Regulation-induced CSR

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Abstract

Under a comply-or-explain framework, the Indian Companies Act of 2013 mandated that companies spend 2% of their profits towards CSR. In response, aggregate CSR spending increased substantially and most firms spent non-trivial amounts. These activities had a substantial real impact. On average, INR 1 Mn expenditure in education-related CSR led to 138 more students enrolled, 5.7 more teachers, and 0.25 more schools. Furthermore, infrastructure and other facilities at schools also improved. Our analysis suggests that corporate CSR activities, even if undertaken due to external pressure and in absence of clear enforcement mechanisms, can have a substantial positive real impact on society.

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1 Introduction

As a part of the Companies Act that came into force in 2014-15, the Indian Government required large and profitable companies to spend 2% of their profits annually on Corporate Social Responsibility (CSR) activities.[1] Importantly, this regulation adopted a comply-or-explain framework – firms that did not spend the 2% had to explain in their annual report filings why they were unable to do so. Failure to spend as well as provide an explanation could result in fines on the firm as well as officers, but actual punishments were essentially non-existent. The regulation also clearly defined the allowed CSR activities, which included promotion of education, health, poverty reduction, environmental sustainability, and gender equality.[2] A board committee comprising of three or more directors, with at least one independent director, was required to be formed that would develop a CSR policy and oversee CSR activities.

There is an extensive literature that studies the impact of CSR. Most studies focus on the motivation of CSR spending, for example Cheng, Hong, and Shue (2016) study whether spending on CSR activities is because managers care about private benefits. Additionally, other reasons to invest in CSR could come from existing shareholders' pressure, or with the hope of either attracting ESG focused investors or improving firm reputation. Furthermore, a significant portion of this literature seems to focus on understanding how CSR activities impact firm outcomes. Two questions seem underexplored – 1) to what extent can firms be induced into CSR activities by external entities, and 2) if this happens, would the firms engage in these activities earnestly such that it has a positive impact on the society at large? In this paper, we take advantage of the aforementioned regulation to improve our understanding of these issues.

Given that most firms were not spending on CSR of their own accord, one might think that a comply-or-explain type regulation, where a firm needs merely to provide some ex-

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[1]The only other countries that have similar requirements are Indonesia and Mauritius, which were introduced in 2007 and 2009, respectively.

[2]Notably, it specifically excluded activities that would benefit employees and their families. Also, expenditures such as paying employees for their time spent on CSR projects were considered administrative expense, which was required to be below 5% of the total CSR spending. In general, the idea was to exclude activities that directly benefit the firm or any person or entity linked to the firm. In that regard, the definition of CSR in the context of this regulation was in the spirit of *corporate philanthropy*.

planation for not spending, might not be particularly effective at getting such a firm to engage in CSR activities. It turns out that this is not the case. Many firms that had zero CSR spending before the regulation report spending non-trivial amounts after it. In the post-regulation period, the aggregate CSR spending across all firms is quite close to the aggregate prescribed amount. Furthermore, just as Dharmapala and Khanna (2018) document, we see a large increase in aggregate CSR spending just when the regulation comes into force. The total annual CSR spending after regulation is about 100 Billion INR more than, and three times that of, the pre-regulation annual spending across firms in our sample. Finally, the distribution of the ratio of a firm's CSR spending to its profits shows a "bunching" around 2%, the fraction required by the regulation, but only after the regulation and not before. Taken together, these patterns show that the regulation had a large impact on the CSR decisions of firms.

Even if the companies report much higher spending after the regulation, this may not necessarily translate into a real impact on society for at least three distinct reasons. First, when companies report spending money on CSR in a weak legal environment like India, where corporate misbehavior and tunneling is prevalent (Bertrand, Mehta, and Mullainathan, 2002), they may manage to find ways to tunnel the money either back to the company, their owners, or the managers.[3] In other words, the reported CSR spending may not reflect actual spending. Second, even if the companies do spend money on actual CSR activities, they could spend it on projects that maximize the private benefits to the managers of the firm without regard for societal impact. Since the regulation does not have any requirement for the CSR spending creating impact (probably because it would be very difficult to verify that), the money might be spent on projects that do not create much impact. Third, even if most of the money were spent on projects that do have a significant real impact, these activities might crowd out other similar activities by the government, non-profit sector, or philanthropy by private individuals.

To understand the extent of real impact that the CSR spending by companies have, we

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[3]Although, the regulation allowed the option to simply donate money to specific government charity funds, we find that almost none of the companies prefer to take this route. On the one hand, this could be because spending the money themselves would allow tunneling. On the other hand, it could be because a specific philanthropic project associated with the company's name is likely to be better in reaping the reputational rewards from such an activity.

take advantage of the fact that the regulation also required detailed annual disclosure of the locations and type of projects where the money was spent. The largest category of aggregate CSR spending is in education, which received 28% of the total spending. Detailed school-level data on various outcomes for primary schools is available from a long-standing annual data collection exercise by the education department. Importantly, the companies have no control over the collection of these data. Combining these two datasets allows us to study the impact of total CSR spending in a district (by all companies spending there) on primary and upper primary school outcomes.

Should an uncoordinated effort by a group of firms create an aggregate positive impact on societal outcomes? If firms are expected to spend on CSR activities it might crowd out government on other private philanthropic organizations expenditure. Recent evidence suggests that government expenditure on education has declined starting 2015 [4]. This effect is likely to be more pronounced for individual philanthropy if CSR expenditure took off in a big way (Andreoni (1989) and Andreoni (1990)) [5]. In the end, the net result may actually be a decline in societal benefit if expected firm CSR crowds out other kinds of public sector expenditure.

We find that CSR expenditure is associated with a significant increase in enrollment, the number of schools, and the number of teachers. Specifically, INR 1 million (equivalent to USD 15,000 approximately) of additional spending in a district leads to 138 additional students enrolled, 0.25 additional primary schools, and 5.7 additional teachers. In addition, this spending also leads to improvements in school facilities, such as access to drinking water, toilets, computers, and books. These estimates imply a comparable, if not slightly higher, impact-per-rupee when comparing with the median amount spent by state governments on primary education. Importantly, the increased enrollment due to CSR by companies does not seem to be at the cost of a decrease in the quality of education, measured by the number of students repeating a grade. Overall this evidence suggests that the reported CSR spending by companies had a significant real impact on education related outcomes.

One possible concern is that the decision of companies of whether to spend in a particular

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[4]https://www.business-standard.com/article/economy-policy/can-india-s-education-budget-fund-increased-spending-in-new-policy-119091000108$_1$.html

[5]https://thewire.in/business/philanthropy-domestic-firms-ngos-decline

district and how much to spend there is endogenous and therefore the above empirical patterns may not reflect the causal effect of CSR spending on measured outcomes. For example, an omitted variable of particular concern is the expected economic growth of a district. In general, we do see that regional economic growth is positively related to school-level outcomes in a region. Therefore, if companies direct their CSR spending in areas that are going to enjoy higher economic growth, this would give rise to a correlation between CSR spending and improved education outcomes. We present three pieces of evidence which, taken together, suggest that this is not the case. First, we use a Difference-in-Differences approach to illustrate the timing of the effects on education outcomes matches the timing when the CSR rules became effective. Importantly, we don't observe any trend in the period before the CSR rules are implemented.

Second, using nightlights, deposit and bank credit data we show that such CSR investments are not related to improved local economic conditions. In fact, if anything, we see a slight decline, suggesting that companies show some tendency to direct CSR activities towards areas that are expected to worsen economically.

Third, we see the effect of CSR spending precisely in the kind of schools where we would expect to see if the impact on the outcomes are a result of spending by corporations and not for other reasons such as improvements in the local economy or spending by the government. Either of these channels should lead to improvements in government-run or government-supported private schools as well. However, the aforementioned documented effects of greater enrollment, number of teachers, and number of schools are entirely due to privately run schools that are not supported by the government. In fact, there is a slight decline in enrollment in government-aided schools, which could be due to a small number of students switching from those schools to either newer or better private schools that were created by the companies' CSR spending. In other words, the second pattern helps us rule out another potential omitted variable concern – CSR spending on education in a district is somehow related to government spending plans and the effects on the outcomes are being driven by the latter.

CSR has become a "catch all phrase" (Benabou and Tirole, 2010) for all good corporate actions undertaken by the firm that can potentially help the environment or the welfare of

people. In this paper, we study the effect of one particular policy experiment implemented in India. We find that corporate philanthropy that was due to a soft push from the government has real effects on improving primary education outcomes in India despite the fact that firms could potentially find ways to get out of doing so by engaging in tunneling and lobbying. Given the real improvements we observe, one cannot but wonder whether the Indian experiment can serve as a template for other developing countries that suffer from limited state capacity.

There is, however, a caveat. In aggregate, we see that the CSR activities of companies tend to be directed more towards districts that are socio-economically better off – those with higher level of nightlights, higher literacy rate, better infrastructure, and districts that are more urban. This suggests that CSR spending by companies, when they have significant leeway in choosing the nature and location of projects, may not be successful as an alternative to government's activities that help reduce regional inequalities.

Our study complements the existing literature on the effect of CSR. So far, most studies focus on the effects of CSR on firms and document inconsistent results. Some studies find that firms can benefit from their CSR activities by building up trust with stakeholders, improving its visibility, and increasing shareholder return (Edmans, 2011; Servaes and Tamayo, 2013; Dimson, Karakaş, and Li, 2015; Lins, Servaes, and Tamayo, 2017). Other studies document that CSR spending is a manifestation of agency issues, and it is detrimental to firm value (Masulis and Reza, 2015; Cheng, Hong, and Shue, 2016). In the Indian setting, Manchiraju and Rajgopal (2017) find that the market response to the passage of the Indian Companies Act 2013 is negative. But evidence of the effect of CSR on non firm related outcomes is scant. One exception is Chen, Hung, and Wang (2018), who study mandatory CSR disclosure rather than mandatory CSR spending in China and find improvements in the environment after the enactment of mandatory disclosure. Our study differs from the above studies by investigating the effect of CSR activities on communities.

This study also contributes to our understanding of the effectiveness of a comply-or-explain framework of regulations. Such a framework is in contrast to a compulsory one-regulation-fits-all policy that everyone is required to follow. A comply-or-explain policy is designed to provide flexibility to companies and is being increasingly widely adopted. Ac-

cording to the 2019 OECD Corporate Governance Factbook, 83% of the jurisdictions rely on such a framework in the context of corporate governance regulations.[6] Our study documents that even in an environment with relatively weak legal institutions and enforcement, a comply-or-explain policy did largely induce companies to comply and the Indian regulator was, to a large extent, able to achieve its goal.

The rest of the paper is organized as follows. Section 2 describes our data and provides summary statistics. In Sections 3 and 4 we present our results and robustness checks. Finally, in Section 5 we conclude.

2 Data and summary statistics

Our project-level CSR data are from PRIME Database Group, an Indian data provider on capital markets. The data covers CSR activities of all listed companies on the National Stock Exchange of India (NSE). The data is available from 2014-15 to 2018-19. The Companies Act of 2013, required companies to disclose their CSR policies and activities in their directors' reports from which PRIME collects the data. Since the school data only contains primary and upper primary schools, we remove projects that are not for these schools. This is done by filtering the project descriptions.[7]

The PRIME data includes both the actual CSR spending as well as the prescribed CSR spending (i.e., 2% of profits). Additionally, it includes descriptions and locations of CSR projects. Our next step is to map locations of CSR projects into the districts. Districts in India are equivalent to counties in the U.S. The merge between district and CSR location data results in a final sample that captures 53% of total CSR spent by NSE companies (Figure A2).[8]

During our sample period, the Indian government created new districts. Specifically, the

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[6]https://www.oecd.org/corporate/corporate-governance-factbook.htm

[7]First we remove non-education related projects. Next, all projects related to development of vocational skills, universities, museums and other educational institutions are filtered out of the sample. About 81% of educational projects are classified as projects for primary and upper primary schools.

