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PARTICIPATION IN A SCHOOL INCENTIVE PROGRAM IN KARNATAKA

Sharon Barnhardt
Harvard University

Dean Karlan
Princeton University

Stuti Khemani
The World Bank

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Abstract

Development education policy has recently focused on school-based recognition and conditional cash transfer programs to improve accountability and incentives of school employees and committees. The Learning Guarantee Programme in Karnataka, India, set a goal of improving achievement in government schools by providing direct cash incentives to schools that achieve at certain high levels. This study examines the differences between schools that self-selected into the incentive program and those that did not. We find no significant differences in resources and characteristics; however, we do find significant differences in test scores prior to selection into the program. These findings provide insight into how incentive-based programs that focus on levels (rather than changes) of achievement can exacerbate inequality in education. In addition, our findings reinforce the need for randomized evaluations of incentive programs, since the participation decision is correlated with likelihood to succeed and difficult to predict.

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1. INTRODUCTION

Traditionally, research on education in developing countries has focused on examining whether resources matter, and if so whether one should focus on the quantity or the quality of schooling (Hanushek 1995; Kremer 1995). More recently, policy has focused on strengthening accountability and incentives of service providers through recognizing and rewarding good performance (World Bank 2004). This is true both in developing countries and in the United States. The state of Karnataka in India provides a unique opportunity to study an incentive-based program in government primary schools—the Learning Guarantee Programme (LGP).

The LGP, a joint effort between a local non-governmental organization, the Azim Premji Foundation (APF), and the Government of Karnataka (GoK), has two primary components: a cash award directly to schools, conditional on performance in enrollment, attendance, and student test scores, plus a public information campaign intended to publicize the successful schools. Participation in the program is voluntary and the decision to join is made by school insiders, such as the teachers and a community-based school committee, the School Development and Monitoring Committee (SDMC), a parental body that is elected locally to monitor the school. Only 896 out of the total 9272 government primary schools in Northeast Karnataka signed up to participate in the first year of the program, while another 992 signed up to join in the second or third (final) year (Azim Premji Foundation 2004).

This paper presents evidence on the differences between schools that never expressed interest in the LGP and those that joined or at least expressed interest. We find that these two groups of schools are remarkably similar on pre-program measures of location characteristics as well as school inputs recorded in the first few months of the 3-year program. But when students in sample schools are tested on state prescribed competencies in language and mathematics, those in schools that expressed interest in the LGP program outperformed those that did not by over 18 percentage points. This follows intuitively from that fact that the reward is based on the level, not the change, in achievement. Figure 1 demonstrates this primary

finding of the paper by showing the distribution of test scores broken down by whether or not they sought materials to apply for the incentive program. This selection effect may result in the entrenchment of pre-existing inequalities if better-off schools participate in the program, garner financial rewards, and invest them in the schools. Furthermore, the lack of *other* (besides test scores, which are not always available) observable differences across schools supports the need for randomized evaluations of such interventions, rather than retrospective studies or evaluations using matching techniques.

2. BACKGROUND

Recent studies in developing countries have examined the effectiveness of different education initiatives, both the inputs-oriented initiatives (e.g., adding teachers to the classroom, providing wallcharts, textbooks or in-school health initiatives such as de-worming) and those that are incentive-oriented (e.g., providing rewards to families, teachers or schools for excellent performance).

Input-based resource interventions that are well designed have shown success. Remedial teaching assistants, selected by an NGO, and provided to schools in Mumbai and Vadodara raise test scores by 0.15 standard deviations in the first year of the program and 0.25 standard deviations in the second year (Banerjee, Cole, Duflo and Linden 2004). De-worming services offered in schools in Kenya improved health and school participation not only in program schools but also in neighboring schools because of reduced disease transmission (Miguel and Kremer 2004). In contrast to these relatively new inputs of remedial teaching and school-based health programs, traditional inputs such as textbooks and flip-charts, that showed significant impact in retrospective analysis, have been shown to have no measurable impact when prospective techniques of randomized experiments are used to evaluate impact (Glewwe, Kremer, Moulin and Zitzewitz 2004). The conditions under which school inputs improve test scores have been analyzed by Das et al (2004) who argue that considerations of market failures in the provision of inputs are likely to be critical. Given the importance of program conditions for the success of inputs-based initiatives, policy attention has recently shifted to incentive-based initiatives ranging

from decentralization, to performance-based pay for teachers, to conditional awards to schools, to vouchers and school choice.

