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ARTICLE

Are disadvantaged schools slow to adopt school-based management reforms? Evidence from India

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ABSTRACT

School-based management reforms continue to be popular in developing countries, but they may have the effect of increasing educational inequalities if (a) advantaged schools adopt them early while disadvantaged schools do not, and (b) they lead to quality improvements in adopting schools. It is therefore instructive to examine the adoption behavior of advantaged and disadvantaged schools. This article examines the correlation between aspects of school (dis)advantage and the time to adoption of school-based management arrangements in Indian government schools. It finds that better-resourced schools – those with greater levels of school infrastructure and more educated teachers – did adopt faster. On the other hand, keeping everything else constant, schools catering to rural and socio-economically disadvantaged communities also adopted faster. The results suggest that low levels of school resources pose barriers to early adoption, and hence effective embedding of SBM reforms is likely to require targeted support for poorly resourced schools.

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1. Introduction

Policy appetite for school-based management (SBM) reforms, that aim to decentralize education by granting schools and local communities more decision-making and management authority, continues to be robust. Defined as the "systematic decentralization to the school level of authority and responsibility to make decisions on significant matters related to school operations within a centrally determined framework" (Caldwell 2005, 1), and often involving a significant transfer of authority to parents and the local community via their representation in school councils (De Grauwe 2005), SBM has been a common feature in the education systems of both developed and developing countries for several decades, based on the expectation that it will help to improve schools via improved monitoring, responsiveness to local needs, and accountability. Carr-Hill et al. (2018, 61) noted that it "is widely promoted by donors in lower-income

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countries as a means for improving educational quality and is often taken up enthusiastically by national governments."

Over the years, there has been considerable research on the effects of SBM on participating schools, which has demonstrated positive impacts on outcomes such as teacher attendance (Blimpo, Evans, and Lahire 2011), teacher effort (Di Gropello and Marshall 2011), student absence (Jimenez and Sawada 1999; Blimpo, Evans, and Lahire 2011), student dropout (Jimenez and Sawada 2014; Skoufias and Shapiro 2006), pass rates (Carnoy et al. 2008; Gertler, Patrinos, and Rubio-Codina 2012; Skoufias and Shapiro 2006), and test scores (Jimenez and Sawada 1999; Khattri, Ling, and Jha 2012; Santibanez, Abreu-Lastra, and O'Donoghue 2014). Relatively little attention, however, has been paid to the issue of *which* schools implement SBM. Yet this question is a pertinent one to explore, given that governments can and often do attempt to "institutionalize" SBM, but not all schools comply with government directives. In their analysis of school management in eight Latin American countries, Gunnarsson et al. (2009) found that school autonomy varied much more within countries than between them, showing that centrally imposed mandates are not sufficient to embed SBM, which instead depends crucially on local participation decisions.

Understanding school-level participation decisions is important because it can inform our understanding of the potential equity implications of SBM. What is particularly important here is to explore differences in the adoption behavior of relatively advantaged and disadvantaged schools. If (a) advantaged schools adopt SBM reforms early while disadvantaged schools do not, and (b) SBM reforms lead to quality improvements in adopting schools, educational inequalities may increase. However, not many studies have explored the school-level correlates of SBM adoption, and those that have don't always agree on the direction of effects. Gunnarsson et al. (2009) found that school autonomy was higher in communities with higher parental education, and in rural and smaller urban communities relative to their counterparts in larger metropolitan areas. In a randomized control trial conducted in Niger, Beasley and Huillery (2013) found that school committees composed of more educated parents took a more active role in school management, e.g. by taking the initiative to supervise teacher attendance. Contrary to Gunnarsson et al., Reimers and Cárdenas (2007) found that urban schools participated more in a SBM program in Mexico, speculating that this was a consequence of their higher organizational resources and capacity. Khan (2006) examined the participation decisions of individuals in school councils in Africa and found that individuals with higher socio-economic status participated more.

This article seeks to answer the following question: do disadvantaged schools adopt SBM reforms faster or slower than advantaged schools, in a context where SBM has already been embraced as a policy objective? The research setting is India. India's Right to Education (RTE) Act made it mandatory for all government schools to constitute school management committees (SMCs), composed principally of parents/guardians of students, to monitor school functioning and recommend school improvements. When the Act came into force in April 2010, however, not all government schools complied promptly with the requirement to constitute SMCs.

Using administrative school-level data from government schools, I start by examining the association between time to SMC adoption and student achievement. I find

that schools that adopt SMCs faster are associated with higher proportions of high-achieving children in primary level examinations. Having established that early adoption is positively correlated with student achievement, I next examine associations between the time to SMC adoption and baseline school characteristics. I find that better-resourced schools (those with higher school infrastructure and more educated teachers) adopt earlier than their less well-resourced counterparts. However, controlling for the level of school resources, schools catering to more socio-economically advantaged communities adopt later than those catering to the socio-economically disadvantaged.