[8]Unmatched projects include nationwide projects (18%), statewide projects (16%), projects that are missing location information (8%), and projects that have location information but cannot be mapped into districts (5%). The reason we cannot match some CSR projects that have location information is because there are very few projects in those areas (typically less than 10).

number of districts increased from 641 in 2011 to 731 in 2019.[9] To take this into account we manually adjust districts that changed their boundaries to ensure changes in CSR spending or education outcomes are not because of changes in district boundaries. For example, Kra Daadi in state of Arunachal Pradesh was carved out of Kurung Kumey in 2015. For our purposes Kra Daadi and Kurung Kumey would be considered as one district.[10] In the final data step, we aggregate project-level CSR data to the district-level.

The school data is from the District Information System for Education (DISE). DISE is an annual census of primary, upper primary, and high schools in India released by the National Institute of Educational Planning and Administration (NIEPA).[11] Our sample consists of primary (Classes I-V) and upper primary (Classes VI-VIII) schools. We do not include high schools as DISE started to collect this data only as of 2013-14 therefore not giving us a pre-period to compare outcomes with.

DISE provides both school-level data and district-level data however we use school data and aggregate it up to the district level rather than using the aggregated data. The main reason to do this is aggregated district level data is not available for 2017-18.[12] Finally, we restrict our sample to observations where enrollment is positive.

We construct various school outcome variables like enrollment, the number of schools, the number of teachers, and other measure of school facilities. Our sample consists of both government and private schools. The government schools include schools managed by the department of education, tribal/social welfare department, or central government. Private schools are managed by private school management boards and can be further divided into aided and unaided private schools. Private aided schools are heavily governed by the government. Private aided school teachers receive similar salaries as teachers in government

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[9]https://en.wikipedia.org/wiki/List_of_districts_in_India

[10]We exclude all districts in Telangana, a newly formed state, due to the large changes in district boundaries. In 2014, 10 districts were separated from the northwestern part of Andhra Pradesh to form Telangana. In 2016, 21 new districts were created in Telangana.

[11]Though NIEPA aimed to survey all schools, in practise some schools were not covered by the DISE data. It is especially true for private schools (Kingdon, 2017). However, it is reasonable to believe that companies cannot influence the data collecting process, and the under-representation of private schools is unlikely to bias our results. Since 2007, 5% of the DISE data have been checked by independent agencies.

[12]We cross check our district-level data against the Statistical Year Book India, 2018 published by the Ministry of Statistics and Programme Implementation and exclude 330 district-year observations (269 in 2011-212 and 61 in 2012-13) in which there are large discrepancies.

schools and the salaries are paid by the government treasury. Additionally, they share the same recruiting process as government schools (Kingdon, 2017). In contrast, private unaided schools are independent of the government.[13]

We collect the financial data from the April 2019 version of Prowess data, which is maintained by the Centre for Monitoring Indian Economy (CMIE). Prowess data has been widely used in studies on Indian companies (Bertrand, Mehta, and Mullainathan, 2002; Manchiraju and Rajgopal, 2017). Besides the standard financial information, we can construct a proxy for CSR from three expenditure variables in Prowess which include donations, social and community expenses, and environment-related expenses. This CSR measure is available before the CSR regulation came into being, but its definition does not match that of the Companies Act of 2013. For example, donations for social causes would be considered as CSR according to the Companies Act of 2013, but donations to a political party would not. Prowess also has no project-level information on CSR, and it cannot be matched to school data. Therefore, we only use the CSR measure from Prowess when we compare the CSR spending patterns before and after the CSR regulation. For the rest of our analysis, we use the CSR measures created from the PRIME data.

Our nightlights data is based on cleaned Visible Infrared Imaging Radiometer Suite (VIIRS) nightlight data (Beyer et al., 2018). The nightlights are measured as the average monthly nightlights in a district divided by the area of the district.[14]

In the end our final data consists of 605 districts and covers the the time period from 2011-12 to 2017-18, giving us data for three years before and four years after the CSR regulation came into effect.

Table 1 Panel A, shows annual actual and prescribed CSR spending from 2015 to 2019. This CSR spending covers all projects and not education related ones which are the main focus of the paper. The amount spent on CSR has been steadily growing over time. Compared to 2015 where INR 62,695 was directed towards CSR, by 2019 it had grown to INR 115,001. Since 2014-15 about INR 447.9 billion had been spent in CSR by NSE listed firms.

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[13]Private unaided schools include schools that are flagged as private aided and unrecognized schools in DISE. Unrecognized schools are private schools that are not certified by the Indian government.

[14]We thank Robert C.M. Beyer from the World Bank for kindly sharing their data. The data consists of monthly nightlights which are then aggregated to the yearly level. The yearly nightlights are then scaled by the area of a district.

Table 1 Panel B, presents CSR spending for only education related projects. On average, a district received INR 9 million of education related CSR investments which translates to about INR 3,800 per school. Of this investment, about 5% is from firms that are located in the same district. Our main education outcome variables include the number of schools, enrollment and the number of teachers. Our sample consists of 2308 schools on average. The average number of teachers per school is about 6 with enrollment being 138 students.

In terms of the geographic distribution of education related CSR spending, we find that most of the spending in rupees and in terms of number of projects tends to be concentrated in a few states like Gujarat, Karnataka, Tamil Nadu, Maharashtra and Rajasthan. CSR per school shows the largest amount of CSR goes to Maharashtra and Gujarat as well. Additionally, the number of projects per school is the highest in Gujarat and Tamil Nadu. Figure A3 shows heat maps of the distribution of CSR levels and CSR per school across the districts in India. Although CSR tends to be concentrated in a few states we still find significant variation across districts. In addition to the heatmaps of CSR, we include the heatmaps of the distribution of economic activity as measured by nightlights (Panel C) and distribution of schools (Panel D) across India.

Table 2 also shows the distribution of CSR spending per school by different economic indicators. We find that CSR activities tend to concentrate in districts with more economic activities as measured by nightlights. Specifically, in the areas with lowest level of nightlights the average CSR spending is INR1.5 million as compared to the CSR spending of INR25 million in the areas with highest level of nightlights. This trend is also true for districts with higher literacy, higher urban population and more roads. These statistics suggest that CSR activity might correlate with economic development across districts. Our panel regressions address some of this concern by including state $\times$ year $\times$ nightlights fixed effects. Nightlight fixed effects are measured from the quintile distribution of nightlights across districts as of 2011-2012. Nightlight data is collected from Beyer et al. (2018) and is defined as yearly nightlight scaled by the area of a district. The discrete version of nightlights data is then interacted with the state $\times$ year fixed effect.

3 Companies Act of 2013

The Companies Act of 2013 was a landmark regulation that made India one of the first countries to make CSR spending mandatory. Clause 135 of the Act specified that a firm with either (i) a net worth of Indian Rupees (INR) 5,000 million or more; or (ii) sales of INR10,000 million or more, or (iii) a net profit of INR50 million would be required to spend 2% of its average profits of the last 3 years on CSR related activities. The Act came into effect in April, 2014 with a comply-or-explain feature. Specifically, firms that did not comply with the regulation were required to explain their reasons for non-compliance.

Since the implementation of the initial CSR policy the Indian regulators have strengthened its enforcement. The Companies (Amendment) Act of 2019 made the regulations significantly more stringent. Company's that could not use the prescribed CSR amount in three years, were required to transfer the unspent amount to a fund set up by the government within 30 days after the end of the third financial year. If the unspent amount is related to an ongoing project, the company had six years to spend it and after three years, the unspent amount would be transferred to a separate account dedicated to CSR activities.

The rules as they stand are prescriptive and provide guidance on how firms are to achieve their CSR goals. Boards are responsible for achieving CSR targets. They approve CSR policies and ensure their implementation and disclosure. Companies were required to have a CSR board committee consisting of three or more directors and at least one independent director that would suggest and monitor CSR spending.

The regulation also clearly defined the scope of the CSR activities. Health, education, gender equality, environmental sustainability, and poverty reduction were some of sectors where CSR investment was encouraged.[15] From its inception, the government has been actively updating the definition of CSR in the Companies Act of 2013. For example, it added contribution to the Clean Ganga Fund set up by the Central Government as one of the prescribed activities as of October 2014.[16] Interestingly, the definition of CSR activities did not include spending that would directly benefit employees. Lastly, firm would be required

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[15]The full list is in Table A1.

[16]The Clean Ganga Fund was a charity fund started by the government in 2015 that encouraged donations from both private and public sector companies and individuals

to disclose an official policy on CSR activities as well as their preferred areas to operate.

4   Empirical results

4.1   CSR compliance over time

Should a mandatory comply-or-explain CSR law induce companies to spend on CSR activities? The answer to this may not be in the affirmative as firms can find ways to lobby or explain why they do not spend on CSR. However, we find that more and more firms comply over time and were spending 2% of their profits or more on CSR investments. In this section, we describe how firms complied with the CSR regulation.

We first examine the CSR spending before and after the regulation. Since the spending in the before period is only available in the Prowess data, we present histograms showing the distribution of the ratio of CSR to profits measured in the Prowess data in Figure 1a. The CSR amount is measured by the sum of three types of expenditures in Prowess: Donation, social and community expenses, and environment-related expenses. To make the figure readable, CSR ratios greater than 4% are set to 4%. Firms that are not required to spend on CSR activities are excluded from the sample. For consistency of sampling criterion across years, the threshold requirements of the Act in terms of net worth, profits, and assets are applied to all the years, including the years prior to the Act. Figure 1a shows a clear change in CSR spending pattern starting in 2015. From 2010 to 2013, the spending on CSR was essentially zero for around 60% of firms. After 2015, less than 20% of firms fall in this category. When examining the distribution of the ratio of CSR to profits, we see a "bunching" around 2%, starting in 2015 and becoming slightly more pronounced in the later years.

As mentioned earlier, since the CSR proxy variable constructed from Prowess does not match the definitions under the Act, we now focus our analysis on the data provided by PRIME. Next, we examine CSR spending patterns after 2015 in the PRIME data, which is compiled from the information of the Act-approved CSR spending as disclosed by the firms. Figure 1c shows the rate of compliance of firms. Panel B shows that 80% of firms were

spending more than 50% of the prescribed amount (2% of profits) on CSR related activities by 2019 as compared to 58% in 2015. Interestingly, the number of firms spending more than 80% of the required amount grew from 46% to 70% from 2015 to 2019 (Panel C). By 2019, only a few firms (less than 6%) chose not to spend on CSR at all. These numbers taken together, show the remarkable trend towards voluntary compliance with the law by 2019. Table 1 confirms this trend. By 2019 about INR 115,001 million was being directed towards CSR while the aggregate of the prescribed amount across firms in our sample was INR 116,346 million. This is explained by the fact that some firms spend more than 2% of profits on CSR, which counterbalances the deficit from firms that spend below the prescribed level. In fact, Figure 2b suggests that firms that were the top 10% contributors to CSR in 2012-13 continued to spend more than 2% of their profits on CSR after the regulation become effective.[17]

In terms of the sectoral distribution of CSR spending, we find that firms are making CSR investments in the health and educator sectors primarily. About 28% of total CSR spending went to education related projects. As mentioned earlier the objective of the regulation was to get firms involved in "nation building" but it set up outlets (e.g. Prime minister's relief fund) where firms could donate and it get counted towards their CSR spending. As we see from Table A.1 firms did not choose that route and only about 3% of CSR spending went to the Prime Minister's relief fund.[18]

4.2 School outcomes

We next examine whether the CSR that the firms report has any real impact. It seems most firms were not inherently willing to spend money on CSR as most of them spent nothing before the Companies Act came into force. One might expect that such firms might i) find ways to report that they are spending without actually spending the money, or ii) spend

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[17]We find the same pattern when examining spending by companies that were the top 10% contributors in 2011-12. A seeming drop in CSR for the highest spenders is due to mean reversion from the sorting-year effect. Firms that spend unusually high or low amounts in one year are likely to revert back to their normal levels in the subsequent year.

