Command and Can't Control: Assessing Centralized Accountability in the Public Sector*

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A long-established approach to management in government has been the transmission of information up a hierarchy, centralized decision-making, and centralized accountability; colloquially known as 'command and control'. This paper examines the effectiveness of a centralized accountability system implemented at scale in Punjab, Pakistan. The scheme automatically identified poorly performing jurisdictions for the attention of central management. We find that greater flagging and corresponding de facto punishments had negligible impact on school or student outcomes. We use detailed data on key elements of the education production function to show that command-and-control approaches to managing the general public sector do not induce bureaucratic action towards improvements in government performance.

Keywords: Accountability, Bureaucracy, Education, Government

JEL codes: D73, H11, H83

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1 Introduction

How the bureaucracy performs is fundamental to the provision of high-quality public services in the developing world (Besley et al., 2022). Recent approaches to bolstering the functioning of public administration have focused on de jure improvements in formal contracting environments such as introducing pay-for-performance (Muralidharan and Sundararaman, 2011; Dal Bó, Finan and Rossi, 2013; Ashraf, Bandiera and Jack, 2014; Deserranno, 2019; Leaver et al., 2021). However, the vast majority of reforms to government administration implemented at scale relate to shaping the de facto incentives in the bureaucracy instead of introducing changes in legal and fiscal environments. The Global Survey of Public Servants (Schuster et al., 2023), run in 35 countries, reports that only 31% of public servants perceive their public service as actualizing de jure performance incentives, while 76% state that de facto reward systems are in operation.

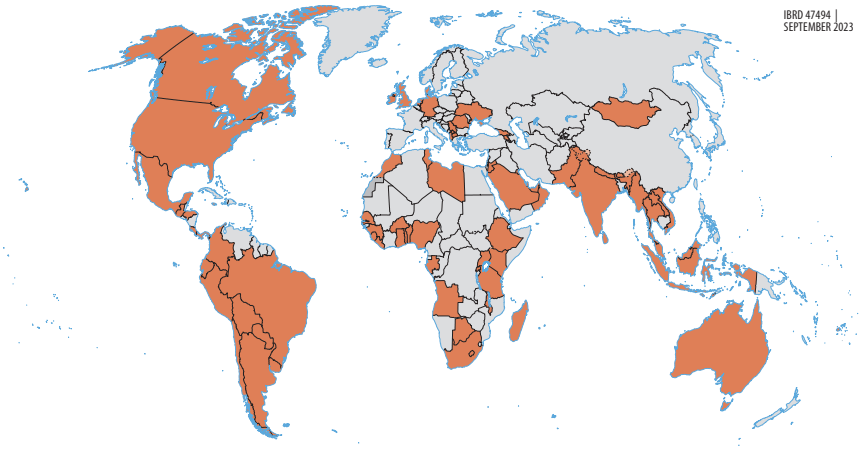
A canonical de facto bureaucratic reform is *command-and-control* management, or hierarchical systems of control where officials are expected to follow centrally determined directions or face punishment. Finer (1997)'s magisterial overview of administrative arrangements of government throughout history emphasizes the continuous efforts of monarchies and autocracies towards the centralization of information and control around a sovereign. Modern military administrators around the world rely on command and control for effective governance across the hierarchy (Wilson, 1989; Hoehn, Campbell and Bowen, 2021).

Faced with constraints on de jure changes in public sector incentives, bureaucracies have been attracted to adopt a command-and-control model. Following the purported success of British Prime Minister Tony Blair's 'delivery unit',[1] over 80 countries have set up centralized routines and offices (see Figure 1) that "combine functions such as target-setting, monitoring, accountability, and problem-solving with the aim of rapidly improving bureaucratic performance and service delivery" (Education Commission, 2023, p. 7). What distinguishes these reforms is the remarkable political and executive backing they received around the world. Yet, evidence on the efficacy of command-and-control approaches at scale in public administration is scarce.

We study such a scheme implemented at scale in the education public administration of Punjab, Pakistan, where monthly education data from over 50 thousand public schools was channeled to the highest executive authority and used to set targets and establish accountability throughout the organizational hierarchy. This command-and-control scheme in Punjab is considered a showpiece of the centralized accountability delivery model: it was implemented to a very high standard for over six years, was advised by top experts in the world, and had the full backing and involvement of

[1] See The History of Government Blog (2022) for more details.

Figure 1: Countries adopting the command-and-control delivery approach (shaded)



Source: Mansoor et al. (2023)

the most senior members of the executive (Barber, 2013; Chaudhry and Tajwar, 2021; Malik and Bari, 2023).[2]

Our analysis focuses on the efficacy of the scheme as a driver of improved educational outcomes. We collect the administrative data from all 52,000 schools in Punjab from December 2011 to May 2018 on which the scheme was built and digitize the monthly reports created for senior managers that flagged performing and underperforming school districts.[3] The monitoring reports present performance metrics drawn from this data, aggregated at the administrative unit, for a range of school outcomes including teacher presence, student attendance, functional facilities, and from January 2016, student test scores on standardized exams. Using this data, we examine how senior officials' high-frequency monitoring of public services and efforts to exert control impact subsequent school performance.

To more deeply assess the impacts of command-and-control approaches on public administration, we also collect data on key elements of the education administration related to financial and personnel resources, bureaucratic attention to individual schools, and the career progressions of affected

[2]Education Commission (2023) write that "the chief minister... attended all 39 stocktake meetings to hold districts accountable, and took action to solve implementation bottlenecks in the quarterly high-stakes meetings" (p.16). A qualitative review of the scheme stated "At the core of the approach design was leveraging political interest and political capital to orient the bureaucratic structures involved in service delivery toward improvements at a fast pace" (Malik and Bari, 2023). The implementation in Punjab is highlighted as one of the success stories around the world. Reviewing the scheme in an interview in 2017, Michael Barber, one of the architects of the delivery approach around the world, stated, "Punjab is unique ... across the whole world for combining deliverology with really good and modern technology."

[3]The school-level data was collected by an agency within the education sector that is fully independent of the bureaucrats being monitored, and we validate its quality by using a distinct set of independent assessments.

officials. This data allows us to unpack the impact of the scheme across the hierarchical chain and explore a broad range of bureaucratic responses to the 'command-and-control' system. The scale of the data we have assembled allows us to estimate even small effects with precision, painting an unusually rich picture of the impact of reforms on bureaucratic activity.

To study how the command-and-control scheme impact educational outcomes, we deploy an instrumental variables approach that uses as-if random variation in the intensity of the scheme's implementation in Punjab. For each month in our data, the system generates flags on public officials if a sufficient percentage of schools within their jurisdiction have fallen below a strict threshold in the educational outcome of interest. We instrument the number of flags a jurisdiction receives in a school year by dummy variables for each month of the school year that indicate whether the markaz was flagged and was in a small 'threshold' window around the arbitrary flagging cut-off.[4] The idea, similar to a regression discontinuity approach (Cattaneo, Frandsen and Titiunik, 2015; Cattaneo, Jansson and Ma, 2020; Cattaneo and Titiunik, 2022), is that whether a jurisdiction is flagged is "as good as random" conditional on being within the optimal bandwidth under a local randomization assumption. As such, our identification strategy utilizes a series of ad hoc administrative thresholds to investigate the efficacy of the management of that administration.[5]

We find precisely estimated evidence that the scheme had no substantive impact on targeted school or student outcomes: teacher and student attendance, functional school facilities, as well as English, Mathematics, and Urdu test scores. For instance, our instrumental variables analysis shows that a one standard deviation increase in flagging (reflecting more than a doubling of mean flagging) improves subsequent teacher presence, an outcome clearly within the authority of public managers, by a negligible tenth of a percentage point.[6]

It is possible that despite no overall impacts, the scheme produced significant changes in activity within the bureaucracy. We capitalize on our rich data on administrative activity to assess the impacts of flagging on key components of the public education production function. We assess the financial and personnel decisions of bureaucratic managers responsible for the flagged areas. We do not observe more visits from relevant bureaucrats to affected schools, or bureaucratic transfers of

[4] We also show robustness to more parametric approaches.

[5] We probe the validity of the instrument in a number of ways: we test as-if random assignment by showing precisely estimated balance on lagged school and student outcomes; the distribution of flags is smooth around the cut-offs showing evidence against sorting around the threshold; the instrument produces monotonic variation in the endogenous variable; and, finally, we observe a strong first stage. The exclusion restriction is likely trivially met, since the instrument isolates the variation in a strict subset of the endogenous variable, such that any effects of the instrument on the outcomes should only pass through the endogenous variable.

[6] Point estimates for all six outcomes similarly reflect a precisely estimated change of less than a percentage point, with standard errors smaller than a fifth of a percentage point.

head teachers or district heads. We do find changes in the budgets allocated to maraakiz flagged for teacher and student attendance: maraakiz with a standard deviation more flagging saw an increase of up to 18.5 percent of government funding made available to schools. However, this amount is small – about sixty additional dollars per annum per school – and there is no evidence that the increase in funds is accompanied by an increase in expenditures related to school operations, consistent with the limited impact on school outcomes. Thus overall, despite the enthusiasm for the reform of senior managers in Punjab, command-and-control management approaches did not motivate rank-and-file officers to change education outcomes in any substantively significant way.

Despite these null effects the program was maintained, and further developed, for 6 years. A potential reason for the persistence of the program is that a naive examination of before-after comparisons yields a strong positive effect of the program. Many outcomes in the policy domain exhibit reversion to the mean following idiosyncratic shocks, such as student test scores (Chay, McEwan and Urquiola, 2005). Our paper extends this finding to the overarching machinery of public administration. In our education setting, after a shock, schools in flagged areas follow a similar pattern of return to their equilibrium state of service delivery as their comparison schools in areas that were not flagged. Though senior managers observe the resolution of alert flags for particular administrative units, comparison to an appropriate counterfactual implies that this resolution does not seem to be due to their efforts.

We contribute to a growing literature on bureaucracy and development broadly (Finan, Olken and Pande, 2015; Besley et al., 2022), and on designing optimal incentive structures in the public sector more specifically (Ali et al., 2021; Deserranno, Leon and Kastrau, 2022). Recent (frequently experimental) papers in this literature have made the important contribution of showcasing the efficacy of various incentive schemes such as financial rewards (Muralidharan and Sundararaman, 2011; Dal Bó, Finan and Rossi, 2013; Ashraf, Bandiera and Jack, 2014; Deserranno, 2019; Leaver et al., 2021), career incentives (Khan, Khwaja and Olken, 2019; Bertrand et al., 2020), or other non-financial incentives (Ash and MacLeod, 2015; Khan, 2020; Honig, 2021). However, implementing many of these reforms at scale would require changes to the de jure environment which has been difficult to implement at scale (Banerjee et al., 2021; Muralidharan and Singh, 2020).[7] Given the systemic nature of centralized accountability, command-and-control reforms are poorly suited to

[7]By scale we mean both geographic coverage, but also temporal sustainability. Important exceptions are usually historical studies that examine major changes to civil service legislation (see for instance Xu (2018), Mehmood (2022), Aneja and Xu (2023), and Riaño (2021)). In fact, many papers examining these questions in modern bureaucracies refer to fixed de jure incentives under the Northcote-Trevelyan *system* that contain three features: competitive exam-based recruitment, rule-based promotions, and permanent civil service protected from political interference (Besley et al., 2022, p. 400). There are limited opportunities to examine how at scale changes in these impact the bureaucracy. See for instance Bertrand et al. (2020) how changes in the retirement age change career concerns in India.

experimental evaluation. We present the first at-scale evidence in the economics literature on this classic pillar of Weberian bureaucracy: centralized control mechanisms.

Our findings are also relevant for the literature on the efficacy of management approaches in the public sector (Bloom and Van Reenen, 2010; Bloom et al., 2015; Rasul and Rogger, 2018; Rasul, Rogger and Williams, 2020; Banerjee et al., 2021; Ali et al., 2021; Carreri, 2021). Evidence on the impact of control mechanisms on public sector performance is mixed, with generally positive results for frontline settings (Olken, 2007; Hussain, 2015; Dhaliwal and Hanna, 2017; Callen et al., 2020; Duflo, Hanna and Ryan, 2012; Das et al., 2016; Craig, Imberman and Perdue, 2015); and less supportive evidence from experiments about administrator's motivation and performance, or those dealing with organizational dynamics (Falk and Kosfeld, 2006; Dickinson and Villeval, 2008; Bandiera et al., 2021; Muralidharan and Singh, 2020). We extend this literature by providing evidence of the effects of centralized oversight on a broader administrative environment from an at-scale implementation in a large bureaucracy. By doing so, our study adds to the literature on the impacts of government-implemented schemes, which are argued to be a test of the external validity of pilot programs (Bold et al., 2018; Muralidharan and Niehaus, 2017; Vivalt, 2020) and an assessment of the most widely used public sector reforms (de Ree et al., 2017).[8]

We also add an early contribution to the nascent study of a key feature of bureaucracy: hierarchy. Though the theory of hierarchy in organizations continues to develop (Aghion and Tirole, 1997; Dessein, 2002; Chen, 2017; Chen and Suen, 2019; Easterly, 2008), there are few related empirical tests in the literature. Empirical work on government performance broadly finds mixed efficacy of the relative importance of top down versus bottom up accountability (Olken, 2007; Björkman and Svensson, 2009; Dunning et al., 2019). Recent evidence from public sector organizations specifically implies that understanding hierarchy is critical to behavior there (Deserranno et al., 2022; Cilliers and Habyarimana, 2023). This paper shows that de-facto pressure directed throughout hierarchy may not engender substantial responses from public officials, however salient senior management makes this form of incentive provision.

The paper proceeds as follows: Section 2 describes the setting of the public service we study and describes the centralized monitoring scheme. Section 3 introduces the data. Section 4 presents the analysis about the effect of the intensity of exposure to command and control on schooling outcomes. Section 5 presents assessments of the scheme's impact on key elements of the education administration. Section 6 explores the extent to which the scheme's results respond to naive

[8]The paper provides a lens to understand the results of smaller pilots of centralized oversight, such as Callen et al. (2020), which show that flagging underperforming health facilities in Punjab positively affected health workers' attendance. When taken to scale, such pilots may not provide a sustainable means of managing the public administration (Banerjee, Duflo and Glennerster, 2008; Banerjee et al., 2021).

evaluation of the bureaucratic response. Finally, Section 7 concludes.

2 Public Education in Punjab

Home to over half the population of the country, Punjab is the most populous province of Pakistan. Of the 110 million people based there, twenty million are school-aged children, over half of whom attend public schools. With over 52,000 public schools employing 400,000 teachers, the scale of managing public education in the province is substantial (School Education Department, 2018).

The province is divided into 36 districts, which are subdivided into administrative units called tehsils, further subdivided into areas of responsibility called “maraakiz" (plural of “markaz", the Urdu word for “center"). On average, there are four tehsils per district, and 48 maraakiz per tehsil. Thus, on average, a district-level education manager has 192 maraakiz to track, while each markaz-level official manages 20 schools.

The School Education Department is responsible for organizing and overseeing the education sector’s performance in the province. The department has two arms: district education authorities, which coordinate the implementation of public education delivery, and the Program Monitoring and Implementation Unit (PMIU), which is responsible for collecting and disseminating data on school performance. Both are staffed and organized separately, and monitoring is generally seen as independent of implementation.

2.1 Education Implementation and Monitoring

Each district in the province has one district education authority which reports directly to the School Education Department. The district education authority is led by an Executive District Officer (EDO), and three District Education Officers (DEOs).[9] Below the district leadership team, the hierarchy consists of officers for each tehsil, and assistant education officers (AEO) for each markaz. Each layer of the hierarchy is expected to manage those officers under them. AEOs are the layer of hierarchy above school principals, thus completing a multi-link chain of command from senior executive to school level. Being the lowest level education management official in the district, the AEOs frequent schools more than any other functionary of the education department, and are tasked with working closely with school principals to manage school-level performance (Malik and Bari

[9]One DEO oversees secondary education (high school and above) directly, while the other two oversee elementary schooling (primary and middle school grades, catering to children aged 4 to 12 years). This paper focuses on the layered organizational structure for management of elementary schools, which constitute 80% of all public schools in the province.

(2023)).

Such a layered hierarchy is not unusual in administrative settings worldwide, as the physical constraint of traveling to schools, handling administrative tasks for each school, and engaging with head teachers implies a limit on the scale of any officer ability for oversight. In contrast to this status quo, the promise of command-and-control style large-scale measurement is that it can alleviate physical constraints and centralize the ability to supervise and censure at scale. By dramatically lowering the cost of monitoring individual schools, digitization of public service delivery measurement has opened up the possibility of centralized management throughout the hierarchy. Such a system of monitoring the administration requires an independent administration.

The Program Monitoring and Implementation Unit (PMIU) is tasked with monitoring the performance of district officers. To this end, monitoring agents, called Monitoring and Evaluations Agents (MEAs), that report to PMIU conduct monthly inspection visits of public schools to assess key aspects of the school environment. These monitoring visits are conducted on an unannounced random date every month, and the assignment of school inspections to monitoring assistants is randomized to limit collusion with school staff.

2.2 Centralized Oversight Intervention

Data pipeline Beginning in December 2011, the monitoring data collected by PMIU was used to generate monthly performance reports called 'data packs.' The data packs reported performance for key school and student outcomes, including teacher presence, student attendance, visits by education implementation staff, and status of school facilities (electricity, drinking water, toilets, and boundary wall).[10] From September 2017, datapacks also reported scores on standardized Math, English, and Urdu tests administered every month.[11]

Datapacks The reported performance on each dimension was color-coded in the data packs based on fixed performance thresholds set by the chief minister's team. A jurisdiction could be coded red, orange, or green, with red being the primary flag for underperformance. Figure A2 in the Appendix illustrates the color-coding in the datapacks. Our study period spans from the introduction of the data packs in December 2011 to May 2018, just before the national elections that led to a change in

[10] Data packs also included the number of schools surveyed, if they were found closed, statistics by male and female schools, and recommendations about which schools to focus on to improve outcomes.

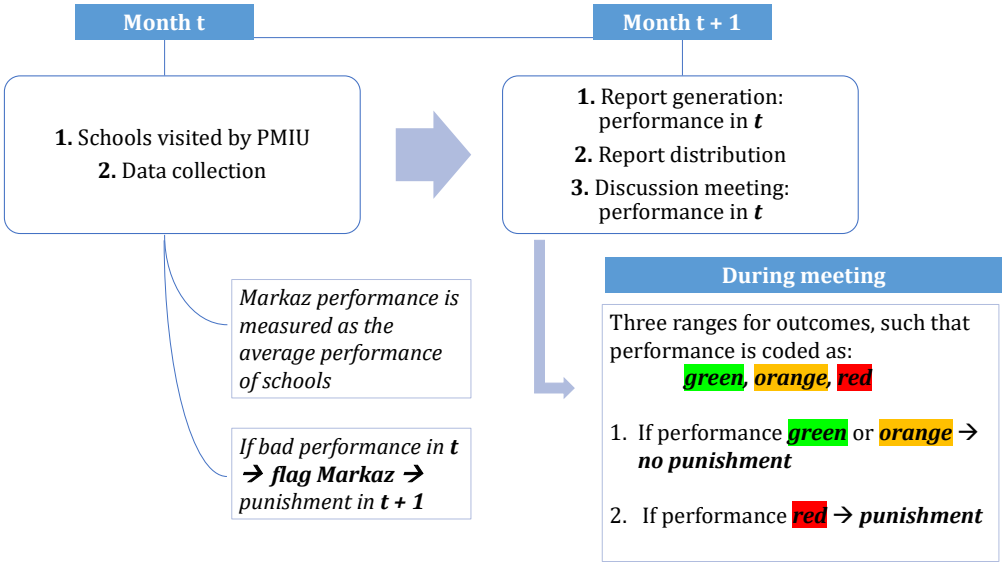
[11] These tests were conducted during the monthly inspection visit by the Monitoring and Evaluation Assistant (MEA). The MEA randomly selected six students from Grade 3 to administer the tests on a tablet through a custom designed testing application.

administration.

Using the PMIU-generated data on school performance, the Chief Minister of Punjab set up a centralized oversight regime for the education sector in 2011. He chaired an oversight committee and worked with the consultancy firm, McKinsey International, and a high-level advisor with expertise in centralized accountability.

Datapacks were generated to highlight jurisdictional performance starting from the markaz level all the way up to the district level, with a corresponding set of meetings where managers probed their subordinates on performance. Figure 2 illustrates the design of the monitoring scheme. Data on all schools in the province was collected in month t. Markaz-level average performance was presented to senior district managers in month $t+1$. Maraakiz that did not reach specific (standardized) thresholds were flagged red or orange.

Figure 2: Monitoring scheme structure



Centralized accountability using datapacks Monthly datapacks at the markaz level, and quarterly datapacks at the district level, were produced from December 2011 to May 2018. These datapacks fed as inputs into accountability meetings at the same frequency with senior managers at the district and provincial levels respectively. This design is a demonstration of centralized, data-informed accountability regimes. The centrality of the scheme to the administration's management, the scale and quality of data collection, and the length of time that the scheme was in place all make the scheme a good test for the efficacy of such approaches in the public sector.

At the central level, the scheme included quarterly meetings at the provincial level, that were chaired

by the Chief Minister, who "would make it a point to not miss any one of the meetings."[12] The senior management of the province placed substantial weight on the system, and the chief minister "had full ownership of this reform and [sent] a signal to the bureaucracy that they were to take it seriously" (Malik and Bari, 2023, p. 22).

Interviews with district officials revealed that these meetings with the Chief Minister involved the officers flagged red getting censured in front of their peers. Quoting Malik and Bari (2023), "the red were reprimanded, and the greens were appreciated," where "The constant monitoring by the Chief Minister and the Chief Secretary played a very critical role." Officials stated that they did "not want to be punished in front of our colleagues." The political weight and international guidance ensured the scheme was effectively implemented as intended.

This command-and-control approach was replicated inside each district: a senior manager from the district bureaucracy reported that "there was a very stringent mechanism for evaluation... from the AEOS to EDOs to DDEOs," (Malik and Bari (2023))[13] highlighting how the entire district education hierarchy was mobilized in the accountability chain. Malik and Bari, based on detailed qualitative work, report that EDOs told them that the "main actors involved in addressing... problems on the grass root level were the DEOs (District Education Officers) and the Assistant Education Offices (AEOs) - who are part of the EDO's team/report to him. These are officers who are in touch with schools at the markaz and individual school level."[14]

In each district, datapack reports were used for senior management check-ins within the first ten days of every calendar month. At least two district-level meetings were held during this period where the district education authority leadership would censure underperforming AEOs flagged in the data packs, and push for improvements. For instance, an AEO said the following on his communication with managers under the new accountability system: "We meet our relevant DDEO frequently in the office. The DDEO asks us for a daily report of the school situation. We submit the visit plan to the DDEO."

Overall, senior managers did not change de jure power, such as making AEO salaries conditional on performance, though some occassional ad hoc financial bonuses were given to district officials. We explore whether there is evidence of staff transfers or long-term impacts on career trajectories from poor performance, but do not find any such evidence. Instead, senior management was constrained

[12] Malik and Bari (2023) state that "All other practices of priority setting, target setting and use of data for monitoring were all feeding into the construction of this accountability mechanism that was arguably central to the design of the delivery approach that was instituted in Punjab."

[13] DDEOs, or Deputy District Education Officers, are tehsil-level education managers in the District Education Authority.

[14] We thank the authors for sharing some of their source material with us.

by public service rules meant to avoid political influence.