The article is organized as follows. Section 2 introduces the concept of SBM in more detail and discusses how India sought to institutionalize it in its public school system via the formation of SMCs. Section 3 outlines the testable hypotheses. Section 4 introduces the data, variables, and empirical methods used. Section 5 presents the results, and section 6 discusses the results and concludes.

2. School-based management, and its Indian variant

There are many models of SBM around the world. While they often have their own unique characteristics, decentralization from a higher level of governance down to the school level is always a key feature, based on the idea that local actors have the knowledge and incentive to make good decisions about school management. Parental involvement in school management is also a very common feature. While SBM could, in principle, devolve decision-making authority only to school principals and/or teachers, most SBM models emphasize the involvement of parents and local community members in school decision-making (Patrinos, Barrera-Osorio, and Fasih 2009).

There is more variation in what aspects of school decision-making are devolved, and the extent of the powers transferred to school committees or councils. In principle, SBM may involve the transfer of decision-making authority in the allocation of school budgets, personnel management (including the hiring and firing of teachers and other school staff), curriculum development and pedagogy, procurement of school supplies and materials, school infrastructure development and maintenance, and monitoring and evaluation of teacher performance and student learning outcomes (Patrinos, Barrera-Osorio, and Fasih 2009). In practice, the powers that are devolved vary widely from case to case.

The RTE Act of 2009 sought to institutionalize SBM in India. While the provisions of the Act were wide-ranging, the relevant one here is the one that mandated the creation of SMCs in all government and private aided schools, to be composed of elected representatives from parents/guardians, the local authority, and teachers. The Act stipulated that at least three-fourths of SMC members should be parents or guardians of students, with the remaining one-fourth to be drawn equally from elected members of the local authority, teachers at the school, and local educationists or children at the school. SMCs were required to meet at least once a month, and to be reconstituted every two years. The main responsibilities of the SMC were to monitor school functioning; prepare school development plans; monitor the utilization of government

grants; prepare school financial accounts; ensure the enrollment and regular attendance of children living in the community; etc.

The intention behind the introduction of SMCs was to establish accountability mechanisms in school functioning. That there is a lack of accountability in the Indian government school sector is well established, with teacher accountability being particularly weak (Muralidharan et al. 2017; Béteille, Kingdon, and Muzammil 2016). It should therefore come as no surprise that learning outcomes are poor. In rural India, only 44 out of every 100 children in Class 5 can read a Class 2-level text, and only 23 of them can perform basic arithmetic operations such as division (ASER Centre 2019).

Accordingly, the RTE Act required schools to constitute SMCs to improve school quality and educational outcomes via greater involvement of parents and the local community. Government clarifications on the provisions of the Act noted that

> the setting up of such Committees has been a recommendation of nearly all previous education commissions and policies. The reason is that if the community has to be involved in the vast school system of the country, and if the parents are to be recognized as primary stakeholders in the education of their children, they must be involved in a meaningful manner in the monitoring and management of schools … There is reason to believe that … the parent-dominated SMCs will lead to overall improvement of the schooling system. (Government of India 2012)

In institutionalizing school-level management committees, the RTE was following in the footsteps of earlier attempts to introduce decentralized community participation in school decision-making. Both the District Primary Education Programme (DPEP) and the Sarva Shiksha Abhiyan (SSA), large-scale programs for basic education sponsored by the central government, envisaged a key role for Village Education Committees (VECs) (Banerjee et al. 2007). VECs were intended to be composed of the elected head of the village council, the head teacher of the government school, and three parents of government school students, and to be the local bodies responsible for school governance and functioning. However, they appear to have failed signally to achieve their objective (Banerjee et al. 2007).

SMCs are also intended to enable decentralized community participation, but differ from VECs in some important respects. VECs were intended to be village-level rather than school-level governance structures. As their name suggests, VECs were meant to be constituted in rural areas only, but SMCs are meant to be constituted in all government and government-aided schools, regardless of whether they are located in rural or urban areas. Finally, SMCs also mandate a much higher number of parent members compared to VECs, thereby potentially enabling greater parental control.

3. Hypothesis development

The main aim of this article is to examine the SBM adoption behavior of advantaged and disadvantaged schools. However, this would only be a policy-relevant exercise if early adoption positively affects school quality. While demonstrating a causal

relationship is beyond the scope of this paper, I start by establishing that there is a positive association between the two by testing the following hypothesis:

H1: Schools that adopt SMCs faster have higher student achievement

Next, I turn to the question of whether advantaged schools adopt SBM reforms earlier than disadvantaged schools do. To answer this question, it is necessary to specify what constitutes school (dis)advantage. School disadvantage has many facets, including deficiencies in "hardware" (school buildings, classrooms, furniture, sanitation and other forms of school infrastructure) and "software" (curriculum, pedagogy and instructional materials), low quantity and quality of teachers, poor school management, and low socio-economic status of the community served (Boissiere 2004). I draw from this list to focus on two composite measures of school (dis)advantage. The first measure represents "school resources" and combines information on the level of school infrastructure (physical resources) and teacher education (human capital resources). The second measure represents "school community" and combines information on whether the school primarily caters to rural/urban children and children from socio-economically advantaged/disadvantaged backgrounds. Disadvantaged schools are therefore characterized as follows:

Disadvantaged schools have low levels of school infrastructure

The provision of basic minimum levels of school infrastructure has been shown to be conducive to improving student enrollment (Dostie and Jayaraman 2006; Cuesta, Glewwe, and Krause 2016), reducing dropout (Mejdalani et al. 2018), and improving learning outcomes (Glewwe et al. 2011). OECD (2016) concluded that the presence of adequate material resources in a school, including school infrastructure, is a necessary (although not sufficient) condition for high academic achievement.