[18]MCA committee reports suggest that the regulators discouraged investment in the prime minister relief fund as it did not "inculcate a sense to involvement and responsibility in the corporate sector for social development by utilizing not just their funds, but also their capabilities and management skills."

the money but manage to channel most of it back to some other purpose, or iii) spend the money on CSR projects that are very inefficient since the Act merely specifies the amount of money they need to spend but does not require them to produce any particular level of output or impact. In any of these scenarios, we should expect to find low or almost no real impact of the CSR activities.

On the other hand, once the firms have to spend money on CSR they may decide to do so as fruitfully and efficiently as possible in order to maximize the benefits. For example, charitable projects have been shown to help firm attract better employees (Greening and Turban, 2000; Krueger, Metzger, and Wu, 2020) and make existing employees more engaged and perform better (Jones, 2010). Similarly, such projects could enhance the reputation of the firms in product markets, leading to higher sales. It is likely that by spending the money more efficiently – for example by building two schools in two different villages by using the same amount of money instead of just one school in a village – would tend to increase the benefits that accrue from the money spent.

For assessing the real impact, we focus on CSR spending related to elementary education. This is because we have detailed annual school-level data that covers the entire country. Our main school outcome variables include the enrollment, number of schools, and number of teachers. Enrollment and the number of schools are common education outcomes. Teachers' salaries constitute a large share of education expenditures. Bordoloi et al. (2020) report that the share of teachers' salaries is 71-84% of school education expenditure in government schools. Thus, we also choose the number of teachers as one of our main outcome variable.

We aggregate both outcome and explanatory variables at the district level. To create CSR spending at the district level, we sum firm level CSR spending based on disclosures provided by the PRIME data. Likewise, the school level data in DISE is aggregated to the district level. Therefore the unit of observation for our regressions is at the district-year level.

We then regress education outcomes such as number of elementary primary school students in the district on CSR spending. We scale both the outcome variables as well as CSR spending by the number of schools in the district as measured in 2011-12, which is the first year in our sample. The reason for doing so is twofold. The first reason is that this makes

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more economic sense if we include time fixed effects to control for shocks that could affect enrollment in different districts at the same time. If there is a positive shock that increases enrollment, we would expect that the absolute number of students would go up more in a larger district (that has 100,000 students, say) compared to a smaller district (that has 1,000 students). Scaling the number of students by some variable that captures the size of the district allows the time fixed effects to more effectively control the unobserved common shock across districts. The second reason is that such scaling dampens the tendency of a few very large districts to dominate the regression estimates.[19]

Different states might be subject to different shocks in the same year that affect education outcomes. This can be accounted for by including State $\times$ Year fixed-effects. However, this would still not account for the possibility that districts with higher economic development (such as cities and urban areas) might follow a different trajectory from districts in the same state with lower economic development. To account for this, we capture economic activity in a district using the share of population in urban areas. We interact urban population ratio quintile, measured in 2011, with the state $\times$ year fixed effects. We also include district fixed effects in all our regressions.

Since it is possible that CSR activities could have an effect on outcomes with a bit of a lag, we include lagged CSR expenditure as an additional explanatory variable in all regressions.[20] Lastly, all standard errors are clustered at the state level.

Table 3 shows our baseline regression results. The outcome variables are the total students enrolled, total number of schools, and total dumber of teachers in a district. Since both the LHS and RHS variables are scaled by a proxy for size of the district (number of schools in 2011-12), we can interpret the coefficients directly as the effect of one unit change in CSR spending (INR 1 million) on the outcome variable. We find that CSR expenditure is associated with economic as well as statistically significant increase in enrollment, number of schools and number of teachers employed. Specifically, INR 1 million spent in CSR translates into 49 additional students (column (1)), 0.15 additional schools (column (2)), and 4 additional teachers(column (3)). When we include the lagged effect from CSR spending,

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[19]In Table A3 we run our main regressions using non-scaled CSR and find similar results.

[20]In Table A2 we run our main regressions using additional lagged CSR and find similar results.

the cumulative effect of INR 1 million CSR spending would be 138 more students being enrolled, 0.25 additional schools, and 5.7 more teachers being added in the district. This implies that the marginal cost of keeping one student in school in one year is about INR 7250. This effect is significant and economically meaningful suggesting that CSR spending by companies does have real impact in the education sector.

While we do not have the precise estimate of the impact that spending of INR 1 million by the *government* would have had, we can rely on studies of government expenditure on primary education to try and benchmark the above numbers. For example, Bordoloi et al. (2020), a study by Accountability Initiative India, found that the median amount spent by the state government across eight states in India was INR 21,179 *per student*. This implies that INR 1 million spent by the state governments supports 47.21 students. This is comparable to our estimate based on the contemporaneous effect of CSR and smaller than the cumulative effect of CSR over two years. It is also worth pointing out that the calculations for the state government captures the *average* effect of spending INR 1 million. The *marginal* spending required by the state government to enrol *additional* students could be considerably higher, since the students that are already enrolled are likely to be the ones that are easier to attract into schools.

4.3   School Outcomes: Difference-in-Differences approach

Our results so far suggest an association between CSR spending and education outcomes at the district level. This can be best thought of a correlation. To strengthen our analysis and give it a causal interpretation we use a Difference-in-Differences approach.

Our identification strategy is motivated by two aspects of the CSR rules. As per the regulation, firms are required to contribute 2% of average profits towards CSR spending. This would suggest that profitable firms should have high CSR spending. Additionally, the regulation also encourages companies to give preference to the local area and areas where it operates for CSR activities. Thus, a district with more profitable firms is expected to receive higher CSR funding.

Using this idea, we create a dummy variable that takes a value 1 if the total profits of firms which are headquartered in a district are in the top 10% among all districts. Since the

required CSR spending is 2% of average profits over three years, we calculate the aggregated profits over three years window that is immediately before the starting of our sample period, from 2009 to 2011. We aggregate firms profits in a district and scale it by the number of schools in 2011-12. We then rank the scaled aggregated profits to identify the top 10% districts and generate *Top district* indicator.

We first check whether districts with more profitable firms indeed received more CSR funding. Columns (1) and (2) of Table 4 suggest that there is a strong statistical and economic association between top district indicator and CSR spending. Specifically, post regulation coming into effect in 2015 the top district × year dummy is significant. The regression specification excludes 2014 as it is the year immediately before the regulation came into effect. For the top districts in 2015, the changes in total CSR per school is INR 0.044 million higher than the changes in non-top districts, and they continued to increase till 2018. A similar trend is seen in CSR spending in elementary schools which is shown in column (2). In 2015 and 2016, a school in top districts received about INR 8,000 and INR 16,000 more CSR funding than a school in non-top districts. CSR spending on schools is stable from 2016 to 2018.

In columns (3)-(5), we present the results from Difference-in-Differences regressions. Our main explanatory variables are the interaction terms between top district indicator and year dummies. A relevant question here is whether *Top district* is correlated with school outcomes through other channels rather than CSR spending? One can argue that firms don't randomly choose their headquarters. The districts with profitable firms are likely to be on a different development trajectory from the districts with few profitable firms or no firms at all. School outcomes are likely to be correlated with economic development and therefore the exclusion restriction is not satisfied. We use the interaction terms to examine whether the timing of changes in outcomes is closely linked to the timing of the CSR activities. If the results are driven by different economic development trajectories or any other unobserved factors in top and non-top districts, we expect to observe a trend before the CSR rules came into force. However, under our hypothesis, we should expect to observe any improvement in education outcomes from the year when the CSR mandate came into effect, but not in the prior years.

Column(3) presents the effect of top district on enrollment scaled by the number of

schools. We observe that prior to 2015, the coefficients on top district × year dummies are not significant, which suggests top districts and non-top districts have a similar trend before 2015. The coefficients on the interaction terms start to rise exactly from when the CSR rules came into force. Column (3) shows the coefficient on the interaction term is 4.056 in 2017, which implies the changes in enrollment per school in top districts is 4.056 higher than the changes in enrollment per school in non-top districts. Based on the aggregated the CSR spending and improvement in enrollment in all four years after 2015, we estimate the cumulative effect of INR 1 million spent in CSR leads to 148 additional student-year enrollment. In other words, the marginal cost of keeping one student in school for one year is about INR 6,750. The economic magnitude is roughly in line with the estimation from Table 3.

However, CSR spending in non-education projects can potentially improve school outcomes as well. For example, a project that is aimed to reduce property, improve health, and create jobs can potentially lead to more students in schools. Using the CSR spending in all projects, we estimate the cumulative effect of INR 1 million spent in any CSR projects leads to 37 additional student-year enrollment. This is the lower bound impact estimation.

Taken together our results suggest that firm CSR spending has a causal impact on real outcomes like enrollment and number of teachers in elementary schools.

4.4 Impact of CSR spending on government and private schools

Our baseline results suggest that CSR investment has a positive impact on education related outcomes. However, it is also possible that the relation observed is due to some omitted variable. For example, suppose companies directed CSR expenditure at districts which are expected to do better economically. Since economic growth is likely associated with better education outcomes, we would see a positive association between CSR expenditure and education outcomes. Another possibility is that companies direct their education-related CSR spending in districts where the government is going to increase its spending. This would also have the effect of leading to a spurious relation between CSR and education outcomes. We conjecture, that if CSR spending is capturing the effect of government expenditure then we should the largest effect of CSR on government schools. To that end, we study the effect

of CSR on government and private schools separately.

There are three types of primary schools in India - a) run and fully funded by the government – government schools, b) run privately but receive significant financial support from the government – private aided schools, and c) run privately and receive no support from the government – private unaided schools. Though the latter two categories have the word 'private' in their names, private unaided and private aided schools differ in fundamental ways in their modes of operation. Private aided schools are virtually like government schools in the way they are governed. Although nominally run by their private management boards, they are heavily governed by the state (Kingdon, 2017). Private unaided schools, on the other hand, are much less constrained and can run independently.

When a new school is started by a company or any private party it is almost surely going to be an unaided private school. It take some time to go through the process of getting approved to become an aided private school. Moreover, not every private school can become an aided private school and certain strict criteria need to be met. Therefore if CSR by companies has an effect on education outcomes, we should expect most of it to show up in the subset of unaided private schools and not so much in the other two categories. On the other hand, if government spending leads to an improvement in education outcomes, we should see all of the effects in government-run and aided-private schools. Economic development of the region causing an improvement in education outcomes should affect all types of schools in the region.

Table 5 presents the panel regression results of CSR expenditure on different types of schools. We find that CSR has a positive and statically significant effect on enrollment only in unaided private schools. Column (2) of Table 5 shows that for INR1 million of CSR expenditure increases enrollment in unaided private schools by 81-170 students. Furthermore, we see a slightly negative effect, though not statistically significantly different from zero, on private-aided schools. A similar pattern is seen for number of teachers and well as number of schools. This supports the hypothesis that the relation between CSR and education outcomes in Table 3 are likely to be causal.

