Title: Electoral Incentives and Educational Outcomes: Evidence from High-Stakes Examinations in India

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Abstract

We study how electoral cycles influence student performance in high-stakes examinations in India. Using data from 26 Indian states with staggered election schedules, we find that pass rates are significantly (weakly) better in Class XII (Class X) state board exams leading up to the state election. We rule out increased public spending as a probable mechanism. The gain accrues to the regular school-going students only and not the private candidates. This suggests that better delivery of educational services by schools, probably through increased teaching efforts, and not grade inflation, through lenient grading, lax exam invigilation, or easier exams, is the key mechanism. Teachers put more effort when the incumbents desire because the latter control their transfers and postings. The effects are stronger for Class XII exams, probably because these students are of voting age and thus politically more salient. Thus, the paper highlights that while electoral incentives can boost performance in the short term, the challenge lies in sustaining these improvements beyond election cycles.

Keywords: electoral cycles, high-stakes tests, Indian board exams

1 Introduction

Performance in high-stakes tests plays a critical role in shaping students' educational and economic opportunities (Ebenstein et al. (2016); Machin et al. (2020)). In India, scores on Class X and XII high-stakes board exams determine access to academic streams, college admissions, and scholarships, and are widely viewed not only as markers of individual academic merit but also as reflections of the quality of schools and state education systems. Given how prominent and consequential these exams are considered by students, their parents, and the public eye, they may also draw political attention, especially when elections are close. This raises a broader question: to what extent do electoral incentives affect the results in these high-stakes exams, and to what extent do these results reflect the quality of school education?

This paper investigates whether electoral incentives influence student performance in high-stakes public state board exams in India. We document three key findings. First, pass rates and percentage of examinees with first division improve during the state board exams that lead up to scheduled state elections, but without any corresponding increase in states' public spending. In our main results, pass rates are 2.5% and 0.9% higher in Class XII and X state board exams held within a year of upcoming state elections. The share of students scoring first division also rises by 2.8% in both classes during these periods. Second, these gains are driven by improved delivery of educational services by schools rather than lenient grading or exam manipulation. Third, the effects are concentrated in Class XII and not Class X board exams. Class XII students are more politically salient because they, on average, are eighteen years of age, which is the minimum voting age in India.

Thus, the paper contributes to a broader debate about how electoral incentives and, consequently, political accountability shape frontline service delivery and the formation of human capital, particularly in a cost-effective manner, in developing countries. It also raises major concerns about how political incentives distort the equitable delivery of public services and whether gains in the public delivery of educational services can be sustained during non-election years.

Our identification strategy compares board exam outcomes in years preceding scheduled state elections to those farther from the elections. The study uses administrative data from 26 Indian states from 2005-19. We exploit India's staggered state election calendar and standardized board exam system for our study. States in India have exogenous electoral cycles of five years. However, mid-term elections are possible, and they can introduce endogeneity bias in our results.[1] For instance, the government may call early elections during favorable economic conditions. We ensure causality by creating an instrument for the election cycle that distinguishes between scheduled and mid-term elections, following Khemani (2004). We also control for President's rule within states, and state and year fixed effects to further mitigate the endogeneity concerns. Moreover, since our sample has only 3 incidences of midterm elections out of 89 state elections, the chances of bias from endogenous timing are limited. We also conduct a series of robustness tests to ensure the consistency of our results.

We investigate three potential mechanisms that may improve performance in the state board exams when state elections are near: (i) increased resource inflows (through higher state expenditure on secondary education, or fiscal expenditure in general), (ii) leniency in grading, invigilation or setting question papers, or (iii) better delivery of educational services by schools (e.g., better teaching, reduced teacher absenteeism).

We do not find any evidence of political cycles in states' fiscal expenditure and their spending on education. We also find no increase in the number of school teachers in the senior secondary schools during the years of improved pass rates. Additionally, we control for the states' yearly revenue account expenditure on education, their total fiscal expenditure, and their GDP per capita in our econometric specifications, and therefore rule out the first mechanism as the only explanation.

The state governments exert influence over the boards of education and school teachers, making the second and third mechanisms plausible. States oversee their boards of education and control teacher postings and transfers (Davies (2021); Fagernäs and Pelkonen (2020)), giving politicians levers to influence both the conduct of exams and what

[1] Khemani (2004) notes 36 mid-term state elections out of the 107 state elections over the period 1960–1992.

happens in classrooms.

To investigate the second and third mechanisms, we contrast outcomes for 'regular' school-going students with non-school-going 'private' students. Regular students write board exams for the board to which their school is affiliated. In contrast, the private students enroll in an education board to write the board exams. Both groups of students follow the same syllabus, take the exam on the same schedule, at the same centers, and answer identical question papers. Moreover, examiners are unaware of whether a student is regular or private when grading. If the gains in pass percentages were due to leniency in grading, easier exams, or relaxed invigilation, we would expect both groups to benefit. But we find improvements only among regular students, suggesting that what changes during election years is how much teaching effort schools deliver.

This paper thus provides indirect evidence of schools delivering better educational services when state elections are close, without any increase in their state-funded resources. The evidence suggests that such improvements are not driven by an increase in states' monitoring of schools. Instead, they are caused by an increase in teaching effort, either through reduced teacher absenteeism or better teaching. While we cannot directly observe classroom instruction, previous research documents a drop in teacher absenteeism before elections (Davies (2021)), lending support to this interpretation.

This paper contributes to the literature on opportunistic political cycles, quality of education in low- and middle-income countries, and high-stakes testing.

A large body of research has examined how elections affect states' fiscal expenditure and their composition. As elections near, governments tend to spend more on visible public investments (Katsimi and Sarantides (2012); Vergne (2009); Castro and Martins (2018); Khemani (2004); Chaudhuri and Dasgupta (2006); Bueno (2023)). More recently, research shows voting is not just influenced by objective measures of well-being, such as the macroeconomic indicators, but also subjective well-being (Ward (2020), Liberini et al. (2017)). This suggests that voters may prioritize their immediate experiences over broader economic trends. Consistent with this, researchers have found political cycles in both physical infrastructure provision (Khemani (2004); Bostashvili and Ujhelyi (2019);

Baskaran et al. (2015); Rogger and Somani (2023)) and social infrastructure delivery (Takaku and Bessho (2018); Cole (2009); Bhattacharjee (2022)).

Fagernäs and Pelkonen (2020) and Davies (2021) are the most important and recent works on the electoral cycle in educational outcomes with a focus on India. Fagernäs and Pelkonen (2020) finds an increase in teacher transfers and hiring after state elections, along with a decrease in test scores of students in primary schools up to 0.15 standard deviations during the post-election period. Davies (2021) shows that absenteeism of public school teachers decrease in the year before elections but increases in the year after.

Educational outcomes in developing countries are significantly affected by desk availability, teacher subject knowledge, and teacher absence. Frequent monitoring of schools can also improve schools' effective student-teacher ratio in a cost effective manner Muralidharan et al. (2017). Other studies find that contract teachers (Muralidharan and Sundararaman (2013)), performance-based pay (Duflo et al. (2012)), and pedagogical reforms (Muralidharan (2024)) also improves educational outcomes.

The economic literature on high-stakes tests examines their effects on both students and educational institutions. While tying students' performance in high-stakes tests with schools' performance improves students' learning (Jacob (2005)), performing badly on these tests have negative effect on students' chances of pursuing advanced education and their employment opportunities in the long run (Ebenstein et al. (2016); Machin et al. (2020)).

2 Institutional Background

2.1 State Assembly Elections in India

State assembly elections are held in the state assembly constituencies. The winning candidate from each constituency becomes a member of the legislative assembly (MLA), and the party or coalition with the majority number of MLAs form the state government.

Constitutionally, the state assembly elections are to be held every five years. The election cycle can differ across states, and consequently, every year sees elections being held in some states. However, a midterm election may happen before the end of the scheduled election cycle if MLAs defect from the ruling party, a coalition government breaks down, or when there is political pressure from the central government. In such a scenario, the president of India can dismiss the elected state government on the recommendation of the central government and impose President's rule in the state. A president's rule typically continues for a few months and may be followed by midterm elections.[2]

2.2 Board Exams in India

School education in India is significantly shaped by the boards of school education. These boards are mainly responsible for setting the syllabus and curriculum of the schools, and conducting standardized examinations. All schools offering secondary or higher secondary education are affiliated to some board. The boards can be central or state; a central board offer educational services in all the states while a state board works only in its parent state.[3,4]

Most boards follow a "10 + 2" pattern of education, i.e., ten years of primary and secondary education followed by two years of higher secondary education. Following the completion of secondary (Class X) and higher secondary (Class XII) education, the boards conduct their respective board examination annually, which are high-stakes public examinations.[5] Students enrolled in schools take these exams as *regular* candidates, through the board their school is affiliated with. Those not enrolled in school, referred to as *private* candidates, can still register independently to take the exams. Private

[2] Article 356 of the Indian Constitution empowers the President to impose emergency rule in a state by dissolving its Legislature and Executive. Presidential Rule vests extensive discretionary powers in the President Joseph and Reddy (2004). However, Dua (1979) finds that its use has often been politically motivated. The Supreme Court's landmark judgment in SR Bommai vs Union of India established constitutional safeguards and limitations to curb the central government's misuse of Article 356.

[3] The Central Board for Secondary Education (CBSE) and Council for Indian Certificate for Secondary Education are the primary national boards of education offering mainstream education in India. The ICSE is a private central board, while the CBSE comes under the central government. Maharshi Sandipani Rashtriya Veda Sanskrit Shiksha Board, and Bhartiya Shiksha Board are also national boards that offer education based on ancient Indian Vedic philosophy.