Instead, the system had to rely on de facto incentives to punish underperforming officials. The censuring based on datapacks generated incentives for district officials to motivate their subordinates. The scheme intended that greater oversight by senior management would allow sanctions to serve as motivation through the chain of command. As such, the scheme relied on the interaction between measurable outcomes and personnel management. In public sector oversight models, the outputs can be reduced to observable quantities, but improvements in these still rely on multidimensional and non-contractable activities. Thus, the question under evaluation is whether oversight and accountability regimes effectively motivate better personnel management throughout the hierarchy.

3 Data

To evaluate the impact of command-and-control management in Punjab, we use administrative data collected at the school level from December 2011 to May 2018.[15] The outcomes are monthly assessments of teacher presence, student attendance, and whether school facilities are functional. The first two are measured as the percentage of teachers/students present at the time of the visit by the monitoring assistants. The functional facilities measure notes the status of school infrastructure: drinking water, electricity, toilets, and the boundary wall. We use an aggregate index of the share of functional facilities.

In addition, starting in January 2016, PMIU began collecting data on student test scores in Math, English, and Urdu using standardized tests, administered by monitoring assistants to seven randomly selected 3rd-grade students in each school. Scores are measured as the percentage of correct answers. Finally, to understand the effect of bureaucratic behavior, we also use data on district education staff visits to schools.

To assess the data quality, we compared it with the Annual Census of Schools for the month the annual census was collected. Both data sources reported information about the number of teachers posted, enrolled students, and the functionality of school infrastructure. Figure A3 in the Appendix compares both sources and shows that there is a high overlap between both data sources. A comprehensive review of the data we use assesses it to be of generally high quality (World Bank, 2020).

Flagging thresholds for color-coding in the datapacks were designed to be generally applicable

[15] The data excludes June, July, and August of each year, corresponding to summer vacations and public schools being closed.

to schools across the province, and based on the education authorities' pre-existing targets for performance measures. These targets were mostly the same across all districts and for all months of the year. In the case of student attendance, different targets were assigned across different districts and for different months of the year based on historical performance as it was felt, in the case of that outcome, a moving target was more appropriate. We provide further details about the thresholds for color-coding in Appendix A.

Over the entire period, 82% of maraakiz were flagged red at least once on some outcome, and 96% were flagged red or orange. Like any population of schools, there were some which were persistently high performers. 1.6% of schools never dropped below 90% on any of the outcomes. However, of the 82% of maraakiz flagged once, 79% got flagged again at some point. Thus, the oversight intervention was broad in its reach across maraakiz.

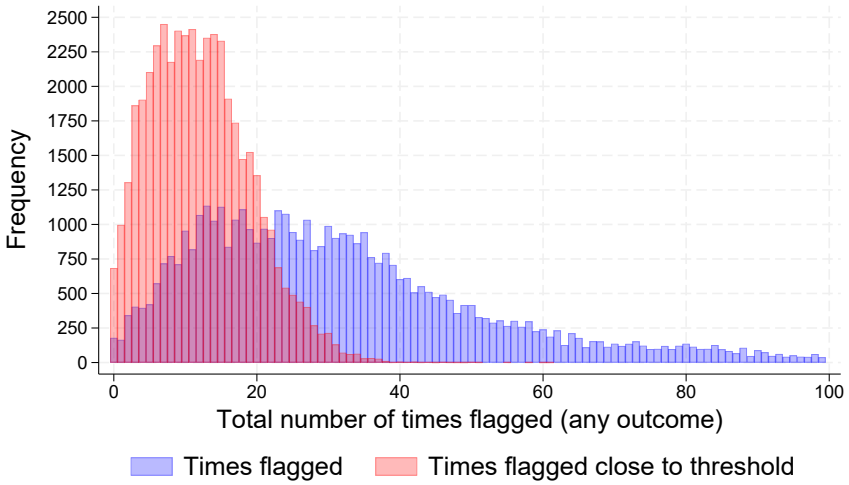
Furthermore, most of the schools were exposed to flagging at least once. The blue bins in Figure 3 show the distribution of the total number of times a school was in a flagged markaz on any of the flagging outcomes.[16] The red bins indicate the number of times a school was in a flagged markaz that was 'just punished', in the sense that the markaz was only marginally below the threshold for flagging. The dynamics of these schools will be the source of our identifying variation. Both of the distributions in Figure 3 indicate that flagging was a relatively common feature of the education system in Punjab.

Table 1 reports descriptive statistics. Panel A shows at the outcome-markaz-month. There is substantial variation in the number of schools within a markaz, broadly following differences in population size. However, the average number of schools an AEO must manage is 22, of which nearly 80% are elementary schools. Panel A also shows statistics separating outcomes in flagged (on that outcome) and non-flagged maraakiz. By construction, the mean in a flagged markaz is lower than the mean in a non-flagged markaz. In the month when a markaz is flagged on a particular outcome, there is a drop in the mean level of that outcome. A comparison of the columns gives the order of magnitude of the differences. For example, flagged maraakiz have an average teacher presence of 80%, while in non-flagged maraakiz it is 93%.

Panel B shows descriptive statistics at the outcome-school-month level. Schools are relatively small, with an average of 4.5 teachers and 109 students. Approximately 3% of the schools have ever had more than 20 teachers. Those with more than 20 teachers are evenly distributed across the province.

[16] For teacher presence, student attendance and functional facilities, a school can be in a flagged markaz at most nine times in a year. Assuming a school is always in a flagged markaz between 2012 and 2018, it can be flagged at most 63 times per outcome, or 189 times in total. The highest number of times flagged by Math, English, and Urdu scores is 22 per score or 66 in total.

Figure 3: Distribution of total number of flags by school



Note: This figure illustrates the distribution of flagging across schools. The y-axis reports the number of schools for each bin, which represent different numbers of time flagged. The blue distribution shows the number of times a school was ever flagged on any of the flagging outcomes. The red distribution shows the number of times a school is 'just punished', i.e. flagged while being 'close' to the threshold of flagging, defined by our econometric assessment of optimal bandwidth around the flagging threshold following Cattaneo, Frandsen and Titiunik (2015). The blue distribution is truncated at the 95^{th} percentile for illustration purposes.

In addition to the monthly flagging of AEOs/maraakiz, districts were ranked each quarter. The ranking was based on an overall score of performance in the previous months.[17] Panel C in Table 1 shows descriptive statistics for districts in the top/bottom positions. Bottom districts report a lower mean in the score. Panel C also shows the percentage of districts that entered the top/bottom five positions in each period. There are relatively a small number of cases in which new districts fell into the top (7.7%) or bottom (8.3%) positions, suggesting a high degree of persistence in the ranking status.

Figure 4 presents this persistence graphically. For each quarterly meeting, we color-coded the quintile in which the district fell in the overall score distribution. The districts in the higher quintiles tend to maintain a high position in the ranking. In contrast, districts in the lowest quintiles remained in last. The figure thus presents a descriptive sense that the flagging did not motivate poor performers sufficiently for their overall rankings to change.

A feature of the intervention environment is that almost all maraakiz were flagged at some point, and yet some districts and maraakiz remain systematically at the bottom of the distribution. Evidence from other settings indicates that education (and other environments) face structural constraints to improve outcomes (World Bank Group, 2018). However, they are also exposed to shocks (such

[17] Since this activity was based on a ranking, even if all districts were systematically improving, the ranking system kept rewarding districts with the highest relative scores and punishing those with the lowest scores.

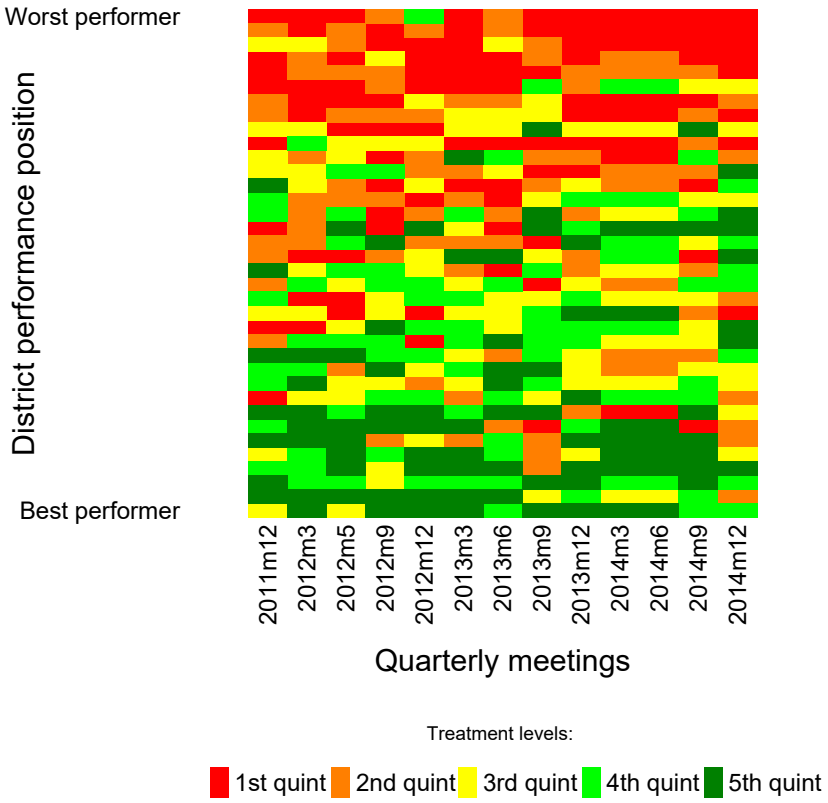
Table 1: Descriptive statistics

Panel A: Markaz-level variables								
	Mean	Median	Std. Dev.	Obs	Mean	Median	Std. Dev.	Obs
Number of schools	22	16	21	142,962	22	16	21	142,962
Proportion elementary	80	100	40	142,962	80	100	40	142,962
Outcomes (0-100)			**No flag**				**Flag**	
Teacher presence	93	94	4.4	104,667	80	83	8.4	10,031
Student attendance	91	92	6	99,045	80	82	7.9	15,625
Functional facilities	95	98	11	98,953	81	84	11	15,693
Math score	87	88	6.4	66,713	64	66	5.5	2,392
English score	80	80	6.4	54,364	64	66	5.4	14,741
Urdu score	85	86	6.4	66,011	65	67	5.8	3,094
Panel B: School-level variables								
	Mean	Median	Std. Dev.	Obs	Mean	Median	Std. Dev.	Obs
Number of teachers	4.5	3	3.8	2,627,487	4.5	3	3.8	2,627,487
Number of students	109	78	102	2,632,372	109	78	102	2,632,372
Outcomes (0-100)			**No flag**				**Flag**	
Teacher presence	92	100	15	2,378,448	84	100	22	244,600
Student attendance	89	93	12	2,175,245	81	85	17	451,303
Functional facilities	92	100	18	2,134,405	83	100	23	448,187
Math score	87	92	14	905,036	68	67	21	24,760
English score	79	83	18	725,631	66	67	20	204,147
Urdu score	85	89	15	890,076	68	71	20	39,694
Panel C: District-level variables								
	Mean	Median	Std. Dev.	Obs	Mean	Median	Std. Dev.	Obs
Outcomes (0-100)			**Top 5**				**Bottom 5**	
Overall score	94	95	3.8	70	78	78	10	70
New position	7.7	0	27	504	8.3	0	28	504

Notes: The unit for outcomes in Panel A is outcome-markaz-month; in Panel B it is outcome-school-month. Outcomes are measured in percentages from 0 to 100. Student test scores are measured as the percentage of correct answers in standardized tests. A unit is flagged if it receives a flag in the data pack on that outcome in that month. Outcomes in Panel B correspond to the maraakiz that had elementary schools for which an AEO can be flagged. Panel C reports statistics at the district-quarter level. The "Overall score" is the weighted average of markaz outcomes for a district for the three months before the meeting for those ranked at the top/bottom in the respective meeting. The "New position" variable measures the percentage of districts that enter into the top/bottom in each quarterly meeting.

as teachers getting sick) that substantially shift the absolute levels of service delivery. This would imply that Punjab's schools face shocks that sometimes push them under the flagging threshold irrespective of their baseline performance levels.

Figure 4: Distribution of quintiles of district performance



Note: This figure illustrates for each quarter the quintile of the overall district score distribution in which each district fell. District scores are measured based on the aggregate performance of teacher presence, student attendance, and functional facilities in each quarter. The figure ranks the districts based on their average performance of all the periods, such that the worst performing district at all times appears first.

The variation in outcomes between schools is consistent with this interpretation. Table 2 presents the standard deviations in school outcomes in each quintile of mean baseline performance. The top four quintiles of schools face comparable levels of variation, so there is a significant probability of falling below the thresholds in each. This probability is almost a magnitude higher in the lowest quintile. The likelihood of flagging jumps toward the bottom of the distribution, implying a persistently challenging environment to manage.

4 Intensity of Exposure to Command and Control

4.1 Empirical Strategy

We study the impact of the command-and-control approach to public management by using variation in the number of times a markaz is flagged. Public officials in charge of areas flagged multiple times

Table 2: Measures of variation by quintile of performance

School-level variation (sd) by quintiles of performance							
Outcome (0-100)	Q1	Q2	Q3	Q4	Q5	All	Obs.
Teacher presence	10	.98	.69	.75	1.4	7.6	51,532
Student attendance	14	1.3	.77	.71	1.6	9.9	51,507
Functional facilities	17	4.3	1.8	.54	.48	16	50,500
Math score	5.6	1.1	.82	.79	1.9	6.3	37,537
English score	6.1	1.4	1.1	1.2	3.1	8.3	37,536
Urdu score	5.8	1.3	.95	.93	2	7.1	37,536

Notes: The unit of observation for outcomes is presented at the school level. Teacher presence and student attendance are measured as the percentage of present teachers/students relative to the total teachers/students reported. The functional facilities variable is measured as the percentage of the school's functional infrastructure. Scores are measured as the percentage of correct answers in standardized tests. Each quintile is calculated separately based on the mean level of performance for each variable. The table shows the standard deviation for each school-level variable quintile.

face stronger de-facto punishments, such that more intense exposure to flagging should lead them to take actions that induce better outcomes. Many incentive schemes are designed for the public sector, and therefore could be said to have an extensive margin impact on the behavior of public sector actors. Yet, a frequent concern with these schemes is that they are not actualized in reality and thus have no intensive margin to speak of. As such, the intensive margin that we assess here represents the true parameter of interest to those interested in the drivers of public sector behaviors.

To measure the intensity of flagging, we aggregate our school-by-month data at the school-by-year level.[18] We then calculate for each markaz the number of times flagged during the year, such that schools are more (less) affected by the command-and-control approach if they were under the jurisdiction of a more (less) flagged markaz. The following equation displays the relationship between exposure to flagging and subsequent outcomes:

$$Y_{s,m,d,t+1} = \beta \cdot TimesFlagged_{m,d,t} + \alpha_m + \lambda_t + \delta_{dt} + \varepsilon_{s,m,d,t+1} \tag{1}$$

where $Y_{s,m,d,t+1}$ is the outcome for school s in markaz m and district d, for year $t+1$. In the main definition, the outcome is the yearly average performance on teacher presence, student attendance, or functional facilities. α_m denotes markaz fixed effects that control for constant characteristics of maraakiz, and λ_t is for time-fixed effects to capture time-specific shocks. We include δ_{dt} –a district binary and linear calendar index– to absorb district linear time trends. $\varepsilon_{s,m,d,t+1}$ is the error term clustered at the markaz level, the level of 'treatment'. $TimesFlagged_{m,d,t}$ is the z-score of the number of times a markaz was flagged in year t, the period preceding the outcome. β, therefore,

[18] We define a school year from September to May of the following calendar year, which coincides with the first and last month of school activities.

captures the effect of a standard deviation more intense flagging on subsequent markaz outcomes.

To obtain a causal interpretation of β, we build an instrumental variable for the number of times flagged, relying on the discontinuous nature of the flagging and the multiple "close-flagging" events to which a markaz is exposed during a year. We follow similar approaches used in the literature to estimate effects resulting from multiple discontinuity events (Clots-Figueras, 2011, 2012; Folke, 2014; Freier and Odendahl, 2015; Hyytinen et al., 2018; Meriläinen, 2022).

In a given *month*, flagging occurred only for a markaz that did not pass a performance threshold. Maraakiz whose aggregate schooling performance in a month was close to but above the threshold were not flagged despite their outcomes being approximately the same as flagged maraakiz slightly below the threshold. Under local randomization assumption from regression discontinuity designs (Cattaneo, Frandsen and Titiunik, 2015), flagging in a month is "as good as random" conditional on the markaz performance being within a small bandwidth around the threshold. This produces randomness in flagging at the month level and allows us to recover exogenous variation from multiple discontinuous events (Borusyak and Hull, 2023).

4.2 Instrumental variable

First, we use the arbitrary threshold definition to identify maraakiz whose average schooling outcomes in a month lie within a small bandwidth on either side of the flagging threshold. We refer to this as the 'threshold sample' in the rest of the paper.[19] We define the optimal bandwidth around the threshold following Cattaneo, Frandsen and Titiunik (2015) and present robustness to it. Second, we take advantage of the monthly flagging to define nine dummy variables, one for each month of the school year (Sep-May), indicating whether a markaz was flagged while close to the threshold –threshold sample–. Third, we use the *yearly* panel to instrument the number of months a markaz was flagged in a year with the nine flagging dummies, such that our estimating variation arises from episodes of flagging that were 'as good as random.' Thus, we estimate the following first-stage regression:

$$TimesFlagged_{m,d,t} = \sum_{j=1}^{J=9} \gamma_j \cdot S_{m,d,t(j)} + \theta_{m,d,t} + \alpha_m + \lambda_t + \delta_{dt} + \varepsilon_{m,d,t} \tag{2}$$

[19] We obtain the maraakiz in the threshold sample separately for each outcome of interest. The threshold sample consisting of maraakiz flagged at least once in the year while being close to the flagging threshold account for 30.5% of the maraakiz for teacher presence, 38% for student attendance, 30% for functional facilities, 11.8% for Math, 50% for English, and 20% for Urdu.

where $S_{m,d,t(j)}$ is equal to one (zero otherwise) if markaz m was flagged while close to the flagging threshold in month j of year t. Using the dummy variables indicating if a markaz was flagged while being close to the threshold instead of the number of months flagged allows us to measure the intensity of flagging non-parametrically to avoid imposing a functional form in the relationship between the endogenous variable and the instrument. We probe this definition in a number of ways in our robustness tests. Thus, γ_j captures the extent to which being flagged while near the threshold in a specific month induces additional flagging for a markaz in a year.

Notice that while there is as-if random variation in whether a markaz inside a small bandwidth around the threshold is flagged in a given *month*, the number of times a markaz is inside such small bandwidth in the year is still endogenous. To account for this, we include $\theta_{m,d,t}$ as a time-varying fixed effect that controls for the number of times a markaz was close to the threshold in year t. α_m, λ_t, and δ_{dt} are defined as in equation 1. The second stage is defined by the following equation:

$$Y_{s,m,d,t+1} = \beta \cdot \widehat{TimesFlagged}_{m,d,t} + \theta_{m,d,t} + \alpha_m + \lambda_t + \delta_{dt} + \varepsilon_{s,m,d,t+1} \tag{3}$$

Where $\widehat{TimesFlagged}_{m,d,t}$ is the instrumented number of times a markaz is flagged in a year, resulting from the predicted values of estimating the first-stage. Thus, our main parameter of interest is β, which captures the causal effect of flagging induced by being close to the threshold.

4.3 Identifying assumptions

To capture the causal effect of flagging on subsequent schooling outcomes, we require the instrument to be as-if randomly assigned and only affect subsequent performance through its impact on the number of times a markaz is flagged. We first validate the random assignment assumption by testing for the manipulation of the monthly markaz average outcomes around the threshold. If there is manipulation, monthly flagging cannot be assumed to be randomly assigned near the threshold. Figure B1 in the Appendix shows the results from a discontinuity in the density test following Cattaneo, Jansson and Ma (2020). We observe a smooth density distribution around the threshold and none of the tests are significant. We conclude that there is no evidence of manipulation in flagging assignments around the threshold.

We further test the random assignment assumption by examining if the treatment variable and instrument correlate with preexisting outcomes. We estimate equation 3 on lagged $(t-1)$ markaz outcomes using as explanatory variables the number of times flagged (D) and number of times flagged while being in the threshold sample (Z). Table 3 shows the results. Panel A reports on markaz schooling outcomes, and Panel B on student scores. The explanatory variables are defined

based on the flagging in year t for the outcome reported at the top of the panel. The results come from equation 1, including times close to the threshold fixed effect.

Columns (1)-(3) show the results when using the number of times flagged (D) as an explanatory variable and show that in all cases, there are significant, but smaller than one percentage point, coefficients. In contrast, columns (4)-(6) report the results for the number of times flagged in the threshold sample (Z). Here, we find, in general, an order of magnitude smaller coefficients versus columns (1)-(3). We also observe no significant coefficients, which is consistent with the random assignment of the instrument conditional on the number of times close to the threshold. The only exception is English, where the coefficient is significant but small: a one standard deviation change in flagging is associated with less than a quarter of a percentage point difference in average English scores. Taken together, these results show that flagging is orthogonal to previous performance, conditional on being close to the flagging threshold.[20]

We test for additional assumptions in the Appendix. Figure B2 shows evidence for the monotonicity assumption. We report a positive monotonic relationship between the instrument and the endogenous variable, residualized from the fixed effects reported in equation 2. Figure B3 shows evidence for the relevance assumption by reporting point estimates (γ_j) from equation 2 for each instrument on the normalized number of times flagged (z-score). The significance of the results supports the relevance of the instrument assumption. Finally, the exclusion restriction is likely trivially met, since the instrument isolates the variation in a strict subset of the endogenous variable. As such, any effects of the instrument on the outcomes should only pass through the endogenous variable.

4.4 Results

Table 4 presents our main results. Panel A reports on school outcomes, and Panel B on student scores. For each outcome at the top of the panel, the first column reports the OLS result and the second column reports the IV result. TimesFlagged$_t$ is defined based on each outcome flagging in year t and standardized such that a unit increase in the treatment is equal to a standard deviation increase in flagging intensity. On average, a standard deviation increase in flagging is equivalent to moving from 0.038 flags in the previous year to 1.61 flags. Outcomes in $t+1$ are scaled from 0 to 100. For all outcomes, the first stage F statistic is high, suggesting that the instruments altogether are not weak.[21]

[20] This analysis uses 80% of the maraakiz, comprising 94% of schools, observed in the school-year level estimations as maraakiz have changes in names that make the panel unbalanced. We show that our results are robust to estimation on this sample in Table B1 and discuss it below.

[21] We report the Kleibergen and Paap (2006) Wald test statistic, which coincides with a non-homoskedastic robust F-statistic in settings with a single endogenous regressor (Andrews, Stock and Sun, 2019).