Teacher incentives have been highlighted by surveys that show large-scale teacher absenteeism in developing countries, which is associated with lower student attendance and test scores. Teacher absence in Karnataka is estimated at 21.7% (Chaudhury and Hammer 2005, forthcoming). A program in Kenya, which sought to improve teacher incentives by rewarding teachers conditional upon student test scores was associated with higher test scores in the short run, but found no long-term gains in learning achievement, no increases in teacher attendance, and no changes in teaching methods. Instead, teachers conducted test preparation sessions and administered more tests (Glewwe, Ilias and Kremer 2002). Increasing school autonomy and promoting community participation in school management have been suggested as promising initiatives that improve child attendance and learning by making schools more responsive to their beneficiaries (Jimenez and Sawada 1999; King and Ozler 2000).

The impact of learning-based rewards program appears to depend critically on the nature of participation in the program. A program in Israel that provided incentives to achieve at high *levels* (not changes) improved performance, but only for those who were close to the margin for the incentive (Angrist and Lavy 2004). However, another program which offered scholarships to the families of girls who achieved within the highest quartile of their district showed improvement of both girls and boys, relative to a randomly selected control group (Kremer, Miguel and Thornton 2004).

The LGP program, designed by a team of education experts from APF, the Government of Karnataka, and outside academics, reflects many of the ideas of performance-based awards and community participation in improving incentives and accountability of service providers. The creators of the program aspired to certify some schools as those that could guarantee learning, and reward them for their performance, thereby changing parents' information base and motivating them to interact with the school, creating demands on teachers for higher quality education.

The program is being implemented in eight of the most disadvantaged districts of the state of Karnataka, where learning achievements are lagging the rest of the state. There was a hope that the program would create accountability in the schools of this less developed region and perhaps eventually become a “nationally relevant alternative paradigm of education” (Azim Premji Foundation 2002).

At the start of the year 2003, the Azim Premji Foundation solicited “prospectuses” (written information from each school on its relevant statistics) to join the LGP from all 9272 government primary schools in the eight underdeveloped districts in the northeast of Karnataka. The solicitation process was extensive, involving personal visits by APF workers to each school and SDMC, and obtaining signatures of the head teacher and an SDMC member on receipt of the information package. Ensuring that all schools and their committees were aware of the program was an important issue for APF and the Government, and a wide advertising campaign was used to inform block level administrators and teachers of the new program. The program was to have three cycles over three years and schools were allowed to choose which year would be their first for evaluation for the award. Nearly 1900 schools sent back a completed prospectus, and in June 2003 APF confirmed that 896 schools that submitted a completed LGP form and wanted to be evaluated the first year would be evaluated between July and September 2003. The Foundation hired and trained 37 area coordinators and 584 evaluators to take on the task of testing students and checking records in all of the schools (Azim Premji Foundation 2004).

During September and October 2003 we undertook a survey of 65 schools randomly selected from the list of schools that never expressed any interest in the program, 13 schools that expressed interest (by asking for the prospectus but not completing it and sending it back to APF), and 51 schools that sent back their prospectus and joined the program in its first year. Expressing interest without joining is interpreted as an indication of school decision makers wanting to see more information about the program because they thought they could win an award, but then not following through with the paperwork to join. All of these schools are located in Bellary, one of

the eight program districts. Detailed data on school resources and parental participation in the school were collected through structured interviews of teachers and local school committee members and through direct observation of school functioning by the interviewing teams. The surveys captured information such as school inputs acquired by source for the previous year; available facilities as of the survey date; official enrollment and attendance statistics; teacher education, experience, and reported job satisfaction; and school committee membership and activities. Data on village or town census area characteristics, such as literacy, social composition, and availability of public services, from the 2001 Census of India provide information on “neighborhood” characteristics prior to the program’s launch.

Additionally, students in the 3rd and 5th standards were tested between July and October, 2003 for basic competencies in math and their language of instruction using a test developed by a pedagogical team including APF staff and outside experts. This was 8 to 10 months *after* the program announcement was made and 5 to 7 months after schools signed up for the incentive. Finally, District authorities provided grades for the “Seventh Standard Leaving Exam” from March 2002 (before the LGP was announced) for the 61 “upper” primary schools in the sample, which extend up to the seventh standard. These 7th standard test scores were from *before* the announcement of the LGP incentives.

We are therefore able to use this database to analyze participation in the program. How do schools that chose to participate in the LGP differ from schools that showed no interest, and what can we learn from this about potential program impact?