[4] Alternative options such as open school boards are also available. They offer more flexibility in age restrictions, curriculum, and timing. They conduct secondary and senior secondary exams, equivalent to Class X and XII board exams, typically twice a year. For more details, see: https://www.bosse.ac.in/open-schools-in-india/.

[5] Due to the implementation of National Education Policy 2020, board exams are planned to be conducted twice a year, from the academic year 2024–25 onwards.

candidates typically include home-schooled students or those reappearing after dropping out or failing previously. The regular and private students have no difference in their examination syllabus, schedule, center, or questions. Central board exams for Classes X and XII are conducted simultaneously nationwide, while state board exams are scheduled independently. Exams usually take place in February–March, with results announced around May.

These exams are high-stakes. Class X scores influence subject stream selection for senior secondary schools, such as science, commerce, or humanities, and Class XII scores are crucial for admission into professional programs and competitive exams. Often, there are minimum cutoff marks based on Class XII board exams to pass competitive exams or to get admitted to universities and colleges (e.g., medical, engineering, or general education) for higher education.

3 Empirical Strategy

Our objective is to study whether scheduled elections influence board exam outcomes preceding them. We hypothesize that an incumbent government will benefit electorally from overall good results in the board examinations announced before a scheduled election. Since these exams are crucial in the lives of Indian students, good performance can increase satisfaction among students and their families, potentially translating into support for the ruling party. Furthermore, Class XII students, who are at or near voting age, are a politically relevant group that the incumbents would like to please.[6]

We conduct our analysis using state-level data. Our key independent and dependent variables are scheduled state elections, and state-level pass percentage in state board examinations. Our first regression specification, referred to as specification I, is

$$y_{it} = \alpha_1 E_{it} + \gamma PR_{it} + \psi X_{it} + \theta_i + \theta_t + \epsilon_{it}, \tag{1}$$

where y_{it} is the dependent variable for state i in year t. The dependent variables

[6] Ward (2020) finds a greater intention to vote for the governing party among happier survey respon-

include pass percentages, the fraction of examinees who received a first division, and the logarithm of total examinees in the state board exams (Class X or Class XII). E_{it} is a dummy variable equal to 1 if a state i's scheduled election is within a year of the board exam result of year t, and 0 otherwise.

Our second specification, referred to as specification II, estimates the effect of the entire electoral cycle on the given dependent variable. The estimating equation is

$$y_{it} = \beta_1 E_{1it} + \beta_3 E_{3it} + \beta_4 E_{4it} + \beta_5 E_{5it} + \gamma PR_{it} + \psi X_{it} + \theta_i + \theta_t + \epsilon_{it}, \tag{2}$$

where E_{1it} is a dummy variable equal to 1 if the state i's next scheduled election is within one year of their board exam results of year t, and 0 otherwise. E_{5it}, E_{4it}, and E_{3it} are dummies that equal 1 if the next election is scheduled 1–2, 2–3, and 3–4 years after the declaration of board exam results, respectively. The omitted category is the second year of the constructed election cycle, i.e., when the next scheduled election is 4-5 years after the date of exam results.

The election dummies E_{it} and E_{1it} in equations 1 and 2 identify the board exam results that the incumbent would want to influence for an electoral advantage. Figures 1a and 1b illustrate how the constructed election dummies work for two hypothetical states with elections scheduled on August 1 and March 1, respectively, every five years. Suppose the board exam results are declared on May 31 each year. In the first state, where the election (August 1) follows shortly after the board results, the government has an incentive to influence the exam results of the same year, i.e., $E_{it} = E_{1it} = 1$. However, for the second state, where the next scheduled election is on March 1, the government would want to influence the results of the previous year, i.e., E_{it-1}= $E_{1it-1} = 1$, which is closer to the election in question. Thereafter, the election dummies E_{3it}, E_{4it}, and E_{5it} equal 1 if the next scheduled election is 3-4, 2-3, and 1-2 years after the declaration of board exam results, respectively. Every time an election happens before its schedule, a new electoral cycle begins as shown in Figure 1b; when the midterm election occurs in $t + 7$, a new electoral cycle begins at $t + 8$. This electoral cycle variable helps control for

dents.

any endogeneity introduced through midterm elections (Khemani (2004)).

We assume all state board exam results are announced on May 31^{st} each year, since we lack data on the dates of state board exams for many state-years. This is a reasonable assumption for multiple reasons. First, most state board exams occur between mid-February and March, with results typically declared in May. Second, admissions into undergraduate programs in most central universities usually begin by mid to end June, when the students need to produce their Class XII results.[7] Schools' academic sessions should be synchronized with that of colleges; so it's reasonable to assume that Class X results are announced around the same time as Class XII. We also confirm the validity of our assumption through personal communications with students from different states who undertook state board exams in the same time period as our data. We also conduct robustness tests assuming that the results are announced on April 30.

PR_{it} is a dummy variable equal to 1 if there is President's rule in state i in year t, and 0 otherwise. As explained before, a President's rule typically represents a breakdown of the state government. When in the force, the state may lack the political capacity to influence exam outcomes for political gains, especially if the rule is imposed during the state board exams and the announcement of results. As such, not controlling for it may bias our coefficients.

X_{it} includes logarithms of states' per capita income, their revenue account expenditure on secondary education, and fiscal expenditure. θ_i and θ_t are the state and year fixed effects, respectively.

Since the scheduled state elections are exogenous, our analyses are causal and not correlational. Yet, endogeneity may arise through midterm elections. For instance, when midterm elections occur due to a state's inherent characteristics, like political volatility, or because the government ends its term early, when economic conditions are favorable. Such risks are limited in our study because our sample includes only three midterm elections. Controlling for the state and year fixed effects and President's rule further mitigates the problem. In our sample, every midterm election is preceded by a period

[7]From 2005 to 2019, Delhi University, one of India's premier central universities, released its first admission cutoff list between mid and late June. Admissions typically begin only after these cutoffs are

of the President's rule. Therefore, they are, in a way, controlled for through the dummy variable for President's rule. Moreover, the constructed electoral cycle variables account for opportunistic midterm elections where the state government calls early elections for electoral gains.

4 Data

We analyze state board exams and not the national board exams because they offer more heterogeneity. India currently has 28 states, each with distinct state board systems, while only a few national boards operate uniformly across the country. Our data on state board exam pass percentages are sourced from the Ministry of Education, Government of India. It includes pass percentages from 26 states from 2005-2019.[8] We exclude data post-2019 due to COVID-19 disruptions, which led to widespread exam cancellations, delays, and shifts in grading practices, including more lenient evaluations in several states. Union territories are also excluded since they are ruled by the central government and do not have their own boards of education.

Within a state, there are usually multiple state boards. In addition to the main state board, most states also have Madarsah and Sanskrit state board to promote Islamic and Sanskrit education, respectively. We calculate the pass percentage for each state-year by dividing the total number of students who passed across all state boards by the total number of examinees in that state-year. If data for the primary state board are missing, we exclude that observation. This is because (a) Madarsah and Sanskrit boards differ substantially in syllabus, exam patterns, and pass rates, and (b) the primary board typically enrolls over 90% of students and is most likely to reflect the influence of state governments on exam outcomes.[9]

We also exclude open boards from our study since open boards of education are

announced.

[8]States of Sikkim and Arunachal Pradesh did not have a state board during this time period. We exclude the state of Jammu & Kashmir from our analysis because it follows different rules on state elections. Legislative assembly elections in Jammu & Kashmir are not necessarily five-yearly. Since 2000, legislative assembly elections have been held in the years 2002, 2008, 2014, and 2024.

[9]The results are robust to excluding Madarsah and Sanskrit boards from our analyses.

significantly different in their syllabus, examination pattern, schedule, and the students enrolled from the conventional board (Board of Open Schooling & Skill Education). For example, students do not attend classes in person and are free to pursue studies at their own pace. They also offer exams biannually.

Election data are sourced from the official website of the Election Commission of India. Data on actual revenue account expenditure on secondary education come from the Ministry of Education. Revenue account expenditures on secondary education include expenses on items such as direction, inspection, and administration (DIA), salaries, scholarships, textbooks, teachers' training and vocational education. We include only the revenue account and not capital account expenditures because the latter is unavailable for many state-years. Additionally, revenue account expenditures are relatively short-term and have immediate effects, which the government can use to influence votes in its favor. We also control for states' fiscal expenditure and their per capita income, measured by per capita net state domestic product at factor cost. These data are sourced from the Ministry of Statistics and Programme Implementation, Government of India.

5 Results

5.1 Summary Statistics

Our data contains 89 state elections for 26 states between 2005 and 2019, of which three are midterm elections.[10] On average, each state had 3.4 election cycles over this 15-year period. During this time, there were nine instances of President's rule, 90% of which occurred because the Government lost majority in their state assemblies.

Table 1 gives the summary statistics of the variables used in our study. Panel A reports figures by exam level (Class X and XII). On average, 603 and 442 thousand students appeared for the Class X and XII state board exam, of which 71% and 77% passed, respectively. Approximately 88% of the examinees are regular students, while the rest are private candidates. On average, 74% and 77% of regular students pass the

[10]These include the state elections in Bihar, Karnataka, and Jharkhand in the years 2005, 2008, and

Class X and XII state board exams, respectively. In contrast, pass rates among private candidates are considerably lower, 44% for Class X and 51% for Class XII, probably because they often include home-schooled students and repeaters.