4.5 Impact of CSR spending on grade repetition

Our results suggest that mandatory CSR investment leads to positive increase in enrollment, number of schools and number of teachers. It is possible that the increased enrollment could reduce the focus on the quality of education. To that end, we next study the effect of CSR on the number of students who have to repeat a grade. We think of grade repetition as an indicator of success in educational outcomes.[21]

Table 6 presents these results. We do not find that CSR expenditure has any effect on the number of students, both boys and girls, that had to repeat a grade. These results are indicative of the fact that mandatory CSR investment is not negatively affecting the educational success of a school by shifting the goals away from academic achievement.

4.6 Impact of CSR spending on school infrastructure facilities

The directed CSR investment might have an effect on other school related outcomes. The DISE dataset provides in addition to enrollment, number of schools, and number of teachers, detailed information on school infrastructure facilities. We next examine the effect of CSR on other additional school level outcomes. We can only measure the CSR investments in schools as a whole and we don't know how the money is spent. For example, we don't know if the money is used for building a new school or adding a new toilet. Therefore, any effect documented here should be interpreted as in addition to the improvements reported in our main results of the same INR 1 million being spent.

Table 7 presents results on the effect of CSR on other school level outcomes. First we show that the increase is enrolment that we documented earlier is more or less evenly split between girls and boys (columns (1) and (2)). Provision toilets for girls and boys has been an issue for many schools in India (Adjukia, 2017). To that end, INR 1 million in CSR leads to provision of 1.5 new female and male toilets (Columns (3) and (4)). Further, we find that CSR expenditure has a positive effect in improving the number of schools with water facilities and boundary walls. We also find, that CSR investment has a significant effect on

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[21]DISE also reports the number of students who received distinction or who passed exams in class V or class VIII. But this information is missing for the earlier part of our sample period. The only measure of academic achievement that is available for all years in our sample period is the number of students who repeat a grade.

the number of computers and books provided (column (7) and column (8)). A million rupees spent in CSR provides, in addition to all of the effect documented earlier, 5 new computers and 520 new books across all the schools in a district. Our results, taken together, suggest that CSR spending by firms has a significant positive effect on school related outcomes in India.

In Table 8 we explore whether the patterns documented above between CSR spending and education related outcomes could arise from the omitted variable of economic development. If this were true, then we should observe that CSR spending is associated with improved economic development in a district. We find this not to be the case. When we replace education outcomes with nightlights, deposits, and bank credit in a district, we find negative associations. They suggest that firms might, on average, have a slight tendency to direct education-related CSR towards districts which are likely to do worse economically.

5   Robustness

5.1   Alternative specifications

In our baseline regression specification, we scale CSR by the number of schools measured in 2011-12. In Table A3 we verify our results using the unscaled CSR expenditure. Our results are qualitatively similar to our baseline results as shown in Table 3. Specifically, INR1 million spent in CSR leads to 42 new students, 0.13 new schools, and 4 new teachers.

6   Conclusion

We study whether the effect of CSR spending by firms in response to a regulation on real outcomes in the education sector. Our experiment is set in India, where the Companies Act of 2013 required firms to spend 2% of their profits on CSR. The law took the form of a comply-or-explain regulation, and firms that did not spend the mandated 2% of profits could get away by explaining their reasons for non-compliance. What was considered as an acceptable explanation was not specified and there were no instances of firms being punished for non-compliance during our sample period. Given the nature of the regulation, it would

not be surprising if firms decided to avoid the regulation or do CSR simply as a "window dressing" exercise. However, we find that firms did engage in CSR projects as laid out in the guidelines of the Companies Act. Further, we find that this directed philanthropy helped increase the number of schools, the number of teachers, and enrollment. INR 1 million of directed corporate philanthropy led to 49 new students, 0.125 new schools, and 2.1 new teachers. We also find that CSR investments led to significant improvement in other school-related outcomes in a district, such as provision of toilets, books, and computers. These findings suggest that corporate philanthropy, even when undertaken in response to a regulatory push, can indeed have the desired effect, especially in a resource constrained country like India. The success of the CSR regulation in India could potentially serve as a road map for many other developing countries that are trying to motivate the private sector to invest in sectors like education and health. These findings might also be of interest to non-government entities, such as association of ESG-focused institutional investors, who are interested in increasing the breadth of firms that engage in CSR activities.

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(a) **CSR spending trend in Prowess data**

This figure shows firm level CSR spending scaled by profits from 2010-2018. The sample consists of firms that are listed in NSE and meet the CSR spending rules. The CSR spending rules came into effect in 2015 and in the period before 2015 the rules are applied retroactively. CSR is defined as the sum of donations, social community, and environment related expenditures. Profits are average profits measured three years prior to CSR spending.
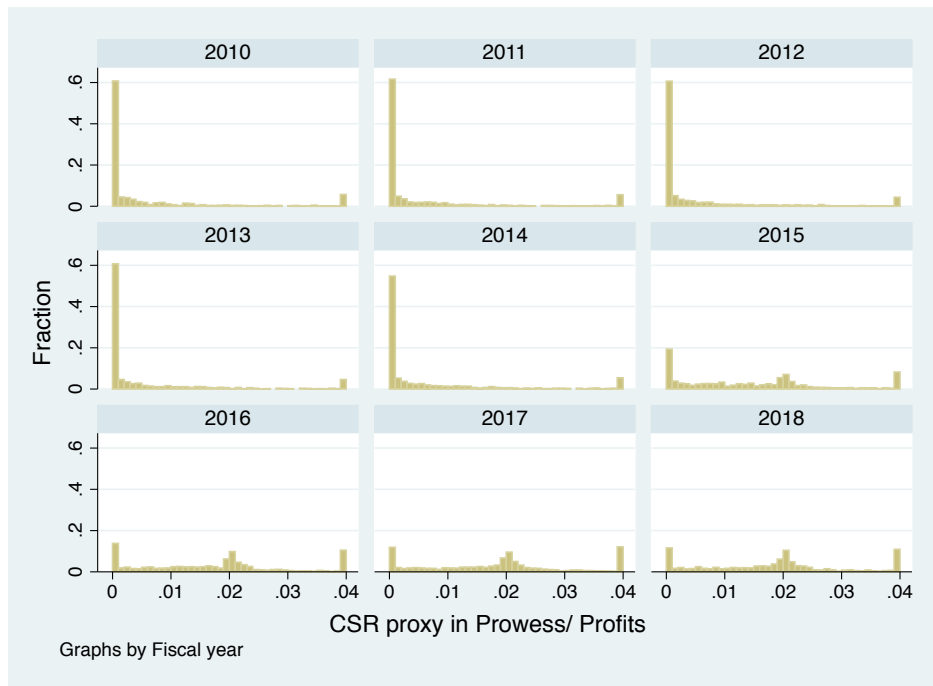
(b) **CSR spending trend in PRIME data**

This figure shows firm level CSR spending scaled by profits from 2015-2019. The definition of CSR spending in PRIME matches that of the Companies Act of 2013. The sample consists of firms that are listed in NSE and meet the CSR spending rules. Profits are average profits measured three years prior to CSR spending.
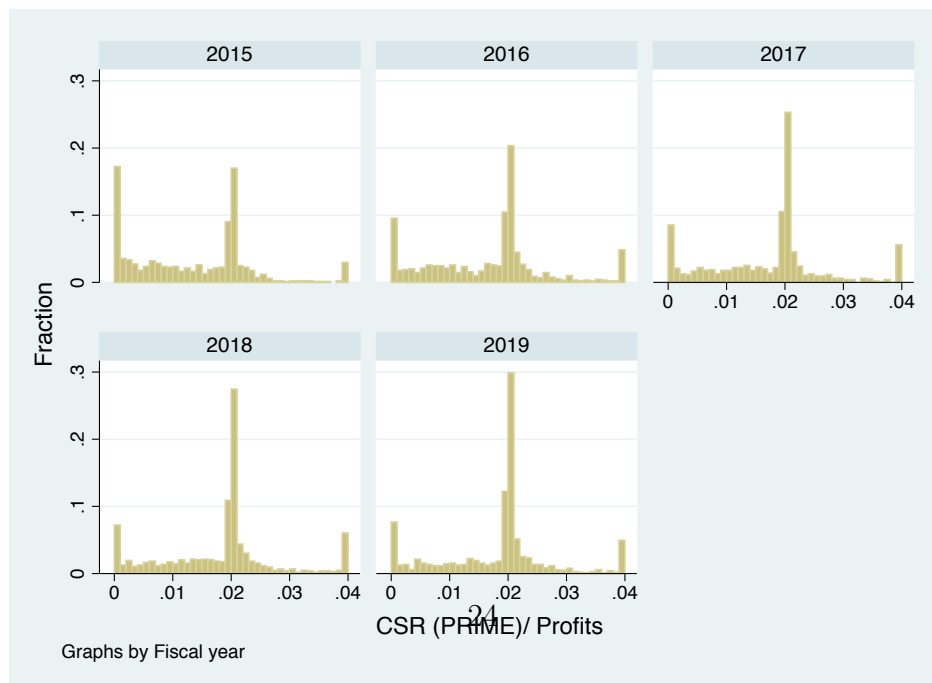
(c) **Firm compliance with Companies Act of 2013 over time**
This figure shows the percentage of firms that comply with the CSR rules over our sample period
2015-2019. The sample includes all NSE firms that meet the CSR spending rules. Actual CSR is
the CSR spending in all projects by a firm in a year. Prescribed CSR is 2% of the average profits
over the last three years.
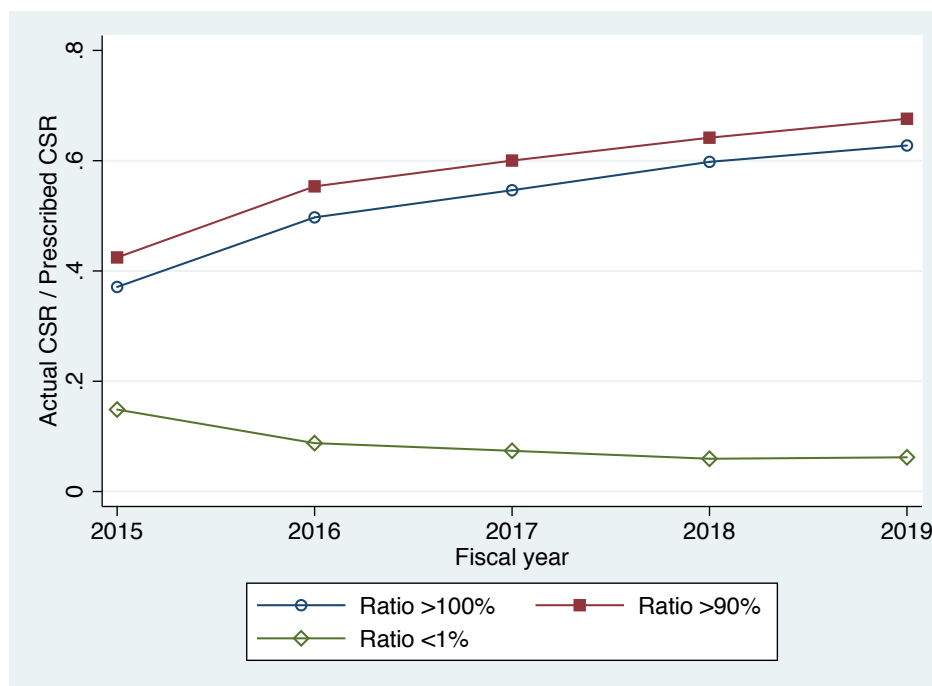
(d) **Aggregated CSR over time**
This figure presents the aggregated CSR spending in PRIME, Prowess data and the Indian Ministry
Of Corporate Affairs (MCA). PRIME data consists of all NSE firms. Prowess data consists of
both public and private firms in India. The numbers reported by MCA are for both public and
private firms. The definitions of CSR used by PRIME and MCA match the definition in the
Companies Act of 2013. CSR spending in Prowess is the sum of sum of donations, social community,
and environment related expenditures and does not meet the definition of CSR spending in the
Companies Act of 2013.