3. EVIDENCE ON SELECTION

The evidence presented in this section has been analyzed using two techniques. The first compares mean values of school and village characteristics for schools that expressed no interest versus those that expressed interest or joined the program. Means are also presented for the 51 schools that “Joined” for comparative purposes. The second method estimates the probability of a school joining or at least expressing interest in the LGP using multivariate regression and probit models.

Independent variables used in both frameworks include many factors whose relationship to improved educational outcomes has been tested in India or in a developing economy context, such as teacher-student ratios, free uniforms and textbooks, social characteristics of the students, the main economic activities in the locality, and the availability of other public services in the village area.

As Table 1 shows, sample means between “Not interested” and “Interested/ Joined” schools near the start of the program are remarkably similar along community and social characteristics and in the overall availability of resources. Specifically, schools are indistinguishable statistically along the following measures: availability of blackboards, running water, electricity, roofs that do not leak, lights, fans and health facilities in villages, teachers’ salaries, experience, job satisfaction, on-the-job training, interaction with the Block Resource Center and Cluster Resource Center, desks, chairs, notebooks or textbooks received per student, percent of school’s teachers with an education above secondary school, student-teacher ratio, percent of population that is Scheduled Caste, Scheduled Tribe, not working, or marginal worker, the number of primary schools in the village, and the presence of public services such as an adult literacy center or market facilities.

The only statistically significant differences are (1) in school location, with rural schools interested in the program being in villages that are closer to towns (17.87 km for Interested/Joined schools and 20.74 km for Not Interested schools), and that have Post and Telegraph Facilities (87% for Interested/Joined schools and 67% for Not Interested schools), (2) in student attendance, measured by a single surprise visit (77% at Interested/Joined schools and 69% at Not Interested schools), and (3) in community participation, measured by whether the SDMC discussed teacher attendance at the staff meetings (64% for Interested/Joined schools, and 39% for Not Interested schools).

There are no district or state-wide standardized tests for lower primary students. However, when all 3rd and 5th standard students in lower and upper primary schools were tested for an LGP evaluation or for purposes of this study, the average student

test score combining math and language tests is 58% for Interested/Joined schools and only 40% for Not Interested schools. The difference between these scores is significant using a 99% confidence level. Note, however, that these tests were administered *after* the program began, not before. So this difference could be driven by selection (only the best schools sign up) or by the impact of the program (schools improved their performance in order to win the award).

In order to determine whether the difference in test scores comes from selection rather than just potential impact, we examine test scores on a portion of the schools from prior to the LGP launch. Unfortunately, since no standardized tests are taken for 3rd or 5th standard students, we have no test scores on the exact standards included in the LGP incentive system. However, we can look at the 61 schools in our sample that are upper primary schools because the Seventh Standard Leaving Exam from March 2002 was administered before the LGP launch.

For these 61 schools, the average “total marks”¹ of the Seventh Standard Leaving Exam from March 2002 is 25.7 points higher for Interested/Joined schools than for the Not Interested schools. Figure 1 demonstrates the results graphically, showing a kernel density estimate of the distribution of test scores for both sets of schools. This difference in test scores corresponding to expressing interest in the program is equivalent to 0.22 standard deviations and is significant at the 90% level. The difference in the average first language scores taken alone is 6 points higher for the Interested/Joined schools, a significant difference at the 95% level. Math scores are 4 points higher as well, but this difference is not statistically significant.

Thus, from a simple comparison of means we find an interesting pattern—schools interested in participating in the program are better performing schools, as measured by student test scores, but do not differ systematically in easily observable school inputs.

¹ Total Marks is comprised of six individual exam marks: three languages, math, science, and social studies.

Multivariate regression analysis reported in Table 3 Column 1 also shows that school resources are not significantly associated with the probability of being interested in or joining the LGP. The only statistically significant correlation with interest in the LGP is that teacher attendance was discussed in a joint meeting of the teachers and the SDMC. Column 2 shows that where LGP test scores are included and inputs variable that could affect test scores in the short term are excluded, the only variable related to the probability of being in the Interested/Joined group is the LGP test score at a 99% confidence level. For each percentage point increase in average test scores, the probability of participating in the LGP also increases by nearly one percentage point.

Table 3 also presents the same analysis using a probit specification, finding approximately the same results and an even larger relationship between test scores and interest in the program. For comparison, the analysis using Joined versus Did Not Join (including those 13 schools who only expressed interest in the Did Not Join group) is repeated and presented in Table 4. The minor differences resulting from this approach are that three variables are statistically significant for estimating the probability of Joined: percentage of teachers in the school who are originally from the school's village/town, percent of women in the census area who are literate, and a village's distance from the nearest town.