Students from socioeconomically advantaged groups account for over 60% of examinees. In contrast, only 33% and 31% of the students in the X^{th} and XII^{th} state board exams come from the disadvantaged groups, which are called Scheduled caste/Scheduled tribe (SC/ST). As expected, the pass rates among the non-SC/ST students are significantly higher than SC/ST students, irrespective of the level of the board exam. The gender distribution in state board exams is slightly male-skewed, with female students comprising about 45% of examinees. Nonetheless, girls outperform boys. The average pass percentage among female students is 71.8% and 78.8% in the X^{th} and XII^{th} state board exams, compared to 70.5% and 71.8% for males. Across every group, pass percentages are consistently higher in Class XII than in Class X.

States spend an average of ₹599 BN annually in total fiscal expenditure, including ₹31.9 BN on revenue account expenditure for secondary education. Their average per capita income is ₹84.5 thousand. Expenditure, per capita income, and the number of examinees, vary significantly between Indian states, reflecting disparities in their population, economic development, and education policy. For example, Uttar Pradesh, the most populous state in India, has an average of 2.2 MN Class XII examinees compared to 12,458 of Nagaland, one of the smaller states by area and population. Maharashtra's revenue account expenditure on secondary education is ₹114 BN, on average, while Mizoram's is ₹1.6 BN.

Figure 2 breaks down pass rates by our five-level electoral cycle variable. Pass rates are highest when the next scheduled election is within one year of the state board exams results (0-1) for both Classes XII and X. We examine the statistical differences between the pass rates of board exams closest to the scheduled state elections and those in other years. For Class XII, pass rates are significantly higher (at 10%) for those exams that lead to election, but we find no significant effect for Class X exams.

2009, respectively.

5.2 Impact of Scheduled Elections on the Results of State Board Exam

In our analyses, standard errors are clustered at the state level. As we have a small number of clusters of varying sizes, the clustered standard errors can still be biased. Hence, we report the p-values generated using the Wild-Raedemacher bootstrap method.[11]

Figure 3 illustrates how an upcoming state election influences the pass percentages of the state board exams.[12]. Various panels display the regression coefficients from specifications 1 and 2, with their 95% confidence intervals. Figures 3(a) and 3(b) show that the pass percentage of Classes XII and X state board exams, on average, are 2.5 and 0.97 percentage points higher when the next scheduled state election occurs within a year of the exam results. They are significant at 1% and 10%.[13] Analogously, Figures 3(c) and 3(d) show gains of 2.35 and 0.84 percentage points for Class XII and X state board exams when the next scheduled state election is within a year of the exam results, compared to when it is 4-5 years away, with significance for Class XII only (at 1%).[14]

In our analyses, the second year of the constructed electoral cycle of specification 2 is the omitted category. We conduct the two-tailed tests of coefficient equality for all regressions, and find that β_1 is significantly different from other β's, especially for Class XII. Thus, our interpretations are robust to changes in the base category.[15]

We also examine whether proximity to elections affects the likelihood of scoring first division. We regress the share of examinees with first division in state board exams on our election dummy variables. Figures 3(e-f) and 3(g-h) demonstrate the regression coefficients from specifications 1 and 2, respectively. The share of students obtaining first division in the state board exams increases by 2.8 percentage points when the next scheduled state election is within a year of the exam results, than at any other time.

[11]Our sample covers 26 states. Since Andhra Pradesh was bifurcated in 2014 to form Telangana, we treat pre- and post-division Andhra Pradesh as separate entities, resulting in 27 clusters and fixed effects. All states except Andhra Pradesh and Telangana have 15 observations each.

[12]The Kolmogorov–Smirnov test shows that pass rates of Classes X and XII are differently distributed. Hence, we conduct separate regressions for each exam.

[13]These results are also given in Table B1. P-values from the Wild-Raedemacher bootstrap method are shown in square brackets.

[14]Our results remain qualitatively similar, with or without controls.

[15]These tests are again conducted using the Wild-Raedemacher bootstrap method.

Compared to a 4–5 year gap, the increase is 2.5 and 3.7 percentage points for Classes XII and X state board exams. However, the results are significant for Class XII only (at 10%).

Our results point to a political cycle in the results of Class XII state board exams, but the evidence for Class X is weak since the coefficients for the former are bigger and highly significant. This likely stems from two reasons. First, Class XII board exam results are seen as more career-defining by students and parents.[16] Second, and more importantly, Class XII students are typically around eighteen and thus eligible to vote. Consequently, the state governments have greater electoral incentive to influence their results than Class X. To investigate whether upcoming elections have different effects on the pass rates of Class XII and X board exams, we conduct a regression analysis on the pooled data (Class XII and X) with interactions between a dummy variable for Class XII and the election dummy variables. The empirical strategy for the pooled regression and its results are available in the online appendix C. They confirm greater effects of electoral timings on Class XII results.

5.3 Mechanisms

There can be three possible mechanisms that can increase the pass rates when state elections are closer. First, states may boost their expenditure on secondary education, improving the availability of teachers, textbooks and scholarships. They may also increase their total fiscal expenditure before elections (Khemani (2004)), which in turn boosts household income. This will enable families to invest more in education, e.g., private tutoring. It will also allow students who are part-time laborers, devote more time to school. Additionally, it can increase enrollment in schools.

Second, states may inflate pass rates through lenient grading, lax invigilation (allowing cheating), or easier exams. Lenient grading can reduce students' *effective* pass marks, as demonstrated in Figure 4a. Let $\underline{p}$ be the official passing score. If the effective passing score drops to $\underline{p} - \epsilon$, previously failing students, represented by the light gray area, now

[16] In contrast, Class X exams are often viewed as preparation for the more consequential Class XII exams (Chaturvedi, M (2021); The Northlines (2021); Indo-Asian News Service (2009))

pass. Alternatively, if teachers grade more generously across the board, the entire score distribution shifts right, increasing pass rates even with the same cutoff. Similar rightward shifts occur if cheating is tolerated or exams are made easier.

Finally, pass percentages can also improve when the schools deliver better educational services as elections get closer. Better educational services may include better teaching, teachers practicing probable exam questions with the students, and reduced teacher absenteeism, thereby encouraging students to be more regular. All of these will increase the learning of the students.

To test the first mechanism, we regress the state's revenue account expenditure on secondary education and their total fiscal expenditure on their 'real' electoral cycle. For these analyses, our specification remains the same as 1 and 2. But the interpretation of election dummy variables changes. The variables E_{it} and E_{1it} of specifications 1 and 2 equal 1 when year t is the year of the scheduled election for state i, and 0 otherwise. Similarly, E_{3it}, E_{4it}, and E_{5it} are dummy variables that equal 1 if the next scheduled election in state i is 3, 2, and 1 year after the year t, respectively.

We analyze expenditure variables using states' actual electoral cycles, unlike other variables that use our constructed cycle. This exception is made for two reasons. First, existing research shows that state spending is tied to actual election timing, not the proximity of board exams to upcoming elections. Second, state expenditures follow fiscal years (February–March), while our electoral cycle is based on how close the exam results are to the next election.

To test the second and third mechanisms, we regress the pass percentage of (i) regular students and (ii) private students taking the state board exams on our constructed electoral cycle variables and other covariates. As discussed, regular students attend formal schools, while private students do not. However, there is no difference in their examination syllabus, schedule, center, and questions. Additionally, the examiners who grade exam papers do not know whether a student is regular or private. Consequently, any inflation of the pass rates (mechanism II) should benefit both types of students. However, greater teaching efforts (mechanism III) should improve the performance of regular students only, since private students do not attend schools.

5.3.1 Empirical Evidence for Mechanisms

We report the results from regression analyses of the logarithm of expenditure variables in the online appendix B.[17] We do not find evidence of political cycles in the states' actual revenue account expenditure on secondary education, and their fiscal expenditure, particularly in specification 2. We also examine whether election proximity affects the number of senior secondary school teachers, which could explain improvements in pass rates.[18] There is no significant increase in the number of teachers around elections.[19]

To distinguish between mechanisms II and III, we analyze sub-samples of regular and private students. Panel A of Table 2 shows that the pass rates of regular students are 1.6 and 2.7 percentage points higher during Class X and XII state board exams that lead up to the scheduled state election. These pass rates are 1.4 and 2.5 percentage points higher compared to a 4-5 year gap. However, these coefficients are statistically significant primarily for Class XII exams. The coefficient equality tests further confirm a clear political cycle in the pass percentages of regular students of Class XII. In contrast, the evidence for a political cycle for pass rates of the private students is weak, as seen in Panel B. Thus, the results provide empirical support for mechanism III and reject mechanism II.[20]

Had the pass rates been inflated by reducing the effective pass marks, the probability of passing should have increased for both private and regular students. In fact, given the structure of our data, we expect a greater impact on the pass rates of private students than regular students for the following reason. The median pass rate for regular and private students of Class XII (Class X) is 78.07% (74.37%) and 49.87% (41.42%).[21] Therefore, assuming normally distributed scores (see Figure 4b), the distribution of exam scores

[17]Refer to Table B3.

[18]See Table B4. Our sample consists of 25 Indian states for years 2005-12.

[19]Fagernäs and Pelkonen (2020) finds a moderate increase in the hiring of Indian primary school teachers in the post-state election period.

[20]See tables B5 and B6 for the coefficients on other election dummies and test of equalities of coefficients.