Figure 2: **CSR spending in High/Low spenders**
This figure shows CSR spending for high and low spenders. CSR spending is scaled by profits. The sample consists of firms listed in NSE. CSR is the sum of donations, social community, and environment related expenditures. Profits are averag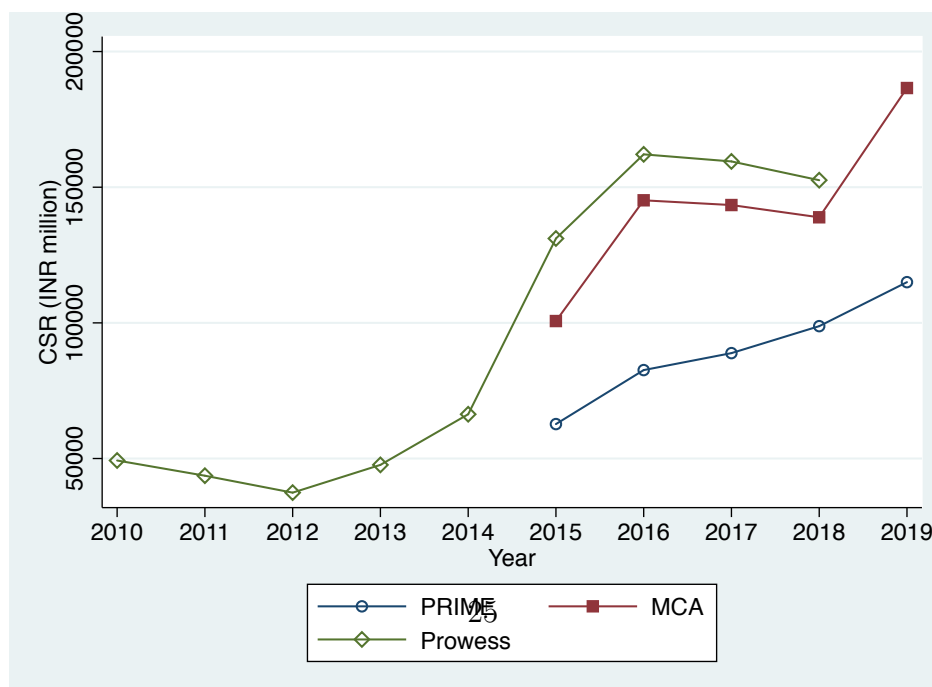e profits measured three years prior to CSR spending. The high CSR spender group consists of firms that spent over 2% of their profits; medium CSR spenders are firms where the CSR/profits ratio is between 0.01% and 2% and low CSR spenders are firms that spent less than 0.01% of their profits on CSR activities. In Figure (a) and (b) the high and low spending groups are based on CSR measured in 2011-2012 and 2012-2013 respectively

(a)

(b)

26
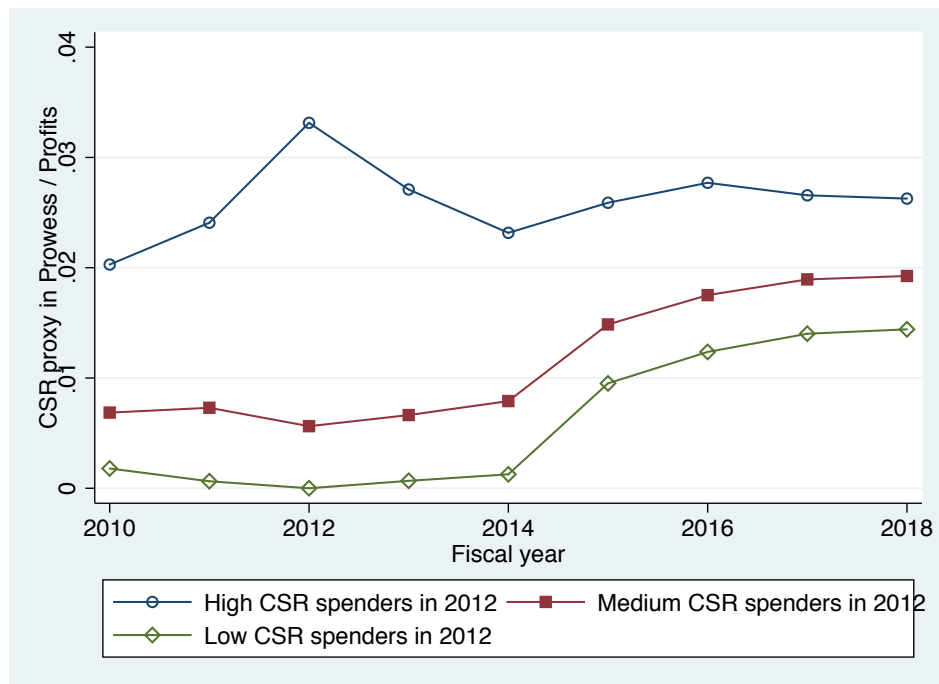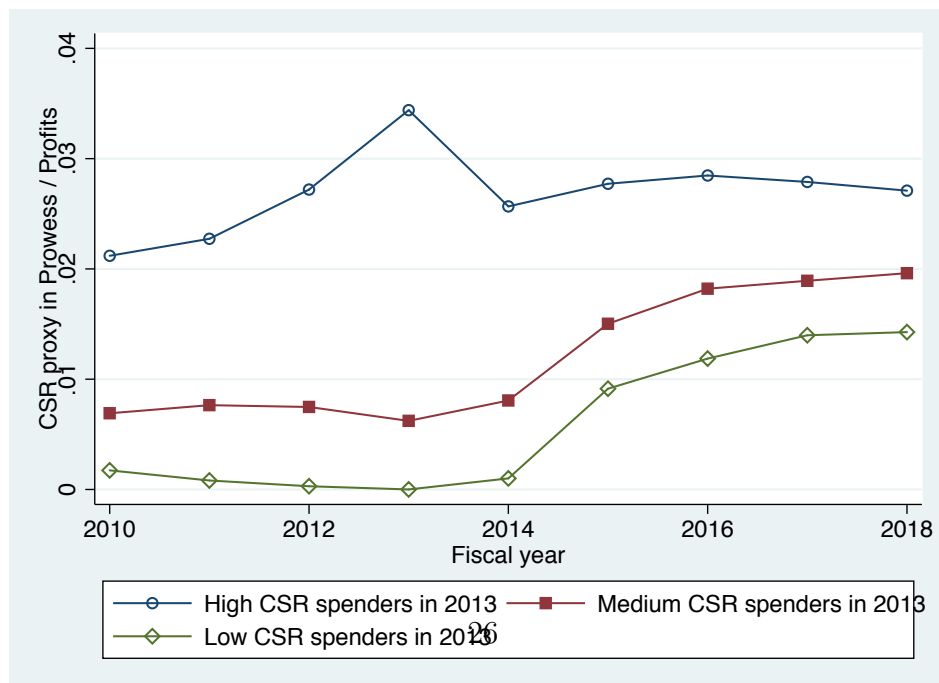
Figure 3: **Education outcomes in districts with most profitable firms**
This figure plots estimates from the difference-in-differences regressions in Table 4. Panel A plots the coefficients in column (1); Panel B plots the coefficients in column (2); Panel C plots the coefficients in columns (3)-(5). It illustrates the education outcomes in top districts across years. Top districts are districts where the most profitable firms' headquarters are located. We use the aggregated profits in a district from 2009-2011 to identify the top districts.

Panel A
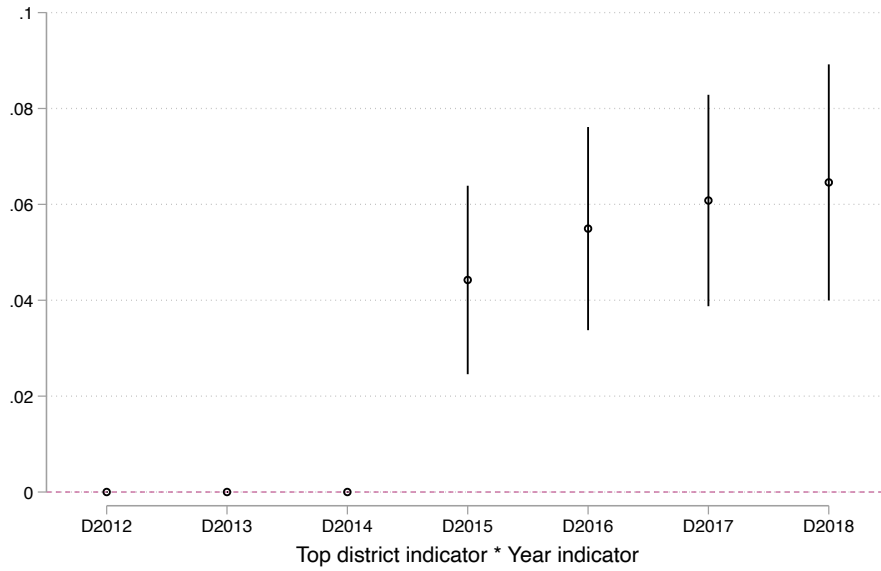
Panel B
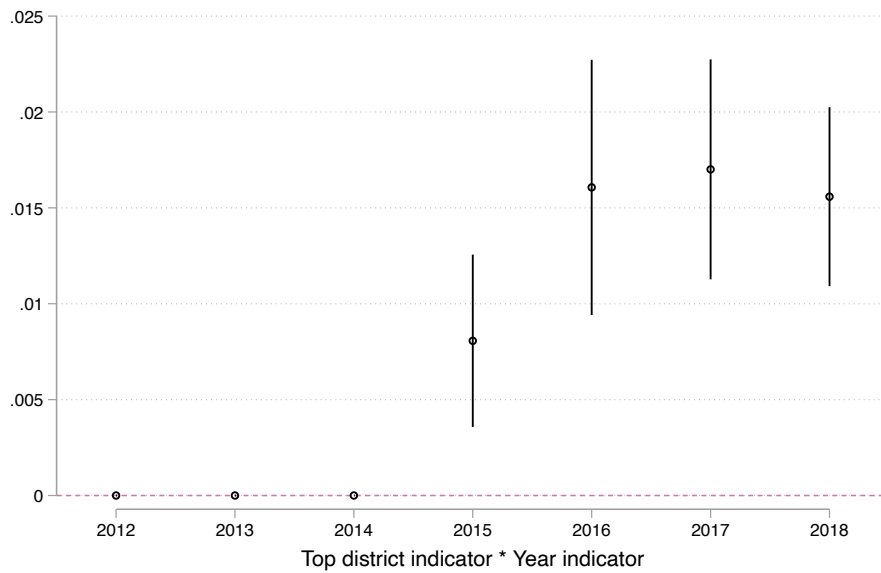
Panel C
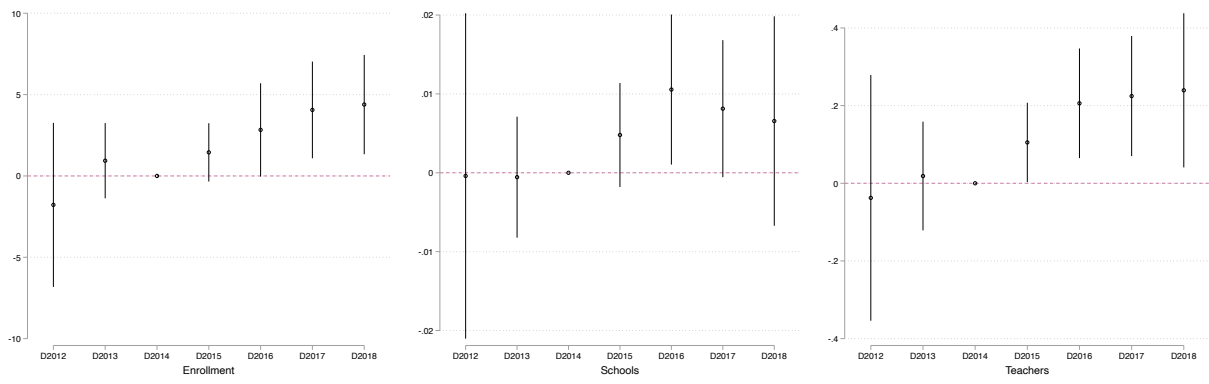
Table 1: **Summary Statistics**