4. DISCUSSION

The significant relationship between interest in the LGP and higher test scores can be interpreted alternatively as program impact or self-selection of better performing schools into the program. For three reasons, we conclude that the difference in test scores is due to the self-selection of better performing schools, not impact of the program. First, although the LGP tests were administered after the enrollment of schools in the program, the schools only had a few to effect changes in their school before the tests were administered.

This short time period makes the difference highly unlikely to be from impact. If test scores in Joined schools were the same as test scores in Did Not Join schools

before the announcement of the program, then participants would have had to increase their scores by 55 percent of the average (0.89 standard deviations) in the 4-6 months of teaching-time available outside of school exams and holidays. Compared to the randomized evaluation of the Balsakhi program in Mumbai and Vadodara, which found at most a 0.25 standard deviation increase in test scores *when a teaching assistant was provided*, this seems unlikely. The highest gain from pre to post-test in the first year of the Balsakhi program was a 15.8 percentage point or 46 percent increase (from 34% to 49.8%) in verbal scores for fourth standard students in Vadodara (Banerjee, Cole, Duflo and Linden 2004). A program impact interpretation for the LGP case would mean that Joined schools increased test scores by 22 percentage points or 55 percent in less than six months, given no additional inputs of any kind, but rather simply in response to a change in incentives. If the self-selection interpretation were wrong, this finding would suggest that there is enormous untapped potential in Bellary's primary schools to improve performance without significant increases in physical inputs.

Second, the 7th standard exams, taken *before* the launch of the LGP incentives, provide the cleanest evidence that the schools differ on selection. Assuming schools that perform better on 7th standard also perform better for 3rd and 5th standards, this shows that schools that expressed interest in the LGP incentives were higher achieving schools beforehand.

Lastly, as a part of our survey, teachers in program schools were asked what changes they expected as a result of the LGP. They consistently answered this open-ended question in broad terms of improved attendance, learning levels, overall improvements, or better teaching. Of the 183 teachers asked what changes they anticipated in their school, none answered in a manner that indicates the schools had "plans" by which they were attempting to improve student attendance or performance in response to increase their chances of earning the LPG award.

We do find differences between program and non-program schools in student attendance and community participation specifically directed to the issue of teacher

attendance. We are unable to distinguish whether these are part of the self-selection of the better schools into the program, or due to program impact. Yet, in either case the evidence here highlights the importance of non-tangible and difficult to observe processes at the community-level that shape the incentives of both providers and beneficiaries. Given the significance of village location that comes up in some of our analysis, one interpretation might be that better located schools are able to attract better teachers, and serve communities that care more about education. The interesting point here is that the suspected advantages of well performing schools do not derive obviously from easy-to-measure school-level inputs such as textbooks and desks and chairs, but rather from largely unobservable phenomena of teacher and student commitment.

There is an important methodological implication brought out by this study. Adding to the finding of omitted variables bias in retrospective versus prospective data to measure the effectiveness of flip charts in primary schools in Kenya (Glewwe, Kremer, Moulin and Zitzewitz 2004), a proper evaluation of the impact of this kind of levels-based incentive program must also consider the selection bias of those who voluntarily join. Here we find that observable information cannot predict the decision to join, yet the Interested/Joined and Not Interested schools differ significantly on test results. This suggests that non-program characteristics that account for some schools being better than others cannot be easily measured using standard survey instruments and are therefore likely to be neither appropriately “controlled for” nor “matched upon” to evaluate program impact. A matching exercise, for instance, would fail to control properly for omitted variable bias and a randomized control trial might be the only reliable methodology to measure program impact.

On a policy level, these findings suggest that the specific design of the rewards program has important distributional implications. The LGP conditions the cash reward to a school on its absolute level of student enrolment, attendance, and achievement, irrespective of prior performance. This may lead to better schools participating in the program, with the poorer performers opting out, and hence could exacerbate inequality across schools.

5. CONCLUSION

Programs such as the LGP, which aim to improve outcomes by creating direct incentives to schools, are becoming popular around the world. We find that schools that participate in a *level-target* (not *improvement-target*) incentive-based program have better test scores and student attendance than non-participating schools, but are otherwise impossible to distinguish (i.e., observable school inputs are the same, but outcomes differ in important ways). The self-selection into such programs is important. Rewarding for improvements rather than for reaching fixed levels may address some of this problem, but it also raises problems. Schools that start out at different levels, that have to exert different effort levels in order to improve, will respond differently to the same incentive structure. Much care needs to be taken in the design of these programs in order to avoid undesirable distributional outcomes whereby school quality is made more unequal, and the worst performing schools are actually targeted *out*, not *in*, of the program.