Disadvantaged schools have low levels of teacher education

A literature review by Glewwe et al. (2011) found a positive relationship overall between teachers' education levels and students' educational outcomes. In India, the government has made a concerted effort to increase the educational qualifications of teachers over time (Ramachandran et al. 2017).

Disadvantaged schools are rural

In most developing countries, rural schools and students tend to lag behind their urban counterparts. Zhang (2006) noted that rural education is often associated with poorer learning outcomes. Indian government statistics show that the test scores of rural students in tenth grade lag behind their urban counterparts in English, math, science, and social science (Government of India (GoI) 2018).

Disadvantaged schools mainly cater to students from socio-economically disadvantaged backgrounds

Government policies often officially classify schools as disadvantaged if most of their students come from deprived backgrounds. For instance, a government program in Chile that provided monetary incentives to high-performing teachers teaching in

disadvantaged schools defined disadvantaged schools as those in which 60% or more of students were classified as low socio-economic status (SES) (Elacqua et al. 2019).

Predicting the effect of the "school resources" and "school community" measures of school disadvantage on the speed of SBM adoption is not straightforward, as there are sometimes competing channels in theory, and little empirical evidence in practice. The role of school resources is particularly complex. On the one hand, local communities served by schools characterized by low levels of resources may be keen to adopt SBM faster to expedite school improvement. On the other hand, schools themselves may struggle to implement the changes: SBM imposes considerable administrative demands on schools (Murnane, Willet, and Cardenas 2006), and it is possible that schools with lower levels of infrastructure and less educated teachers find it particularly difficult to take on these new burdens. Schools that serve socio-economically disadvantaged communities, too, may find it more difficult to implement SBM reforms. Poorer parents may be less willing to join school committees than richer parents as they face starker tradeoffs in terms of foregone income-earning opportunities, and parents with lower education may be less willing to join than those with higher education if they perceive themselves as lacking in the knowledge, skills and expertise required to make decisions about schools. I therefore test the following hypotheses about the relationship between school (dis)advantage and speed of adoption:

H2: Schools with higher levels of resources adopt SMCs faster

H3: Schools that cater to more socially advantaged communities adopt SMCs faster

4. Data, variables and methods

School-level data were obtained from the District Information System for Education (DISE) maintained by the National University for Educational Planning and Administration. DISE collects annual school-level data from all government, private aided and recognized private unaided schools in the country. The dataset used for the analysis is constructed as follows. First, twenty percent of all schools are randomly selected from the DISE database of schools between the years 2009 and 2017 (extracting a random sample of the data was necessary to enable data processing, as the size of the full data set was very large). Schools in all states except the erstwhile state of Jammu & Kashmir, which was not required to implement the RTE, are included in the random sampling. If a school is selected in any one year, all available years of data for it are included in the sample. The annual samples are then merged, resulting in a large (unbalanced) panel dataset of schools. The three main categories of government schools – those managed by state departments of education, by tribal/social welfare departments, and by local bodies such as district councils or municipal governments – are retained for the analysis.

Next, data on whether the school had a SMC in the years 2010–2017 are used to measure the time to SMC adoption for all schools that were in existence in 2009. Speed of adoption is measured by the years to (first) SMC adoption[1]. Accordingly, schools that constituted a SMC in 2010 (the year in which the RTE came into effect) are treated as having zero years to adoption, schools that constituted a SMC in 2011 are treated as

having one year to adoption, etc. In some instances (about 6% of government schools in existence in 2009), schools report creating a SMC in one year but are seen to have zero SMC members in that year. In such cases, the year of adoption is taken to be the first year in which the school reports having a SMC with non-zero members.

I use the percentage of students who passed with more than 60% marks in the primary school level examination (Class 4–Class 5) as the dependent variable to test hypothesis H1. I estimate OLS regressions to measure associations between this and the time to SMC adoption, while controlling for district fixed effects. To allow for a time lag between SBM implementation and observable effects on student achievement (Carr-Hill et al., 2018), I use data on schools that adopted within the first four years (2010–2013), and estimate the regression model for each of the last three years of data (2015–2017).

After testing hypothesis H1, data for the years 2010–2017 are dropped, so that the data now represent a cross-section of schools in 2009. 2009 is chosen as the appropriate year for testing hypotheses H2 and H3 because implementation of the RTE Act started on April 1, 2010, hence school-level characteristics in 2009 represent pre-RTE/baseline conditions.