Table 3: Orthogonality of the instrument

Panel A: Markaz average schooling outcomes

	Dependent variables (range: 0-100)					
	Teacher presence$_{t-1}$	Student attendance$_{t-1}$	Functional facilities$_{t-1}$	Teacher presence$_{t-1}$	Student attendance$_{t-1}$	Functional facilities$_{t-1}$
	(1)	(2)	(3)	(4)	(5)	(6)
# Times flagged$_t$ – D (z-score)	0.318***	0.204***	-0.748***			
	(0.123)	(0.077)	(0.147)			
# Times flagged threshold$_t$ – Z (z-score)				0.086	0.037	-0.041
				(0.060)	(0.050)	(0.071)
N. of obs.	7,470	7,470	7,470	7,470	7,470	7,470
Number markaz	2,871	2,871	2,871	2,871	2,871	2,871
Mean Dep. Var	92.1	88.7	93.9	92.1	88.7	93.9
Mean # Times flagged	0.21	0.36	0.24	0.21	0.36	0.24
SD # Times flagged	0.59	0.82	0.77	0.59	0.82	0.77

Panel B: Markaz average student scores

	Dependent variables (range: 0-100)					
	Math$_{t-1}$	English$_{t-1}$	Urdu$_{t-1}$	Math$_{t-1}$	English$_{t-1}$	Urdu$_{t-1}$
	(1)	(2)	(3)	(4)	(5)	(6)
# Times flagged$_t$ – D (z-score)	0.377***	0.591***	0.314***			
	(0.130)	(0.092)	(0.076)			
# Times flagged threshold$_t$ – Z (z-score)				-0.026	0.208***	0.029
				(0.055)	(0.066)	(0.041)
N. of obs.	3,672	3,674	3,674	3,672	3,674	3,674
Number markaz	1,836	1,837	1,837	1,836	1,837	1,837
Mean Dep. Var	87.1	75.8	84.2	87.1	75.8	84.2
Mean #Times flagged	0.032	0.28	0.050	0.032	0.28	0.050
SD # Times flagged	0.20	0.65	0.24	0.20	0.65	0.24
Markaz FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
District time trends	Yes	Yes	Yes	Yes	Yes	Yes
#Times in threshold$_t$ FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The unit of analysis is the markaz-year. Results from estimating equation 3. Outcomes in the top of each column, measured in year $t-1$ in scale from 0 to 100. Panel A reports on schooling outcomes. Panel B reports on student scores. # Times flagged$_t$ counts the number of times a markaz was flagged in year t in the outcome reported at the top of the column. # Times flagged threshold$_t$ counts the number of times flagged while being close to the flagging threshold in the outcome reported at the top. The variables for the # Times flagged are normalized (z-score). Year is measured as school-year (September to May). Teacher presence and student attendance are measured as the percentage of present teachers/students. Functional facilities is measured as the percentage of the school's functional infrastructure. Scores are measured since 2016, and consist on the share of correct answers in standardized exams performed on a random sample of primary students. *Mean # Times flagged* and *SD # Times flagged* indicate the mean and standard deviation of # Times flagged$_t$. *Mean. Dep. Var* shows the average outcome in the markaz in year t. Standard errors clustered by markaz are in parentheses. * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

We find limited effects of the command-and-control system. OLS yields small significant effects for all outcomes. For teacher presence, for example, an increase of one standard deviation in flagging increases the average teacher presence by 0.206 percentage points. In Panel A, the 2SLS coefficients indicate an improvement only for teacher presence. The estimate show that a one standard deviation increase in flagging increases teacher presence by 0.112 of a percentage point. This implies that even the 95th percentile of flagging intensity would yield less than a quarter percentage point increase in teacher presence. There are also similar small and negative effects on student attendance and functional facilities, but these are not significant. Perhaps intuitively, teacher presence is the element of the student production function that would be most responsive to hierarchical pressures. But as we report, even in this case the effects are limited. The scale of our data allows us to be relatively precise in estimation, allowing us to detect the extremely small, and economically negligible, impact of command-and-control. The results in Panel B also suggest that more intense exposure to the scheme does not appear to substantially improve average student performance throughout the year.

Robustness We follow Borusyak and Kolerman-Shemer (2024) to estimate a regression discontinuity aggregation design –RDA– that resembles our specification but including additional controls.[22] We redefine the endogenous variable as the share of months in a year a markaz was flagged, and the instrument as the share of months a markaz was flagged while being around the threshold. We then estimate equation 3 controlling by: i) the share of months where the markaz was close to the threshold, ii) the average markaz performance in the year, weighted by the share of months the markaz was around the threshold, and iii) the average markaz performance in the year weighted by the share of months the markaz was flagged while being close to the threshold. We find no significant results (see Appendix Table B2).

Next, we probe if the results are sensitive to more parametric approaches. We do this by redefining the instrument in three ways: i) *Linear*, which is the normalized number of times a markaz is flagged close to the threshold; ii) *Ever*, which is a dummy equal to one if the markaz reported being flagged at least once a year; and iii) *Median*, which is a categorical variable for whether a markaz is flagged above or below the median of the distribution of flagging. We find that the results are not sensitive to parametric instrument definition: the coefficients remain smaller than a half of a percentage point in all cases (see Appendix Table B3).

We also test if our results are sensitive to the definition of the endogenous variable. In the main analysis, this variable is defined as the z-score of the number of times a markaz is flagged. We test

[22] See Borusyak and Kolerman-Shemer (2024) for further details. The authors argue that by including their proposed controls, the RDA estimator inherits characteristics of a regression discontinuity design.

Table 4: Impacts of exposure to flagging

Panel A: School outcomes

	Dependent variables (range: 0-100)					
	Teacher presence$_{t+1}$		Student attendance$_{t+1}$		Functional facilities$_{t+1}$	
	OLS	2SLS	OLS	2SLS	OLS	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)
# Times flagged$_t$ (z-score)	0.206***	0.112*	0.321***	-0.067	0.945***	-0.091
	(0.046)	(0.067)	(0.048)	(0.079)	(0.082)	(0.106)
N. of obs.	257,592	257,592	257,865	257,865	254,058	254,058
Number markaz	3,567	3,567	3,567	3,567	3,567	3,567
Mean Dep. Var.	91.6	91.6	87.6	87.6	90.2	90.2
Mean # Times flagged	0.87	0.87	1.59	1.59	1.61	1.61
SD # Times flagged	1.42	1.42	2.19	2.19	2.81	2.81
First stage F-stat		210.8		258.6		382.5

Panel B: Student scores

	Dependent variables (range: 0-100)					
	Math$_{t+1}$		English$_{t+1}$		Urdu$_{t+1}$	
	OLS	2SLS	OLS	2SLS	OLS	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)
# Times flagged$_t$ (z-score)	0.293***	0.230	0.798***	0.578***	0.169**	-0.239
	(0.084)	(0.189)	(0.116)	(0.165)	(0.080)	(0.175)
N. of obs.	67,385	67,385	67,383	67,383	67,384	67,384
Number markaz	2,721	2,721	2,721	2,721	2,721	2,721
Mean Dep. Var.	86.9	86.9	76.5	76.5	84.6	84.6
Mean # Times flagged	0.038	0.038	0.34	0.34	0.065	0.065
SD # Times flagged	0.24	0.24	0.96	0.96	0.33	0.33
First stage F-stat		34.9		156.7		53.3
Markaz FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
District time trends	Yes	Yes	Yes	Yes	Yes	Yes
# Times in threshold$_t$ FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The unit of analysis is the school-year. Results from estimating equation 3. Outcomes in the top of each column, measured in year $t+1$ in scale from 0 to 100. Panel A reports on schooling outcomes. Panel B reports on student scores. # Times flagged$_t$ is the number of times a markaz was flagged in year t in the outcome reported at the top of the column. # Times flagged threshold$_t$ is the number of times flagged while being close to the flagging threshold in the outcome reported at the top. # Times flagged is normalized (z-score). OLS columns show the results from equation 3. 2SLS columns show the results after instrumenting the # Times flagged by # Times flagged threshold. Year is measured as school-year (September to May). The first stage is estimated through equation 2. *First stage F-stat* show the Kleibergen and Paap (2006) F-statistic. *Mean # Times flagged* and *SD # Times flagged* indicate the mean and standard deviation of # Times flagged$_t$. *Mean. Dep. Var* shows the average outcome in the markaz in year t. Teacher presence and student attendance are measured as the percentage of present teachers/students. Functional facilities is measured as the percentage of the school's functional infrastructure. Scores are measured since 2016, and consist on the share of correct answers in standardized exams performed on a random sample of primary students. Standard errors clustered by markaz in parentheses. * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

if we get larger impacts when a markaz gets more flags over the course of the year versus no flags. We define the endogenous variable (and instrument) equal to one if the markaz was flagged once, two if the markaz was flagged twice, and three if the markaz was flagged thrice or more.[23] The base category is zero if there is no flagging. As before, point estimates are small in all cases (see Appendix Figure B4), supporting our main conclusions.

In addition, we test if our results are sensitive to alternative bandwidth definitions (Appendix Figure B5), different flagging thresholds (Appendix Table B4), or if there are effects for schooling outcomes different to those of defining the flagging (Appendix Table B5). Finally, and, since the analysis of orthogonality of the instrument in Table 3 limited attention to about 80% of maraakiz, we also show that our results are robust to subsetting to the same sample (see Appendix Table B1).

Subsample Analysis While we have shown that there is no evidence that more intense command-and-control improved outcomes on average across the school year, it could be the case that the program worked in either improving the worst months of performance or the best months of performance in a given school year. We also find no evidence for this: the analysis in Appendix Table B6 takes as the outcome the performance in the best and worst months of a school year instead of the average across all months. Remarkably, IV estimates show that, as before, improvements remain smaller than a percentage point, suggesting that the program did not substantively improve outcomes across the school year.

Next, despite finding no average effects, we examine if specific schools improved by exploring heterogeneity by school characteristics. We use the fact that whether a markaz is flagged depends on the *average* performance of all schools in that markaz. We estimate the effects by separating the sample by best- and worst-performing schools, defined as those with an average yearly performance above or below the markaz median. Table B7 shows minimal effects in both types of schools.

Schools may also be affected based on the district in which they are located, as district officers are punished (rewarded) if the district is in the bottom (top) five performing areas. We explore the differential effects of district ranking by interacting the number of times flagged with an indicator showing whether the markaz was ever in the five bottom/top districts in year t.[24] We find substantively small effects (see Table B8).[25]

[23] For student performance variables there is an smaller yearly sample, so we define for them the endogenous variable (and the instrument) as one if the markaz was flagged once, and two if the markaz was flagged twice or more.

[24] For the 2SLS estimations using 3, we first instrument the number of times flagged using equation 2, then interact the predicted variable with the district ranking indicators.

[25] Data on district punishment/reward goes until May 2015, before data on student scores started to be collected in the datapacks. Thus, we only report district performance heterogeneity for school performance variables.

Another possibility is that the system was intended to serve political ends and was implemented to a higher quality in certain areas. We follow Callen, Gulzar and Rezaee (2020) to identify maraakiz in constituencies aligned with the ruling party where political pressures might generate differential effects. Using data from the 2013 Provincial Assembly elections, we define an aligned markaz if all its schools lie in constituencies with a winner from the Chief Minister's party. As markaz might overlap with multiple constituencies, we also control for an indicator for not fully aligned maraakiz. Table B9 shows the results of the interaction of the alignment indicator with the number of times flagged on school performance variables. IV estimates show no differential effects of alignment with the state ruling party, suggesting that political pressure does not improve educational outcomes under this program.

5 Tracing Impacts Through the Machinery of Government

Although we did not observe meaningful impacts of the command-and-control scheme on school outcomes, the approach to public management may induce a response from bureaucratic actors within the government machinery. We use the detailed data we have assembled to investigate whether we can detect effects of the scheme along the chain of bureaucratic hierarchy. We are able to analyze the impact of command-and-control on administrative action in terms of both personnel and financial resources, the two key inputs to effective government functioning.

Bureaucratic Oversight A natural immediate response by public officials flagged for poor performance would be to visit poorly performing schools to undertake diagnostic and remedial work. School visits are a standard part of the AEO work program and a mechanism to resolve issues that schools face in functioning effectively. To measure AEO school visits, we calculate the share of months that a school received a bureaucratic visit in a year. Appendix Table C1 indicates that the flagging has no significant effects on bureaucratic visits to schools. Figure C1 shows the robustness of these results for alternative instrument definitions.

Transfers and Postings Public officials can also intervene in the management of schools through the labor market by moving head teachers in response to flagging. We explore whether the markaz flagging induced a higher rotation of head teachers, as AEOs might use it to improve school performance within their administrative unit. To measure the rotation of head teachers, we define a variable equal to one if the head teacher reported in a month is different from the one reported in the previous month. We then calculate the share of months in a year that a school reported different head teachers. Appendix Table C1 indicates that the flagging has no significant effects

on bureaucratic transfers and postings. Figure C1 further shows the robustness of these results for different instrument definitions.

Budget Allocation and Utilization In addition to increasing monitoring intensity, public officials can also channel more budgetary resources to support struggling schools. We estimate equation 3 on measures of school budget allocation and utilization to explore the relationship between command-and-control and school resources.

Our measure of school funds consists of the budget allocated for development spending, which schools use to cover non-recurrent needs. About 86% of this budget comes from the government and the rest comes from non-government sources.[26] While district officials have limited influence over non-government funding, they have substantial influence over government contributions to the development budget. Every year, AEOs assess how much development funding is needed for each school they supervise, and communicate the requirements. If approved, funding is allocated to the district education authority, which has autonomy over its spending.

Table 5 shows the results on the total development funds and its expenditures. With our IV strategy, we find that a one standard deviation increase in flagging for teacher presence and student attendance increase the total amount of funds made available to schools, by 15 and 18.5 percent respectively. However, the increase is minor as for the *average* school it amounts to between 48.3-59.7 additional dollars annually per school.[27] The increase in resources arises solely from government funds. We detect no impacts on non-government funds (see Appendix Table C2). We do not observe a corresponding impact on resource availability arising from flagging for lapses in functional facilities and student scores variables. This small increase in financial resources made available in flagged maraakiz is the most direct evidence of the impact of command-and-control management that we detect in this study.

We find mixed evidence for corresponding changes in expenditure at the school level. In the case of teacher presence flagging, the coefficient suggests that a one standard deviation increase in flagging increases expenditure by 9.4 percent (s.e.=6.5). The coefficient for flagging on student attendance suggests a *decrease* in expenditure by 7.1 percent (s.e.=7.2). Yet, both coefficients are statistically insignificant. Thus, our microdata does not provide evidence that the increase in funding also increased subsequent expenditures related to school functioning, which is in line with the idea that

[26] Local community participatory bodies are authorized to raise funds for development expenses of school from parents, philanthropists, and other non-government sources.

[27] Between 6,724-8,293 Pakistan rupees, using the average conversion rate from December 2018, corresponding to 139 rupees per dollar.

beyond senior management action, command and control has limited affects on bureaucratic activity. Figure C2 in the Appendix report robustness to alternative instrument definitions for the budgetary outcomes.

Table 5: Intensity of exposure to flagging - effect on budget

Panel A: School outcomes flagging												
Flagging variable	Teacher presence		Student attendance		Functional facilities		Teacher presence		Student attendance		Functional facilities	
	Dependent variables (logs)											
	Total Funds$_{t+1}$						Expenditure$_{t+1}$					
	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
# Times flagged$_t$ (z-score)	0.199***	0.150**	0.151***	0.185*	-0.020	-0.031	0.049	0.094	0.049	-0.071	0.039	-0.031
	(0.044)	(0.075)	(0.050)	(0.097)	(0.042)	(0.089)	(0.037)	(0.065)	(0.040)	(0.072)	(0.040)	(0.071)
N. of obs.	258,147	258,147	258,147	258,147	258,147	258,147	258,147	258,147	258,147	258,147	258,147	258,147
Number markaz	3,567	3,567	3,567	3,567	3,567	3,567	3,567	3,567	3,567	3,567	3,567	3,567
Mean Dep. Var. (unlogged)	44,827	44,827	44,827	44,827	44,827	44,827	57,033	57,033	57,033	57,033	57,033	57,033
Mean # Times flagged	0.87	0.87	1.59	1.59	1.61	1.61	0.87	0.87	1.59	1.59	1.61	1.61
SD # Times flagged	1.42	1.42	2.19	2.19	2.81	2.81	1.42	1.42	2.19	2.19	2.81	2.81
First stage F-stat		210.5		258.8		386.0		210.5		258.8		385.9
Panel B: Student scores flagging												
Flagging variable	Math		English		Urdu		Math		English		Urdu	
	Dependent variables (logs)											
	Total Funds$_{t+1}$						Expenditure$_{t+1}$					
	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
# Times flagged$_t$ (z-score)	0.054**	0.066	0.062**	0.090*	-0.036	-0.003	-0.006	-0.061	0.008	0.012	0.018	-0.048
	(0.027)	(0.062)	(0.028)	(0.052)	(0.026)	(0.045)	(0.025)	(0.042)	(0.025)	(0.050)	(0.023)	(0.038)
N. of obs.	94,605	94,605	94,605	94,605	94,605	94,605	94,605	94,605	94,605	94,605	94,605	94,605
Number markaz	3,150	3,150	3,150	3,150	3,150	3,150	3,150	3,150	3,150	3,150	3,150	3,150
Mean Dep. Var. (unlogged)	44,827	44,827	57,033	57,033	44,827	44,827	57,033	57,033	44,827	44,827	57,033	57,033
Mean # Times flagged	0.038	0.038	0.038	0.038	0.34	0.34	0.34	0.34	0.065	0.065	0.065	0.065
SD # Times flagged	0.24	0.24	0.24	0.24	0.96	0.96	0.96	0.96	0.33	0.33	0.33	0.33
First stage F-stat		35.1		35.1		156.9		156.9		53.2		53.2
Markaz FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District time trends	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# Times in threshold$_t$ FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The unit of analysis is the school-year. Results from estimating equation 3. Outcomes in the top of each column, measured in year $t+1$ in scale from 0 to 100. Panel A report on the schooling outcomes flagging. Panel B reports on the student scores flagging. # Times flagged$_t$ is the number of times a markaz was flagged in year t in the outcome reported at the top of the column. # Times flagged threshold$_t$ is the number of times flagged while being close to the flagging threshold in the outcome reported at the top. # Times flagged is normalized (z-score). OLS columns show the results from equation 3. 2SLS columns show the results after instrumenting the # Times flagged by # Times flagged threshold. Year is measured as school-year (September to May). The first stage is estimated through equation 2. *First stage F-stat* show the Kleibergen and Paap (2006) F-statistic. *Mean # Times flagged* and *SD # Times flagged* indicate the mean and standard deviation of # Times flagged$_t$. *Mean. Dep. Var* shows the average outcome in the markaz in year t. Unlogged total funds and expenditure in pakistani rupees. Standard errors clustered by markaz in parentheses. * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Taken together, our results on the machinery of government imply that command-and-control

management yields small increases in resources budgeted for schools flagged on teacher and student attendance, but no other actions to convert these resources into improved service delivery. Such findings are consistent with our main results implying that the increase in allocated resources had no impacts on educational outcomes.

6 Naive Evaluations of Response

In contrast to the limited impacts of command-and-control documented here, hierarchical systems of control are prevalent in many public sector settings. Why do such programs persist? One explanation is that senior managers are employing naive evaluations of the response to such programs. It may be that after shocks to the outcomes of interest, they naturally return to their original state as shown by Chay, McEwan and Urquiola (2005). Yet, if senior managers intervene and do not benchmark treatment schools with an appropriate counterfactual, they may naively attribute the dynamics of the improved outcomes to their own intervention.

To explore this possibility, we use the school-by-month data to build a stacked dataset where, for each monthly flagging event, we make a sub-dataset consisting of schools in a flagged markaz at the time of the event. For comparison, we create a sub-dataset of those schools never in a flagged markaz during the time window of interest. We then stack all the sub-datasets together so the flagging event is centered in relative time, and we can compare the evolution of schools in flagged and unflagged maraakiz. For consistency with our analysis above, we can also identify those schools in maraakiz close to the flagging thresholds for each outcome. More precisely, we identify the maraakiz within an optimal bandwidth on either side of the flagging threshold in event-time 0 (Calonico, Cattaneo and Farrell, 2020), as in Section 4.[28]

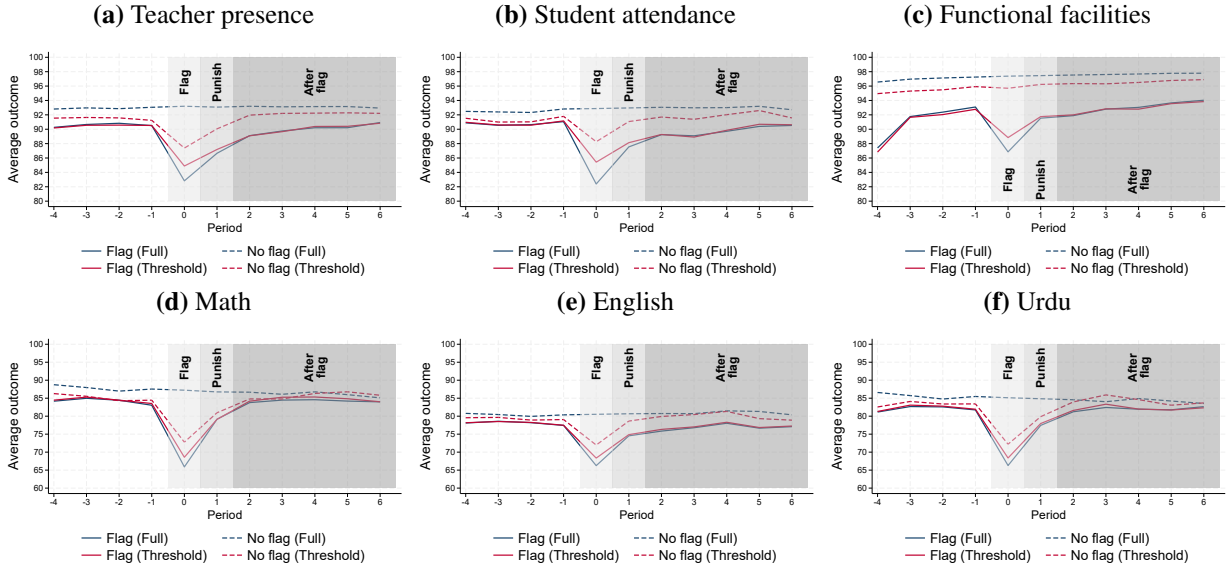
Figure 5 presents the evolution of the stacked outcomes in relative time, anchored around periods of lag. Blues lines show the full stacked sample. Red lines plot the evolution for the optimal bandwidth sample around the flagging threshold. Solid lines are schools in flagged maraakiz. Dotted lines are schools in non-flagged maraakiz. We highlight three periods corresponding to the month in which the data is collected and the flag is defined – *Flag*, the month in which these are reported to oversight committees and punishments occur – *Punish*, and the period after the flagging events, where we assess the impact of treatment – *After flag*.

Focusing first on the blue lines that compare all flagged maraakiz (solid) with non-flagged maraakiz

[28] We obtain optimal bandwidths separately for each event panel to build a stacked-threshold sample. The threshold sample consists of 8.2% of the full sample for teacher presence, 11.5% for student attendance, 12.4% for functional facilities, 3% for Math, 20% for English, and 5.8% for Urdu.

(dotted), we observe that flagged and non-flagged marakiz follow similar paths just before the flagging. In the month of flagging, the average school in a markaz that gets flagged suffers from a shock, contributing to the markaz being selected for treatment. This is similar to Ashenfelter dip (Ashenfelter, 1978; Ashenfelter and Card, 1984; Heckman and Smith, 1999), where self-selection into the treatment happens because of a negative shock.

Figure 5: Evolution of school outcomes in relative time - markaz flagging



Note: The figure presents the average evolution of schools in flagged (continuous line) and non-flagged (dashed line) maraakiz. Flagging is based on the outcome variable in focus. Blue lines represent the full sample. Red accounts for the threshold sample that is "close" to the flagging threshold. Relative time is divided into: *Flag*: period where information is collected and maraakiz are flagged; *Punish*: period where the reports are distributed and oversight meetings are held; *After flag*: periods after the meeting. Teacher presence and student attendance are measured as the percentage of present teachers/students relative to the total teachers/students reported. The functional facilities variable is measured as the percentage of the school's functional infrastructure. Scores variables are measured as the share of correct answers of students in standardized exams.