[21]The average pass rates are shown in Table 1 and are qualitatively similar to the median pass rates.

for private students, the red curve, should lie to the left of the distribution for regular students, the blue curve. In addition, the pass mark is much closer to the mode of the distribution of exam scores of private students, compared to the distribution of exam scores for regular students. When the government reduces the effective pass rate to $\underline{p}-\epsilon$, students scoring at least $\underline{p}-\epsilon$ will pass the board exam. Since the density of private students at the cutoff is greater, their gain in pass rates with a reduced effective pass mark (depicted by the dark and light gray regions) is larger than the gain of regular students (depicted by the light gray region). When either the grading policy or invigilation is generally relaxed, the score distributions will shift right. By the aforementioned logic, in both cases, private students will gain more than the regular students. Nonetheless, we observe gains only for the regular students, suggesting that attending schools improves outcomes and that mechanism III is at play.

Yet another reason for an increase in pass rates when state elections are near may be a decline in the number of board examinees, particularly the academically weak ones. To test this hypothesis, we regress the logarithm of the number of examinees against our election dummy variables, along with other covariates. There is no significant evidence of students dropping out from Classes XII and X state board exams.[22]

5.3.2 How do state government influence teachers?

Our evidence suggests that board exams' pass percentages improve as a result of better delivery of educational services by the schools. In this section, we answer how the state governments influence school teachers to exert more effort when elections are near.

The state government can influence the teachers in the following ways. First, it oversees the state boards of education, which are responsible for administering the board exams, setting the exam papers, and grading them. The grading process is carried out by a group of teachers assigned to the task by state board authorities.

Second, in India, although the government school teachers have high job security, politicians in power can directly impact their transfers and postings (Fagernäs and Pelko-

[22]Table B7 report these results.

nen (2020)). Béteille (2015) find that Indian school teachers value political connections to secure better postings. Thus, politicians can reward school teachers who comply with their wish and provide better teaching services when state elections are close, with desirable postings and punish others with unfavorable transfers.

Third, state governments appoint the District Education Officers (DEO) who are responsible for monitoring school performance, their inspection, and fund allocation at the district level. DEOs work closely with the MLAs within a district to ensure optimal school performance (Davies (2021)). The state governments can thus increase monitoring before elections to influence the teachers to teach better.

We empirically test whether states improve school administration and monitoring in the run-up to elections through the DEOs. States' revenue account expenditure on secondary education includes DIA, which includes costs associated with managing the secondary education system, including the salaries of officials and staff involved in overseeing schools and education policies. On average, DIA accounts for 4–5% of the state's total revenue expenditure on secondary education. We regress the logarithm of states' DIA expenditure on their true electoral cycle. There is no significant increase in the DIA expenditure as state elections approach.[23] This result corroborates Davies (2021), who find no increase in school visits by government officials when state elections are approaching to enforce administrative or pedagogical compliance.

Therefore, in the absence of strong statistical evidence for administrative oversight, we posit that the school teachers' efforts increase primarily because the incumbent controls their transfers and postings.

5.4 Testing for Heterogeneity

Table 3 analyzes how the upcoming scheduled state elections affect the state board exam pass rates for various socio-economic groups. The results reported are for specification 1.[24] Panel A reports the regression results by gender. When state elections fall within a

[23] The final two columns of Table B3 present these results.

[24] The results from specification 2 are qualitatively similar to specification 1, and are available in tables B8 and B9.

year of exam results, pass rates of female students increase by 0.87 and 2.35 percentage points in Class X and XII exams, respectively, while male students see an increase of 1.05 and 2.5 percentage points. These effects are statistically significant, primarily for Class XII state board exams. Panel B presents results for the SC/ST and non-SC/ST students. Both types of examinees of XIIth state board exams gain 3.3 and 2.2 percentage points in their pass rates when their state elections are nearby. These results are not as pronounced and statistically significant for grade X board exams.

6 Robustness Checks

6.1 Alternative Measure of Distance to Election

We check if our results are robust to alternative measures of the gap between board exam results and state elections using the following specifications.

$$y_{it} = \alpha_1 E_{it} + \delta_1 Dist_{it} \times E_{it} + \gamma PR_{it} + \psi X_{it} + \theta_i + \theta_t + \epsilon_{it} \quad (3)$$

$$y_{it} = \beta_1 E_{1it} + \beta_3 E_{3it} + \beta_4 E_{4it} + \beta_5 E_{5it} + \delta_2 Dist_{it} \times E_{1it} + \gamma PR_{it} + \psi X_{it} + \theta_i + \theta_t + \epsilon_{it} \quad (4)$$

Here $Dist_{it}$ is the number of months between the announcement of board exam results and the next scheduled state election in state i and year t. Its interactions with the election variables E_{it} and E_{1it} of equations 3 and 4 capture the monthly proximity to scheduled state election, conditional on the election occurring within one year of the result announcement. Therefore, they range from 1 to 12. Coefficients δ_1 and δ_2 estimate how pass rates change with each additional month between the result announcement and the upcoming election, when the election is within a year of the announcement.

Table 4 shows that these coefficients are negative for both Xth and XIIth state board exams. When the next scheduled state election is already within a year of board exam results, reducing their gap by one month increases the pass rate by 0.17 and 0.63 percentage points for Class X and XII exams, respectively. However, the coefficient is significant at 10% (p = 0.07) for Class XII only.

6.2 Alternative Date of Announcement of the Results of State Board Exams

Our results are based on the assumption that the board exam results are announced on May 31^{st} of each year. While we argue that this assumption is fairly reasonable,[25] We shift the assumed announcement date to April 30 to test the robustness of our results. This adjustment shifts 9 electoral cycles,[26] with some elections which were previously within a year of results now moving outside that window, and vice versa. For example, state elections that occurred in May but before May 31^{st} were initially recorded as E_{1it}=1. They will now take the value 0 for E_{1it} and 1 for E_{5it}.

Table B10 of the online appendix B reports the estimates of this alternate timing assumption using specifications 1 and 2. The results remain very similar to our baseline results, supporting the robustness of our main findings.

6.3 Alternative Specification

We also use an alternative econometric specification with state fixed effects and state-specific time trends. The results are reported in Table B11. They are consistent with the results from our primary specifications 1 and 2.

7 Conclusion

We provide empirical evidence of electoral cycles in the results of high-stakes board exams in India. In particular, we find that students perform better, in terms of their pass percentage, during those Class X and XII state board exams that lead up to the state's scheduled election. Our results are particularly strong for Class XII students, suggesting a targeted effort by politicians to influence potential first-time voters and their families. We

[25]See Section 3.
[26]See Figure A1.

do not find any evidence of increased states' revenue account expenditure in secondary education or their fiscal expenditure in our sample. Additionally, we find that these improvements only benefit students who attend school regularly, not private students who study independently. This helps us rule out the idea that better scores are just the result of easier grading. Our findings point to teachers putting in more effort when elections are near, likely because state governments can directly influence their transfers and postings.

These results offer a mix of promise and caution. On one hand, they show that meaningful change is possible without extra spending— through greater political accountability–can lead to better outcomes. On the other hand, if these improvements are tied to election timing, it raises concerns about consistency and fairness. Education shouldn't depend on the electoral calendar. Still, the fact that things improve when politicians are watching closely gives us a valuable clue: with the right incentives and accountability, public education systems can work better. The challenge is figuring out how to make that accountability consistent, not just every five years.

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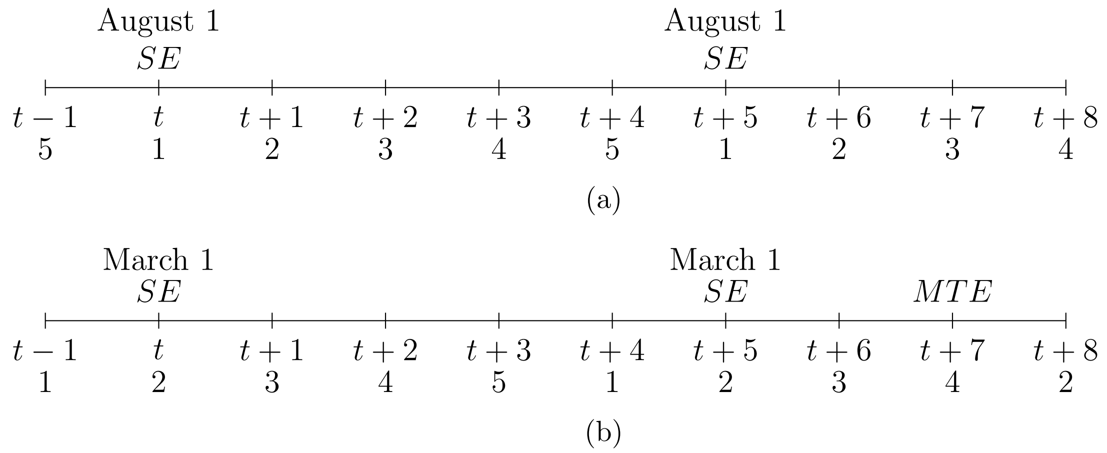
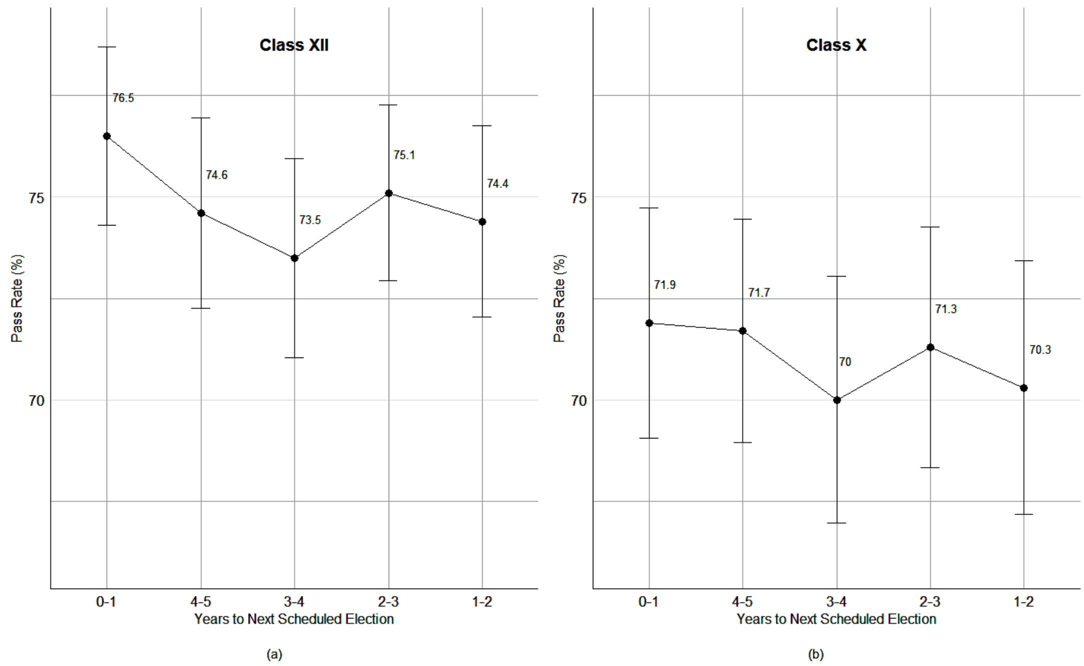
Figures