This table presents the actual and prescribed CSR for all NSE firms. The sample includes NSE firms, including these that do not meet the CSR spending criteria. Actual CSR is calculated as the CSR spending for all projects by a firm in a year. Prescribed CSR is 2% of the average profits over the last three years.

| Year | Sum (INR million) | | Mean | | | |
| | Actual CSR | Prescribed CSR | Actual CSR / Prescribed CSR | | | |
			<=0.01	0.01-0.9	0.9-1.1	>1.1
2015	62,692	82,421	15%	43%	31%	12%
2016	82,590	90,045	9%	36%	38%	18%
2017	88,852	95,266	7%	33%	43%	17%
2018	98,783	101,267	6%	30%	44%	20%
2019	115,001	116,346	6%	26%	49%	19%

Summary Statistics

Panel B: The table presents the summary statistics for our main variables. *Total CSR* is the total amount of CSR spending in all sectors (INR '000) and *Edu CSR* is the total amount of CSR spending in elementary schools (INR '000). *Enrollment* is the total number of enrollment in elementary schools in a district. *Schools* is the number of elementary schools in a district. *Teachers* is the number of teachers in elementary schools in a district. The scaled CSR and education outcome variables are scaled by the number of schools in 2011-12. *Urban ratio* is the ratio of urban population to total population in a district. *Nightlights* is measured as the average monthly nightlights in a district divided by the area of the district. *Deposit* is the total amount of deposits in scheduled commercial banks in a district. *Credit* is the bank credit of scheduled commercial banks in a district.

Variable	N	Mean	St.	Min	p25	p50	p75	Max
Total CSR	3,905	30,632.32	88,732.73	0	0	248.63	14,431.16	620,216.69
Edu CSR	3,905	9,350.82	28,908.99	0	0	0	3,244.78	196,585.81
Enrollment	3,905	309,895.32	250,391.68	6,795.00	133,011.00	248,786.00	421,160.00	1,306,339.00
Schools	3,905	2,308.25	1,458.08	72.00	1,208.00	2,113.00	3,091.00	6,800.00
Teachers	3,905	12,406.05	8,621.82	714.00	6,502.00	10,390.00	16,406.00	47,174.00
Total CSR (scaled)	3,905	13.38	40.44	0	0	0.18	7.65	300.47
Edu CSR (scaled)	3,905	3.85	11.55	0	0	0	1.55	79.63
Enrollment (scaled)	3,905	138.73	73.71	37.23	87.06	123.20	167.28	390.73
Schools (scaled)	3,905	1.03	0.08	0.81	0.99	1.02	1.06	1.31
Teachers (scaled)	3,905	6.10	3.02	2.52	4.11	5.25	7.08	18.95
Urban ratio	3,905	0.25	0.19	0	0.11	0.19	0.32	1.00
Nightlights	3,907	4.41	17.15	0	0.44	1.13	3.41	250.86
Deposit	3,917	604,321.60	3,131,826.08	973.99	75,596.43	164,490.43	377,580.74	62,585,725.09
Credit	3,917	453,972.14	3,299,417.20	185.46	32,323.03	80,504.36	212,328.11	81,372,319.64

Table 2: **Regional CSR spending**

This table shows CSR spending broken down by regional characteristics. Edu CSR is the total amount of CSR spending on elementary schools in a district in a year. Edu CSR (scaled) is total CSR spending on elementary schools divided by the number of schools in 2011-12. Panels A-F show *Edu CSR* and *Edu CSR (scaled)* by economic development, measured by urban population ratio, nightlights, deposit, bank credit, literacy, and % of villages that have roads quintiles respectively. All variables are defined in Appendix A.

	Quintile				
(INR '000)	1	2	3	4	5
Panel A: Urban ratio					
Edu CSR	2,044.73	4,773.57	6,888.58	11,219.95	22,676.64
Edu CSR (scaled)	0.86	1.91	2.49	4.71	9.64
Panel B: Nightlights					
Edu CSR	1,510.82	5,080.94	5,553.80	10,158.61	24,825.00
Edu CSR (scaled)	0.97	2.17	1.86	3.81	10.59
Panel C: Deposit					
Edu CSR	551.43	2,175.20	5,527.26	10,357.17	29,017.32
Edu CSR (scaled)	0.68	1.36	2.73	4.21	10.58
Panel D: Credit					
Edu CSR	655.14	3,108.39	5,271.09	9,608.57	28,879.52
Edu CSR (scaled)	0.76	1.80	2.43	3.89	10.64
Panel E: Literacy					
Edu CSR	655.14	3,108.39	5,271.09	9,608.57	28,879.52
Edu CSR (scaled)	1.51	2.09	3.74	5.46	6.64
Panel F: % of villages that have roads					
Edu CSR	7,160.59	5,461.69	5,756.72	12,603.44	10,778.17
Edu CSR (scaled)	2.30	2.02	2.02	5.24	6.21

Table 3: **Impact of CSR spending on education outcomes**
This table reports ordinary least squares estimates of CSR spending regressed on education related outcomes. The sample consists of district-year observations from 2011-12 to 2017-18. *Edu CSR (scaled)* is the district-wise aggregated CSR expenditure in elementary school related projects (INR. million) scaled by the number of schools in 2011-12. All regressions include state × year × urban ratio (quintile) fixed effects and district fixed effects. Urban ratio is the district-wise ratio of urban population to total population, measured in 2011. t-statistics are calculated with standard errors clustered at the state level. $***$, $**$, and $*$ denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Dependent var	Enrollment (scaled)	Schools (scaled)	Teachers (scaled)
	(1)	(2)	(3)
Edu CSR (scaled)	49.017**	0.148**	4.108***
	(2.537)	(2.218)	(3.972)
Edu CSR (scaled, lag)	89.166**	0.102	1.587
	(2.197)	(0.759)	(0.787)
Observations	3,705	3,705	3,705
R-squared	0.993	0.911	0.991
State*Year*Urban5 FE	Yes	Yes	Yes
District FE	Yes	Yes	Yes
Cluster	State	State	State

Table 4: **Education outcomes in districts with profitable firms**
This table reports the ordinary least squares estimates of CSR spending and school outcomes
regressed on interaction terms between *Top district* and year indicators. The sample consists
of district-year observations from 2011-12 to 2017-18. *Top district* is a time-invariant indica-
tor that equals one if the scaled total profits of firms of which headquarters are in the district
are in the top 10% among all districts. The scaled total profits are aggregated profits from
2009 to 2011 scaled by the number of schools in 2011-12. *2012*, *2013*, *2015*, *2016*, *2017*, and
2018 are year indicators. The omitted group is the interaction term between *Top district*
and the indicator, *2014*. 2014 is the year immediately before the CSR rules came into force.
Total CSR is aggregated CSR expenditure in all sectors in a district (INR million) scaled
by the number of schools in 2011-12. *Edu CSR (scaled)* is the district-wise aggregated CSR
expenditure in elementary school related projects (INR. million) scaled by the number of
schools in 2011-12. All education outcomes are scaled by the number of schools in 2011-12.
All regressions include state × year × urban ratio (quintile) fixed effects and district fixed
effects. Urban ratio is the district-wise ratio of urban population to total population, mea-
sured in 2011. t-statistics are calculated with standard errors clustered at the state level.
∗ ∗ ∗, ∗∗, and ∗ denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Dependent var	Total CSR (scaled) (1)	Edu CSR (scaled) (2)	Enrollment (scaled) (3)	Schools (scaled) (4)	Teachers (scaled) (5)
Top district * 2012			-1.781	-0.000	-0.038
			(0.554)	(0.974)	(0.842)
Top district * 2013			0.937	-0.001	0.019
			(0.497)	(0.903)	(0.822)
Top district * 2015	0.044***	0.008***	1.449	0.005	0.105*
	(0.001)	(0.005)	(0.180)	(0.227)	(0.090)
Top district * 2016	0.055***	0.016***	2.830	0.011*	0.206**
	(0.000)	(0.000)	(0.104)	(0.069)	(0.019)
Top district * 2017	0.061***	0.017***	4.056**	0.008	0.225**
	(0.000)	(0.000)	(0.028)	(0.123)	(0.020)
Top district * 2018	0.065***	0.016***	4.388**	0.007	0.239**
	(0.000)	(0.000)	(0.021)	(0.408)	(0.050)
Observations	3,705	3,705	3,705	3,705	3,705
R-squared	0.766	0.712	0.993	0.911	0.991
State*Year*Urban5	Yes	Yes	Yes	Yes	Yes
District FE	Yes	Yes	Yes	Yes	Yes
Cluster	state	state	state	state	state

Table 5: **Impact of CSR spending on government and private schools**

This table reports estimates of ordinary least squares models of CSR spending regressed on education outcomes in government and private schools separately. The sample consists of district-year observations from 2011-12 to 2017-18. *Edu CSR (scaled)* is the district-wise aggregated CSR expenditure in elementary school related projects (INR. million) scaled by the number of schools in 2011-12. All education outcomes are scaled by the number of schools in 2011-12. All regressions include state × year × urban ratio (quintile) fixed effects and district fixed effects. Urban ratio is the district-wise ratio of urban population to total population, measured in 2011. t-statistics are calculated with standard errors clustered at the state level. * * *, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable	Enrollment (scaled)			Schools (scaled)			Teachers (scaled)		
	Government	Unaided pvt	Aided pvt	Government	Unaided pvt	Aided pvt	Government	Unaided pvt	Aided pvt
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Edu CSR (scaled)	26.714	66.642*	-21.360	0.040	0.149	-0.050	1.263	3.392***	-0.378
	(1.054)	(1.806)	(-1.564)	(0.816)	(1.564)	(-1.251)	(1.010)	(4.133)	(-1.128)
Edu CSR (scaled, lag)	12.355	85.024**	-9.772	-0.011	0.166	-0.050	-0.437	2.181	-0.766*
	(1.516)	(2.071)	(-1.071)	(-0.189)	(1.139)	(-1.216)	(-0.725)	(1.693)	(-1.781)
Observations	3,705	3,705	3,705	3,705	3,705	3,705	3,705	3,705	3,705
R-squared	0.995	0.975	0.992	0.987	0.967	0.994	0.980	0.978	0.997
State*Year*Urban5 FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster	State	State	State	State	State	State	State	State	State

Table 6: **Impact of CSR spending on grade repetition**
This table reports ordinary least squares estimates of CSR spending regressed on the number of students repeating a grade. The sample consists of district-year observations from 2011-12 to 2017-18. *Edu CSR (scaled)* is the district-wise aggregated CSR expenditure in elementary school related projects (INR. million) scaled by the number of schools in 2011-12. All regressions include state $\times$ year $\times$ urban ratio (quintile) fixed effects and district fixed effects. Urban ratio is the district-wise ratio of urban population to total population, measured in 2011. t-statistics are calculated with standard errors clustered at the state level. $* * *$, $* *$, and $*$ denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable	Repeaters (scaled)	Repeaters (scaled, girl)	Repeaters (scaled, boy)
	(1)	(2)	(3)
Edu CSR (scaled)	-0.338	-0.120	-0.202
	(-0.140)	(-0.108)	(-0.153)
Edu CSR (scaled, lag)	-0.344	-0.577	0.110
	(-0.155)	(-0.493)	(0.095)
Observations	3,705	3,705	3,705
R-squared	0.686	0.675	0.694
State*Year*Urban5 FE	Yes	Yes	Yes
District FE	Yes	Yes	Yes
Cluster	state	state	state