A senior manager following the trajectory of school outcomes in either the full or threshold samples of flagged maraakiz across the flagging and punishment periods and beyond would observe the trajectories illustrated by the solid lines in Figure 5. A naive interpretation of these dynamics is that the maraakiz are seemingly responsive to the flagging and punishment periods. However, by comparing the dynamics of the flagged maraakiz with those that were not flagged (the dotted lines), one can perceive little impact of flagging on the overall trajectories of outcomes. Flagged maraakiz do no better than non-flagged maraakiz, and typically revert to their mean level of performance before the period 0 shock by the 4th proceeding month. In addition, even non-flagged maraakiz exhibit a dip in performance in the flagging period and revert to historical trends, further showing that flagging itself is not contributing to recovery.

Appendix D presents the corresponding statistical assessment of these trends by applying a stacked

(Cengiz et al., 2019; Baker, Larcker and Wang, 2022) difference-in-discontinuities approach (Grembi, Nannicini and Troiano, 2016) to the setup described here. As a natural extension, Appendix D also show the results of estimating markaz-by-month effects using regression discontinuity design. Overall, the analysis implies the observed dynamics are equivalent to a reversion to the mean. By naively interpreting the natural reversion of school outcomes to their pre-shock means, senior managers may incorrectly associate better public sector outcomes with their own command-and-control interventions.

7 Conclusions

Centralized command of the public administration, typically with few related changes in the de jure incentive structure, has been a dominant approach to the management of the public sector (Finer, 1997; Education Commission, 2023). The rise of public service digital information systems has brought greater attention to the efficacy of this approach. As centralized analytical units have fed substantial volumes of data to senior managers, governments have been keen to showcase their responsiveness to this data through top-down methods of controlling service delivery. Despite the prevalence of this approach to managing government throughout history, as well as its continued implementation at scale worldwide, there have been limited evaluations to date on its efficacy.

We analyze the effectiveness of the main instrument used in applying 'command and control' in government administration by evaluating a system from Punjab province in Pakistan that alerted senior government managers to poorly performing jurisdictions. Despite flagging of poor performance leading to de facto accountability along the bureaucratic hierarchy, the scheme had no substantive impacts on schooling outcomes across any targeted outcome. By assessing the activities of public officials throughout the chain of service delivery, we find that this system had a negligible impact on any aspect of government functioning beyond a slight increase in government funding for some flagged schools. Our data allow us to make these claims with a high degree of precision. Taken together, our results suggest that centralized command-and-control management approaches struggle to effectively manage unpredictable delivery environments. Such findings are consistent with emerging literature on large-scale incentive provision in the public service.

An obvious caveat to our findings is that de jure incentives were not changed, and thus it could be argued that we would not expect to see responses by rational economic actors. However, a widespread literature on the personnel economics of the state has documented the challenges to sustained changes in formal public sector contracts (Banerjee et al., 2021) and the dominance of de facto public sector incentive schemes implemented in reality (Schuster et al., 2023). As such, a

frontier of that literature is to understand how de facto incentives (such as top-down accountability) may or may not improve service delivery outcomes. We provide a contribution to that debate.

A natural question that arises from these findings is why a management approach with such limited effects persists as a phenomenon observed in public services around the world. By capitalising on the fine-grained temporal nature of our data, we highlight that a naive evaluation of the scheme may lead senior managers to believe their interventions have subsequent positive impacts on school outcomes. In contrast, in all but one period and for one outcome, we do not observe a transition after flagging that differs from an organic reversion-to-the-mean.

In conclusion, our paper provides a detailed evaluation of the concerns with centralized accountability systems debated in the literature (Kane and Staiger, 2002; Besley and Coate, 2003; Bardhan, 2002; Dal Bó et al., 2021). Our results support the perspective that 'command-and-control' oversight and control approaches fail to induce economically-meaningful changes throughout a public sector hierarchy.

References

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

Ali, Aisha J, Javier Fuenzalida, Margarita Gómez, and Martin J Williams. 2021. "Four lenses on people management in the public sector: an evidence review and synthesis." *Oxford Review of Economic Policy*, 37(2): 335–366.

Andrews, Isaiah, James H. Stock, and Liyang Sun. 2019. "Weak Instruments in Instrumental Variables Regression: Theory and Practice." *Annual Review of Economics*, 11(Volume 11, 2019): 727–753.

Aneja, Abhay, and Guo Xu. 2023. "Strengthening State Capacity: Civil Service Reform and Public Sector Performance during the Gilded Age."

Ash, Elliott, and W. Bentley MacLeod. 2015. "Intrinsic Motivation in Public Service: Theory and Evidence from State Supreme Courts." *The Journal of Law and Economics*, 58(4): 863–913.

Ashenfelter, Orley. 1978. "Estimating the effect of training programs on earnings." *The Review of Economics and Statistics*, 47–57.

Ashenfelter, Orley C, and David Card. 1984. "Using the longitudinal structure of earnings to estimate the effect of training programs."

Ashraf, Nava, Oriana Bandiera, and B Kelsey Jack. 2014. "No margin, no mission? A field experiment on incentives for public service delivery." *Journal of public economics*, 120: 1–17.

Baker, Andrew C, David F Larcker, and Charles CY Wang. 2022. "How much should we trust staggered difference-in-differences estimates?" *Journal of Financial Economics*, 144(2): 370–395.

Bandiera, Oriana, Michael Carlos Best, Adnan Qadir Khan, and Andrea Prat. 2021. "The Allocation of Authority in Organizations: A Field Experiment with Bureaucrats*." *The Quarterly Journal of Economics*, 136(4): 2195–2242.

Banerjee, Abhijit, Raghabendra Chattopadhyay, Esther Duflo, Daniel Keniston, and Nina Singh. 2021. "Improving Police Performance in Rajasthan, India: Experimental Evidence on Incentives, Managerial Autonomy, and Training." *American Economic Journal: Economic Policy*, 13(1): 36–66.

Banerjee, Abhijit V., Esther Duflo, and Rachel Glennerster. 2008. "Putting a Band-Aid on a Corpse: Incentives for Nurses in the Indian Public Health Care System." *Journal of the European Economic Association*, 6(2-3): 487–500.

Barber, Michael. 2013. "The Good News from Pakistan." Reform, London.

Bardhan, Pranab. 2002. "Decentralization of Governance and Development." *Journal of Economic Perspectives*, 16(4): 185–205.

Bertrand, Marianne, Robin Burgess, Arunish Chawla, and Guo Xu. 2020. "The glittering prizes: Career incentives and bureaucrat performance." *The Review of Economic Studies*, 87(2): 626–655.

Besley, Timothy, and Stephen Coate. 2003. "Centralized versus decentralized provision of local public goods: a political economy approach." *Journal of Public Economics*, 87(12): 2611–2637.

Besley, Timothy, Robin Burgess, Adnan Khan, and Guo Xu. 2022. "Bureaucracy and Development." *Annual Review of Economics*, 14(1): 397–424.

Björkman, Martina, and Jakob Svensson. 2009. "Power to the People: Evidence from a Randomized Field Experiment on Community-Based Monitoring in Uganda*." *The Quarterly Journal of Economics*, 124(2): 735–769.

Bloom, Nicholas, and John Van Reenen. 2010. "Why Do Management Practices Differ across Firms and Countries?" *Journal of Economic Perspectives*, 24(1): 203–24.

Bloom, Nicholas, Renata Lemos, Raffaella Sadun, and John Van Reenen. 2015. "Does Management Matter in schools?" *The Economic Journal*, 125(584): 647–674.

Bold, Tessa, Mwangi Kimenyi, Germano Mwabu, Alice Ng'ang'a, and Justin Sandefur. 2018. "Experimental evidence on scaling up education reforms in Kenya." *Journal of Public Economics*, 168: 1–20.

Borusyak, Kirill, and Matan Kolerman-Shemer. 2024. "Regression discontinuity aggregation, with an application to the union effects on inequality." *arXiv preprint arXiv:2501.00428*.

Borusyak, Kirill, and Peter Hull. 2023. "Nonrandom exposure to exogenous shocks." *Econometrica*, 91(6): 2155–2185.

Callaway, Brantly, and Pedro HC Sant'Anna. 2021. "Difference-in-differences with multiple time periods." *Journal of Econometrics*, 225(2): 200–230.

Callen, Michael, Saad Gulzar, Ali Hasanain, Muhammad Yasir Khan, and Arman Rezaee. 2020. "Data and policy decisions: Experimental evidence from Pakistan." *Journal of Development Economics*, 146: 102523.

Callen, Michael, Saad Gulzar, and Arman Rezaee. 2020. "Can political alignment be costly?" *The Journal of Politics*, 82(2): 612–626.

Calonico, Sebastian, Matias D Cattaneo, and Max H Farrell. 2020. "Optimal bandwidth choice for robust bias-corrected inference in regression discontinuity designs." *The Econometrics Journal*, 23(2): 192–210.

Carreri, Maria. 2021. "Can good politicians compensate for bad institutions? Evidence from an original survey of Italian mayors." *The Journal of Politics*, 83(4): 1229–1245.

Cattaneo, Matias D, and Rocio Titiunik. 2022. "Regression discontinuity designs." *Annual Review of Economics*, 14: 821–851.

Cattaneo, Matias D, Brigham R Frandsen, and Rocio Titiunik. 2015. "Randomization inference in the regression discontinuity design: An application to party advantages in the US Senate." *Journal of Causal Inference*, 3(1): 1–24.

Cattaneo, Matias D, Michael Jansson, and Xinwei Ma. 2020. "Simple local polynomial density estimators." *Journal of the American Statistical Association*, 115(531): 1449–1455.

Cengiz, Doruk, Arindrajit Dube, Attila Lindner, and Ben Zipperer. 2019. "The effect of minimum wages on low-wage jobs." *The Quarterly Journal of Economics*, 134(3): 1405–1454.

Chaudhry, Rastee, and Abdullah Waqar Tajwar. 2021. "The Punjab Schools Reform Roadmap: A Medium-Term Evaluation." *Implementing Deeper Learning and 21st Century Education Reforms: Building an Education Renaissance After a Global Pandemic*, , ed. Fernando M. Reimers, 109–128. Cham:Springer International Publishing.

Chay, Kenneth Y., Patrick J. McEwan, and Miguel Urquiola. 2005. "The Central Role of Noise in Evaluating Interventions That Use Test Scores to Rank Schools." *American Economic Review*, 95(4): 1237–1258.

Chen, Cheng. 2017. "Management Quality and Firm Hierarchy in Industry Equilibrium." *American Economic Journal: Microeconomics*, 9(4): 203–44.

Chen, Cheng, and Wing Suen. 2019. "The Comparative Statics of Optimal Hierarchies." *American Economic Journal: Microeconomics*, 11(2): 1–25.

Cilliers, Jacobus, and James Habyarimana. 2023. "Tackling Implementation Challenges with Information: Experimental Evidence from a School Governance Reform in Tanzania."

Clots-Figueras, Irma. 2011. "Women in politics: Evidence from the Indian States." *Journal of public Economics*, 95(7-8): 664–690.

Clots-Figueras, Irma. 2012. "Are Female Leaders Good for Education? Evidence from India." *American Economic Journal: Applied Economics*, 4(1): 212–44.

Craig, Steven G., Scott A. Imberman, and Adam Perdue. 2015. "Do administrators respond to their accountability ratings? The response of school budgets to accountability grades." *Economics of Education Review*, 49: 55–68.

Dal Bó, Ernesto, Frederico Finan, and Martín A Rossi. 2013. "Strengthening state capabilities: The role of financial incentives in the call to public service." *The Quarterly Journal of Economics*, 128(3): 1169–1218.

Dal Bó, Ernesto, Frederico Finan, Nicholas Y. Li, and Laura Schechter. 2021. "Information Technology and Government Decentralization: Experimental Evidence From Paraguay." *Econometrica*, 89(2): 677–701.

Das, Jishnu, Abhijit Chowdhury, Reshmaan Hussam, and Abhijit V Banerjee. 2016. "The impact of training informal health care providers in India: A randomized controlled trial." *Science*, 354(6308): aaf7384.

De Chaisemartin, Clément, and Xavier d'Haultfoeuille. 2020. "Two-way fixed effects estimators with heterogeneous treatment effects." *American Economic Review*, 110(9): 2964–96.

De Chaisemartin, Clément, and Xavier D'Haultfoeuille. 2022. "Difference-in-differences estimators of intertemporal treatment effects." National Bureau of Economic Research.

de Ree, Joppe, Karthik Muralidharan, Menno Pradhan, and Halsey Rogers. 2017. "Double for Nothing? Experimental Evidence on an Unconditional Teacher Salary Increase in Indonesia*." *The Quarterly Journal of Economics*, 133(2): 993–1039.

Deserranno, Erika. 2019. "Financial Incentives as Signals: Experimental Evidence from the Recruitment of Village Promoters in Uganda." *American Economic Journal: Applied Economics*, 11(1): 277–317.

Deserranno, Erika, Gianmarco Leon, and Philipp Kastrau. 2022. "Promotions and Productivity: The Role of Meritocracy and Pay Progression in the Public Sector." Working Paper.

Deserranno, Erika, Stefano Caria, Philipp Kastrau, and Gianmarco León-Ciliotta. 2022. "The Allocation of Incentives in Multi-Layered Organizations." Northwestern University Working Paper.

Dessein, Wouter. 2002. "Authority and Communication in Organizations." *The Review of Economic Studies*, 69(4): 811–838.

Dhaliwal, Iqbal, and Rema Hanna. 2017. "The devil is in the details: The successes and limitations of bureaucratic reform in India." *Journal of Development Economics*, 124: 1–21.

Dickinson, David, and Marie-Claire Villeval. 2008. "Does monitoring decrease work effort?: The complementarity between agency and crowding-out theories." *Games and Economic behavior*, 63(1): 56–76.

Duflo, Esther, Rema Hanna, and Stephen P Ryan. 2012. "Incentives work: Getting teachers to come to school." *American Economic Review*, 102(4): 1241–78.

Dunning, Thad, Guy Grossman, Macartan Humphreys, Susan D. Hyde, Craig McIntosh, Gareth Nellis, Claire L. Adida, Eric Arias, Clara Bicalho, Taylor C. Boas, Mark T. Buntaine, Simon Chauchard, Anirvan Chowdhury, Jessica Gottlieb, F. Daniel Hidalgo, Marcus Holmlund, Ryan Jablonski, Eric Kramon, Horacio Larreguy, Malte Lierl, John Marshall, Gwyneth McClendon, Marcus A. Melo, Daniel L. Nielson, Paula M. Pickering, Melina R. Platas, Pablo Querubín, Pia Raffler, and Neelanjan Sircar. 2019. "Voter Information Campaigns and Political Accountability: Cumulative Findings from a Preregistered Meta-Analysis of Coordinated Trials." *Science Advances*, 5(7): eaaw2612.

Easterly, William. 2008. "Institutions: Top Down or Bottom Up?" *American Economic Review*, 98(2): 95–99.

Education Commission. 2023. "Deliberate Disrupters: Can Delivery Approaches Deliver Better Education Outcomes?" *Technical Report*.

Falk, Armin, and Michael Kosfeld. 2006. "The hidden costs of control." *American Economic Review*, 96(5): 1611–1630.

Finan, Frederico, Benjamin A Olken, and Rohini Pande. 2015. "The personnel economics of the state." *Handbook of Economic Field Experiments*.

Finer, S.E. 1997. *The History of Government from the Earliest Times: Volumes I-III.* Oxford University Press, USA.

Folke, Olle. 2014. "Shades of brown and green: party effects in proportional election systems." *Journal of the European Economic Association*, 12(5): 1361–1395.

Freier, Ronny, and Christian Odendahl. 2015. "Do parties matter? Estimating the effect of political power in multi-party systems." *European Economic Review*, 80: 310–328.

Goodman-Bacon, Andrew. 2021. "Difference-in-differences with variation in treatment timing." *Journal of Econometrics*, 225(2): 254–277.

Grembi, Veronica, Tommaso Nannicini, and Ugo Troiano. 2016. "Do fiscal rules matter?" *American Economic Journal: Applied Economics*, 1–30.

Heckman, James J, and Jeffrey A Smith. 1999. "The pre-programme earnings dip and the determinants of participation in a social programme. Implications for simple programme evaluation strategies." *The Economic Journal*, 109(457): 313–348.

Hoehn, John R, Caitlin Campbell, and Andrew S Bowen. 2021. "Defense primer: What is command and control." Congressional Research Service. https://crsreports. congress. gov/product ....

Honig, Dan. 2021. "Supportive management practice and intrinsic motivation go together in the public service." *Proceedings of the National Academy of Sciences*, 118(13): e2015124118.

Hussain, Iftikhar. 2015. "Subjective performance evaluation in the public sector evidence from school inspections." *Journal of Human Resources*, 50(1): 189–221.

Hyytinen, Ari, Jaakko Meriläinen, Tuukka Saarimaa, Otto Toivanen, and Janne Tukiainen. 2018. "Public employees as politicians: Evidence from close elections." *American Political Science Review*, 112(1): 68–81.

Kane, Thomas J, and Douglas O Staiger. 2002. "The Promise and Pitfalls of Using Imprecise School Accountability Measures." *Journal of Economic Perspectives*, 16(4): 91–114.

Khan, Adnan Q., Asim Ijaz Khwaja, and Benjamin A. Olken. 2019. "Making Moves Matter: Experimental Evidence on Incentivizing Bureaucrats through Performance-Based Postings." *American Economic Review*, 109(1): 237–70.

Khan, Muhammad Yasir. 2020. "Mission Motivation and Public Sector Performance: Experimental Evidence from Pakistan." *Unpublished manuscript*.

Kleibergen, Frank, and Richard Paap. 2006. "Generalized reduced rank tests using the singular value decomposition." *Journal of econometrics*, 133(1): 97–126.

Leaver, Clare, Owen Ozier, Pieter Serneels, and Andrew Zeitlin. 2021. "Recruitment, Effort, and Retention Effects of Performance Contracts for Civil Servants: Experimental Evidence from Rwandan Primary Schools." *American Economic Review*, 111(7): 2213–46.

Malik, Rabea, and Faisal Bari. 2023. "Improving service delivery via top-down data-driven accountability: Reform enactment of the Education Road Map in Pakistan." DeliverEd Initiative Working Paper.

Mansoor, Zahra, Dana Qarout, Kate Anderson, Celeste Carano, Liah Yecalo-Tecle, Veronika Dvorakova, and Martin J. Williams. 2023. "A Global Mapping of Delivery Approaches." *Technical Report*.

Mehmood, Sultan. 2022. "The impact of Presidential appointment of judges: Montesquieu or the Federalists?" *American Economic Journal: Applied Economics*, 14(4): 411–445.

Meriläinen, Jaakko. 2022. "Political selection and economic policy." *The Economic Journal*, 132(648): 3020–3046.

Muralidharan, Karthik, and Abhijeet Singh. 2020. "Improving Public Sector Management at Scale? Experimental Evidence on School Governance India." National Bureau of Economic Research Working Paper 28129.

Muralidharan, Karthik, and Paul Niehaus. 2017. "Experimentation at Scale." *Journal of Economic Perspectives*, 31(4): 103–24.

Muralidharan, Karthik, and Venkatesh Sundararaman. 2011. "Teacher Performance Pay: Experimental Evidence from India." *Journal of Political Economy*, 119(1): 39–77.

Olken, Benjamin A. 2007. "Monitoring corruption: evidence from a field experiment in Indonesia." *Journal of political Economy*, 115(2): 200–249.

Rasul, Imran, and Daniel Rogger. 2018. "Management of Bureaucrats and Public Service Delivery: Evidence from the Nigerian Civil Service." *The Economic Journal*, 128(608): 413–446.

Rasul, Imran, Daniel Rogger, and Martin J Williams. 2020. "Management, Organizational Performance, and Task Clarity: Evidence from Ghana's Civil Service." *Journal of Public Administration Research and Theory*, 31(2): 259–277.

Riaño, Juan Felipe. 2021. "Bureaucratic nepotism." *Available at SSRN 3995589*.

School Education Department. 2018. "Annual School Census." Government of Punjab.

Schuster, Christian, Kim Sass Mikkelsen, Daniel Rogger, Francis Fukuyama, Zahid Hasnain, Dinsha Mistree, Jan Meyer-Sahling, Katherine Bersch, and Kerenssa Kay. 2023. "The Global Survey of Public Servants: Evidence from 1,300,000 Public Servants in 1,300 Government Institutions in 23 Countries." *Public Administration Review*, 83(4): 982–993.

Sun, Liyang, and Sarah Abraham. 2021. "Estimating dynamic treatment effects in event studies with heterogeneous treatment effects." *Journal of Econometrics*, 225(2): 175–199.

The History of Government Blog. 2022. "The Art of Delivery: The Prime Minister's Delivery Unit, 2001-2005." *https://history.blog.gov.uk/2022/08/26/the-art-of-delivery-the-prime-ministers-delivery-unit-2001-2005/*, Published on August 26, 2022.

Vivalt, Eva. 2020. "How Much Can We Generalize From Impact Evaluations?" *Journal of the European Economic Association*, 18(6): 3045–3089.

Wilson, J.Q. 1989. *Bureaucracy.* Basic Books.

World Bank. 2020. "Technical Review of the PMIU Data Information System." World Bank Group Technical Report.

World Bank Group. 2018. "World Development Report 2019: LEARNING to Realize Education's Promise." World Bank Publications.

Xu, Guo. 2018. "The costs of patronage: Evidence from the british empire." *American Economic Review*, 108(11): 3170–3198.

Online Appendix

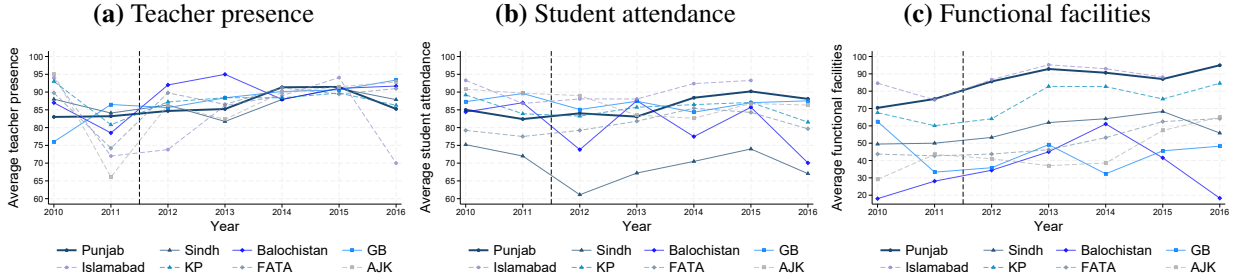
A Data and Design Details

A.1 Broad context of education outcomes in Pakistan

As argued in the main paper, the command-and-control intervention was a major initiative of the Punjab Government. Similar schemes were not implemented in other provinces of Pakistan during the same period of time. As such, a broad reflection on the scheme can be had by comparing the trajectory of education in Punjab to that in other provinces. We recover province-level data for the period 2010-2016 from the Annual Status of Education Report - ASER - Pakistan (aserpakistan.org), which have conducted independently and consistently household and school surveys to assess education progress in the country.

Figure A1 shows the average trends in educational outcomes in all Pakistan provinces. Note that most provinces are improving or trending in a similar way to Punjab (darker blue line). So despite some underperforming provinces, most of the country faces similar evolving trends.