Figure 1: Illustration of the construction of our electoral variables from specifications 1 and 2.



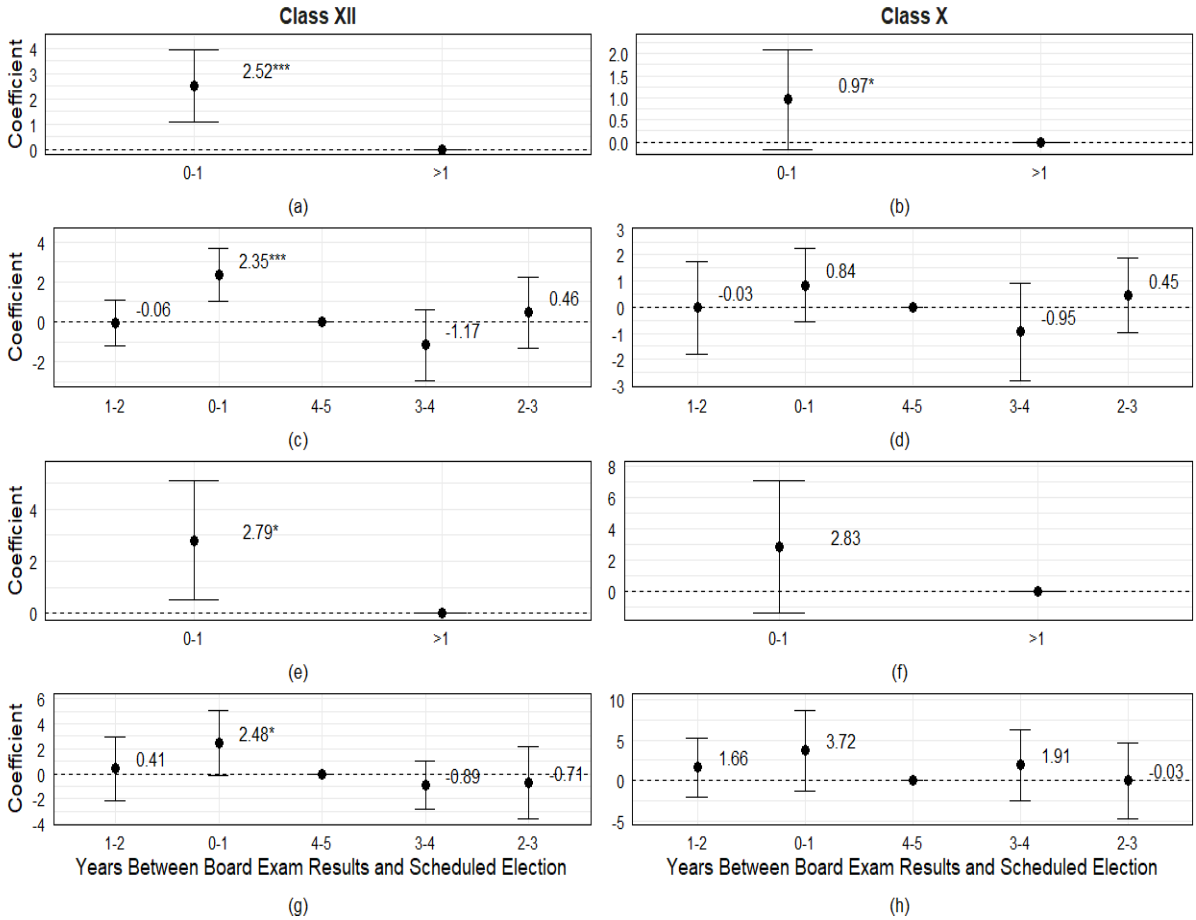
The figures show hypothetical examples of the timeline of our constructed electoral cycle variables for two states with different election cycles. Each dot marks a point in time. *SE* represents scheduled state election, while *MTE* represents the mid-term election. States in Figures 1a and 1b have elections scheduled on August 1 and March 1 of year t, respectively, with board exam results announced each year on April 30. '1' corresponds to when the next state scheduled elections occur within 1 year of state board exam result. Consequently, '2', '3', '4', and '5' correspond to when the next scheduled elections are 4, 3, 2, and 1 years after board exam results, respectively. When a midterm election, denoted by *MTE* occurs, the old electoral cycle ends and a new one begins.

Figure 2: Proximity to Scheduled state election and pass rates in Classes (a) XII and (b) X state board exams.



Note: 95% confidence intervals included. N=455.

Figure 3: Coefficients from baseline regression analyses.



Figures (a)–(b) and (c)-(d) plot the coefficients of regression analyses with the pass percentages of Classes XII and X state board exams as the dependent variables, and the electoral variables from specifications I and II as the key independent variables, respectively. Figures (e)–(f) and (g)-(h) plot the coefficients of regression analyses with the share of examinees receiving first division as the dependent variable and the electoral variables from specifications I and II as the key independent variables, respectively. The y-axis shows these coefficients, along with their 95% confidence intervals. The x-axis denotes the yearly gap between exam results and the next scheduled election. For example, '0–1' means the election is within one year of the results; '4–5' is the base category.

Figure 4: Effect of reduced "effective" pass marks (a) overall, and on (b) regular and private students.

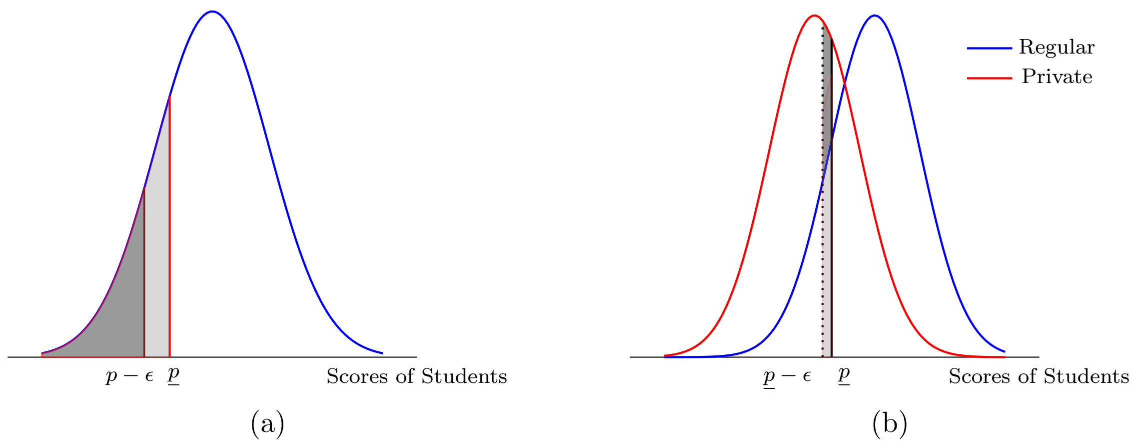


Figure 4a shows how pass rates improve when effective passing marks are lowered. Let $\underline{p}$ be the original passing score. If this threshold drops to $\underline{p} - \epsilon$, the marginal students pass, thereby the pass rate increases by the light gray region. Figure 4b compares the impact of this drop for regular and private students, assuming exam scores are distributed normally. Since regular students generally perform better, their score distribution lies to the right of private students. When passing marks are relaxed, regular students gain only from the light gray region, while private students benefit from both light and dark gray areas, indicating that they gain more from lenient grading.

Tables

Table 1: Summary statistics.