The key independent variables for this part of the analysis are "school resources" and "school community." As described above, "school resources" is a composite index based on (1) level of school infrastructure and (2) level of teacher education, while "school community" is a composite index based on (3) rural/urban location and (4) a measure of students' socio-economic (dis)advantage. Principal Component Analysis (PCA) confirms the appropriateness of grouping the four individual variables in this way (Appendix Table A1). To create each index, the relevant variables are standardized and combined using equal weights. Details about each variable follow below.

(1) is operationalized through an infrastructure index that aggregates the following eight dummy variables: (i) whether the school has a permanent boundary wall; (ii) whether the school has a computer lab; (iii) whether most of the classrooms in the school are in good condition (this dummy variable takes the value 1 if at least 75% of classrooms in the school are in good condition, and 0 otherwise); (iv) whether the school has a functioning electricity connection; (v) whether the school has a separate room for the head teacher; (vi) whether the school has a library; (vii) whether the school has a playground; and (viii) whether the school has a tap water connection. The value of the infrastructure index therefore ranges from 0 to 8. (2) is measured by the percentage of teachers in the school who possess a graduate degree or higher. (3) is measured by a dummy variable that takes the value 1 for urban schools and 0 for rural schools. (4) is operationalized using the percentage of students in elementary school enrollment *not* from the Scheduled Caste (SC), Scheduled Tribe (ST), or Other Backward Class (OBC) groups, which are officially designated socially disadvantaged groups in Indian society[2]. Socio-economic inequalities often manifest themselves along caste lines in India (Thorat et al., 2017), representing the cumulative historical disadvantage faced by lower castes, hence students who are not from these groups are expected to have relatively higher socio-economic status.

Control variables used in the analysis include (1) type of government school (i.e. whether it is managed by a state department of education, by the tribal/social welfare department, or by local bodies such as district councils or municipal governments), (2) total elementary school enrollment, (3) the level of government funding, (4) number of

government visits per year, (5) whether the school has a private school in the vicinity, and (6) whether the school has a head teacher. (4) is calculated as the number of formal academic inspections as well as visits by Block Resource Center (BRC) and Cluster Resource Center (CRC) officers[3].

(5) is included to control for the possibility that community incentives to participate in SBM are blunted if alternatives to low-performing government schools exist in the local area. As Hirschman (1970) noted, users of under-performing organizations may respond, not by exercising their "voice" to improve the organization, but by choosing the "exit" option to circumvent the problem altogether. John (2007) found that the availability of private schooling in Latin America led to the exit of wealthier families from public schools, which in turn inhibited the development of civil society pressure to improve the quality of education in these schools. I measure (5) with a dummy variable that takes the value one if there is at least one private school in the same town/village, and zero otherwise. Note, however, that the private school dummy only captures the existence of private recognized schools, as the DISE data do not include the number of unrecognized private schools.

(6) is included because the head teacher typically plays an important role in institutionalizing SBM arrangements. In a study of SBM in Indonesia, Bandur (2018) noted the central role played by the school principal in encouraging and initiating participatory decision-making in practice, despite a central mandate for the formation of school councils. A committed and enthusiastic head teacher can take the lead in institutionalizing SMCs and ensuring they work effectively. While indicators of head teacher quality are not available in the data, I use the presence or absence of a head teacher in the school as a crude indicator of organizational capacity and stability (Reimers and Cárdenas 2007) and hypothesize that schools with a head teacher are more likely to adopt SMCs sooner.

Summary statistics are shown in Table 1. Column (1) shows the means for the entire sample, while columns (2) and (3) show the means for the sub-groups of advantaged and disadvantaged schools, respectively. These sub-groups were created by adding the "school resources" and "school community" indices and splitting the sample at the mean of the total. Finally, column (4) shows whether the differences in the group means are statistically significant.

Tobit regressions are estimated to measure associations between the time to SMC adoption and baseline school characteristics. Tobit estimation is preferred because the dependent variable is left-censored at zero, as a large number of schools report SMC adoption in 2010 (Figure 1). There is a possibility that schools that adopted SMCs in the first year post-RTE (2010-11) did not create them from scratch but had already constituted them prior to 2010. However, this cannot be detected from the data as the DISE data on SMC constitution were only collected from 2010 onwards. To check consistency of results, I also compare the Tobit results with OLS regression results, although the OLS estimates are likely to be biased toward zero (Greene, 2012). All regressions include district dummies to control for district-level differences in administrative capacity and implementation effort that affect the average time to SMC adoption within the district. The regression coefficients should not be interpreted as causal estimates; the intention is simply to observe which school-level antecedents appear to be more strongly correlated with, and better predictors of, SMC adoption.

Table 1. Summary statistics.

