, enrollment, teacher and student attendance, and student test scores. The results are robust to the use of covariates. Figure 1 presents the first stage graphical estimation with equal optimal bandwidths on their side of the threshold. The x-axis is the forcing variable centered at the median in each district-level-gender cell. The optimal bandwidth is approximately 20, which includes schools of similar size, however has little external validity. Using this first stage estimate to calculate the fuzzy RDD estimates for outcome measures will present with challenges associated with a weak instrument. In Table 2 I present both reduced form and fuzzy RDD estimates for outcome measures. The estimates for the RDD reduced form estimates are comparable to the DiD estimates for school outcomes.

1.2 Missing Data

I estimate an auxiliary DD regression in which missingness is the dependent variable, which indicates that SCMP treated schools were modestly but significantly less likely to be missing from the post-treatment school monitoring. That is, over this study period, treated schools were more likely to be monitored relative to schools that did not receive SCMP calls, by roughly 5 percent. Similarly, schools that received SCMP were 12 percent less likely to be missing from the census data than control schools. There is no problem of missingness in test scores data as shown in Table B1. The missingness poses internal validity threat if the monitors are responding to SCMP treatment, or if schools closed down, merged/consolidated into other schools or opened

up as a response to treatment.

1.3 School Facilities

Figure 4 in the Appendix estimates the DiD regressions for each measure of facilities separately. There is a significant, albeit very small negative impact of the program on each of the measures of facilities.

Figure 1: First Stage RDD Estimates

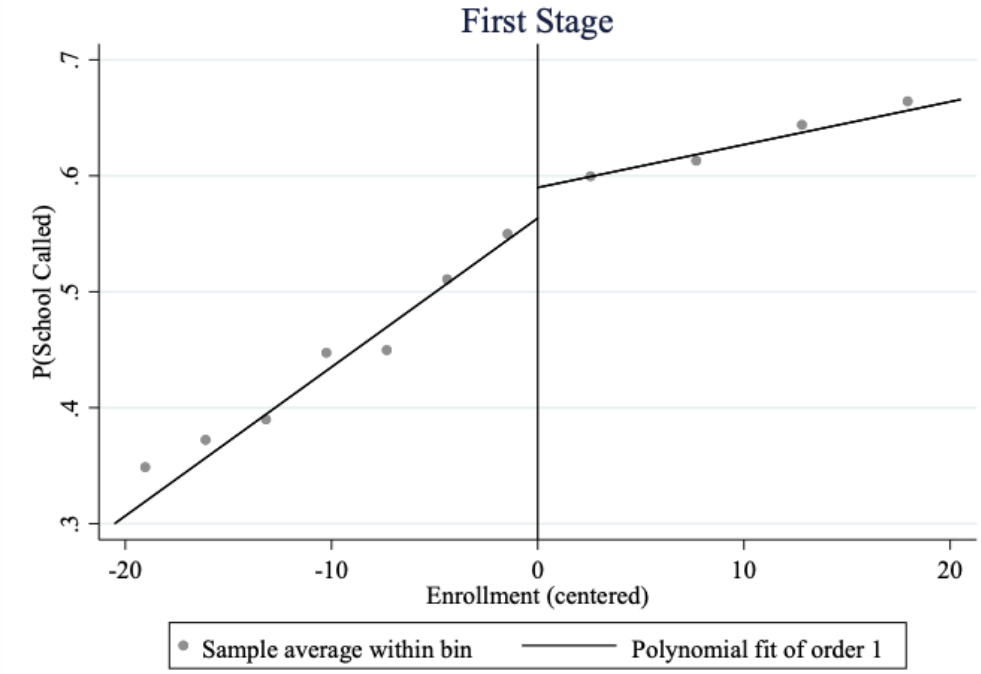


Table 1: First Stage RDD Estimates

	(I)	(II)
RD_Estimate	0.025	0.057**
	(0.025)	(0.020)
N	23,655	

Note: standard errors in parenthesis (p<0.1, * p<0.05, ** p<0.01, ***p<0.001) Column (I) is an estimation for equal bandwidths on both sides of the thresholds and Column (II) is an estimation for optimal bandwidth on either side of the threshold.

Table 2: Reduced Form and Fuzzy RDD Estimates

		Reduced Form	Fuzzy
SC Participation	SC Meetings	-0.292*	-2.557
		(0.139)	(2.430)
	Expenditure/ Balance	-0.260	-15.292
		(0.393)	(22.143)
	Expenditure /Pupil	-3.778	-691.872
		(9.270)	(770.760)
	Total Expenditure	-711.164	-46138.954
		(1187.496)	(61056.611)
School Outcomes	Contract Teachers	0.041	1.847
		(0.031)	(1.991)
	Facilities Factor	-0.001	0.066
		(0.004)	(0.071)
	Teacher Attendance	-0.623	-20.054
		(0.349)	(21.680)
	Student Enrollment	-2.068**	-58.780
		(0.655)	(44.666)
	Students Present	-1.968**	-59.981
		(0.646)	(52.282)
Student Outcomes	Math	-0.039	-0.419
		(0.025)	(0.442)
	Urdu	-0.037	-0.452
		(0.022)	(0.495)
	English	-0.031	-0.427
		(0.023)	(0.364)
	Composite Test Measure	-0.037	-0.416
		(0.025)	(0.542)
	Percent of Test Takers	0.027	4.393
		(0.263)	(4.946)

Note: standard errors in parenthesis (p<0.1, * p<0.05, ** p<0.01, ***p<0.001)

Table 3: Estimating Missingness in the Data Sources

	Monitoring Data	Census Data	Test Scores Data
Missingness	-0.056***	-0.120***	-0.000
	(0.003)	(0.003)	(0.000)
Observations	524262	77808	833424

Note: standard errors in parenthesis (p<0.1, * p<0.05, ** p<0.01, ***p<0.001)

Table 4: Impact of SCMP on School Facilities

	(I)	(II)	(III)	(IV)
Drinking Water	-0.005**	-0.004	-0.009**	-0.005**
	(0.002)	(0.002)	(0.003)	(0.002)
Electricity	-0.015***	-0.007	0.002	-0.015***
	(0.004)	(0.005)	(0.007)	(0.004)
Boundary Wall	-0.014***	-0.014***	-0.011*	-0.014***
	(0.003)	(0.004)	(0.005)	(0.003)
Main Gate	-0.013***	-0.012**	-0.009	-0.012***
	(0.003)	(0.004)	(0.005)	(0.003)
Sewerage	-0.011*	-0.008	-0.007	-0.012*
	(0.005)	(0.006)	(0.008)	(0.005)
Toilet	0.008***	0.005	0.002	-0.006***
	(0.002)	(0.003)	(0.003)	(0.002)

Note: standard errors in parenthesis (p<0.1, * p<0.05, ** p<0.01, ***p<0.001) Column (1) presents results for the full sample, column (II) restricts the schools to an optimal bandwidth of 50 to compare schools of similar size (enrollment ¡=100 students), column (III) presents results for schools that complied with treatment assignment (i.e., received calls if were above the enrollment threshold and vice versa), and column (IV) presents results for a balanced panel (i.e., schools that have monitoring data for all time periods