Figure 1: Kernel Density, Pre-LGP 7th Standard Exam Results

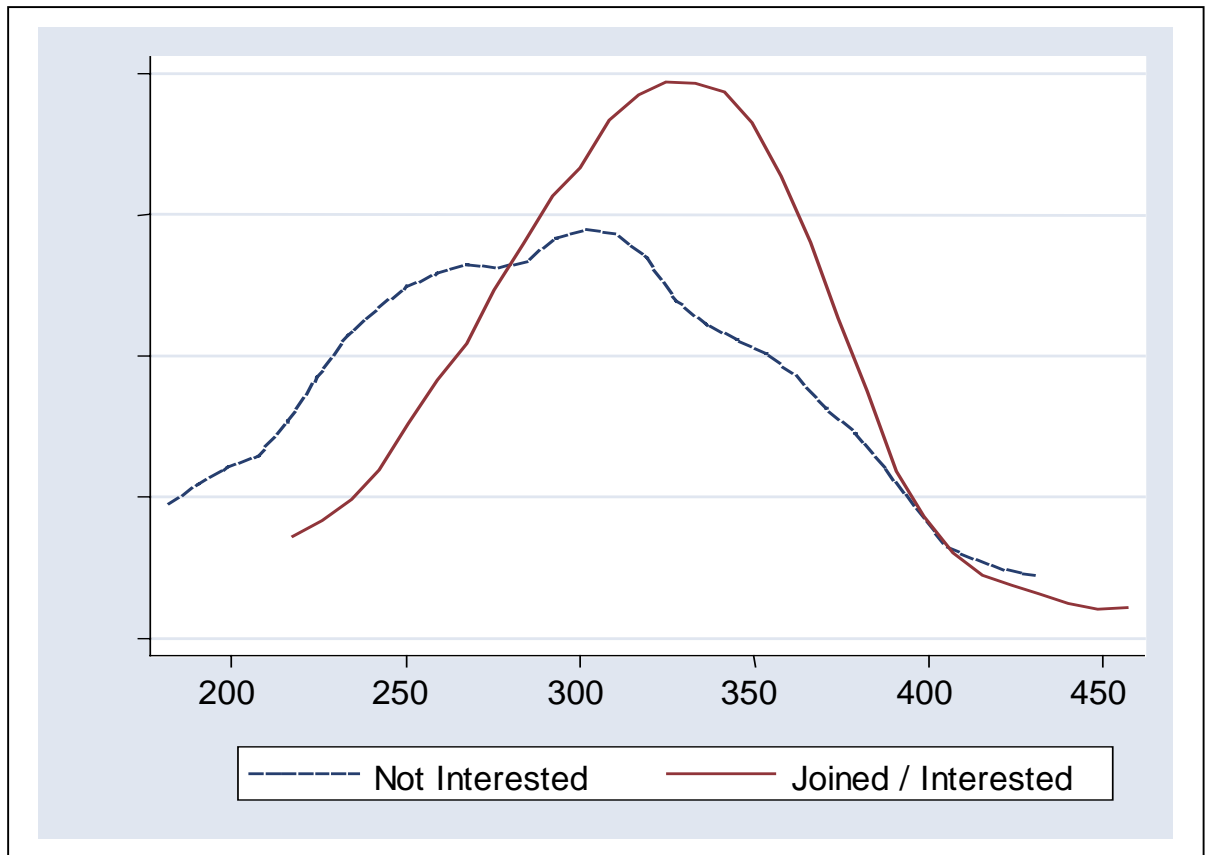


TABLE 1: Comparison of Mean School Characteristics by School Response to Program

“Not Interested” versus “Interested or Joined”