Variable	(1) Mean (all schools)	(2) Mean (advantaged)	(3) Mean (disadvantaged)	(4) Difference
Years to SMC adoption	0.74	0.67	0.79	−0.12***
High-pass rate in primary school exam (boys)	8.6%	14.3%	4.7%	9.6%***
High-pass rate in primary school exam (girls)	8.7%	14.6%	4.6%	10.0%***
School management				
Dept. of education	70.2%	68.0%	72.0%	−3.9%***
Tribal/social welfare dept.	5.5%	3.6%	7.1%	−3.5%***
Local body	24.3%	28.3%	20.9%	7.4%***
School (dis)advantage				
Schools with permanent boundary wall	24.6%	37.0%	14.0%	23.0%***
Schools with computer lab	5.8%	10.3%	2.4%	7.9%***
Schools with ≥75% of classrooms in good condition	61.8%	70.0%	54.6%	15.3%***
Schools with functioning electricity connection	31.7%	46.4%	19.2%	27.2%***
Schools with separate room for head teacher	43.2%	57.6%	32.1%	25.5%***
Schools with library	56.2%	70.8%	43.8%	27.0%***
Schools with playground	49.5%	63.0%	38.1%	24.9%***
Schools with tap water connection	19.1%	29.6%	10.0%	19.6%***
Infrastructure index (0–8)	2.96	3.91	2.15	1.76***
Teachers with graduate degree or higher	49.3%	69.2%	32.5%	36.7%***
Urban schools	6.7%	14.7%	0.0%	14.7%***
Share of socially advantaged in elementary enrollment	18.8%	31.9%	7.8%	24.1%***
Control variables				
Elementary enrollment	125.9	142.2	112.1	30.2***
Government funding received per year (Rs '000)	9.3	11.4	7.6	3.8***
Number of government visits per year	11.0	10.6	11.4	−0.9***
Schools with at least one private school in vicinity	11.2%	16.7%	6.5%	10.3%***
Schools with head teacher(s)	43.1%	46.0%	40.6%	5.4%***
N	198,714	91,098	107,616	

***$p < 0.01$

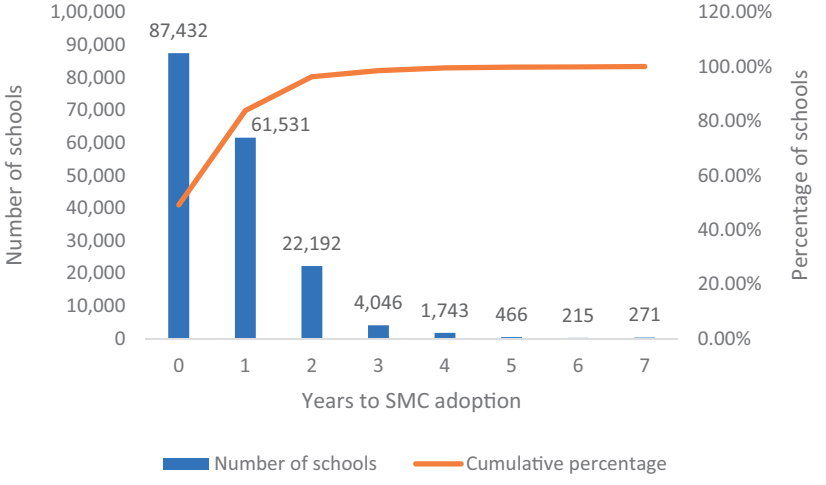

Figure 1. Distribution of government schools by years to SMC adoption.

5. Results

Figure 1 shows the pace of SMC adoption in Indian government schools. About 49% of schools adopted SMCs by the end of 2010 (and hence had zero years to adoption), an additional 35% did so by the end of 2011, and another 13% did so by the end of 2012.

States varied considerably in their average speed of SMC adoption (Figure 2). However, there was also a significant amount of intra-state variation. Districts within the same state, and schools within the same district, differed in their average times to adoption. Figure 3 illustrates these differences. States, districts and schools in Figure 3 are categorized into three groups: fast adopters if they adopted within a year, intermediate adopters if their (average) time to adoption was between one and two years, and slow adopters if they took longer than two years to adopt. The left panel of Figure 3 shows the distribution of districts within fast, intermediate and slow states. While most districts in fast states adopted rapidly, districts in intermediate and slow states showed greater variation in their pace of adoption. For instance, 42% of districts in slow states adopted faster than the state average. The right panel of Figure 3 shows that there was also considerable variation within districts. For instance, 18% of the schools in fast districts and 23% of the schools in intermediate districts adopted slower than average.

Table 2 presents the results when the percentage of students passing with more than 60% in the primary level examination (by gender) is regressed on years to adoption. They show that there is a negative and statistically significant association between years to SMC adoption and student achievement.