Panel A:	**X**			**XII**		
Variable	Mean	SD	Obs	Mean	SD	Obs
Number of examinees ('000)	603.4	642.7	455	442.1	507.9	455
Pass percentage	71.02	13.02	455	76.90	11.10	455
Percentage of						
SC/ST examinees	33.32	21.41	360	30.56	12.23	355
Female examinees	46.81	4.56	376	45.61	5.39	376
Private examinees	12.23	13.62	327	12.61	9.92	340
Pass percentage of						
Regular examinees	73.93	12.01	377	77.54	9.61	377
Private examinees	43.91	19.82	318	51.09	15.27	332
SC/ST examinees	65.36	14.25	360	69.28	12.51	355
Non-SC/ST examinees	74.44	13.23	360	76.74	10.88	355
Female examinees	71.75	13.69	376	78.65	10.57	376
Male examinees	70.46	12.89	376	71.76	10.77	375

Panel B:			
Variable	Mean	SD	Obs
State per capita income ('000 ₹)	84.5	64.9	377
State's fiscal expenditure (BN ₹)	599.61	642.96	377
Actual revenue account expenditure on secondary education (BN ₹)	31.9	36.9	376

The sample includes observations on 26 Indian states from 2005-2019. Panel A contains variables related to Class X and XII state board exams. Panel B contains states' per capita income and expenditures that are used as independent variables in our regression analyses.

Table 2: Testing mechanisms- Grade inflation versus better delivery of educational services by schools

	Dependent variable:			
	Pass Percentage			
	X		XII	
	(1)	(2)	(1)	(2)
Panel A: Regular				
Next scheduled election within 1 year of board exam results	1.579**	1.447	2.662***	2.495***
	(0.755)	(0.918)	(0.775)	(0.755)
	[0.045]	[0.126]	[0.001]	[0.000]
Observations	350	376	376	376
R-squared	0.304	0.301	0.253	0.257
Panel B: Private				
Next scheduled election within 1 year of board exam results	0.293	0.720	1.347	1.117
	(1.635)	(1.804)	(1.209)	(1.429)
	[0.848]	[0.689]	[0.279]	[0.436]
Observations	298	298	331	331
R-squared	0.081	0.085	0.048	0.057

The sample includes 26 states for years 2005-19. The dependent variables are the pass percentage of regular (Panel A) and private students (Panel B) in the state board exams of Classes XII and X. Regular students attend schools while private students do not. We assume that the state board exam results are declared on May 31^{st} of each year. The key independent variables are the constructed election dummy variables used in Specifications 1 and 2, which correspond to columns (1) and (2). Controls include logarithms of state per capita income, their revenue account expenditure of secondary education, fiscal expenditure, a dummy variable for president's rule, state, and year fixed effects. Standard errors are clustered at the state level. The p-values, generated from Wild bootstrap cluster, are reported in square brackets. *p<0.1, **p<0.05, ***p<0.01.

Table 3: Test of heterogeneity

	Dependent variable:			
	Pass Percentage			
Panel A: Gender	X		XII	
	Female	Male	Female	Male
Next scheduled election within	0.874*	1.053	2.352***	2.543***
1 year of board exam results	(0.540)	(0.633)	(0.650)	(0.801)
	[0.096]	[0.108]	[0.000]	[0.004]
Observations	375	375	374	374
R-squared	0.334	0.253	0.199	0.152
Panel B: Socio-economic groups				
	SC/ST	non-SC/ST	SC/ST	non-SC/ST
Next scheduled election within	1.436*	0.611	3.299***	2.206***
1 year of board exam results	(0.761)	(0.873)	(0.972)	(1.033)
	[0.069]	[0.479]	[0.002]	[0.041]
Observations	359	359	354	354
R-squared	0.316	0.263	0.235	0.130

The sample includes 26 states for years 2005-19. Panel A reports the coefficient of the scheduled election dummy from Specification I for female and male examinees of Classes X and XII state board exams. Similarly, the results for SC/ST and non-SC/ST examinees are reported in Panel B. Controls include logarithms of state per capita income, their revenue account expenditure of secondary education, fiscal expenditure, a dummy variable for president's rule, state, and year fixed effects. Standard errors are clustered at the state level. The p-values, generated from Wild bootstrap cluster, are reported in square brackets. *p<0.1, **p<0.05, ***p<0.01.

Table 4: Robustness Check: Alternative Measure of Distance to Election.

	Dependent variable:			
	Pass Percentage			
	X		XII	
	(5)	(6)	(5)	(6)
Months between board results and elections, if within a year	-0.167	-0.166	-0.629*	-0.628*
	(0.201)	(0.202)	(0.315)	(0.317)
	[0.409]	[0.401]	[0.065]	[0.068]
Observations	376	376	376	376
R-squared	0.298	0.301	0.198	0.203

The sample includes 26 states for years 2005-19. The dependent variables are the pass percentages in Class XII and Class X state board exams. The key independent variables consist of the interaction of election dummies from specifications 3 and 4, with the monthly gap between the scheduled election and board exam results, provided the scheduled elections are within a year of the board exam results. '(5)' and '(6)' represent results from specifications 3 and 4. Controls include logarithms of state per capita income, their revenue account expenditure of secondary education, fiscal expenditure, a dummy variable for president's rule, state, and year fixed effects.Standard errors are clustered at the state level. The p-values, generated from Wild bootstrap cluster, are reported in square brackets. *p<0.1, **p<0.05, ***p<0.01.

Online Appendix

A Figures

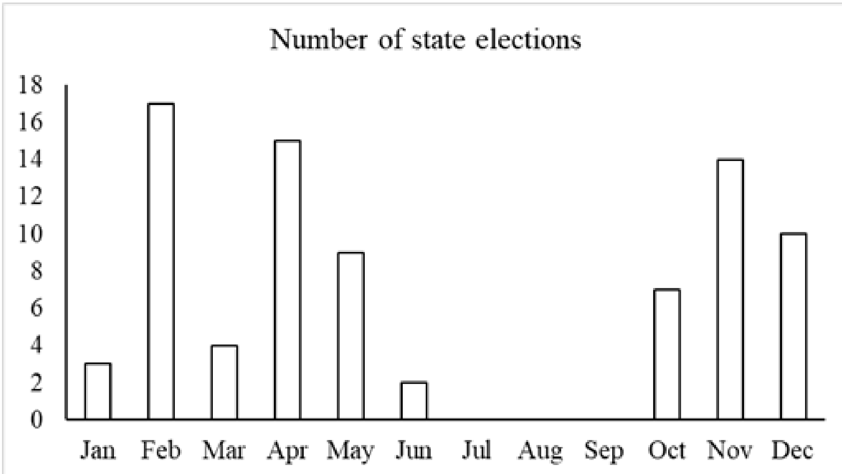


Figure A1: The figure shows monthly frequency of state elections. It includes data from 2005-2019 on 26 Indian states. It includes three midterm state election.

B Tables

Table B1: Political cycles in pass percentage of students who appear for state board exams.

	Dependent variable:			
	Pass Percentage			
	X		XII	
	(1)	(2)	(1)	(2)
Next scheduled election within 1 year of board exam results	0.966*	0.844	2.524***	2.347***
	(0.575)	(0.719)	(0.726)	(0.684)
	[0.093]	[0.233]	[0.001]	[0.001]
Next scheduled election after 3 years of board exam results		-0.946		-1.165
		(0.948)		(0.902)
		[0.362]		[0.199]
Next scheduled election after 2 years of board exam results		0.452		0.457
		(0.735)		(0.909)
		[0.531]		[0.614]
Next election after 1 year of board exam results		-0.030		-0.061
		(0.899)		(0.576)
		[0.985]		[0.924]
Observations	376	376	376	376
R-sq	0.298	0.301	0.192	0.197
Test of equality		P-value		P-value
$\beta_1 = \beta_3$		0.093		0.007
$\beta_1 = \beta_4$		0.587		0.091
$\beta_1 = \beta_5$		0.143		0.000

The sample includes 26 states for years 2005-19. We assume that the state board exam results are declared on May 31^{st} of each year. The key independent variables are the constructed election dummy variables used in Specifications 1 and 2, which correspond to columns (1) and (2). Controls include logarithms of state per capita income, their revenue account expenditure of secondary education, fiscal expenditure, a dummy variable for president's rule, state, and year fixed effects.
Standard errors are clustered at the state level. The p-values, generated from Wild bootstrap cluster, are reported in square brackets. *p<0.1, **p<0.05, ***p<0.01.

Table B2: Political cycles in probability of getting first division in state board exams.

	Dependent variable:			
	$\frac{\#FirstDivision}{\#Appeared}$			
	X		XII	
	(1)	(2)	(1)	(2)
Next scheduled election within 1 year of board exam results	2.833	3.719	2.788**	2.485*
	(2.145)	(2.543)	(1.162)	(1.316)
	[0.200]	[0.166]	[0.020]	[0.074]
Next scheduled election after 3 years of board exam results		1.905		-0.887
		(2.223)		(0.972)
		[0.419]		[0.359]
Next scheduled election after 2 years of board exam results		-0.025		-0.711
		(2.413)		(1.468)
		[0.985]		[0.644]
Next election after 1 year of board exam results		1.661		0.413
		(1.860)		(1.291)
		[0.390]		[0.743]
Observations	300	300	323	323
R-sq	0.226	0.229	0.245	0.247
Test of equality		P-value		P-value
$\beta_1 = \beta_3$		0.629		0.036
$\beta_1 = \beta_4$		0.107		0.051
$\beta_1 = \beta_5$		0.335		0.029

The sample includes 26 states for years 2005-19. The dependent variables are percentage of total examinees who obtain first division in X^{th} and XII^{th} state board exams. We assume that the state board exam results are declared on May 31^{st} of each year. The key independent variables are the constructed election dummy variables used in Specifications 1 and 2, which correspond to columns (1) and (2). Controls include logarithms of state per capita income, their revenue account expenditure of secondary education, fiscal expenditure, a dummy variable for president's rule, state, and year fixed effects. Standard errors are clustered at the state level. The p-values, generated from Wild bootstrap cluster, are reported in square brackets. *p<0.1, **p<0.05, ***p<0.01.