		Not Interested			Interested/ Joined			Interested/ Joined – Not interested
		N	Mean	Standard Deviation	N	Mean	Standard Deviation	Difference in Means
School Resources	Desks Received Per Student	51	0.02	0.01	77	0.03	0.03	0.01
	Chairs Received Per Student	51	0.07	0.05	77	0.07	0.07	0.01
	Notebooks Received Per Student	51	0.33	0.33	77	0.34	0.27	0.01
	Textbooks Received Per Student	51	3.41	1.06	77	3.06	1.36	-0.35
	Cash Received Per Student (Rs.)	51	67.34	112.39	77	138.71	305.18	71.37
	% Schools that Have Electricity	51	0.33	0.48	78	0.35	0.48	0.01
	% Schools that Have Running Water	51	0.49	0.50	78	0.62	0.49	0.13
	Students per toilet	51	55.10	90.34	78	60.58	97.51	5.48
Community Participatio	SDMC contribution per student (Rs.)	51	15.64	42.70	77	26.88	65.14	11.24
	Last Gram Sabha discussed school (%)	51	0.43	0.50	78	0.50	0.50	0.07
	SDMC discussed teacher attendance at	51	0.39	0.49	78	0.64	0.48	0.25
Teachers	%Teachers with education beyond SSC	51	0.80	0.28	78	0.79	0.30	-0.01
	%Teachers originally from this location	51	0.11	0.21	78	0.17	0.28	0.06
	Student: Teacher Ratio	51	42.69	16.84	78	43.07	20.51	0.38
Village/ Town	% Literate Females	50	0.44	0.16	78	0.44	0.14	-0.01
	% Scheduled Caste population	51	0.25	0.27	77	0.27	0.29	0.02
	% Scheduled Tribe population	51	0.23	0.25	77	0.20	0.22	-0.03
	% Not working	51	0.62	0.13	78	0.62	0.10	0.00
	% Marginal Workers	51	0.10	0.09	78	0.09	0.09	-0.01
Village	% With Adult Literacy Center	43	0.19	0.39	67	0.25	0.44	0.07
	% With Market Facility	43	0.23	0.43	67	0.21	0.41	-0.02
	% With Post & Telegraph Facility	43	0.67	0.47	67	0.87	0.34	0.19
	Distance to Nearest Town (km)	43	20.74	9.04	67	17.87	8.76	-2.88
	Number of Primary Schools	43	2.98	3.40	67	3.75	4.40	0.77
	Number of Middle Schools	43	1.02	1.39	67	1.21	1.46	0.19
Location Outcomes	Urban	51	0.16	0.37	78	0.14	0.35	-0.02
	% Of school rooms in good condition	51	0.90	0.16	78	0.84	0.21	-0.06
	% Of school rooms with educational	51	0.65	0.26	78	0.67	0.27	0.02
	School records % students attend > 20	51	0.87	0.10	77	0.90	0.09	0.03
	School records % students attend 11-19	51	0.05	0.06	77	0.02	0.05	-0.03
	School records % students attend 1-10	51	0.04	0.05	77	0.04	0.05	0.00
	School records % students attend 0	51	0.04	0.06	77	0.04	0.06	0.00
	Student attendance - surprise visit	51	0.69	0.16	77	0.77	0.16	0.08
	Average LGP Language Test %	48	0.45	0.25	77	0.59	0.24	0.14
	Average LGP Math Test %	48	0.35	0.23	77	0.57	0.24	0.23
	Total average of LGP Test %	48	0.40	0.23	77	0.58	0.23	0.18
	Average 7th Standard Leaving Exam	21	51.20	11.87	40	57.43	9.17	6.22
Average 7th Standard Leaving Exam	21	47.19	13.70	40	51.13	10.81	3.94	
Average 7th Standard Leaving Exam	21	293.70	63.48	40	319.36	49.86	25.66	

* Difference in means is significant at 90% confidence level ** Significant at 95% confidence level ***Significant at 99% confidence level

TABLE 2: Comparison of Mean School Characteristics by School Response to Program “Not Interested” versus “Joined”