Figure A1: Pakistan provinces average outcomes trends



Note: The figure shows the average trends of education outcomes in all Pakistan provinces using data from ASER Pakistan (aserpakistan.org), for the period 2010-2016, which have been independently and consistently conducting household and school surveys to assess the education advancements in the country. Most provinces are either improving or in a similar trend to Punjab (darker blue line). So despite some underperforming provinces, most of the country faces similar evolving trends. Teacher presence and student attendance are measured as the percentage of present teachers/students relative to the total teachers/students reported. The functional facilities variable is measured as the percentage of the school's functional infrastructure.

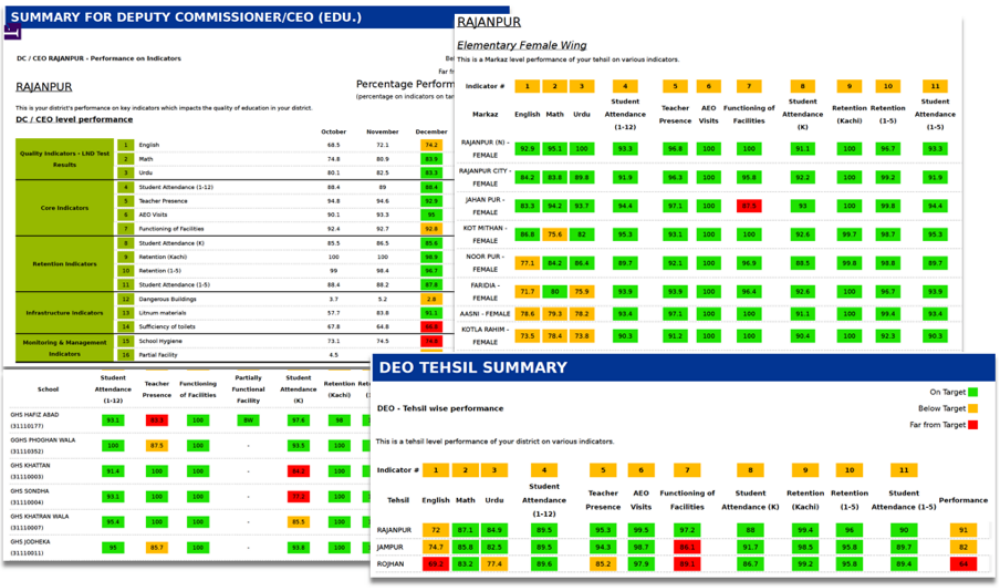
A.2 Color-coded performance thresholds

Teacher presence was coded red when it fell below 86%, orange when it was between 86% and 90%, and green when it was 90% or higher. Functional facilities thresholds were 90% and 95%. For both variables, the thresholds were the same across all administrative units and time periods. The thresholds for student attendance varied between districts and months. The districts were

divided into three categories, A, B, and C, where category A consisted of historically the highest performing districts, category C consisted of historically lowest performing districts, and category B consisted of the rest. Furthermore, the months in the year were divided into high attendance (December-March), and low attendance (April-November). Different thresholds were established for each category of districts and group of months. For category A districts during December-March, student attendance was coded red if it was below 89%, orange if it was between 89% and 92%, and green if it was 92% and above. During April-November, the thresholds were 87% and 90%. For category B districts, the thresholds were 87% and 90% during December-March and 85% and 88% during April-November. For category C districts, the thresholds were 84% and 87% during December-March and 82% and 85% during April-November.

Figure A2 shows the color-coding for the April 2013 data pack for the district of Rajanpur.

Figure A2: Data pack screenshot



A.3 Data compliance

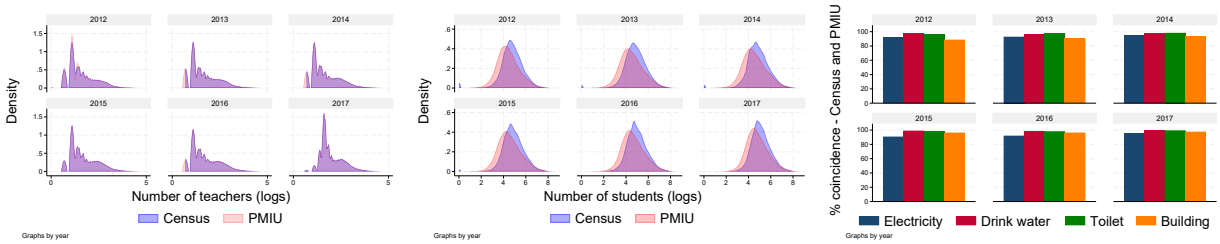
We have data-pack reports for 60 months from December 2011 to May 2018, which represent 100% of the reporting.[29] We compare these datapack reports with census data to assess their quality. The Annual School Census is used to collect comprehensive statistics on the education sector in Punjab. It is the government's primary source of information for public policy and resource allocation. Because it is collected yearly, there is a longer training period for data collectors and a longer span for data validation and correction. As such, data collected by the census is high quality and passes multiple validation checks. We assess the quality of the data collected in the data-packs by

[29] June, July, and August are not included as schools are not in session

comparing it against the census in the month where the census information was collected (October). However, since data are not collected on the same day, nor by the same sources, there can be some measurement error. Figure A3 compares the distribution of the variables reported by both sources. Panels (a) show for teacher presence that the data-pack and census data overlap almost completely, suggesting that the information collected in the data-packs mapped consistently the population behaviour reported by the census. Panel (b) also shows an almost full overlap in student attendance across the two information sources. Panel (c) plots the percentage of schools where the functional infrastructure coincides, which is near 100% for all the indicators. As such, there is no systematic manipulation of the monthly performance measures, further supporting the reliability of the monthly data for the analysis.

Figure A3: Data validation - monthly PMIU vs. Census

(a) Overlap - Teacher presence **(b)** Overlap - Stud attendance **(c)** Overlap - Funct facilities



Note: This figure compares October PMIU data and corresponding school-level quantities from the Annual School Census. Teacher presence and student attendance are measured as the percentage of present teachers/students relative to the total teachers/students reported. The functional facilities variable is measured as the percentage of the school's functional infrastructure. Panel (a) and (b) plot the distribution of (log+1) teachers and students. Panel (c) plots the coincidence in the reporting of functional facilities (= 1 if functional).

B Intensity of Exposure to Flagging

Table B1: Intensity of exposure to flagging - balance test maraakiz sample

Panel A: School outcomes

	Dependent variables (range: 0-100)					
	Teacher presence$_{t+1}$		Student attendance$_{t+1}$		Functional facilities$_{t+1}$	
	OLS	2SLS	OLS	2SLS	OLS	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)
# Times flagged$_t$ (z-score)	0.163***	0.036	-0.018	-0.191**	-0.163**	-0.173*
	(0.048)	(0.073)	(0.055)	(0.088)	(0.075)	(0.101)
N. of obs.	204,224	204,224	204,398	204,398	201,600	201,600
Number markaz	2,871	2,871	2,871	2,871	2,871	2,871
Mean Dep. Var.	91.6	91.6	87.6	87.6	90.2	90.2
Mean # Times flagged	0.87	0.87	1.59	1.59	1.61	1.61
SD # Times flagged	1.42	1.42	2.19	2.19	2.81	2.81
First stage F-stat		187.1		222.5		320.0

Panel B: Student scores

	Dependent variables (range: 0-100)					
	Math$_{t+1}$		English$_{t+1}$		Urdu$_{t+1}$	
	OLS	2SLS	OLS	2SLS	OLS	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)
# Times flagged$_t$ (z-score)	0.269***	0.183	0.764***	0.579***	0.172**	-0.227
	(0.082)	(0.190)	(0.114)	(0.165)	(0.081)	(0.175)
N. of obs.	57,656	57,656	57,654	57,654	57,655	57,655
Number markaz	1,837	1,837	1,837	1,837	1,837	1,837
Mean Dep. Var.	86.9	86.9	76.5	76.5	84.6	84.6
Mean # Times flagged	0.038	0.038	0.34	0.34	0.065	0.065
SD # Times flagged	0.24	0.24	0.96	0.96	0.33	0.33
First stage F-stat		35.5		156.7		53.3
Markaz FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
District time trends	Yes	Yes	Yes	Yes	Yes	Yes
# Times in threshold$_t$ FE	Yes	Yes	Yes	Yes	Yes	Yes

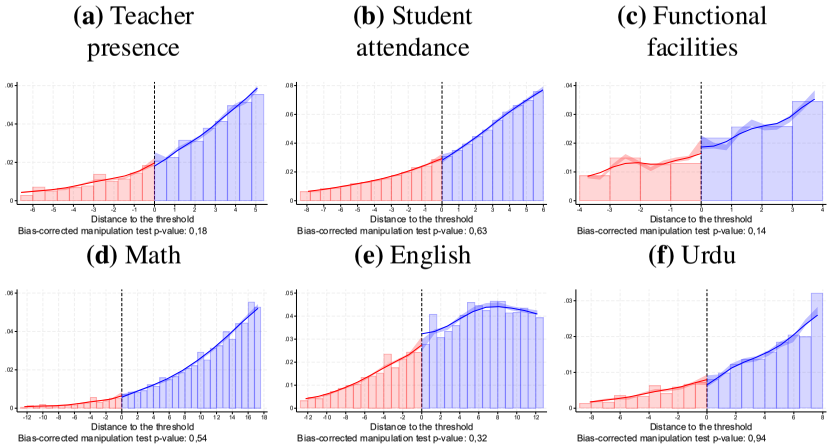
Notes: The unit of analysis is the school-year. This table present the results from estimating equation 3 on the sample used for testing orthogonality of the instrument in Table 3, where we use only 80% of maraakiz. This table is then a robustness test for the results presented in Table 4. Outcomes in the top of each column, measured in year $t+1$ in scale from 0 to 100. Panel A reports on schooling outcomes. Panel B reports on student scores. # Times flagged$_t$ is the number of times a markaz was flagged in year t in the outcome reported at the top of the column. # Times flagged threshold$_t$ is the number of times flagged while being close to the flagging threshold in the outcome reported at the top. # Times flagged is normalized (z-score). OLS columns show the results from equation 3. 2SLS columns show the results after instrumenting the # Times flagged by # Times flagged threshold. Year is measured as school-year (September to May). The first stage is estimated through equation 2. *First stage F-stat* show the Kleibergen and Paap (2006) F-statistic. *Mean # Times flagged* and *SD # Times flagged* indicate the mean and standard deviation of # Times flagged$_t$. *Mean. Dep. Var* shows the average outcome in the markaz in year t. Teacher presence and student attendance are measured as the percentage of present teachers/students. Functional facilities is measured as the percentage of the school's functional infrastructure. Scores are measured since 2016, and consist on the share of correct answers in standardized exams performed on a random sample of primary students. Standard errors clustered by markaz in parentheses. * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table B2: Intensity of exposure to flagging - RDA estimator

	Dependent variables (range: 0-100)		
	Teacher presence$_{t+1}$	Student attendance$_{t+1}$	Functional facilities$_{t+1}$
	2SLS	2SLS	2SLS
	(1)	(2)	(3)
Times flagged$_t$ (%)	0.399	2.318	4.679
	(4.373)	(1.859)	(5.558)
N. of obs.	257,587	257,861	254,028
Number markaz	3,566	3,566	3,565
Mean Dep. Var.	91.6	87.6	90.2
First stage F-stat	13.6	58.8	10.7
Markaz FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
District time trends	Yes	Yes	Yes
RDA Controls	Yes	Yes	Yes

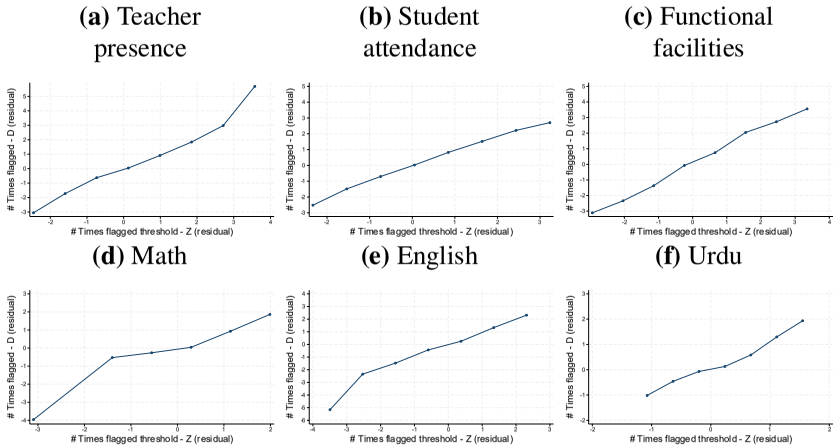
Notes: The unit of analysis is the school-year. This table presents the results from using the RDA method proposed by Borusyak and Kolerman-Shemer (2024). It estimates equation 3 without the term $\theta_{m,d,t}$, and including the RDA controls as: i) the share of months in a year a markaz was close to the threshold, ii) the average markaz performance weighted by the share of months a markaz was close to the threshold, and iii) the average markaz performance weighted by the share of months a markaz was flagged while being close to the threshold. Performance in controls ii) and iii) are recentered by substracting the threshold value. The instrumental variables is defined as the share of months that a markaz was flagged while being close to the threshold. Outcomes in the top of each column, measured in year $t+1$ in scale from 0 to 100. Results not reported for student scores as controls overlap between them. Times flagged$_t$ (%) is the share of months a markaz was flagged in year t in the outcome reported at the top of the column. The first stage is estimated through equation 2. *First stage F-stat* show the Kleibergen and Paap (2006) F-statistic. *Mean. Dep. Var* shows the average outcome in the markaz in year t. Teacher presence and student attendance are measured as the percentage of present teachers/students. Functional facilities is measured as the percentage of the school's functional infrastructure. Standard errors clustered by markaz in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Figure B1: Manipulation around the flagging threshold test



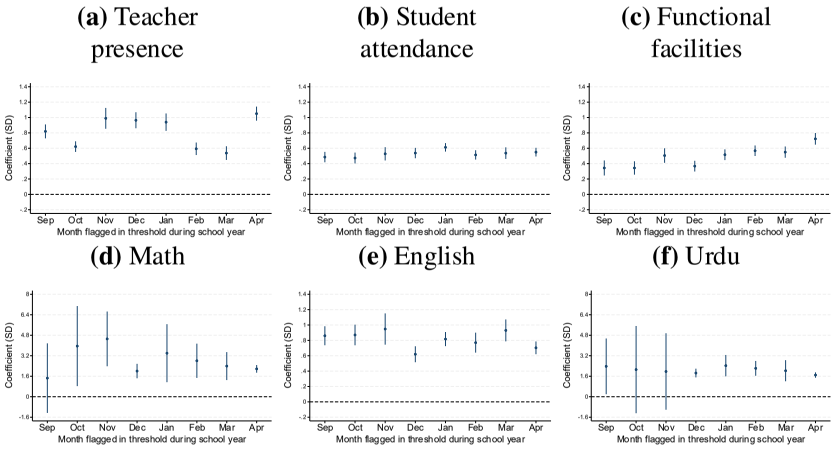
Note: This figure reports the manipulation test proposed by Cattaneo, Jansson and Ma (2020) using the command *rddensity* in stata for each outcome, using a unrestricted density estimation, triangular kernel, and jackknife standard errors. The p-value corresponds to the bias-corrected p-value from estimating the discontinuity in the outcome density around the flagging threshold, reported at the bottom of the figure. The test is performed using markaz-by-month data, which is the relevant level of flagging. For the functional facilities outcome, there are specific peaks in the distribution due to functional facilities not being clearly defined as a continuous variable. At the school level, it is measured as the share of functional facilities between four possible options. We report larger bins and the results from a restricted test to account for the distribution of the variable.

Figure B2: Monotonicity assumption



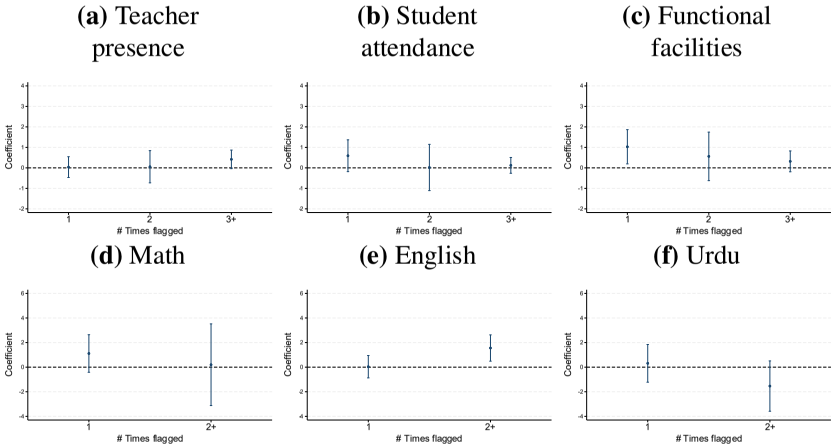
Note: This figure reports the correlation for the # Times flagged and the # Times flagged threshold after residualizing the fixed effects defined in equation 2 to test for the monotonicity assumption of instrument. Under monotonicity, each additional flagging close to the threshold must lead to no less than an extra flag in general, so a positive relationship exists between both variables. The correlations are estimated in the markaz-by-school year data. The points are grouped in equal-length bins. Each panel reports on the respective outcome flagging.

Figure B3: Relevance assumption - first stage results



Note: This figure presents results from the γ_j coefficients of estimating equation 2, where S_j is for individual dummies for each month j of the school year in which a markaz was flagged by being close to the threshold. The coefficients test for the relevance assumption of the first stage for results in Table 4. The outcome is measured as the (normalized) # times a markaz was flagged in a year. Thus, the coefficients are interpreted using standard deviations (SD). May is used as the base month, so no coefficient has been reported for it. Each panel reports on the respective outcome flagging. Teacher presence and student attendance are measured as the percentage of present teachers/students. Functional facilities is measured as the percentage of the school's functional infrastructure. Scores are measured since 2016, and consist on the share of correct answers in standardized exams performed on a random sample of primary students in each school. Error bars at the 95 percent level, clustered at the markaz level, are presented for each coefficient.

Figure B4: Intensity of exposure to flagging - non-linearity



Note: This figure presents the results from estimating equation 3 under different definitions of the endogenous and instrumental variables to capture non-linearities in the effects, as a robustness test for the results reported in Table 4. Panels show the point estimates defining the endogenous variable equal to one if the markaz was flagged once, equal to two if the markaz was flagged twice, and equal to three if the markaz was flagged thrice or more. For student scores variables, we define the endogenous variable as one if the markaz was flagged once, and equal to two if the markaz was flagged twice or more. The instrument for the first stage in each case is defined in the same way but for the # Times flagged close to the threshold. The base category for all definitions is equal to zero if there is no flagging. Teacher presence and student attendance are measured as the percentage of present teachers/students. Functional facilities is measured as the percentage of the school's functional infrastructure. Scores are measured since 2016, and consist on the share of correct answers in standardized exams performed on a random sample of primary students in each school. Error bars at the 95 percent level, clustered at the markaz level, are presented for each coefficient.

Table B3: Intensity of exposure to flagging - alternative instrument definition

Panel A: School outcomes

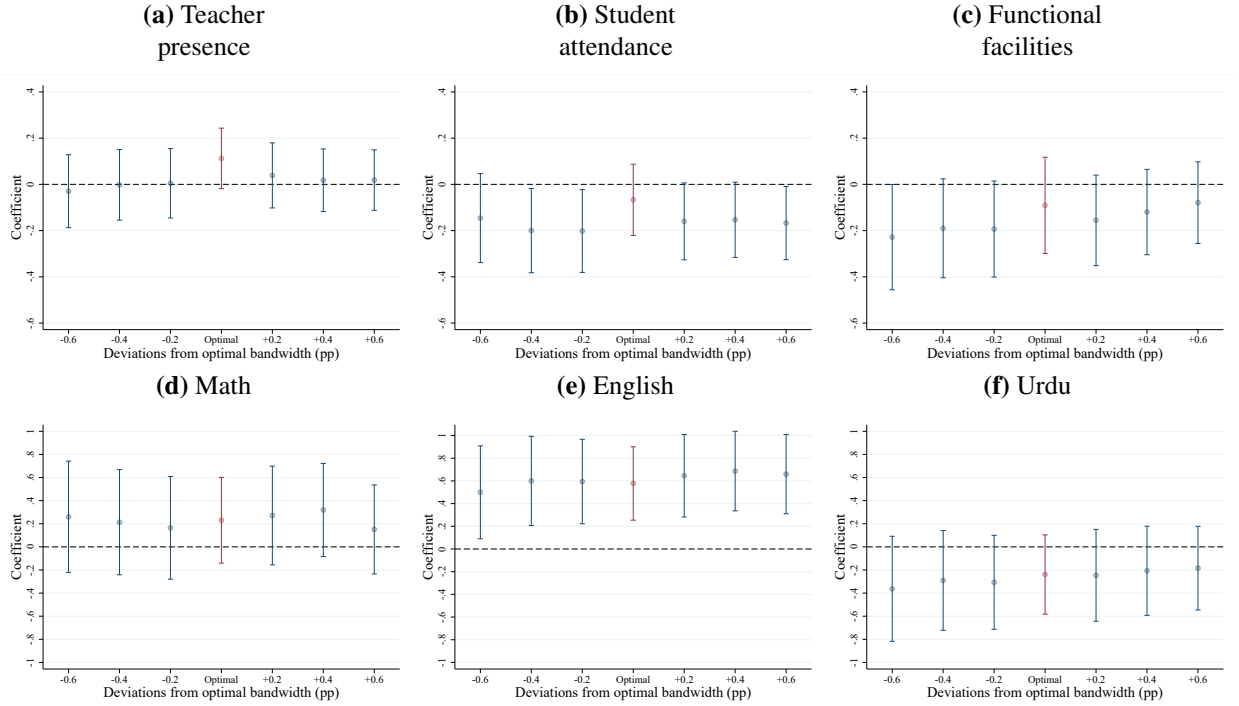
	Dependent variables (range: 0-100)								
	Teacher presence$_{t+1}$			Student attendance$_{t+1}$			Functional facilities$_{t+1}$		
	Linear	Ever flag	Median	Linear	Ever flag	Median	Linear	Ever flag	Median
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
# Times flagged$_t$ (z-score)	0.124*	0.110	0.130*	-0.010	0.122	0.003	-0.036	0.267**	0.111
	(0.066)	(0.080)	(0.070)	(0.076)	(0.100)	(0.085)	(0.107)	(0.135)	(0.117)
N. of obs.	257,592	257,592	257,592	257,865	257,865	257,865	254,058	254,058	254,058
Number markaz	3,567	3,567	3,567	3,567	3,567	3,567	3,567	3,567	3,567
Mean Dep. Var.	91.6	91.6	91.6	87.6	87.6	87.6	90.2	90.2	90.2
Mean # Times flagged	0.87	0.87	0.87	1.59	1.59	1.59	1.61	1.61	1.61
SD # Times flagged	1.42	1.42	1.42	2.19	2.19	2.19	2.81	2.81	2.81
First stage F-stat	1784.5	1064.8	802.2	2163.0	1083.6	904.1	2428.7	1356.1	875.8

Panel B: Student scores

	Dependent variables (range: 0-100)								
	Math$_{t+1}$			English$_{t+1}$			Urdu$_{t+1}$		
	Linear	Ever flag	Median	Linear	Ever flag	Median	Linear	Ever flag	Median
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
# Times flagged$_t$ (z-score)	0.287	0.299	0.250	0.448***	0.370*	0.516***	-0.238	-0.162	-0.205
	(0.191)	(0.215)	(0.196)	(0.154)	(0.218)	(0.168)	(0.171)	(0.178)	(0.169)
N. of obs.	67,385	67,385	67,385	67,383	67,383	67,383	67,384	67,384	67,384
Number markaz	2,721	2,721	2,721	2,721	2,721	2,721	2,721	2,721	2,721
Mean Dep. Var.	86.9	86.9	86.9	76.5	76.5	76.5	84.6	84.6	84.6
Mean # Times flagged	0.038	0.038	0.038	0.34	0.34	0.34	0.065	0.065	0.065
SD # Times flagged	0.24	0.24	0.24	0.96	0.96	0.96	0.33	0.33	0.33
First stage F-stat	220.5	213.5	112.7	1378.0	515.6	542.6	363.6	366.5	191.7
Markaz FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District time trends	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# Times in threshold$_t$ FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The unit of analysis is the school-year. This table presents the results from estimating equation 3 through 2SLS, varying the definition of the instrumental variable as a robustness test for Table 4. The *Main* instrument is defined as dummy variables for each month of a year equal to one if in such month a markaz was flagged while close to the threshold. This table report the following variations for the instrument – *Linear*: normalized number of times flagged close to the threshold sample. *Ever*: a dummy equal to one if the markaz reported to be flagged at least once in a year, zero otherwise. *Median*: a categorical variable dividing between markaz flagged above/below the median of the distribution. Outcomes in the top of each column, measured in year $t+1$ in scale from 0 to 100. Panel A reports on schooling outcomes. Panel B reports on student scores. # Times flagged$_t$ is the number of times a markaz was flagged in year t in the outcome reported at the top of the column. # Times flagged threshold$_t$ is the number of times flagged while being close to the flagging threshold in the outcome reported at the top. # Times flagged is normalized (z-score). OLS columns show the results from equation 3. 2SLS columns show the results after instrumenting the # Times flagged by # Times flagged threshold. Year is measured as school-year (September to May). The first stage is estimated through equation 2. *First stage F-stat* show the Kleibergen and Paap (2006) F-statistic. *Mean # Times flagged* and *SD # Times flagged* indicate the mean and standard deviation of # Times flagged$_t$. *Mean. Dep. Var* shows the average outcome in the markaz in year t. Teacher presence and student attendance are measured as the percentage of present teachers/students. Functional facilities is measured as the percentage of the school's functional infrastructure. Scores are measured since 2016, and consist on the share of correct answers in standardized exams performed on a random sample of primary students. Standard errors clustered by markaz in parentheses. * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Figure B5: Intensity of exposure to flagging - flagging threshold bandwidth robustness



Note: This figure presents the results from estimating equation 3 under different bandwidth definitions for defining a flagging event around the threshold. Panels show the point estimates. Red coefficient correspond the one from the main specification as reported in Table 4. Teacher presence and student attendance are measured as the percentage of present teachers/students. Functional facilities is measured as the percentage of the school's functional infrastructure. Scores are measured since 2016, and consist on the share of correct answers in standardized exams performed on a random sample of primary students in each school. Error bars at the 95 percent level, clustered at the markaz level, are presented for each coefficient.