Table B3: Political cycles in state-level expenditure variables.

	Dependent variable:					
	Log(Expenditure on Secondary Education)		Log(Fiscal Expenditure)		Log(Expenditure on DIA)	
	(1)	(2)	(1)	(2)	(1)	(2)
Year of scheduled election	0.036*	0.007	-0.009	0.003	0.116	0.055
	(0.018)	(0.018)	(0.013)	(0.013)	(0.072)	(0.105)
	[0.056]	[0.664]	[0.151]	[0.241]	[0.112]	[0.604]
4 years before scheduled election		-0.079*		-0.000		-0.102
		(0.041)		(0.013)		(0.112)
		[0.074]		[0.493]		[0.358]
2 years before scheduled election		0.002		0.023		-0.039
		(0.027)		(0.013)		(0.093)
		[0.931]		[0.790]		[0.692]
1 year before scheduled election		-0.043		0.025		-0.105
		(0.027)		(0.014)		(0.127)
		[0.118]		[0.430]		[0.438]
Observations	376	376	377	377	315	315
R-squared	0.875	0.877	0.973	0.974	0.407	0.409

The sample for first four regressions includes data on 26 states for years 2005-19. The last two columns have data for all years except 2015. They also do not have data for some states in specific years. For example, data for the state of Chhattisgarh are only available for the years 2013 and 2014; data for the state of Goa are available for the years 2005, 2006, 2013 and 2014; data for the state of Tripura are available for the years 2005-09, and 2017-19. The dependent variables are log of the following variables: state's yearly revenue expenditure on secondary education, their yearly fiscal expenditure, their yearly revenue account expenditure on direction, investigation and administration for secondary education (DIA). The independent variables of interest are the dummy variable for the year of the scheduled election states, and their actual electoral cycles. '(1)' and '(2)' represent specifications 1 and 2, except the interpretation of the election dummy in 1 is the year of scheduled state election, and the electoral variables in 2 are how far is the upcoming scheduled state elections from the year of observation. All regressions control the dummy variable for president's rule in the given year, state and year fixed effects. Standard errors are clustered at the state level. *p<0.1, **p<0.05, ***p<0.01.

Table B4: Political cycles in the logarithm of the number of senior secondary teachers.

	Dependent variable:	
	Log(#Teachers in Senior Secondary Classes)	
	(1)	(2)
Next scheduled election within 1 year of board exam results	0.059	0.014
	(0.041)	(0.043)
	[0.168]	[0.744]
Next scheduled election after 3 years of board exam results		-0.006
		(0.050)
		[0.917]
Next scheduled election after 2 years of board exam results		-0.099**
		(0.046)
		[0.040]
Next election after 1 year of board exam results		-0.073
		(0.046)
		[0.129]
Observations	195	195
R-squared	0.255	0.278

Our sample consists of data on 25 Indian states for years 2005-12. The dependent variable is yearly data on log of number of teachers in senior secondary classes (or equivalent) by states. The independent variable is our constructed electoral cycle. '(1)' and '(2)' refers to the regression results from specifications 1 and 2. Other covariates include log of state per capita income, dummy variable for president's rule, state and year fixed effects. Standard errors are clustered at the state level. The p-values, generated from Wild bootstrap cluster, are reported in square brackets. *p<0.1, **p<0.05, ***p<0.01.

Table B5: Political cycles in pass percentage of regular students who appear for state board exams.

	Dependent variable:			
	Pass Percentage			
	X		XII	
	(1)	(2)	(1)	(2)
Next scheduled election within 1 year of board exam results	1.579** (0.755) [0.045]	1.447 (0.918) [0.126]	2.662*** (0.775) [0.001]	2.495*** (0.755) [0.000]
Next scheduled election after 3 years of board exam results		-0.670 (1.002) [0.545]		-0.949 (0.860) [0.975]
Next scheduled election after 2 years of board exam results		-0.112 (0.873) [0.905]		0.221 (0.824) [0.385]
Next election after 1 year of board exam results		0.245 (0.860) [0.764]		0.014 (0.561) [0.829]
Observations	350	376	376	376
R-sq	0.304	0.301	0.253	0.257
Test of equality		P-value		P-value
$\beta_1 = \beta_3$		0.081		0.008
$\beta_1 = \beta_4$		0.087		0.05
$\beta_1 = \beta_5$		0.117		0.000

The sample includes 26 states for years 2005-19. The dependent variables are pass percentage of regular students in the state board exams of grades XII and X. Regular students attend regular schools.We assume that the state board exam results are declared on May 31^{st} of each year. The key independent variables are the constructed election dummy variables used in Specifications 1 and 2, which correspond to columns (1) and (2). Controls include logarithms of state per capita income, their revenue account expenditure of secondary education, fiscal expenditure, a dummy variable for president's rule, state, and year fixed effects.
Standard errors are clustered at the state level. The p-values, generated from Wild bootstrap cluster, are reported in square brackets. *p<0.1, **p<0.05, ***p<0.01.

Table B6: Political cycles in the pass percentage of private students who appear for state board exams.

	Dependent variable:			
	Pass Percentage			
	X		XII	
	(1)	(2)	(1)	(2)
Next scheduled election within 1 year of board exam results	0.293	0.720	1.347	1.117
	(1.635)	(1.804)	(1.209)	(1.429)
	[0.848]	[0.689]	[0.279]	[0.436]
Next scheduled election after 3 years of board exam results		1.083		0.782
		(2.071)		(1.397)
		[0.612]		[0.570]
Next scheduled election after 2 years of board exam results		1.411		0.335
		(1.758)		(1.304)
		[0.424]		[0.787]
Next election after 1 year of board exam results		-0.679		-2.145
		(1.661)		(1.498)
		[0.677]		[0.159]
Observations	298	298	331	331
R-sq	0.081	0.085	0.048	0.057
Test of equality		P-value		P-value
$\beta_1 = \beta_3$		0.887		0.826
$\beta_1 = \beta_4$		0.647		0.609
$\beta_1 = \beta_5$		0.470		0.035

The sample includes 26 states for years 2005-19. The dependent variables are pass percentage of private students in the state board exams of grades XII and X. Private students do not attend regular schools.We assume that the state board exam results are declared on May 31^{st} of each year. The key independent variables are the constructed election dummy variables used in Specifications 1 and 2, which correspond to columns (1) and (2). Controls include logarithms of state per capita income, their revenue account expenditure of secondary education, fiscal expenditure, a dummy variable for president's rule, state, and year fixed effects.

Standard errors are clustered at the state level. The p-values, generated from Wild bootstrap cluster, are reported in square brackets. *p<0.1, **p<0.05, ***p<0.01.

Table B7: Political cycles in the logarithm of the number of state board examinees for Classes X and XII.

	Dependent variable:			
	Log(#Appeared)			
	X		XII	
	(1)	(2)	(1)	(2)
Next Scheduled election within 1 year of board exam results	0.024 (0.014) [0.101]	0.026 (0.016) [0.109]	-0.007 (0.014) [0.605]	-0.015 (0.014) [0.272]
Next Scheduled election 3 years after the board exam results		-0.001 (0.014) [0.94]		0.003 (0.014) [0.843]
Next Scheduled election 2 years after the board exam results		0.001 (0.020) [0.951]		-0.019 (0.023) [0.462]
Next Scheduled election 1 year after the board exam results		0.01 (0.016) [0.538]		-0.016 (0.020) [0.454]
Observations	376	376	376	376
R-squared	0.505	0.505	0.736	0.737
Test of equality		P-value		P-value
$\beta_1 = \beta_3$		0.131		0.403
$\beta_1 = \beta_4$		0.187		0.872
$\beta_1 = \beta_5$		0.335		0.968

The sample includes 26 states for years 2005-19. The dependent variables are log of total examinees in state board exams of grades XII and X.We assume that the state board exam results are declared on May 31^{st} of each year. The key independent variables are the constructed election dummy variables used in Specifications 1 and 2, which correspond to columns (1) and (2). Controls include logarithms of state per capita income, their revenue account expenditure of secondary education, fiscal expenditure, a dummy variable for president's rule, state, and year fixed effects.
Standard errors are clustered at the state level. The p-values, generated from Wild bootstrap cluster, are reported in square brackets. *p<0.1, **p<0.05, ***p<0.01.

Table B8: Test of heterogeneity: By Gender.

	Dependent variable:			
	Pass Percentage			
	X		XII	
	Female	Male	Female	Male
Next scheduled election within 1 year of board exam results	0.734	0.966	2.205***	2.429***
	(0.756)	(0.729)	(0.639)	(0.733)
	[0.325]	[0.192]	[0.001]	[0.003]
Next scheduled election after 3 years of board exam results	-1.097	-0.799	-0.937	-1.190
	(0.924)	(0.989)	(0.752)	(1.050)
	[0.243]	[0.473]	[0.222]	[0.263]
Next scheduled election after 2 years of board exam results	0.417	0.501	0.662	0.390
	(0.735)	(0.794)	(0.805)	(1.051)
	[0.536]	[0.512]	[0.409]	[0.699]
Next election after 1 year of board exam results	0.097	-0.068	-0.360	0.299
	(0.977)	(0.863)	(0.866)	(0.738)
	[0.097]	[0.939]	[0.716]	[0.697]
Observations	375	375	374	374
R-squared	0.338	0.256	0.204	0.156
Test of equality	P-value		P-value	
$\beta_1 = \beta_3$	0.092	0.103	0.006	0.010
$\beta_1 = \beta_4$	0.625	0.567	0.141	0.098
$\beta_1 = \beta_5$	0.264	0.110	0.001	0.007

The sample includes 26 states for years 2005-19. This table demonstrates whether our results on political cycle in board exam results hold for students of different sex. The dependent variables are the pass rates in state board exams of XII^{th} and X^{th} for each of these groups of students.We assume that the state board exam results are declared on May 31^{st} of each year. The independent variables of interest are the election dummy variables we constructed in specification I. All regressions account for the log of the state's per capita income, the log of the state's revenue account expenditure on secondary education, a dummy variable for presidential rule during the months of April to May, as well as state-grade and year fixed effects. Standard errors are clustered at the state level. *p<0.1, **p<0.05, ***p<0.01.