Table 7: **Impact of CSR spending on school infrastructure and other outcomes**

This table reports ordinary least squares estimates of CSR spending regressed on provision of school supplies and school infrastructure. The sample consists of district-year observations from 2011-12 to 2017-18. *Edu CSR (scaled)* is the district-wise aggregated CSR expenditure in elementary school related projects (INR. million) scaled by the number of schools in 2011-12. All regressions include state × year × urban ratio (quintile) fixed effects and district fixed effects. Urban ratio is the district-wise ratio of urban population to total population, measured in 2011. t-statistics are calculated with standard errors clustered at the state level. ∗ ∗ ∗, ∗∗, and ∗ denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable	Enrollment (female, scaled)	Enrollment (male, scaled)	Toilets (female, scaled)	Toilets (male,scaled)	Schools with boundary walls (scaled)	Schools with water (scaled)	Computers (scaled)	Books (scaled)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Edu CSR (scaled)	22.932***	26.232**	1.872***	1.935***	0.135	0.091	4.591***	423.774***
	(2.777)	(2.305)	(2.920)	(3.015)	(1.393)	(1.290)	(3.376)	(2.833)
Edu CSR (scaled, lag)	44.338**	47.266**	1.560	1.793*	0.386**	0.109	2.238	599.842**
	(2.323)	(2.157)	(1.541)	(2.019)	(2.625)	(0.728)	(1.074)	(2.719)
Observations	3,705	3,705	3,705	3,705	3,705	3,705	3,705	3,705
R-squared	0.993	0.993	0.989	0.982	0.984	0.904	0.993	0.996
State*Year*Urban5 FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster	state	state	state	state	state	state	state	state

Table 8: **CSR spending and economic development**
This table reports ordinary least squares models estimates of CSR spending regressed on nightlights, deposit and credit. The sample consists of district-year observations from 2011-12 to 2017-18. *Edu CSR (scaled)* is the district-wise aggregated CSR expenditure in elementary school related projects (INR. million) scaled by the number of schools in 2011-12. *Nightlights* is measured as the average monthly nightlights in a district divided by the area of the district. *Deposit* is the total amount of deposits in scheduled commercial banks in a district. *Credit* is the bank credit of scheduled commercial banks in a district. *Nightlights*, *Deposit* and *Credit* are all log-transformed. All regressions include state × year × urban ratio (quintile) fixed effects and district fixed effects. Urban ratio is the district-wise ratio of urban population to total population, measured in 2011. t-statistics are calculated with standard errors clustered at the state level. $***$, $**$, and $*$ denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Dependent var	Nightlights (1)	Deposit (2)	Credit (3)
Edu CSR (scaled)	-1.471***	-0.754*	-1.095***
	(-2.899)	(-2.013)	(-4.071)
Edu CSR (scaled, lag)	-2.189***	-1.044**	-0.783**
	(-3.322)	(-2.138)	(-2.233)
Observations	3,664	3,689	3,689
R-squared	0.990	0.998	0.998
State*Year*Urban5 FE	Yes	Yes	Yes
District FE	Yes	Yes	Yes
Cluster	state	state	state

Appendix A: Variable Definition

This table presents all variables used in our analysis.

Variable	Definition	Source
CSR		
Total CSR	The amount of CSR spent in all projects in a district-year (INR)	PRIME
Total CSR (scaled)	The amount of CSR spent in all projects in a district-year (INR) scaled by the number of schools in 2011-12	PRIME
Edu CSR	The amount of CSR spent in elementary school related projects in a district-year (INR)	PRIME
Edu CSR (scaled)	The amount of CSR spent in elementary school related projects in a district-year (INR) divided by the number of schools in 2011-12 (INR)	PRIME
Education		
Enrolment	Total enrolment in a district-year	DISE
Enrolment (scaled)	Total enrolment in a district-year divided by the number of schools in 2011-12	DISE
Enrolment (female, scaled)	Total girl enrolment in a district-year divided by the number of schools in 2011-12	DISE
Enrolment (male, scaled)	Total boy enrolment in a district-year divided by the number of schools in 2011-12	DISE
Enrolment (govt, scaled)	Total enrolment in government schools divided by the number of schools in 2011-12	DISE
Enrolment (prvt, scaled)	Total enrolment in private schools divided by the number of schools in 2011-12	DISE
Enrolment (unaided prvt,scaled)	Total enrolment in unaided private schools divided by the number of schools in 2011-12	DISE
Enrolment (aided prvt, scaled)	Total enrolment in aided private schools divided by the number of schools in 2011-12	DISE
Schools	The no. of schools in a district-year	DISE
Schools (scaled)	The no. of schools in a district-year divided by the number of schools in 2011-12	DISE
Schools (govt, scaled)	The no. of government schools divided by the number of schools in 2011-12	DISE
Schools (prvt, scaled)	The no. of private schools divided by the number of schools in 2011-12	DISE
Schools (unaided prvt, scaled)	The no. of unaided private schools divided by the number of schools in 2011-12	DISE
Schools (aided prvt, scaled)	The no. of aided private schools divided by the number of schools in 2011-12	DISE
Teachers	The no. of teachers in a district-year	DISE
Teachers (scaled)	The no. of teachers divided by the number of schools in 2011-12	DISE
Teachers (female, scaled)	The no. of female teachers divided by the number of schools in 2011-12	DISE
Teachers (male, scaled)	The no. of male teachers divided by the number of schools in 2011-12	DISE
Teachers (govt, scaled)	The no. of teachers in government schools divided by the number of schools in 2011-12	DISE
Teachers (prvt, scaled)	The no. of teachers in private schools divided by the number of schools in 2011-12	DISE
Teachers (unaided prvt, scaled)	The no. of teachers in unaided private schools divided by the number of schools in 2011-12	DISE
Teachers (aided prvt, scaled)	The no. of teachers in aided private schools divided by the number of schools in 2011-12	DISE
Repeaters (scaled)	The no. of failed students divided by the number of schools in 2011-12	DISE
Repeaters (female, scaled)	The no.of failed girls divided by the number of schools in 2011-12	DISE
Repeaters (male, scaled)	The no .of failed boys divided by the number of schools in 2011-12	DISE
Schools with boundary walls (scaled)	The no. of schools that have boundary walls divided by the no. of school in 2011-12	DISE
Schools with water (scaled)	The no. of schools that access water divided by the number of schools in 2011-12	DISE
Female toilets (scaled)	The no. of female toilets divided by the number of schools in 2011-12	DISE
Male toilets (scaled)	The no. of male toilets divided by the number of schools in 2011-12	DISE
Computers (scaled)	The no. of computers divided by the number of schools in 2011-12	DISE
Books (scaled)	The no. of books divided by the number of schools in 2011-12	DISE
Other		
Nightlights	The average of monthly nightlights in a district divided by the area of the district. Nightlights quintiles are defined using nightlights in 2011-12.	VIIRS
Population	Total population in a district	Census of India 2011
Urban ratio	The ratio of population in urban areas to total population in a district	Census of India 2011
Credit	Bank credit of scheduled commercial banks in a district	Reserve Bank of India
Deposit	The total amount of deposits in scheduled commercial banks in a district	Reserve Bank of India

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Appendix B: Figures

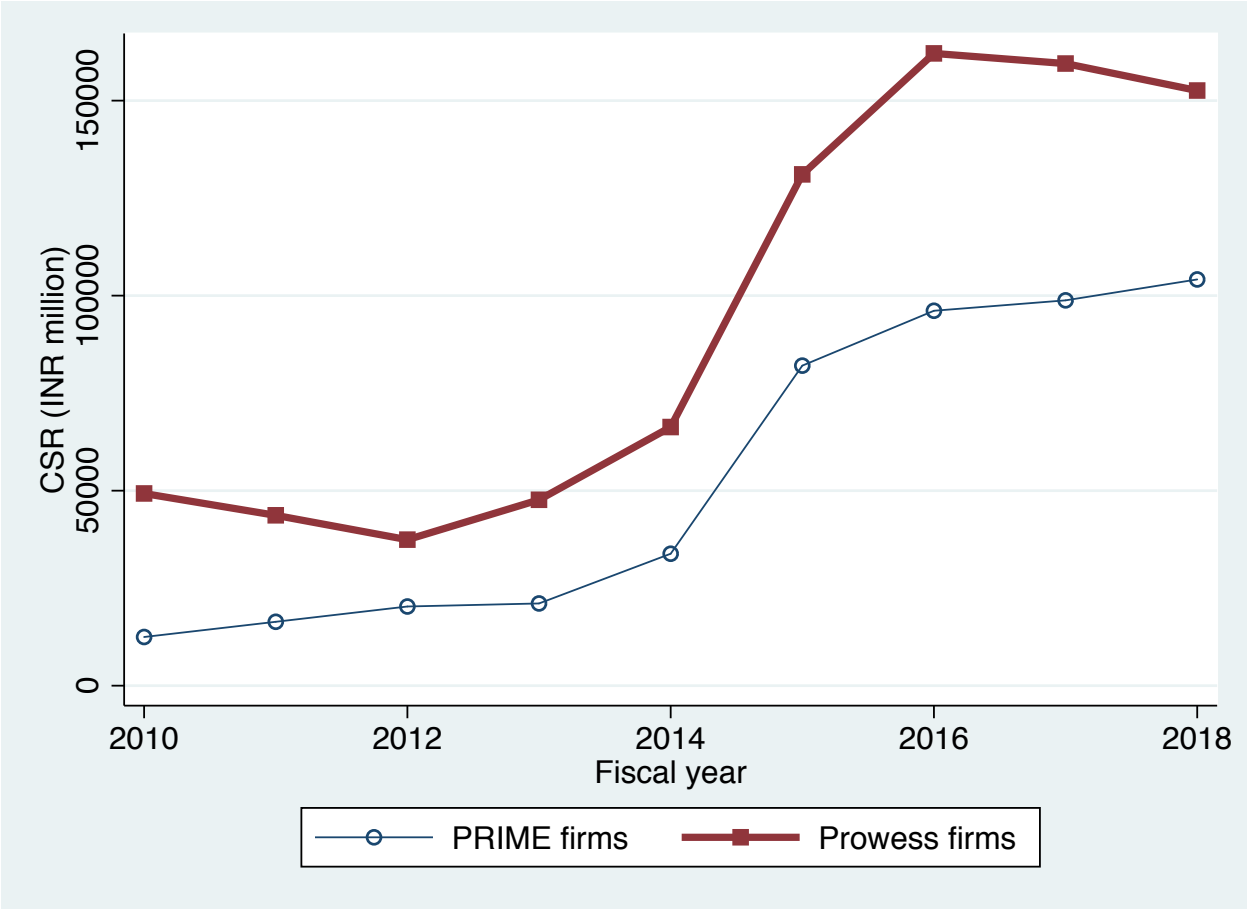Figure A1: CSR spending in the PROWESS and PRIME datasets