		Not Interested			Joined			Joined – Not interested	
		N	Mean	Standard Deviation	N	Mean	Standard Deviation	Difference in Means	
School Resources	Desks Received Per Student	51	0.02	0.01	64	0.03	0.03	0.01	
	Chairs Received Per Student	51	0.07	0.05	64	0.07	0.07	0.01	
	Notebooks Received Per Student	51	0.33	0.33	64	0.35	0.27	0.02	
	Textbooks Received Per Student	51	3.41	1.06	64	3.07	1.29	-0.34	
	Cash Received Per Student (Rs.)	51	67.34	112.39	64	140.49	322.25	73.15	
	% Schools that Have Electricity	51	0.33	0.48	65	0.32	0.47	-0.01	
	% Schools that Have Running Students per toilet	51	0.49	0.50	65	0.60	0.49	0.11	
Community Participatio	SDMC contribution per student	51	15.64	42.70	64	29.05	70.32	13.41	
	Last Gram Sabha discussed school	51	0.43	0.50	65	0.52	0.50	0.09	
	SDMC discussed teacher	51	0.39	0.49	65	0.66	0.48	0.27	***
Teachers	%Teachers with education beyond	51	0.80	0.28	65	0.77	0.32	-0.03	
	%Teachers originally from this	51	0.11	0.21	65	0.20	0.30	0.08	*
	Student: Teacher Ratio	51	42.69	16.84	65	44.02	21.57	1.34	
Village/ Town	% Literate Females	50	0.44	0.16	65	0.43	0.15	-0.01	
	% Scheduled Caste population	51	0.25	0.27	64	0.26	0.28	0.02	
	% Scheduled Tribe population	51	0.23	0.25	64	0.22	0.23	-0.01	
	% Not working	51	0.62	0.13	65	0.62	0.10	0.01	
	% Marginal Workers	51	0.10	0.09	65	0.08	0.08	-0.02	
Village	% With Adult Literacy Center	43	0.19	0.39	55	0.22	0.42	0.03	
	% With Market Facility	43	0.23	0.43	55	0.22	0.42	-0.01	
	% With Post & Telegraph Facility	43	0.67	0.47	55	0.87	0.34	0.20	**
	Distance to Nearest Town (km)	43	20.74	9.04	55	16.89	8.81	-3.85	**
	Number of Primary Schools	43	2.98	3.40	55	3.84	4.78	0.86	
Location	Number of Middle Schools	43	1.02	1.39	55	1.22	1.55	0.19	
	Urban	51	0.16	0.37	65	0.15	0.36	-0.00	
Outcomes	% Of school rooms in good	51	0.90	0.16	65	0.84	0.22	-0.06	
	% Of school rooms with	51	0.65	0.26	65	0.66	0.27	0.01	
	School records % students attend	51	0.87	0.10	64	0.90	0.10	0.03	
	School records % students attend	51	0.05	0.06	64	0.02	0.06	-0.03	***
	School records % students attend	51	0.04	0.05	64	0.04	0.05	0.00	
	School records % students attend	51	0.04	0.06	64	0.04	0.06	0.00	
	Student attendance - surprise visit	51	0.69	0.16	64	0.77	0.17	0.08	***
	Average LGP Language Test %	48	0.45	0.25	64	0.62	0.23	0.17	***
	Average LGP Math Test %	48	0.35	0.23	64	0.61	0.22	0.26	***
	Total average of LGP Test %	48	0.40	0.23	64	0.62	0.22	0.22	***
	Average 7th Standard Leaving	21	51.20	11.87	31	57.08	9.95	5.87	*
	Average 7th Standard Leaving	21	47.19	13.70	31	51.06	11.66	3.88	
	Average 7th Standard Leaving	21	293.70	63.48	31	316.13	54.81	22.43	

* Difference in means is significant at 90% confidence level ** Significant at 95% confidence level ***Significant at 99% confidence level. Taluk level fixed effects included in all specifications.

TABLE 3: Probability of “Expressing Interest or Joining”

Standard errors in parentheses	Linear Probability Model		Probit, Marginal Effects	
	Resources/ Characteristics	Stable Resources/ Characteristics & Test Scores	Resources/ Characteristics	Stable Resources/ Characteristics & Test Scores
Text received per student	-0.06 (0.038)		-0.081 (0.044)	
Cash received per student	0.000 (0.000)		0.000 (0.000)	
Value of SDMC contributions per student	0.001 (0.001)		0.000 (0.001)	
Gram Sabha discussed school in last	0.080 (0.096)		0.072 (0.109)	
Teacher attendance discussed in last SDMC	-0.250 (0.092)	**	0.328 (0.099)	***
Percent teachers education above SSC	0.070 (0.15)	0.042 (0.138)	0.157 (0.187)	0.062 (0.173)
Percent teachers from this location	0.269 (0.174)	0.102 (0.164)	0.399 (0.223)	0.281 (0.229)
Student: teacher ratio	0.002 (0.003)	0.001 (0.003)	0.003 (0.003)	0.002 (0.003)
Percent literate (female)	-0.506 (0.440)	-0.561 (0.401)	-0.657 (0.503)	-0.827 (0.485)
Percent SC students	-0.071 (0.186)	-0.124 (0.172)	-0.082 (0.207)	-0.166 (0.223)
Percent ST students	-0.054 (0.211)	-0.184 (0.202)	-0.069 (0.226)	-0.246 (0.239)
Percent community non-working	0.263 (0.777)	0.660 (0.674)	0.159 (0.802)	0.731 (0.742)
Percent community marginal workers	-0.368 (0.529)	-0.616 (0.58)	-0.680 (0.608)	-0.995 (0.703)
Adult literacy center available in village	0.011 (0.142)	-0.114 (0.12)	-0.020 (0.166)	-0.144 (0.167)
Market facility available in village	-0.059 (0.170)	-0.271 (0.151)	-0.085 (0.181)	-0.407 (0.19)
Post & telegraph facility available in village	0.209 (0.132)	0.199 (0.120)	0.244 (0.153)	0.251 (0.138)
Distance to nearest town	-0.006 (0.007)	-0.003 (0.007)	-0.007 (0.008)	-0.005 (0.008)
Primary schools in census area	0.018 (0.024)	0.003 (0.025)	0.024 (0.026)	0.007 (0.026)
Middle schools in census area	-0.026 (0.082)	0.013 (0.077)	-0.027 (0.083)	0.034 (0.082)
Urban school	0.120 (0.277)	-0.089 (0.263)	0.130 (0.246)	-0.083 (0.300)
Test score average (overall)		0.984 (0.170)	***	1.297 (0.255)
Constant	0.628 (0.537)	0.241 (0.433)		
Predicted Probability			0.661	0.685
Observations	127	123	127	123
(Pseudo) R ²	0.276	0.360	0.247	0.330
Root MSE for OLS and Log Likelihood for	0.469	0.431	-64.100	-54.809