Table B4: Impacts of exposure to flagging - orange flagging

	Dependent variables (range: 0-100)					
	Teacher presence$_{t+1}$		Student attendance$_{t+1}$		Functional facilities$_{t+1}$	
	OLS	2SLS	OLS	2SLS	OLS	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)
# Times flagged$_t$ (z-score)	0.298***	-0.094	0.402***	-0.245	1.076***	0.089
	(0.045)	(0.334)	(0.049)	(0.583)	(0.090)	(0.120)
N. of obs.	257,592	257,592	257,865	257,865	254,058	254,058
Number markaz	3,567	3,567	3,567	3,567	3,567	3,567
Mean Dep. Var.	91.6	91.6	87.6	87.6	90.2	90.2
Mean # Times flagged	0.87	0.87	1.59	1.59	1.61	1.61
SD # Times flagged	1.42	1.42	2.19	2.19	2.81	2.81
First stage F-stat		11.1		23.4		585.4
Markaz FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
District time trends	Yes	Yes	Yes	Yes	Yes	Yes
# Times in threshold$_t$ FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The unit of analysis is the school-year. Results from estimating equation 3. Flagging is defined based on the orange flagging threshold, instead of the red, as in Table 4. Outcomes in the top of each column, measured in year $t+1$ in scale from 0 to 100. Results for student scores no reported as there are no cases of "close flagging" near the orange threshold for such outcomes. # Times flagged$_t$ is the number of times a markaz was flagged in year t in the outcome reported at the top of the column. # Times flagged threshold$_t$ is the number of times flagged while being close to the flagging threshold in the outcome reported at the top. # Times flagged is normalized (z-score). OLS columns show the results from equation 3. 2SLS columns show the results after instrumenting the # Times flagged by # Times flagged threshold. Year is measured as school-year (September to May). The first stage is estimated through equation 2. *First stage F-stat* show the Kleibergen and Paap (2006) F-statistic. *Mean # Times flagged* and *SD # Times flagged* indicate the mean and standard deviation of # Times flagged$_t$. *Mean. Dep. Var* shows the average outcome in the markaz in year t. Teacher presence and student attendance are measured as the percentage of present teachers/students. Functional facilities is measured as the percentage of the school's functional infrastructure. Standard errors clustered by markaz in parentheses. * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table B5: Impacts of exposure to flagging - cross flagging-outcomes

	Dependent variables (range: 0-100)					
	Teacher presence$_{t+1}$	Student attendance$_{t+1}$	Functional facilities$_{t+1}$	Math$_{t+1}$	English$_{t+1}$	Urdu$_{t+1}$
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Teacher presence flagging						
# Times flagged$_t$ (z-score)	0.112*	0.068	0.212**	0.076	0.475	0.127
	(0.067)	(0.074)	(0.091)	(0.291)	(0.355)	(0.314)
N. of obs.	257,592	257,865	254,058	67,385	67,383	67,384
Number markaz	3,567	3,567	3,567	2,721	2,721	2,721
Panel B: Student attendance flagging						
# Times flagged$_t$ (z-score)	-0.162**	-0.067	0.095	-0.536	-1.138*	-0.419
	(0.071)	(0.079)	(0.119)	(0.522)	(0.647)	(0.575)
N. of obs.	257,592	257,865	254,058	67,385	67,383	67,384
Number markaz	3,567	3,567	3,567	2,721	2,721	2,721
Panel C: Functional facilities flagging						
# Times flagged$_t$ (z-score)	-0.249***	-0.146*	-0.091	0.168	1.139*	0.911
	(0.073)	(0.084)	(0.106)	(0.541)	(0.629)	(0.591)
N. of obs.	257,592	257,865	254,058	67,385	67,383	67,384
Number markaz	3,567	3,567	3,567	2,721	2,721	2,721
Panel D: Math scores flagging						
# Times flagged$_t$ (z-score)	0.018	-0.144	0.002	0.230	0.308	0.154
	(0.174)	(0.135)	(0.102)	(0.189)	(0.219)	(0.206)
N. of obs.	257,592	257,865	254,058	67,385	67,383	67,384
Number markaz	3,567	3,567	3,567	2,721	2,721	2,721
Panel E: English scores flagging						
# Times flagged$_t$ (z-score)	0.292***	0.128	0.037	0.318**	0.579***	0.440***
	(0.106)	(0.091)	(0.080)	(0.140)	(0.165)	(0.144)
N. of obs.	257,592	257,865	254,058	67,385	67,383	67,384
Number markaz	3,567	3,567	3,567	2,721	2,721	2,721
Panel F: Urdu scores flagging						
# Times flagged$_t$ (z-score)	0.112	-0.137	-0.063	-0.091	-0.141	-0.239
	(0.105)	(0.104)	(0.094)	(0.153)	(0.181)	(0.175)
N. of obs.	257,592	257,865	254,058	67,385	67,383	67,384
Number markaz	3,567	3,567	3,567	2,721	2,721	2,721
Markaz FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
District time trends	Yes	Yes	Yes	Yes	Yes	Yes
# Times in threshold$_t$ FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The unit of analysis is the school-year. Results from estimating equation 3. Outcomes in the top of each column, measured in year $t+1$ in scale from 0 to 100. Each Panel title reports on the respective flagging. # Times flagged$_t$ is the number of times a markaz was flagged in year t in the outcome reported in the outcome reported in title of the Panel. # Times flagged threshold$_t$ is the number of times flagged while being close to the flagging threshold in the outcome reported in title of the Panel. # Times flagged is normalized (z-score). OLS columns show the results from equation 3. 2SLS columns show the results after instrumenting the # Times flagged by # Times flagged threshold. Year is measured as school-year (September to May). The first stage is estimated through equation 2. *First stage F-stat* show the Kleibergen and Paap (2006) F-statistic. *Mean # Times flagged* and *SD # Times flagged* indicate the mean and standard deviation of # Times flagged$_t$. *Mean. Dep. Var* shows the average outcome in the markaz in year t. Teacher presence and student attendance are measured as the percentage of present teachers/students. Functional facilities is measured as the percentage of the school's functional infrastructure. Scores are measured since 2016, and consist on the share of correct answers in standardized exams performed on a random sample of primary students. Standard errors clustered by markaz in parentheses. * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table B6: Intensity of exposure to flagging - other performance metrics

Panel A: Best performance month

	Dependent variables (range: 0-100)											
	Teacher presence$_{t+1}$		Student attendance$_{t+1}$		Functional facilities$_{t+1}$		Math$_{t+1}$		English$_{t+1}$		Urdu$_{t+1}$	
	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
# Times flagged$_t$ (z-score)	0.11***	0.094**	0.24***	0.0059	0.82***	0.13*	-0.13	0.40*	0.10	0.046	-0.15*	-0.12
	(0.029)	(0.044)	(0.043)	(0.066)	(0.068)	(0.073)	(0.098)	(0.21)	(0.14)	(0.20)	(0.092)	(0.21)
N. of obs.	257,592	257,592	257,865	257,865	254,058	254,058	67,385	67,385	67,383	67,383	67,384	67,384
Number markaz	3,567	3,567	3,567	3,567	3,567	3,567	2,721	2,721	2,721	2,721	2,721	2,721
Mean Dep. Var.	98.8	98.8	94.9	94.9	93.3	93.3	96.6	96.6	91.4	91.4	95.2	95.2
Mean # Times flagged	0.87	0.87	1.59	1.59	1.61	1.61	0.038	0.038	0.34	0.34	0.065	0.065
SD # Times flagged	1.42	1.42	2.19	2.19	2.81	2.81	0.24	0.24	0.96	0.96	0.33	0.33
First stage F-stat		211.0		258.6		382.6		34.9		156.7		53.3

Panel B: Worst performance month

	Dependent variables (range: 0-100)											
	Teacher presence$_{t+1}$		Student attendance$_{t+1}$		Functional facilities$_{t+1}$		Math$_{t+1}$		English$_{t+1}$		Urdu$_{t+1}$	
	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
# Times flagged$_t$ (z-score)	0.395***	0.190	0.538***	-0.144	0.609***	-0.726	1.031***	-0.054	1.466***	1.003***	0.739***	-0.134
	(0.107)	(0.173)	(0.124)	(0.191)	(0.216)	(0.509)	(0.135)	(0.289)	(0.172)	(0.263)	(0.129)	(0.252)
N. of obs.	257,592	257,592	257,865	257,865	254,058	254,058	67,385	67,385	67,383	67,383	67,384	67,384
Number markaz	3,567	3,567	3,567	3,567	3,567	3,567	2,721	2,721	2,721	2,721	2,721	2,721
Mean Dep. Var.	75.7	75.7	75.7	75.7	85.2	85.2	71.8	71.8	58.3	58.3	69.5	69.5
Mean # Times flagged	0.87	0.87	1.59	1.59	1.61	1.61	0.038	0.038	0.34	0.34	0.065	0.065
SD # Times flagged	1.42	1.42	2.19	2.19	2.81	2.81	0.24	0.24	0.96	0.96	0.33	0.33
First stage F-stat		211.0		258.6		382.5		34.9		156.7		53.3
Markaz FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District time trends	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# Times in threshold$_t$ FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The unit of analysis is the school-year. This table present the results from estimating equation 3 on measures of performance different to the average yearly performance as used in Table 4. Outcomes in the top of each column, measured in year $t+1$ in scale from 0 to 100. Panel A report the results for the outcomes defined as the best monthly performance in a school year. Panel B reports for the worst monthly performance in a school year. # Times flagged$_t$ is the number of times a markaz was flagged in year t in the outcome reported at the top of the column. # Times flagged threshold$_t$ is the number of times flagged while being close to the flagging threshold in the outcome reported at the top. # Times flagged is normalized (z-score). OLS columns show the results from equation 3. 2SLS columns show the results after instrumenting the # Times flagged by # Times flagged threshold. Year is measured as school-year (September to May). The first stage is estimated through equation 2. *First stage F-stat* show the Kleibergen and Paap (2006) F-statistic. *Mean # Times flagged* and *SD # Times flagged* indicate the mean and standard deviation of # Times flagged$_t$. *Mean. Dep. Var* shows the average outcome in the markaz in year t. Teacher presence and student attendance are measured as the percentage of present teachers/students. Functional facilities is measured as the percentage of the school's functional infrastructure. Scores are measured since 2016, and consist on the share of correct answers in standardized exams performed on a random sample of primary students. Standard errors clustered by markaz in parentheses. * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table B7: Intensity of exposure to flagging by school performance

Panel A: Best performance schools

	Dependent variables (range: 0-100)											
	Teacher presence$_{t+1}$		Student attendance$_{t+1}$		Functional facilities$_{t+1}$		Math$_{t+1}$		English$_{t+1}$		Urdu$_{t+1}$	
	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
# Times flagged$_t$ (z-score)	-0.039***	-0.026	-0.094***	-0.084***	-0.022***	-0.001	-0.043	-0.203**	0.048	0.236	-0.010	0.088
	(0.013)	(0.021)	(0.018)	(0.025)	(0.008)	(0.012)	(0.049)	(0.101)	(0.159)	(0.246)	(0.058)	(0.121)
N. of obs.	141,203	141,203	78,779	78,779	195,751	195,751	13,611	13,611	3,351	3,351	10,399	10,399
Number markaz	3,508	3,508	3,270	3,270	3,519	3,519	2,219	2,219	997	997	2,028	2,028
Mean Dep. Var.	91.6	91.6	87.6	87.6	90.2	90.2	86.9	86.9	76.5	76.5	84.6	84.6
Mean # Times flagged	0.87	0.87	1.59	1.59	1.61	1.61	0.038	0.038	0.34	0.34	0.065	0.065
SD # Times flagged	1.42	1.42	2.19	2.19	2.81	2.81	0.24	0.24	0.96	0.96	0.33	0.33
First stage F-stat		241.0		200.4		373.1		4320.3		33.2		34.8

Panel B: Worst performing schools

	Dependent variables (range: 0-100)											
	Teacher presence$_{t+1}$		Student attendance$_{t+1}$		Functional facilities$_{t+1}$		Math$_{t+1}$		English$_{t+1}$		Urdu$_{t+1}$	
	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
# Times flagged$_t$ (z-score)	0.346***	0.208**	0.526***	0.018	1.493***	0.516**	0.266***	0.365*	0.711***	0.548***	0.227***	-0.135
	(0.062)	(0.087)	(0.048)	(0.078)	(0.123)	(0.203)	(0.085)	(0.196)	(0.108)	(0.159)	(0.078)	(0.163)
N. of obs.	116,251	116,251	178,897	178,897	57,764	57,764	53,392	53,392	63,302	63,302	56,506	56,506
Number markaz	3,410	3,410	3,515	3,515	2,187	2,187	2,624	2,624	2,696	2,696	2,644	2,644
Mean Dep. Var.	91.6	91.6	87.6	87.6	90.2	90.2	86.9	86.9	76.5	76.5	84.6	84.6
Mean # Times flagged	0.87	0.87	1.59	1.59	1.61	1.61	0.038	0.038	0.34	0.34	0.065	0.065
SD # Times flagged	1.42	1.42	2.19	2.19	2.81	2.81	0.24	0.24	0.96	0.96	0.33	0.33
First stage F-stat		166.5		238.2		276.8		32.5		152.9		52.8
Markaz FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District time trends	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# Times in threshold$_t$ FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The unit of analysis is the school-year. This table show the results from estimating equation 3 on samples of schools to test how much the conclusions from Table 4 change under specific school characteristics. Outcomes in the top of each column, measured in year $t+1$ in scale from 0 to 100. Panel A report for the schools performing above the median of the markaz average performance. Panel B reports for schools performing below the median of the markaz average performance. # Times flagged$_t$ is the number of times a markaz was flagged in year t in the outcome reported at the top of the column. # Times flagged threshold$_t$ is the number of times flagged while being close to the flagging threshold in the outcome reported at the top. # Times flagged is normalized (z-score). OLS columns show the results from equation 3. 2SLS columns show the results after instrumenting the # Times flagged by # Times flagged threshold. Year is measured as school-year (September to May). The first stage is estimated through equation 2. *First stage F-stat* show the Kleibergen and Paap (2006) F-statistic. *Mean # Times flagged* and *SD # Times flagged* indicate the mean and standard deviation of # Times flagged$_t$. *Mean. Dep. Var* shows the average outcome in the markaz in year t. Teacher presence and student attendance are measured as the percentage of present teachers/students. Functional facilities is measured as the percentage of the school's functional infrastructure. Scores are measured since 2016, and consist on the share of correct answers in standardized exams performed on a random sample of primary students. Standard errors clustered by markaz in parentheses. * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table B8: Intensity of exposure to flagging - heterogeneity by district ranking

	Dependent variables (range: 0-100)					
	Teacher presence$_{t+1}$		Student attendance$_{t+1}$		Functional facilities$_{t+1}$	
	OLS	2SLS	OLS	2SLS	OLS	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)
# Times flagged$_t$ (z-score)	-0.046	-0.210	0.815***	0.256	1.134***	0.637***
	(0.121)	(0.188)	(0.127)	(0.246)	(0.231)	(0.237)
Bottom district$_t$ × # Times flagged$_t$ (z-score)	0.325**	0.424**	-0.496***	-0.416	-0.002	-0.712***
	(0.127)	(0.195)	(0.136)	(0.255)	(0.253)	(0.270)
Top district$_t$ × # Times flagged$_t$ (z-score)	0.190	0.277	-0.573***	-0.282	-0.382	-0.817***
	(0.128)	(0.199)	(0.136)	(0.256)	(0.249)	(0.255)
N. of obs.	257,592	257,592	257,865	257,865	254,058	254,058
Number markaz	3,567	3,567	3,567	3,567	3,567	3,567
Mean Dep. Var.	91.6	91.6	87.6	87.6	90.2	90.2
Mean # Times flagged	0.87	0.87	1.59	1.59	1.61	1.61
SD # Times flagged	1.42	1.42	2.19	2.19	2.81	2.81
Markaz FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
District time trends	Yes	Yes	Yes	Yes	Yes	Yes
# Times in threshold$_t$ FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The unit of analysis is the school-year. This table show the results from estimating equation 3 adding an additional interaction for the district ranking to test for heterogeneity of the main results of Table 4. Outcomes in the top of each column, measured in year $t+1$ in scale from 0 to 100. # Times flagged$_t$ is the number of times a markaz was flagged in year t in the outcome reported at the top of the column. # Times flagged threshold$_t$ is the number of times flagged while being close to the flagging threshold in the outcome reported at the top. # Times flagged is normalized (z-score). OLS columns show the results from equation 3. 2SLS columns show the results after instrumenting the # Times flagged by # Times flagged threshold. Bottom (Top) district equals one if the average position of the district is in the bottom (top) five, relative to the districts outside the bottom and top positions. Year is measured as school-year (September to May). *Mean # Times flagged* and *SD # Times flagged* indicate the mean and standard deviation of # Times flagged$_t$. *Mean. Dep. Var* shows the average outcome in the markaz in year t. Teacher presence and student attendance are measured as the percentage of present teachers/students. Functional facilities is measured as the percentage of the school's functional infrastructure. Standard errors clustered by markaz in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B9: Intensity of exposure to flagging - heterogeneity by political alignment

	Dependent variables (range: 0-100)					
	Teacher presence$_{t+1}$		Student attendance$_{t+1}$		Functional facilities$_{t+1}$	
	OLS	2SLS	OLS	2SLS	OLS	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)
# Times flagged$_t$ (z-score)	0.067	-0.021	0.437***	-0.225	0.953***	-0.151
	(0.113)	(0.146)	(0.123)	(0.203)	(0.225)	(0.231)
Not fully aligned × # Times flagged$_t$ (z-score)	0.071	0.087	-0.240*	0.074	-0.035	0.052
	(0.122)	(0.164)	(0.141)	(0.222)	(0.259)	(0.261)
Fully aligned × # Times flagged$_t$ (z-score)	0.214*	0.204	-0.056	0.261	0.016	0.086
	(0.119)	(0.162)	(0.136)	(0.217)	(0.258)	(0.262)
N. of obs.	257,592	257,592	257,865	257,865	254,058	254,058
Number markaz	3,567	3,567	3,567	3,567	3,567	3,567
Mean Dep. Var.	91.6	91.6	87.6	87.6	90.2	90.2
Mean # Times flagged	0.87	0.87	1.59	1.59	1.61	1.61
SD # Times flagged	1.42	1.42	2.19	2.19	2.81	2.81
Markaz FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
District time trends	Yes	Yes	Yes	Yes	Yes	Yes
# Times in threshold$_t$ FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Notes: The unit of analysis is the school-year. This table show the results from estimating equation 3 adding an additional interaction for the political alignment to test for heterogeneity of the main results of Table 4. Outcomes in the top of each column, measured in year $t+1$ in scale from 0 to 100. Panel A report for the schools performing above the median of the markaz average performance. Panel B reports for schools performing below the median of the markaz average performance. # Times flagged$_t$ is the number of times a markaz was flagged in year t in the outcome reported at the top of the column. # Times flagged threshold$_t$ is the number of times flagged while being close to the flagging threshold in the outcome reported at the top. # Times flagged is normalized (z-score). OLS columns show the results from equation 3. 2SLS columns show the results after instrumenting the # Times flagged by # Times flagged threshold. Following Callen, Gulzar and Rezaee (2020) we define: i) maraakiz fully aligned: all schools lie within constituencies where the winners are part of the chief minister party, ii) not fully aligned, and iii) not aligned: no constituency with the same party as the chief minister. Year is measured as school-year (September to May). *Mean # Times flagged* and *SD # Times flagged* indicate the mean and standard deviation of # Times flagged$_t$. *Mean. Dep. Var* shows the average outcome in the markaz in year t. Teacher presence and student attendance are measured as the percentage of present teachers/students. Functional facilities is measured as the percentage of the school's functional infrastructure. Standard errors clustered by markaz in parentheses. * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