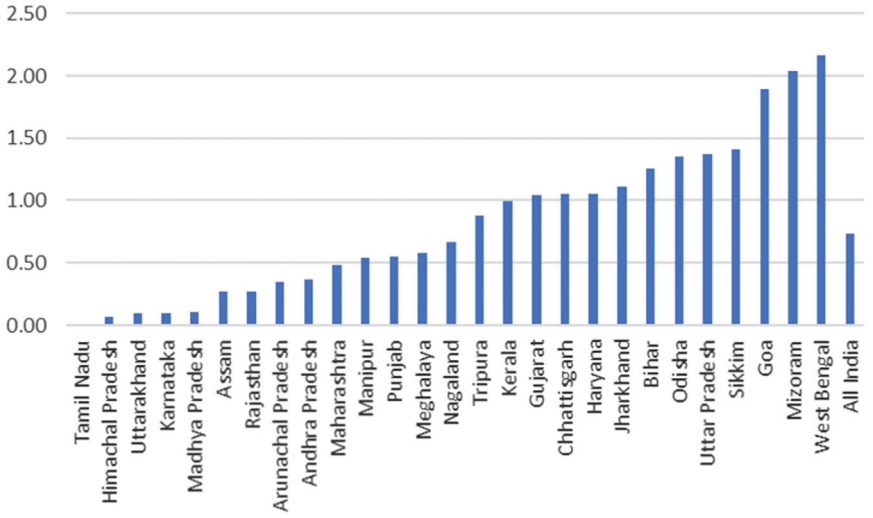

Figure 2. Average time to SMC adoption by state (years).

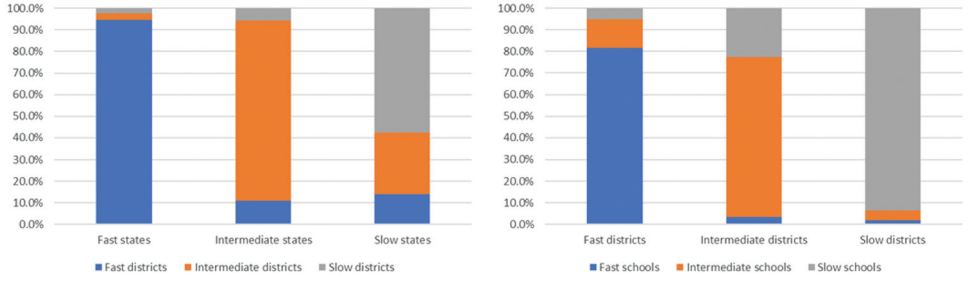

Figure 3. Variation in time to SMC adoption within states and districts.

Table 2. Regressing student achievement on years to SMC adoption.

Variables	(1) 2015 (Boys)	(2) 2015 (Girls)	(3) 2016 (Boys)	(4) 2016 (Girls)	(5) 2017 (Boys)	(6) 2017 (Girls)
Years to SMC adoption	−1.7106***	−1.6893***	−1.7038***	−1.5872***	−0.9497***	−0.7346***
	(0.1661)	(0.1676)	(0.1720)	(0.1716)	(0.1861)	(0.1861)
Mgmt: social welfare dept.	−5.6392***	−7.1346***	−5.3912***	−5.9075***	−6.5198***	−6.9264***
	(0.8798)	(0.8706)	(0.8893)	(0.8982)	(0.9346)	(0.9656)
Mgmt: local body	3.3882***	2.8294***	4.6131***	3.5020***	0.6257	−0.9290
	(0.7359)	(0.7238)	(0.7804)	(0.7558)	(0.7425)	(0.7442)
Infrastructure index	0.5004***	0.5278***	0.2002**	0.4019***	0.4565***	0.4506***
	(0.0838)	(0.0844)	(0.0857)	(0.0857)	(0.0904)	(0.0908)
Graduate teachers (%)	0.0236***	0.0235***	0.0243***	0.0343***	0.0254***	0.0260***
	(0.0032)	(0.0032)	(0.0033)	(0.0033)	(0.0036)	(0.0036)
Urban dummy	0.1316	1.2629***	−0.4625	0.6839	−2.1936***	−0.6221
	(0.4579)	(0.4636)	(0.4734)	(0.4816)	(0.5141)	(0.5265)
Socially advantaged students (%)	0.0041	0.0307***	−0.0076	0.0044	0.0037	0.0116**
	(0.0051)	(0.0051)	(0.0054)	(0.0054)	(0.0056)	(0.0056)
Elementary enrollment	−0.0024**	−0.0002	0.0042***	0.0052***	0.0006	0.0049***
	(0.0009)	(0.0009)	(0.0010)	(0.0010)	(0.0011)	(0.0011)
Government funding	0.0032	0.0027	0.0196	0.0125	0.0372**	0.0420**
	(0.0080)	(0.0085)	(0.0138)	(0.0132)	(0.0159)	(0.0174)
Government visits	0.1670***	0.1818***	0.1380***	0.1451***	0.1990***	0.2053***
	(0.0100)	(0.0099)	(0.0103)	(0.0103)	(0.0119)	(0.0121)
Private school dummy	0.1399	0.5338*	0.3528	0.1621	0.1870	−0.1034
	(0.3025)	(0.3031)	(0.3149)	(0.3160)	(0.3313)	(0.3348)
Head teacher dummy	1.1478***	1.3157***	0.6674**	0.9374***	1.7140***	1.6004***
	(0.2458)	(0.2464)	(0.2606)	(0.2611)	(0.2892)	(0.2905)
Constant	19.1139***	17.7433***	19.8270***	17.4495***	9.0640***	11.1098***
	(1.6102)	(1.6030)	(1.6633)	(1.6967)	(1.4282)	(1.5707)
Observations	108,893	108,638	101,451	101,443	94,529	94,253
Adjusted *R*-squared	0.1476	0.1550	0.1801	0.1876	0.1364	0.1383
District dummies	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses.
***$p < 0.01$; **$p < 0.05$; *$p < 0.1$.