Table B9: Test of heterogeneity: By Socio-economic Class.

	Dependent variable:			
	Pass Percentage			
	X		XII	
	SC/ST	non-SC/ST	SC/ST	non-SC/ST
Next scheduled election within 1 year of board exam results	1.302	0.332	2.795**	2.282*
	(0.852)	(0.988)	(0.905)	(0.836)
	[0.128]	[0.744]	[0.005]	[0.009]
Next scheduled election after 3 years of board exam results	-0.858	-0.830	-1.105	-0.661
	(1.131)	(1.033)	(1.214)	(1.299)
	[0.468]	[0.470]	[0.363]	[0.642]
Next scheduled election after 2 years of board exam results	0.083	-0.264	-0.634	0.918
	(0.763)	(1.138)	(1.207)	(1.158)
	[0.910]	[0.832]	[0.611]	[0.449]
Next election after 1 year of board exam results	0.207	-0.051	-0.330	-0.025
	(1.307)	(0.977)	(0.769)	(1.376)
	[0.866]	[0.958]	[0.998]	
Observations	359	359	354	354
R-squared	0.317	0.264	0.236	0.133
Test of equality	P-value		P-value	
$\beta_1 = \beta_3$	0.086	0.331	0.012	0.065
$\beta_1 = \beta_4$	0.191	0.616	0.017	0.308
$\beta_1 = \beta_5$	0.381	0.665	0.003	0.082

The sample includes 26 states for years 2005-19. This table demonstrates whether our results on political cycle in board exam results hold for students of different socio-economic class. In India, people belonging to SC/ST are considered socially and economically most disadvantaged. The dependent variables are the pass rates in state board exams of XII^{th} and X^{th} for each of these groups of students.We assume that the state board exam results are declared on May 31^{st} of each year. The independent variables of interest are the election dummy variables we constructed in specification II. All regressions account for the log of the state's per capita income, the log of the state's revenue account expenditure on secondary education, a dummy variable for presidential rule during the months of April to May, as well as state-grade and year fixed effects. Standard errors are clustered at the state level. *p<0.1, **p<0.05, ***p<0.01.

Table B10: Robustness Check: Alternative Date of declaration of state board exam results.

	Dependent variable:			
	Pass Percentage			
	X		XII	
	(1)	(2)	(1)	(2)
Next scheduled election within 1 year of board exam results	0.955	0.859	2.606**	2.488**
	(0.599)	(0.740)	(0.828)	(0.779)
	[0.111]	[0.245]	[0.001]	[0.004]
Next scheduled election after 3 years of board exam results		-0.886		-1.069
		(0.970)		(0.842)
		[0.385]		[0.214]
Next scheduled election after 2 years of board exam results		0.479		0.505
		(0.780)		(0.999)
		[0.532]		[0.608]
Next election after 1 year of board exam results		0.020		0.065
		(0.909)		(0.661)
		[0.966]		[0.920]
Observations	376	376	376	376
R-squared	0.298	0.301	0.193	0.197
Test of equality		P-value		P-value
$\beta_1 = \beta_3$		0.120		0.010
$\beta_1 = \beta_4$		0.594		0.103
$\beta_1 = \beta_5$		0.170		0.001

The sample includes 26 states for years 2005-19. The dependent variables are pass percentage in state board exams of grades XII and X. We assume that state board exam results are declared on April 30^{th} of each year. The key independent variables are the constructed election dummy variables used in Specifications 1 and 2, which correspond to columns (1) and (2). Controls include logarithms of state per capita income, their revenue account expenditure of secondary education, fiscal expenditure, a dummy variable for president's rule, state, and year fixed effects.
Standard errors are clustered at the state level. The p-values, generated from Wild bootstrap cluster, are reported in square brackets. *p<0.1, **p<0.05, ***p<0.01.

Table B11: Robustness Check: Alternative Specification.

	Dependent variable:			
	Pass Percentage			
	X		XII	
	(1)	(2)	(1)	(2)
Next scheduled election within 1 year of board exam results	1.348	1.428	2.134***	1.912**
	(0.695)	(0.929)	(0.855)	(0.790)
	[0.044]	[0.108]	[0.008]	[0.011]
Next scheduled election after 3 years of board exam results		-0.559		-0.761
		(0.892)		(0.942)
		[0.527]		[0.370]
Next scheduled election after 2 years of board exam results		0.411		0.269
		(0.895)		(0.999)
		[0.605]		[0.787]
Next election after 1 year of board exam results		0.459		-0.435
		(1.012)		(0.691)
		[0.605]		[0.504]
Observations	376	376	376	376
R-squared	0.827	0.828	0.637	0.638
Test of equality		P-value		P-value
$\beta_1 = \beta_3$		0.068		0.051
$\beta_1 = \beta_4$		0.205		0.162
$\beta_1 = \beta_5$		0.088		0.001

The sample includes 26 states for years 2005-19. We assume that the state board exam results are declared on May 31^{st} of each year. The independent variables of interest are our constructed election and electoral cycle variables used in specifications I and II, respectively. '(1)' and '(2)' represent regression results from specifications 1 and 2. Controls include logarithms of state per capita income, their revenue account expenditure of secondary education, their fiscal expenditure, dummy variable for president's rule, state-specific fixed effects and state-specific trends. The estimations use least square dummy variable models. Standard errors are clustered at the state level. The p-values, generated from Wild bootstrap cluster, are reported in square brackets. *p<0.1, **p<0.05, ***p<0.01.

C Comparison of Political Cycles in Class X and XII State Board Exams

In this section, we statistically investigate whether proximity to state elections affects the pass percentages of the Class X and XII board exams differently. We pool the Class XII and X samples and use the following specifications with interaction terms.

$$y_{igt} = \alpha_1 E_{igt} + \alpha_2 I(\text{XII}) + \alpha_3 E_{igt} \times I(\text{XII}) + \gamma PR_{it} + \psi X_{it} + \theta_i + \theta_t + \epsilon_{igt} \quad (5)$$

$$\begin{aligned} y_{igt} &= \pi I(\text{XII}) + \beta_1 E_{1igt} + \beta_3 E_{3igt} + \beta_4 E_{4igt} + \beta_5 E_{5igt} + \rho_1 I(\text{XII}) \times E_{1igt} \quad (6) \\ &+ \rho_3 I(\text{XII}) \times E_{3igt} + \rho_4 I(\text{XII}) \times E_{4igt} + \rho_5 I(\text{XII}) \times E_{5igt} + \gamma PR_{it} + \psi X_{it} \\ &+ \theta_i + \theta_t + \epsilon_{igt}. \end{aligned}$$

In both specifications, y_{igt} is the pass percentage of Class g board exam of state i in year t, where $g \in \{\text{X}, \text{XII}\}$. $I(\text{XII})$ is an indicator variable that equals 1 if g equals XII, and 0 otherwise. E_{igt} and E_{1igt} of equations 5 and 6 are defined analogously to E_{it} and E_{1it} of equations 1 and 2, but for level g state board exam. Likewise, the definitions of E_{3igt}, E_{4igt} and E_{5igt} are similar to E_{3it}, E_{4it} and E_{5it} of equation 6. Controls include logarithms of state per capita income, their revenue account expenditure of secondary education, fiscal expenditure, a dummy variable for president's rule, state, and year fixed effects.

Table C1 shows the results for specifications 5 and 6. Class XII pass rates increase more than those of Class X when state elections are near. Specifically, Class XII results are 1.2 to 1.9 percentage points higher than Class X, for state board exams that lead up to state elections. However, the coefficient is significant for specification 6 only. Its p-value for specification 5 is 15%.[27]

[27] When we re-estimate specifications 5 and 6 with state-grade fixed effects and cluster standard errors at the state-grade level, the interaction term coefficients remain similar but lose statistical significance. Nevertheless, their t-statistics exceed 1.2.

Table C1: Comparing the political cycles in pass percentage for Class XII and X state board exams.

	Dependent variable:	
	Pass Percentage	
	(3)	(4)
Next scheduled election within 1 year of board exam results	1.135*	0.622
	(0.652)	(0.787)
	[0.083]	[0.408]
XII^{th} × Next scheduled election within 1 year of board exam results	1.236	1.915**
	(0.859)	(0.944)
	[0.151]	[0.042]
XII^{th}	3.543	2.867
	(2.183)	(2.274)
	[0.110]	[0.206]
Observations	752	752
R-squared	0.442	0.445

Columns '(3)' and '(4)' represent results from specification 5 and 6. Standard errors are clustered at the state level. The p-values, generated from Wild bootstrap cluster, are reported in square brackets. *p<0.1, **p<0.05, ***p<0.01.