C Tracing Impacts Through the Machinery of Government

Table C1: Intensity of exposure to flagging - effect on AEO's effort

Panel A: School outcomes flagging

Flagging variable	Teacher presence				Student attendance				Functional facilities			
	Dependent variables (range: 0-100)											
	Visited schools$_{t+1}$		Change head teacher$_{t+1}$		Visited schools$_{t+1}$		Change head teacher$_{t+1}$		Visited schools$_{t+1}$		Change head teacher$_{t+1}$	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
# Times flagged$_t$ (z-score)	0.731***	0.389	0.251***	0.339**	0.746***	-0.179	-0.016	-0.182	0.030	-0.522	0.423***	0.232
	(0.224)	(0.354)	(0.087)	(0.138)	(0.267)	(0.432)	(0.101)	(0.155)	(0.239)	(0.371)	(0.101)	(0.166)
N. of obs.	258,147	258,147	258,147	258,147	258,147	258,147	258,147	258,147	258,147	258,147	258,147	258,147
Number markaz	3,567	3,567	3,567	3,567	3,567	3,567	3,567	3,567	3,567	3,567	3,567	3,567
Mean Dep. Var.	68.2	68.2	11.0	11.0	68.2	68.2	11.0	11.0	68.2	68.2	11.0	11.0
Mean # Times flagged	0.87	0.87	0.87	0.87	1.59	1.59	1.59	1.59	1.61	1.61	1.61	1.61
SD # Times flagged	1.42	1.42	1.42	1.42	2.19	2.19	2.19	2.19	2.81	2.81	2.81	2.81
First stage F-stat		210.5		210.5		258.8		258.8		385.9		386.0

Panel B: Student scores flagging

Flagging variable	Math				English				Urdu			
	Dependent variables (range: 0-100)											
	Visited schools$_{t+1}$		Change head teacher$_{t+1}$		Visited schools$_{t+1}$		Change head teacher$_{t+1}$		Visited schools$_{t+1}$		Change head teacher$_{t+1}$	
	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
# Times flagged$_t$ (z-score)	0.240	1.858*	-0.075	0.164	-0.502	-1.262	-0.093	-0.008	-0.800*	-0.879	-0.255**	-0.474*
	(0.393)	(1.009)	(0.138)	(0.347)	(0.530)	(0.827)	(0.168)	(0.261)	(0.424)	(0.859)	(0.128)	(0.253)
N. of obs.	258,147	258,147	258,147	258,147	258,147	258,147	258,147	258,147	258,147	258,147	258,147	258,147
Number markaz	3,567	3,567	3,567	3,567	3,567	3,567	3,567	3,567	3,567	3,567	3,567	3,567
Mean Dep. Var.	68.2	68.2	11.0	11.0	68.2	68.2	11.0	11.0	68.2	68.2	11.0	11.0
Mean # Times flagged	0.038	0.038	0.038	0.038	0.34	0.34	0.34	0.34	0.065	0.065	0.065	0.065
SD # Times flagged	0.24	0.24	0.24	0.24	0.96	0.96	0.96	0.96	0.33	0.33	0.33	0.33
First stage F-stat		34.8		34.8		155.9		155.9		57.5		57.5
Markaz FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District time trends	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# Times in threshold$_t$ FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The unit of analysis is the school-year. This table show the results from estimating equation 3 on bureaucratic effort outcomes as a measure of the machinery of government. Outcomes in the top of each column, measured in year $t+1$ in scale from 0 to 100. Panel A report on the schooling outcomes flagging. Panel B reports on the student scores flagging. # Times flagged$_t$ is the number of times a markaz was flagged in year t in the outcome reported at the top of the column. # Times flagged threshold$_t$ is the number of times flagged while being close to the flagging threshold in the outcome reported at the top. # Times flagged is normalized (z-score). OLS columns show the results from equation 3. 2SLS columns show the results after instrumenting the # Times flagged by # Times flagged threshold. Change head teachers measure the percentage of months a school reported changed of head teacher. Visited schools measure the percentage of months where schools received a visit by a public official. Year is measured as school-year (September to May). The first stage is estimated through equation 2. *First stage F-stat* show the Kleibergen and Paap (2006) F-statistic. *Mean # Times flagged* and *SD # Times flagged* indicate the mean and standard deviation of # Times flagged$_t$. *Mean. Dep. Var* shows the average outcome in the markaz in year t. Standard errors clustered by markaz in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table C2: Intensity of exposure to flagging - effect on funds by category

Panel A: School outcomes flagging

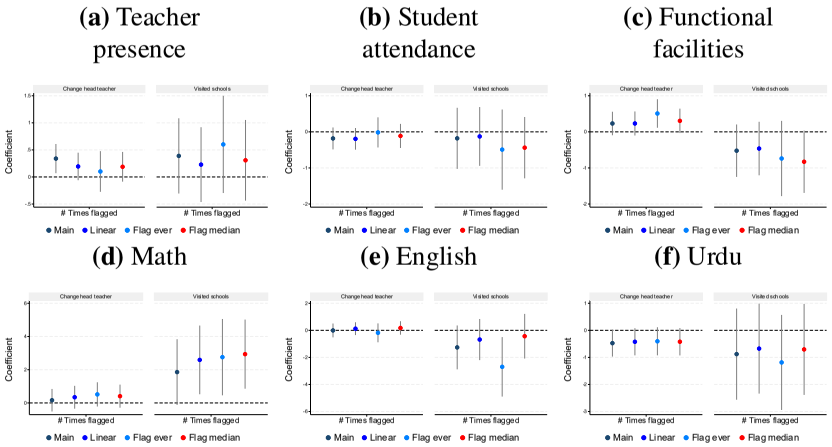
Flagging variable	Teacher presence				Student attendance				Functional facilities			
	Dependent variables (logs)											
	Government Funds$_{t+1}$		Non Government Funds$_{t+1}$		Government Funds$_{t+1}$		Non Government Funds$_{t+1}$		Government Funds$_{t+1}$		Non Government Funds$_{t+1}$	
	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
# Times flagged$_t$ (z-score)	0.200***	0.143*	0.063**	0.008	0.204***	0.251**	-0.040	-0.057	-0.051	-0.044	-0.015	0.020
	(0.047)	(0.081)	(0.027)	(0.046)	(0.053)	(0.102)	(0.032)	(0.055)	(0.045)	(0.093)	(0.033)	(0.052)
N. of obs.	258,147	258,147	258,147	258,147	258,147	258,147	258,147	258,147	258,147	258,147	258,147	258,147
Number markaz	3,567	3,567	3,567	3,567	3,567	3,567	3,567	3,567	3,567	3,567	3,567	3,567
Mean Dep. Var. (unlogged)	40,146	40,146	4,712	4,712	40,146	40,146	4,712	4,712	40,146	40,146	4,712	4,712
Mean # Times flagged	0.87	0.87	0.87	0.87	1.59	1.59	1.59	1.59	1.61	1.61	1.61	1.61
SD # Times flagged	1.42	1.42	1.42	1.42	2.19	2.19	2.19	2.19	2.81	2.81	2.81	2.81
First stage F-stat		210.5		210.5		258.8		258.8		385.9		386.0

Panel B: Student scores flagging

Flagging variable	Math				English				Urdu			
	Dependent variables (range: 0-100)											
	Government Funds$_{t+1}$		Non Government Funds$_{t+1}$		Government Funds$_{t+1}$		Non Government Funds$_{t+1}$		Government Funds$_{t+1}$		Non Government Funds$_{t+1}$	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
# Times flagged$_t$ (z-score)	0.050*	0.076	0.045**	0.080	-0.040	-0.016	-0.033	-0.041	0.002	0.019	0.043*	0.053
	(0.028)	(0.056)	(0.021)	(0.062)	(0.025)	(0.043)	(0.027)	(0.040)	(0.022)	(0.047)	(0.023)	(0.044)
N. of obs.	94,605	94,605	94,605	94,605	94,605	94,605	94,605	94,605	94,605	94,605	94,605	94,605
Number markaz	3,150	3,150	3,150	3,150	3,150	3,150	3,150	3,150	3,150	3,150	3,150	3,150
Mean Dep. Var. (unlogged)	40,146	40,146	4,712	4,712	40,146	40,146	4,712	4,712	40,146	40,146	4,712	4,712
Mean # Times flagged	0.038	0.038	0.038	0.038	0.34	0.34	0.34	0.34	0.065	0.065	0.065	0.065
SD # Times flagged	0.24	0.24	0.24	0.24	0.96	0.96	0.96	0.96	0.33	0.33	0.33	0.33
First stage F-stat		35.1		35.1		156.9		156.9		53.2		53.2
Markaz FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District time trends	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# Times in threshold$_t$ FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

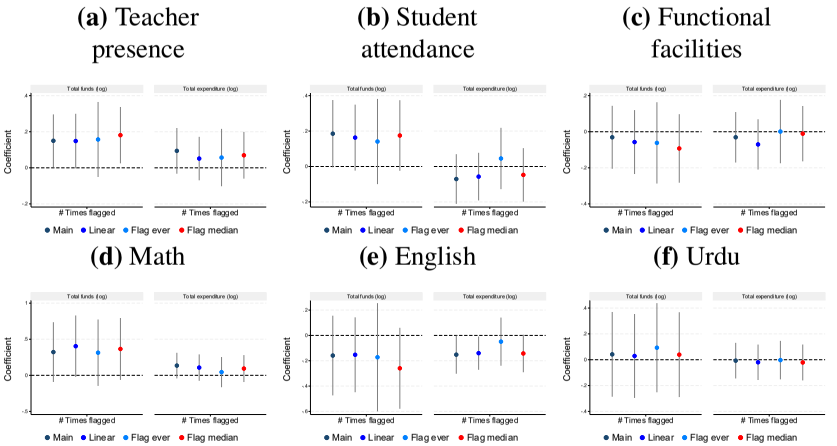
Notes: The unit of analysis is the school-year. This table show the results from estimating equation 3 on the dissagregation of total development funds to test the source of the effects observed in Table 5. Outcomes in the top of each column, measured in year $t+1$ in scale from 0 to 100. Panel A report on the schooling outcomes flagging. Panel B reports on the student scores flagging. # Times flagged$_t$ is the number of times a markaz was flagged in year t in the outcome reported at the top of the column. # Times flagged threshold$_t$ is the number of times flagged while being close to the flagging threshold in the outcome reported at the top. # Times flagged is normalized (z-score). OLS columns show the results from equation 3. 2SLS columns show the results after instrumenting the # Times flagged by # Times flagged threshold. Year is measured as school-year (September to May). The first stage is estimated through equation 2. *First stage F-stat* show the Kleibergen and Paap (2006) F-statistic. *Mean # Times flagged* and *SD # Times flagged* indicate the mean and standard deviation of # Times flagged$_t$. *Mean. Dep. Var* shows the average outcome in the markaz in year t. Unlogged government and non government funds in pakistani rupees. Standard errors clustered by markaz in parentheses. * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Figure C1: Intensity of exposure to flagging - effect on effort - robustness by instrument definition



Note: This figure presents the results from estimating equation 3 on effort variables under different definitions of the instrument as a robustness test for the results in Table C1. The *Main* instrument is defined as dummy variables for each month of a year equal to one if in a such month a markaz was flagged while close to the threshold. The additional instrument definitions are measured as follows – *Linear*: normalized number of times flagged close to the threshold sample. *Flag Ever*: a dummy equal to one if the markaz reported to be flagged at least once in a year, and zero otherwise.*Flag Median*: a categorical variable dividing between markaz flagged above or below the median of the distribution. # Times flagged counts the number of times a markaz was flagged in year t in the outcome reported in the title of the subgraph. The number of times flagged is normalized (z-score). Year is measured as school-year (September to May). Change head teachers measure the percentage of months a school reported changed of head teacher. Visited schools measure the percentage of months where schools received a visit by a public official. Error bars at the 95 percent level, clustered at the markaz level, are presented for each coefficient.

Figure C2: Intensity of exposure to flagging - effect on budget - robustness by instrument definition



Note: This figure presents the results from estimating equation 3 on budget variables under different definitions of the instrument as a robustness test for the results in Table 5. The *Main* instrument is defined as dummy variables for each month of a year equal to one if in a such month a markaz was flagged while close to the threshold. The additional instrument definitions are measured as follows – *Linear*: normalized number of times flagged close to the threshold sample. *Flag Ever*: a dummy equal to one if the markaz reported to be flagged at least once in a year, and zero otherwise.*Flag Median*: a categorical variable dividing between markaz flagged above or below the median of the distribution. # Times flagged counts the number of times a markaz was flagged in year t in the outcome reported in the title of the subgraph. The number of times flagged is normalized (z-score). Year is measured as school-year (September to May). Total funds and total expenditure are log transformed. Error bars at the 95 percent level, clustered at the markaz level, are presented for each coefficient.

D Naive Evaluations of Response

Building on the discussion in Section 6, we implemented a stacked difference-in-discontinuities analysis , where we compare schools in flagged and non-flagged maraakiz, before and after the flagging occurs. The stacking design allow us to avoid biases driven by the time-varying nature of the treatment (De Chaisemartin and d'Haultfoeuille, 2020; Callaway and Sant'Anna, 2021; Goodman-Bacon, 2021) and estimate features of the dynamics of flagged and non-flagged schools.

To explore the extent to which the lack of an effect is driven by a natural return of the outcomes to their original state, we estimate the following event study equation:

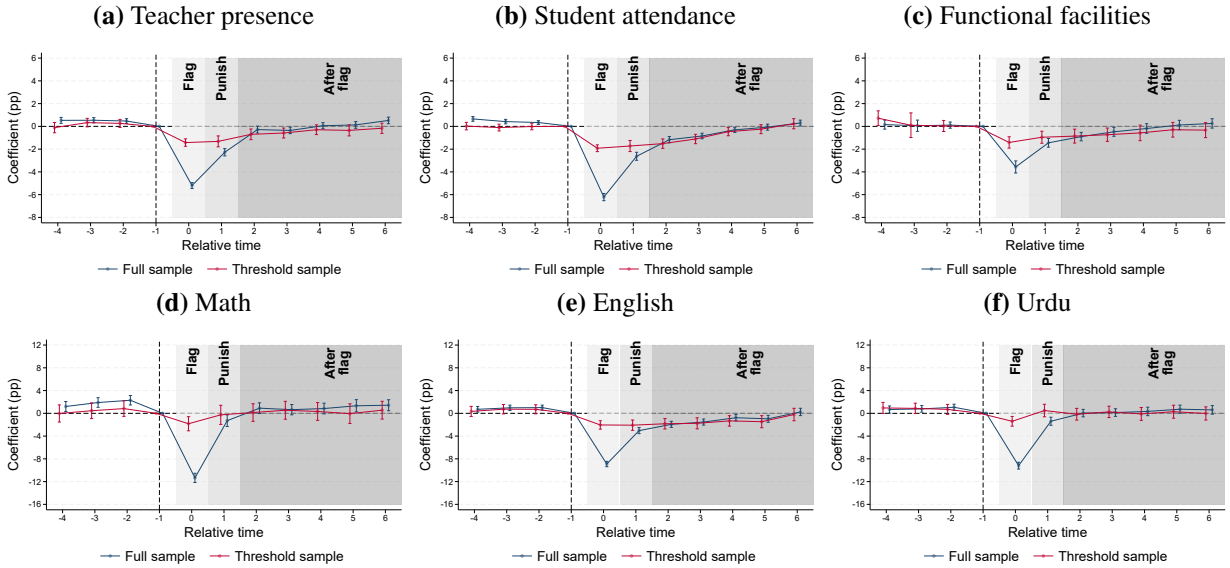
$$Y_{s,m,d,t,e} = \sum_{j \neq -1}^{J} \beta_j \cdot (T_{m,d,e} \times \mathbb{1}[j = t]) + \alpha_{m,d,e} + \lambda_{t,e} + \delta_{dt} + \varepsilon_{s,m,d,t,e} \tag{4}$$

where subscripts s, m, d, t are for school, markaz, district, and time. All components are indexed at the flagging event panel e. $Y_{s,m,d,t,e}$ is the outcome for school s, within markaz m, in district d. $T_{m,d,e}$ equals 1 for schools in a flagged markaz m. β_j captures the effect of being in a flagged markaz for each relative time $t = j$. α_{me} is for markaz fixed effects, and λ_{te} is for time fixed effects. We also include δ_{dt} to absorb district linear time trends. $\varepsilon_{s,m,d,t,e}$ is the error term clustered at the markaz level. We stack for four pre-periods and seven post-periods.

Figure D1 reports the event studies for each outcome variable we study. The y-axis reports β coefficients in percentage point differences. The blue line is the full sample, while the red is the threshold sample. The event studies show that the pre-trends are not significant and are small in magnitude. Thus, the parallel trends assumption is plausible. As can be seen, most of the coefficients in both samples are statistically equivalent to zero at the 95% level in the *After flag* period, indicating null impact of the flagging. The full sample estimations exhibit a larger relative negative shock measured in period 0, but even this is almost recovered by the first *After flag* period.

The recovery to pre-treatment means is some combination of mean reversion and the impact of the punishment period. A key advantage of the frequency of our data is that we can separately examine the impact of punishment beyond the regression to the mean trends in the outcomes. To do so, Figure D2 plots over time impacts on first-differenced outcomes that are reported above in Figure D1. We can see that there exists a negative shock during the flagging month ($t = 0$). This negative shock is followed by a quick recovery in the month where punishment occurs ($t = 1$). If it were the case that punishment was contributing to an improvement *beyond* the pre-existing path of recovery, we would expect the coefficient in period $t = 2$ to be larger than the coefficient in period $t = 1$ as

Figure D1: Event study - flagging effect on performance



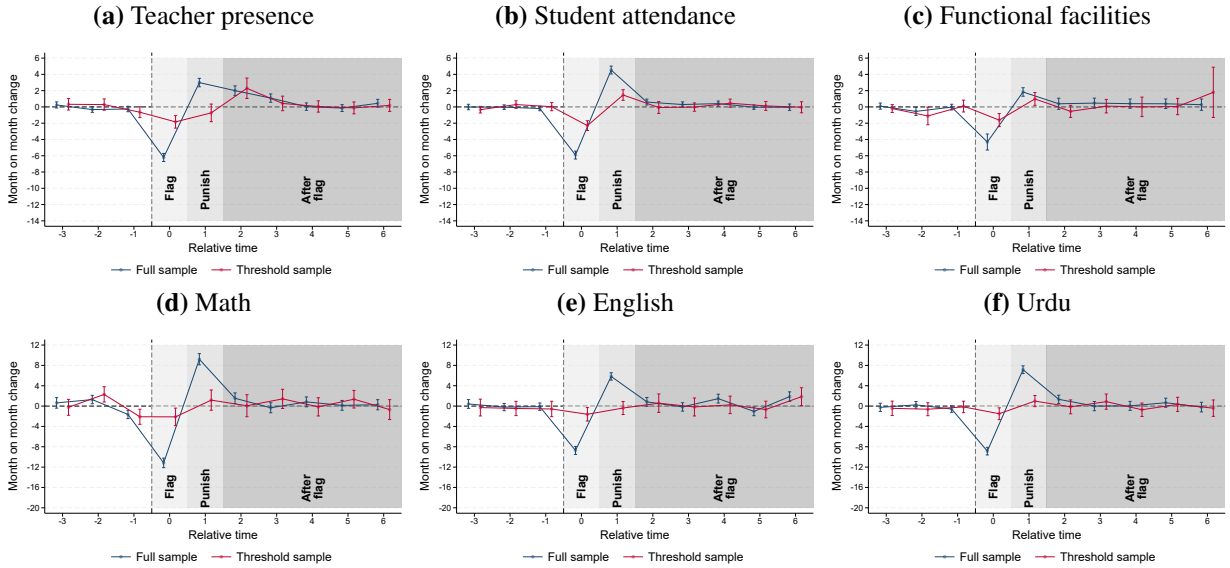
Note: This figure presents results from estimating event studies based on equation 4 using -1 as the base period, comparing schools in flagged and non-flagged maraakiz. The blue line presents results for the full sample, while the red line presents results for the threshold sample, obtained through regression discontinuity optimization methods. The results are for flagging on the variable in the title of the panel. *Flag* is for the period in which the information is collected, and the markaz is flagged. *Punish* is for the period where the reports are distributed and the oversight meeting with the punishment occurs. *After flag* is for periods after the oversight meeting occurs. Error bars at the 95 percent level are presented for each coefficient. Teacher presence and student attendance are measured as the percentage of present teachers/students relative to the total teachers/students reported. The functional facilities variable is measured as the percentage of the school's functional infrastructure. Scores variables are measured as the share of correct answers of students in standardized exams.

the path to recovery would have accelerated.

We find evidence for the efficacy of punishment only in the case of teacher presence (panel a), where there is a small precisely estimated effect on the first differenced outcome (p-value of 0.001). This shows that the rate at which teachers return to school is increased in the first month after flagging by 2 percentage points. From month 2 onwards, we see no difference between flagged and non-flagged schools, suggesting that punishment is not bringing any further improvement in the rate of recovery. The results for flagging on other outcomes are all indistinguishable from zero. Taken together, these results show that there is a small impact of command-and-control approaches that only occurs in the short-term on that margin of schooling most responsive to hierarchical pressure: personnel attendance. All other dynamics are equivalent to a reversion to the mean.

Table D1 show the average coefficients of the event study of Figure D1. The first column for each variable reports the full sample, and the second shows the threshold sample. Panel A reports outcomes relating to school functioning. Coefficients for *Flag* and *Punish* represent the first negative shock and the immediate recovery. The coefficients for the *After flag* report the trend after the

Figure D2: Punishment Period vs Reversion to Mean - Month on Month Changes



Note: This figure presents results from estimating month-by-month coefficients based on equation 4 on the sample of maraakiz that have not fully recovered from the negative shock in the punishment period. The specification compares schools in flagged and non-flagged maraakiz in consecutive months. The blue line presents results for the full sample, while the red line presents results for the threshold sample, obtained through regression discontinuity optimization methods. The results are for flagging on the variable in the title of the panel. *Flag* is for the period in which the information is collected, and the markaz is flagged. *Punish* is for the period where the reports are distributed and the oversight meeting with the punishment occurs. *After flag* is for periods after the oversight meeting occurs. Error bars at the 95 percent level are presented for each coefficient. Teacher presence and student attendance are measured as the percentage of present teachers/students relative to the total teachers/students reported. The functional facilities variable is measured as the percentage of the school's functional infrastructure. Scores variables are measured as the share of correct answers of students in standardized exams. We report the p-values for a one-sided test for the coefficient of relative time 2 (after flag) being greater than the coefficient of relative time 1 (punishment) in the threshold sample: Panel (a) –0.001–. Panel (b) –0.99–. Panel (c) –0.99–. Panel (d) –0.75–. Panel (e) –0.19–. Panel (f) –0.83–.

immediate recovery. The coefficients are small compared to the mean of the dependent variable, but negative. Panel B of Table D1 presents the results for the student test score variables. We observe the same pattern of results as in Panel A. The results imply that the oversight scheme had negligible impacts on school functioning nor student outcomes, but rather that flagged and non-flagged schools facing a similar shock returned to equilibria.