Table 3 shows the results when time to SMC adoption is regressed on the measures of school (dis)advantage. Examining the results in columns (1) and (3) first, which show the results of the Tobit and OLS regressions respectively, we find that schools possessing higher levels of school resources adopt SMCs earlier than those with lower levels of school resources. However, ceteris paribus, schools catering to more socio-economically advantaged communities adopt later than those catering to more disadvantaged communities. Schools managed by state departments of education (omitted category) adopt SMCs earlier than those managed by local bodies or social/tribal welfare departments. Schools with more students adopt earlier, as do schools that receive more government funding and more frequent official visits. As hypothesized, government schools that have a private school in the vicinity are slower to adopt SMCs. Finally, schools with a head teacher adopt earlier than schools without one.

What explains the faster adoption time of schools catering to socio-economically disadvantaged populations? One possible explanation is that it is not actually these schools themselves that choose to adopt faster, but that district or sub-district governments apply greater encouragement or enforcement pressure to more disadvantaged schools. If government officials pay greater attention to ensuring SMC formation in

Table 3. Regressing years to SMC adoption on school (dis)advantage.

Variables	(1) Base model (Tobit)	(2) Adding interaction terms (Tobit)	(3) Base model (OLS)	(4) Adding interaction terms (OLS)
School resources	−0.0169***	−0.0168***	−0.0107***	−0.0107***
	(0.0024)	(0.0024)	(0.0013)	(0.0013)
School community	0.0183***	0.0243***	0.0100***	0.0140***
	(0.0023)	(0.0030)	(0.0015)	(0.0021)
Mgmt: social welfare dept.	0.2394***	0.2395***	0.1266***	0.1266***
	(0.0180)	(0.0180)	(0.0097)	(0.0097)
Mgmt: local body	0.3097***	0.3098***	0.1316***	0.1318***
	(0.0159)	(0.0159)	(0.0093)	(0.0093)
Elementary enrollment	−0.0003***	−0.0003***	−0.0002***	−0.0002***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Government funding	−0.0017***	−0.0017***	−0.0011***	−0.0011***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Government visits	−0.0017***	−0.0012***	−0.0011***	−0.0008***
	(0.0003)	(0.0004)	(0.0002)	(0.0002)
Urban*visits		−0.0029***		−0.0016***
		(0.0010)		(0.0006)
Social advantage*visits		−0.0010*		−0.0008***
		(0.0005)		(0.0003)
Private school dummy	0.0617***	0.0621***	0.0334***	0.0334***
	(0.0099)	(0.0100)	(0.0052)	(0.0052)
Head teacher dummy	−0.0798***	−0.0795***	−0.0426***	−0.0425***
	(0.0063)	(0.0063)	(0.0037)	(0.0037)
Constant	−0.4756***	−0.4750***	0.3265***	0.3268***
	(0.0432)	(0.0432)	(0.0318)	(0.0318)
Observations	175,382	175,382	175,382	175,382
Pseudo/Adjusted *R*-squared	0.3497	0.3497	0.5673	0.5673
District dummies	YES	YES	YES	YES

Standard errors in parentheses.
***$p < 0.01$; *$p < 0.1$.

rural schools relative to urban schools, for instance, we might observe the same pattern of results, but they would be the result of district government choices rather than school-level choices.

On the basis that encouragement or enforcement pressure is easiest to apply when government officials actually visit the school, I test this possibility by examining the differential effect of government visits on urban versus rural schools, and on schools with high social advantage versus schools with low social advantage. I classify schools as high-advantage if their share of social advantage in elementary school enrollment is above average, and as low-advantage otherwise. Both urban and high-advantage schools received fewer government visits than their counterparts in 2009. High-advantage schools received 9.77 visits on average, while those with average or lower levels of social advantage received 11.49 visits. The difference in number of visits between urban and rural school visits was smaller but still statistically significant, with rural schools receiving slightly more frequent visits (10.98) than urban schools (10.45). Even after controlling for differences in the number of visits, however, it is possible that the quality of the visits was different, and that the issue of SMC formation received greater emphasis during visits to rural and low-advantage schools than during visits to urban and high-advantage schools. I explore this possibility by including the interaction terms urban*visits and social advantage*visits in the regression model.

The results are shown in columns (2) and (4) of Table 3. They show that, while government visits are associated with faster SMC adoption in general, this effect is actually more pronounced in urban and high-advantage schools than it is in rural and low-advantage schools. While this does not rule out the possibility that district administrations engineered the faster adoption of SMCs in rural and low-advantage schools via some mechanism other than government visits, it does suggest that faster adoption may have been the result of decisions made by schools themselves, rather than by the government departments responsible for overseeing them.