** Significant at 95% confidence level ***Significant at 99% confidence level. Taluk level fixed effects included in all specifications.

TABLE 4: Probability of “Joining”

Standard errors in parentheses	Linear Probability Model		Probit, Marginal Effects			
	Resources/ Characteristics	Stable Resources/ Characteristics & Test Scores	Resources/ Characteristics	Resources/ Characteristics	Stable Resources/ Characteristics & Test Scores	Stable Resources/ Characteristics & Test Scores
Text received per student	-0.059 (0.038)		-0.080 (0.055)			
Cash received per student	0.000 (0.000)		0.000 (0.000)			
Value of SDMC contributions per student	0.002 (0.001)		0.003 (0.001)		***	
Gram Sabha discussed school in last meeting	0.104 (0.093)		0.201 (0.121)			
Teacher attendance discussed in last SDMC-staff	0.268 (0.090)	***	0.445 (0.105)		***	
Percent teachers education above SSC	-0.112 (0.140)		-0.132 (0.134)			-0.402 (0.264)
Percent teachers from this location	0.515 (0.173)	***	0.290 (0.156)		0.947 (0.297)	*** 0.764 (0.327)
Student: teacher ratio	0.002 (0.003)		0.001 (0.003)		0.006 (0.004)	0.005 (0.004)
Percent literate (female)	-0.838 (0.409)	**	-0.836 (0.346)	**	-1.746 (0.616)	*** -1.804 (0.635)
Percent SC students	-0.105 (0.162)		-0.110 (0.153)		-0.293 (0.209)	-0.310 (0.265)
Percent ST students	0.187 (0.211)		0.094 (0.203)		0.205 (0.272)	0.137 (0.308)
Percent community non-working	0.634 (0.653)		0.989 (0.62)		1.499 (0.913)	1.912 (0.856)
Percent community marginal workers	-0.443 (0.605)		-0.611 (0.444)		-1.132 (0.756)	-1.956 (1.003)
Adult literacy center available in village	-0.095 (0.155)		-0.237 (0.127)		-0.138 (0.200)	-0.394 (0.171)
Market facility available in village	0.039 (0.154)		-0.202 (0.125)		0.085 (0.199)	-0.473 (0.149)
Post & telegraph facility available in village	0.181 (0.117)		0.167 (0.107)		0.282 (0.160)	0.362 (0.151)
Distance to nearest town	-0.013 (0.006)	**	-0.011 (0.006)		-0.023 (0.009)	*** -0.019 (0.011)
Primary schools in census area	0.018 (0.023)		0.002 (0.024)		0.033 (0.032)	0.007 (0.030)
Middle schools in census area	-0.028 (0.073)		0.016 (0.069)		-0.046 (0.097)	0.064 (0.097)
Urban school	0.015 (0.259)		-0.215 (0.247)		-0.068 (0.337)	-0.296 (0.312)
Test score average (overall)			1.178 (0.155)	***		2.304 (0.405)
Constant	0.707 (0.545)		0.267 (0.454)			
Predicted Probability					0.507	0.513
Observations	127		123		127	123
(Pseudo) R ²	0.39		0.48		0.37	0.48
Root MSE for OLS and Log Likelihood for Probit	0.44		0.40		-55.374	-43.918

** Significant at 95% confidence level ***Significant at 99% confidence level Taluk level fixed effects included in all specifications.

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