Table D1: Monthly monitoring effect on performance - markaz flagging

Panel A: School outcomes

	Dependent variables (range: 0-100)					
	Teacher presence		Student attendance		Functional facilities	
	(1)	(2)	(3)	(4)	(5)	(6)
T×Flag	-5.593***	-1.566***	-6.603***	-1.971***	-3.658***	-1.630***
	(0.132)	(0.153)	(0.164)	(0.143)	(0.275)	(0.290)
T×Punish	-2.668***	-1.471***	-3.031***	-1.804***	-1.542***	-1.175***
	(0.153)	(0.213)	(0.178)	(0.251)	(0.197)	(0.301)
T×After flag	-0.403***	-0.606***	-0.889***	-0.810***	-0.356**	-0.787**
	(0.092)	(0.139)	(0.080)	(0.131)	(0.163)	(0.305)
Sample	Full	Threshold	Full	Threshold	Full	Threshold
N. of obs.	8,202,224	673,614	6,080,752	693,441	8,737,264	1,085,311
Mean Dep. Var. before	92.9	87.9	91.7	87.2	97.2	95.6

Panel B: Students scores

	Dependent variables (range: 0-100)					
	Math		English		Urdu	
	(1)	(2)	(3)	(4)	(5)	(6)
T×Flag	-12.710***	-2.158***	-9.599***	-2.511***	-9.826***	-2.014***
	(0.338)	(0.512)	(0.196)	(0.265)	(0.250)	(0.348)
T×Punish	-2.654***	-0.595	-3.732***	-2.556***	-2.018***	-0.121
	(0.416)	(0.740)	(0.238)	(0.393)	(0.323)	(0.503)
T×After flag	-0.342	-0.034	-1.749***	-1.851***	-0.273	-0.551*
	(0.258)	(0.468)	(0.185)	(0.268)	(0.203)	(0.326)
Sample	Full	Threshold	Full	Threshold	Full	Threshold
N. of obs.	2,749,969	78,564	1,017,291	202,812	2,461,051	142,267
Mean Dep. Var. before	87.0	73.6	78.0	70.9	84.6	72.7
Markaz FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
District time trends	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Results from estimating equation 4. The school is the unit of observation for both panels. The first column for each outcome estimates for the full sample. The second column for each outcome estimates for the threshold sample, including schools in maraakiz that lie within the bandwidth obtained through regression discontinuity optimization methods. The flagging and threshold sample are based on the studied outcome. Teacher presence and student attendance are measured as the percentage of present teachers/students relative to the total teachers/students reported. The functional facilities variable is measured as the percentage of the school's functional infrastructure. Scores are measured as the percentage of correct answers in standardized tests. *T* equals 1 for schools in a flagged markaz. *Flag* equals 1 for the period in which the information is collected, and the markaz is flagged. *Punish* equals 1 for the period where the reports are distributed and the oversight meeting with the punishment occurs. *After flag* is equal to 1 for periods after the oversight meeting occurs. *Mean. Dep. Var before* shows the average outcome in the non-flagged maraakiz before the flagging occurs. Standard errors clustered by markaz, are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Regression discontinuity analysis We do multiple robustness tests to assess the validity of our analysis. First, we implement as a natural extension a regression discontinuity analysis. We estimate the following equation:

$$\begin{aligned} Y_{m,t+1} = \beta \cdot \mathbb{1}[\text{Performance}_{m,t} > 0] + \gamma \cdot \text{Performance}_{m,t} \\ + \theta \cdot \mathbb{1}[\text{Performance}_{m,t} > 0] \times \text{Performance}_{m,t} + \alpha_{m,t} + \varepsilon_{m,t} \end{aligned} \tag{5}$$

Where $Y_{s,m,t+1}$ is the outcome for school s in markaz m on month $t+1$, which coincides with the punishment period as in Figure D1. $\text{Performance}_{m,t}$ is the average markaz performance in the respective schooling outcome during the flagging month t. We recenter the performance measure by subtracting the threshold value, such that maraakiz with relative performance below zero are flagged. $\mathbb{1}[\text{Performance}_{m,t} < 0]$ is a dummy variable equal to one if the maraakiz was flagged in month t. $\varepsilon_{m,t}$ is for standard errors clustered at the markaz level. $\alpha_{m,t}$ is for markaz-by-month fixed effects to account for the monthly flagging structure, equivalent to the markaz fixed effect of equation 4.

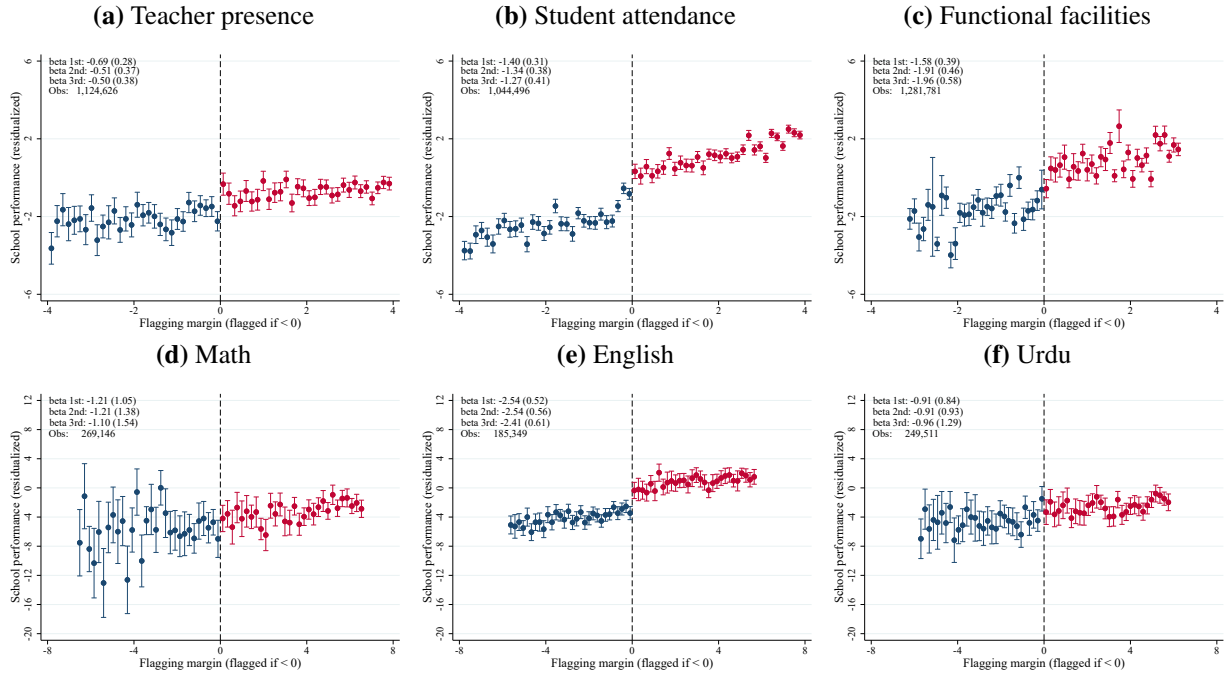
β captures the effect of flagging comparing maraakiz that were just below the threshold with those just above. We identify the optimal bandwidth around the threshold as the one that minimizes the mean squared error of the estimator (Cattaneo and Titiunik, 2022). We validate the no manipulation assumption in Figure B1 to ensure our results are not biased due to the potential strategic behaviour of the AEOs in reporting the monthly performance data.

Figure D3 shows the discontinuity plots for each outcome, and reports the β coefficient from estimating equation 5, fitting a linear, 2^{nd}, and 3^{rd} degree polynomial. All the results point toward the limited impact of flagging in improving schooling outcomes.

Robustness to difference-in-discontinuities approach A concern of our specification is that the bureaucrats' responses might have happened in expectation of the scheme implementation. We test whether the introduction of command-and-control management created significant educational outcomes changes by estimating the first flag's effect. As such, first-time flagged AEOs should have the highest immediate incentives to avoid punishment. The event study of Figure D4 shows no significant improvement, suggesting no relevant bureaucratic responses appeared from the immediate implementation of the command-and-control scheme.

We test for fewer post-periods in the stacked dataset to explore the sensibility of the results to the data structure. Figure D5 shows that the patterns remain consistent with a reversion to the mean. We estimate the effects for orange flagging in Figure D6 to validate that no effects are perceived in higher flagging thresholds. Figure D7 test for flagging at the tehsil level to explore effects on a

Figure D3: Regression discontinuity - effect of flagging on subsequent outcomes



Note: This figure presents the discontinuity plot for schools in maraakiz above and below the flagging threshold for each outcome reported in the sub-panel title. The figure is limited to the optimal bandwidth. Coefficient points and 95% confidence intervals for each bin. Blue bins to the left correspond to schools in flagged maraakiz. Red bins correspond to schools in non-flagged maraakiz. The outcome is measure in month $t+1$. The top of each panel displays the β coefficient from estimating equation 5, fitting a linear, 2^{nd}, and 3^{rd} degree polynomial. Teacher presence and student attendance are measured as the percentage of present teachers/students relative to the total teachers/students reported. The functional facilities variable is measured as the percentage of the school's functional infrastructure. Scores variables are measured as the share of correct answers of students in standardized exams.

more aggregate administrative unit. We find no significant effects from more aggregated flagging measures.

We further explore the comparison of maraakiz with the same flagging path before the negative shock to account for selection from maraakiz constantly flagged given the high frequency of the scheme. We do so by re-building the stacked dataset but allowing flagging in the pre-periods. We then build a 'flagging history FE' indicator such that we compare maraakiz that, before the relevant event-flagging, experienced exactly the same flagging behaviour. Table D2 shows the results. The coefficients of *After flag* are positive, but, when comparing it against the coefficients for flag *T*, the total effects result in small and negative, consistent with our previous results.

Finally, we also test for alternative difference-in-differences estimators. Figure D8 shows the results for the Sun and Abraham (2021) estimator, assuming markaz remain 'treated' after the first time flagged. Figure D9 implements the DiD_l estimator by De Chaisemartin and D'Haultfoeuille (2022) to account for the turning on/off of the treatment. The results follow the same patterns as those of

the stacked design, suggesting that flagged units follow a reversion to the mean.

Table D2: Monitoring effect on performance - markaz flagging - flagging history FE

Panel A: School outcomes

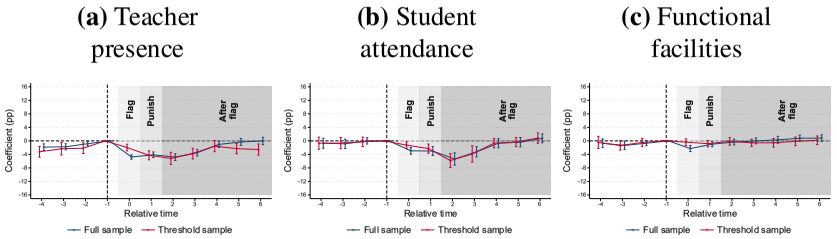
	Dependent variables (range: 0-100)					
	Teacher presence		Student attendance		Functional facilities	
	(1)	(2)	(3)	(4)	(5)	(6)
T×Flag	-5.593***	-1.566***	-6.603***	-1.971***	-3.658***	-1.630***
	(0.132)	(0.153)	(0.164)	(0.143)	(0.275)	(0.290)
T×Punish	-2.668***	-1.471***	-3.031***	-1.804***	-1.542***	-1.175***
	(0.153)	(0.213)	(0.178)	(0.251)	(0.197)	(0.301)
T×After flag	-0.403***	-0.606***	-0.889***	-0.810***	-0.356**	-0.787**
	(0.092)	(0.139)	(0.080)	(0.131)	(0.163)	(0.305)
Sample	Full	Threshold	Full	Threshold	Full	Threshold
N. of obs.	8,202,224	673,614	6,080,752	693,441	8,737,264	1,085,311
Mean Dep. Var. before	92.9	87.9	91.7	87.2	97.2	95.6

Panel B: Students scores

	Dependent variables (range: 0-100)					
	Math		English		Urdu	
	(1)	(2)	(3)	(4)	(5)	(6)
T	-3.443***	-0.987**	-4.152***	-1.988***	-3.553***	-1.117***
	(0.329)	(0.406)	(0.156)	(0.171)	(0.240)	(0.269)
T×Flag	-11.897***	-1.928***	-7.123***	-2.110***	-9.262***	-1.745***
	(0.359)	(0.533)	(0.154)	(0.201)	(0.238)	(0.333)
T×Punish	-1.952***	-0.428	-1.758***	-1.683***	-1.493***	-0.277
	(0.404)	(0.644)	(0.151)	(0.235)	(0.289)	(0.458)
T×After flag	1.634***	0.485	1.601***	0.077	1.765***	0.396
	(0.323)	(0.522)	(0.168)	(0.203)	(0.226)	(0.340)
Sample	Full	Threshold	Full	Threshold	Full	Threshold
N. of obs.	2,871,621	97,336	1,999,008	737,392	2,666,695	246,385
Mean Dep. Var. before	86.7	73.0	74.7	70.4	84.2	74.8
Markaz FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
District time trends	Yes	Yes	Yes	Yes	Yes	Yes

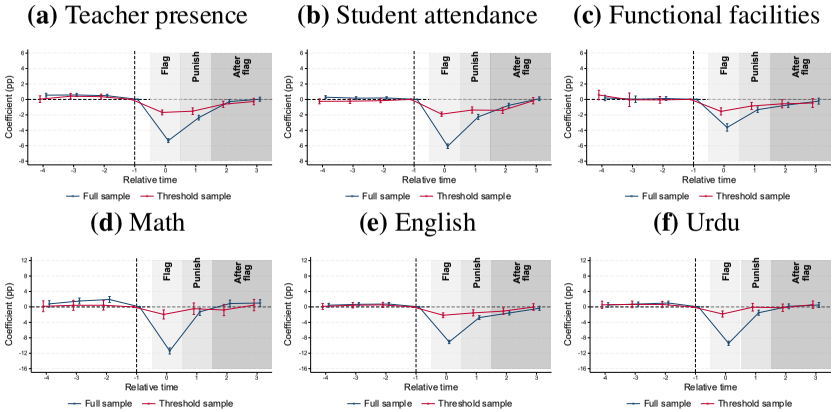
Notes: Results from estimating a modified version of equation 4, including flagging history FE instead of markaz FE. Flagging history is built from concatenating the flagging status in the three periods before the observed flagging. The specification compares maraakiz that had the same flagging path before the negative shock. Flagging history is not a markaz attribute, so the term T_{mde} from equation 4 is not absorbed and the interactions can be compared against it. The school is the unit of observation for both panels. The first column for each outcome estimates for the full sample. The second column for each outcome estimates for the threshold sample, including schools in maraakiz that lie within the bandwidth obtained through regression discontinuity optimization methods. The flagging and threshold sample are based on the studied outcome. Teacher presence and student attendance are measured as the percentage of present teachers/students relative to the total teachers/students reported. The functional facilities variable is measured as the percentage of the school's functional infrastructure. Scores are measured as the percentage of correct answers in standardized tests. *T* equals 1 for schools in a flagged markaz. *Flag* equals 1 for the period in which the information is collected, and the markaz is flagged. *Punish* equals 1 for the period where the reports are distributed and the oversight meeting with the punishment occurs. *After flag* is equal to 1 for periods after the oversight meeting occurs. *Mean. Dep. Var before* shows the average outcome in the non-flagged maraakiz before the flagging occurs. Standard errors clustered by markaz, are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Figure D4: Event study - first time flagging effect on performance - flagged units



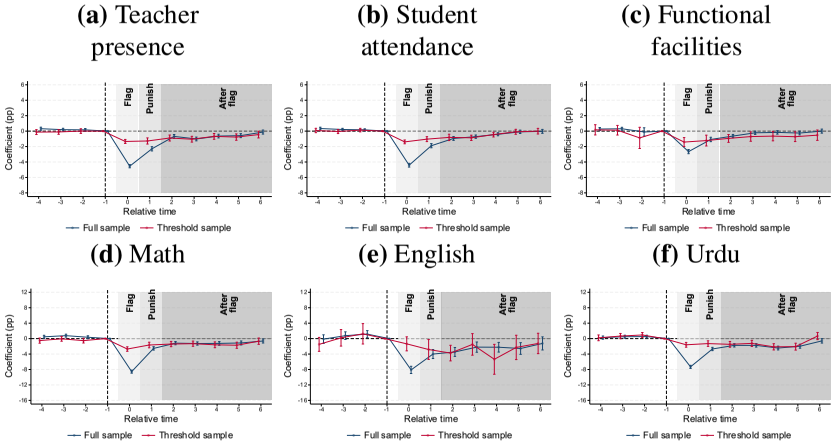
Note: This figure presents results from estimating event studies based on equation 4 using -1 as the base period, comparing schools in flagged and non-flagged maraakiz. The effects are estimated only for the first month of the oversight scheme implementation, using -1 as the base period, and comparing schools in flagged and non-flagged maraakiz. The blue line presents results for the full sample, while the red line presents results for the threshold sample, obtained through regression discontinuity optimization methods. The results are for flagging on the variable in the title of the panel. Teacher presence and student attendance are measured as the percentage of present teachers/students relative to the total teachers/students reported. The functional facilities variable is measured as the percentage of the school's functional infrastructure. *Flag* is for the period in which the information is collected, and the markaz is flagged. *Punish* is for the period where the reports are distributed and the oversight meeting with the punishment occurs. *After flag* is for periods after the oversight meeting occurs. Error bars at the 95 percent level are presented for each coefficient.

Figure D5: Event study - flagging effect on performance short stack



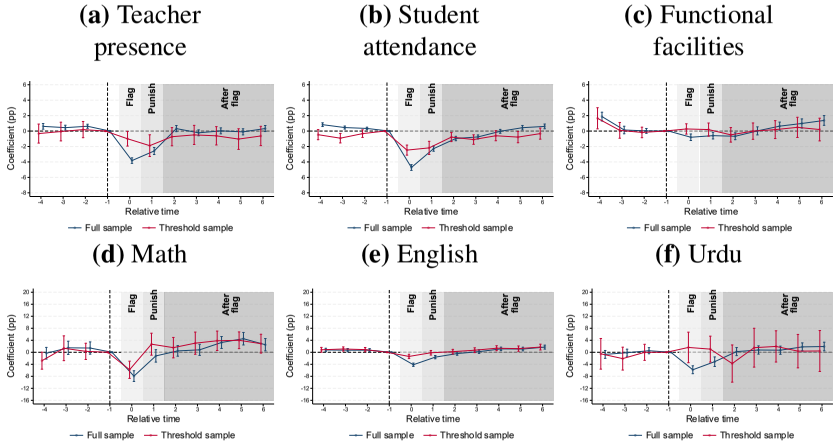
Note: This figure presents results from estimating event studies based on equation 4 using -1 as the base period, comparing schools in flagged and non-flagged maraakiz. The blue line presents results for the full sample, while the red line presents results for the threshold sample, obtained through regression discontinuity optimization methods. The results are for flagging on the variable in the title of the panel. Teacher presence and student attendance are measured as the percentage of present teachers/students relative to the total teachers/students reported. The functional facilities variable is measured as the percentage of the school's functional infrastructure. Scores are measured as the percentage of correct answers in standardized tests. *Flag* is for the period in which the information is collected, and the markaz is flagged. *Punish* is for the period where the reports are distributed and the oversight meeting with the punishment occurs. *After flag* is for periods after the oversight meeting occurs. Error bars at the 95 percent level.

Figure D6: Event study flagging effect on performance orange threshold



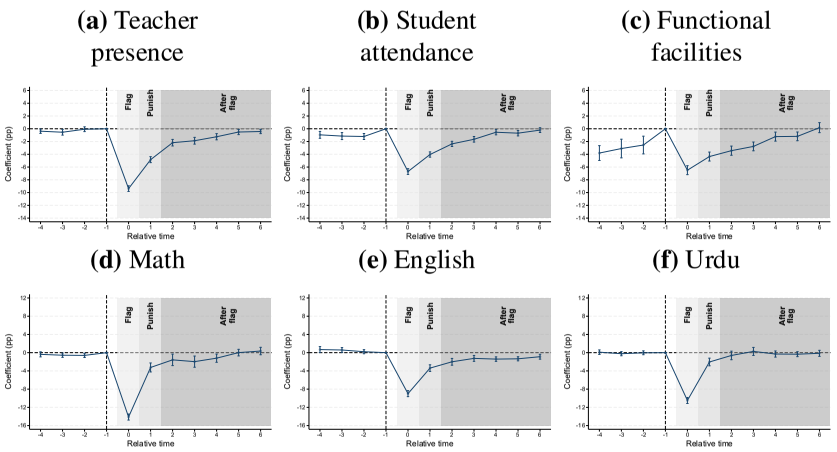
Note: This figure presents results from estimating event studies based on equation 4 using -1 as the base period, comparing schools in orange-flagged and non-flagged maraakiz. The blue line presents results for the full sample, while the red line presents results for the threshold sample, obtained through regression discontinuity optimization methods. The results are for flagging on the variable in the title of the panel. *Flag* is for the period in which the information is collected, and the markaz is flagged. *Punish* is for the period where the reports are distributed and the oversight meeting with the punishment occurs. *After flag* is for periods after the oversight meeting occurs. Error bars at the 95 percent level.

Figure D7: Event study - flagging effect on performance tehsil-wing flagging



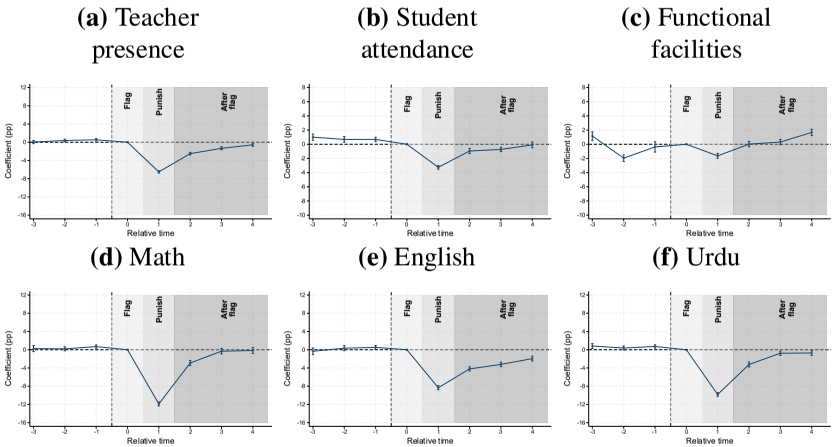
Note: This figure presents results from estimating event studies based on equation 4 using -1 as the base period, comparing schools in flagged and non-flagged tehsil-wing. The blue line presents results for the full sample, while the red line presents results for the threshold sample, obtained through regression discontinuity optimization methods. The results are for flagging on the variable in the title of the panel. *Flag* is for the period in which the information is collected, and the markaz is flagged. *Punish* is for the period where the reports are distributed and the oversight meeting with the punishment occurs. *After flag* is for periods after the oversight meeting occurs. Error bars at the 95 percent level.

Figure D8: Alternative specifications
Sun and Abraham (2021)



Note: This figure presents the results from estimating an event study based on the Sun and Abraham (2021) difference-in-differences estimator, using -1 as the base period, comparing schools in flagged and non-flagged maraakiz. The results are for flagging on the variable in the title of the panel. Teacher presence and student attendance are measured as the percentage of present teachers/students relative to the total teachers/students reported. The functional facilities variable is measured as the percentage of the school's functional infrastructure. Scores are measured as the percentage of correct answers in standardized tests. *Flag* is for the period in which the information is collected, and the markaz is flagged. *Punish* is for the period where the reports are distributed and the oversight meeting with the punishment occurs. *After flag* is for periods after the oversight meeting occurs. Error bars at the 95 percent level are presented for each coefficient.

Figure D9: Alternative specifications
DID_l De Chaisemartin and D'Haultfoeuille (2022)



Note: This figure presents the results from estimating an event study based on the DID_l De Chaisemartin and D'Haultfoeuille (2022) difference-in-differences estimator, using -1 as the base period, and three placebo periods before the treatment, comparing schools in flagged and non-flagged maraakiz. The results are for flagging on the variable in the title of the panel. Teacher presence and student attendance are measured as the percentage of present teachers/students relative to the total teachers/students reported. The functional facilities variable is measured as the percentage of the school's functional infrastructure. Scores are measured as the percentage of correct answers in standardized tests. *Flag* is for the period in which the information is collected, and the markaz is flagged. *Punish* is for the period where the reports are distributed and the oversight meeting with the punishment occurs. *After flag* is for periods after the oversight meeting occurs. Error bars at the 95 percent level are presented for each coefficient.