6. Discussion and conclusion

Policies intended to improve schools by institutionalizing SBM reforms may end up exacerbating educational inequalities if disadvantaged schools do not adopt the reforms while more advantaged schools do, and the reforms result in improving school quality. After demonstrating that speed of SBM adoption is positively correlated with student achievement in primary school, this article examined the correlation between aspects of school (dis)advantage and the speed of SBM adoption among Indian government schools, after a 2009 policy change mandated the institutionalization of SBM arrangements in all government schools in the country. The results show that better-resourced government schools – those with higher levels of infrastructure and more educated teachers – do tend to adopt faster, which is not surprising in view of the fact that SBM does impose considerable administrative demands on schools (Murnane, Willet, and Cardenas 2006), which under-resourced schools may struggle to meet. This suggests that the effective implementation of SBM reforms is likely to require targeted support for poorly resourced schools which lack the organizational resources and capacity to organize successfully.

The analysis also finds that government schools in towns or villages with one or more private schools are slower to constitute SMCs. India has experienced a very rapid growth in private schooling in the last few decades (Kingdon 2007, 2020). While some scholars see this as a positive development due to the learning gains that have transpired with increased access to private schooling (Goyal 2009), others have raised equity concerns, pointing out that even low-cost private schooling options are unaffordable to the poorest families (Härmä 2011; Woodhead, Frost, and James 2013). The private school effect estimated here does point to a potential equity issue. In principle, government schools could have responded with greater alacrity to SBM-type governance reforms in the face of increased competition from private schools. However, this does not appear to have happened. The fact that government schools in the vicinity of private schools respond by taking longer to adopt governance reforms mandated by the state suggests that some kind of sorting mechanism may have come into play instead, perhaps with a move of the highest-aspiration parents toward private schools.

Finally, the analysis shows that, once the level of school resources is controlled for, schools catering to socio-economically disadvantaged communities turn out to be faster rather than slower adopters of SBM reforms. This is a somewhat counter-intuitive finding, although not entirely unprecedented. As mentioned previously, Gunnarsson et al. (2009) found that there was greater participation in SBM among rural communities in

Latin America. More generally, Davies and Falleti (2017) noted that low-income, indigenous and rural groups in Bolivia are more likely to participate in local community associations, while Krishna (2006) found that the propensity to participate in rural local government in India is uncorrelated with wealth or caste grouping.

An important limitation of this research is that it focuses on *de jure* rather than *de facto* adoption of SBM. In this article, schools are considered to have adopted SBM when they constitute a school committee. In reality, constituting a school committee does not guarantee that the committee will start to play a meaningful role in school management, although it is a step in the right direction (King and Ozler 2000). While the observed propensity of rural and socio-economically disadvantaged populations to participate in SBM is encouraging, it is important to note that the literature on SBM effectiveness repeatedly stresses that SBM tends to have significantly smaller impacts on schools in poor, disadvantaged, and low-literacy communities, because such communities lack the skills, ability and confidence to participate effectively in shared decision-making (Carr-Hill et al. 2018). Again, this underscores the need for government to tailor implementation support to schools on the basis of local capacity (Yan 2019), to ensure that SBM reforms achieve *de facto* autonomy and the intended beneficial effects for all schools, including the most disadvantaged ones.

Notes

1. While most schools continue to have SMCs once they are constituted, about 4.9% of government schools in the sample revert from having a SMC in one year to not having one in a later year. The dependent variable in these cases measures the years to first SMC adoption.
2. The disadvantage of the SCs stems from their marginalised position in the Hindu caste hierarchy, while the disadvantage of the STs stems from their tribal identity. The OBC category identifies castes that are not listed as SC but are nevertheless significantly lower in the caste hierarchy than the forward castes. Although caste identities originated within Hinduism, these divisions also straddle religions, as significant numbers of Muslims, Christians and Sikhs identify with caste groups (Desai and Kulkarni 2008).
3. BRCs and CRCs are resource centres established at the sub-district level to conduct teacher training and provide academic support to schools and teachers.

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Appendix. Principal component analysis (PCA) results.

Table A1. PCA confirmed two components with Eigenvalues >1, which collectively explained 57.6% of the variance:

Principal components/correlation			Number of obs = 198,714	
			Number of comp. = 4	
			Trace = 4	
Rotation: (unrotated = principal)			Rho = 1.0000	
Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	1.23712	0.169813	0.3093	0.3093
Comp2	1.06731	0.171675	0.2668	0.5761
Comp3	0.89563	0.0956841	0.2239	0.8000
Comp4	0.799946		0.2000	1.0000

Varimax rotation with absolute value of factor loading ≥0.4 was then used to facilitate grouping of items:

	Component 1	Component 2
Infrastructure index	0.66	
Share of graduate teachers	0.65	
Urban dummy		0.59
Share of socially advantaged students in elementary enrollment		0.75