Figure A2: Sample
Our final sample is created from a merge between PRIME project data for which we have district location information. After accounting for district changes, missing locations on projects and some projects being identified as All India projects. The final sample captures 53% of total CSR spent.
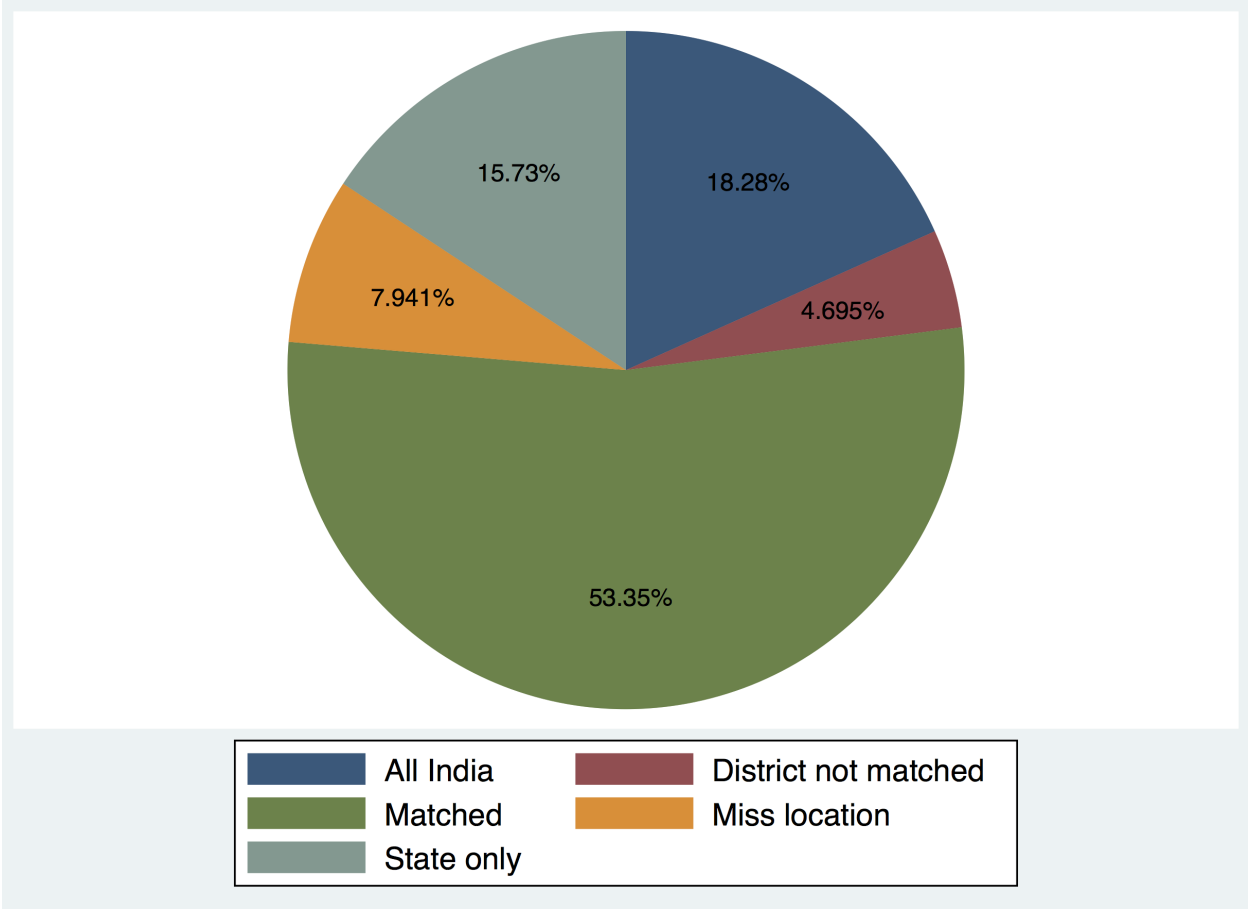
Figure A3: **Distribution of CSR spending, nightlight and number of schools across India**

This figure shows the choropleth maps of district CSR spending, nightlight, and the number of schools. The sample only includes CSR spending on education projects by NSE firms. Total CSR is total CSR spending in all education projects in a district. CSR per school is the total CSR divided by the number of schools in 2011-12. Nightlight is the sum of nightlight divided by the area. Number of schools (2012) is the number of schools in a district in 2011-12.
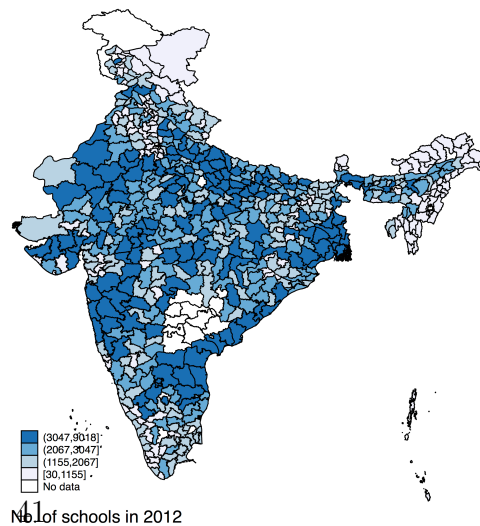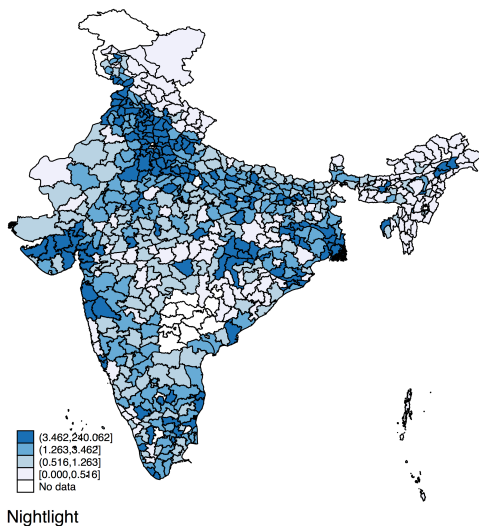
(a) Total CSR

(b) CSR per school
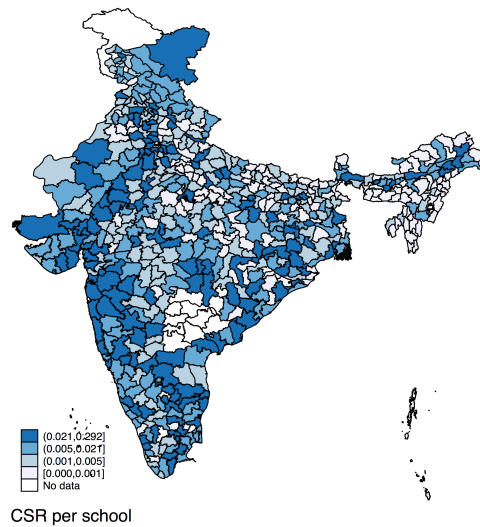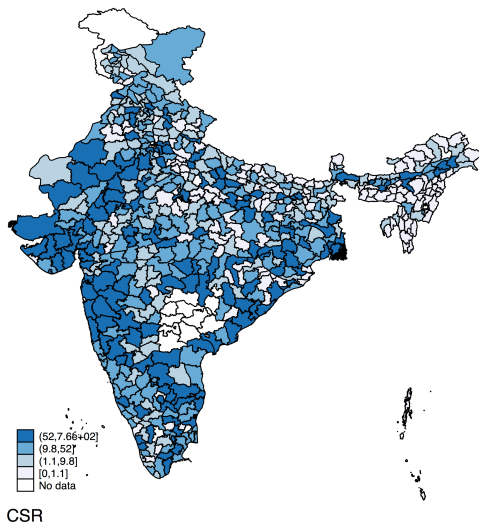
(c) Nightlight

(d) No. of schools (2012)

Appendix C: Tables

Table A1: **Sectoral CSR spending**

This table shows CSR spending across sectors. The table reports CSR sector spending for all projects as well as those that have district information. Sectors are defined in Schedule VII in Companies Act of 2013. The sample includes CSR projects by all NSE firms. CSR is the total amount of CSR spending in a sector. The category "Education" includes projects for any educational projects rather than only for primary and upper primary schools. The category "Others" includes projects that have missing sector information or are in a sector that are not included in Sectors I-XI.

Item	Sector	CSR (INR, million)		No. of projects	
		All	With districts	All	With districts
I	Health and sanitation	161,778	84,156	11,572	8,722
II	Education	191,545	104,878	14,288	10,743
III	Gender equality	31,318	8,550	2,164	1,522
IV	Environment	69,565	22,578	4,095	2,883
V	Heritage art and culture	28,142	7,961	1,224	809
VI	Benefit of armed forces veterans and their dependents	17,929	1,669	426	187
VII	Sports	25,149	5,854	1,288	844
VIII	Prime minister's national relief fund	23,039	2,111	905	301
IX	Technology incubators	16,460	1,350	301	134
X	Rural development	75,773	25,167	2,799	2,008
XI	Slum area development	16,686	1,501	296	127
	Other	19,434	4,692	4,391	961
Total[22]		676,819	270,467	43,749	29,241
% Edu		28%	39%	33%	37%

Table A2: **Robustness: Additional lagged CSR**

This table reports ordinary least squares models estimates of CSR spending regressed on education related outcomes. The sample consists of district-year observations from 2011-12 to 2017-18. *Edu CSR (scaled)* is the district-wise aggregated CSR expenditure in elementary school related projects (INR. million) scaled by the number of schools in 2011-12. All regressions include state $\times$ year $\times$ urban ratio (quintile) fixed effects and district fixed effects. Urban ratio is the district-wise ratio of urban population to total population, measured in 2011. t-statistics are calculated with standard errors clustered at the state level. $***$, $**$, and $*$ denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Dependent var	Enrolment (1)	Schools (2)	Teachers (3)
Edu CSR (scaled)	46.146**	0.145**	4.054***
	(2.406)	(2.227)	(4.009)
Edu CSR (scaled, lag 1)	64.584**	0.081	1.122
	(2.163)	(0.785)	(0.696)
Edu CSR (scaled, lag 2)	108.125**	0.095	2.047
	(2.044)	(0.591)	(0.894)
Observations	3,705	3,705	3,705
R-squared	0.994	0.911	0.991
State * Urban5 * Year	Yes	Yes	Yes
District	Yes	Yes	Yes
Cluster	State	State	State

Table A3: **Robustness: Alternative regression specification**
This table reports linear probability model estimates of CSR spending regressed on education outcomes. The sample consists of district-year observations from 2011-12 to 2017-18. *Edu CSR* is the total amount of CSR on elementary education related projects in a district. All regressions include state × year × urban ratio (quintile) fixed effects and district fixed effects. Urban ratio is the district-wise ratio of urban population to total population, measured in 2011. t-statistics are calculated with standard errors clustered at the state level. ∗∗∗, ∗∗, and ∗ denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable	Enrolment	Schools	Teachers
	(1)	(2)	(3)
Edu CSR	41.81**	0.125**	4.492***
	(2.285)	(2.396)	(3.729)
Edu CSR (lag)	73.54**	0.0831	1.443
	(2.438)	(0.788)	(0.868)
Observations	3,705	3,705	3,705
R-squared	0.996	0.998	0.993
State*Year*Urban5	Yes	Yes	Yes
District	Yes	Yes	Yes
Cluster	State	State	State

Table A4: **Robustness: Changes in education outcomes**
This table reports ordinary least squares estimates of CSR spending regressed on education outcomes. The sample consists of district-year observations from 2011-12 to 2017-18. *Edu CSR (scaled)* is the district-wise aggregated CSR expenditure in elementary school related projects (INR. million) scaled by the number of schools in 2011-12. The dependent variables are changes in education outcomes. All regressions include state $\times$ year $\times$ urban ratio (quintile) fixed effects. Urban ratio is the district-wise ratio of urban population to total population, measured in 2011. t-statistics are calculated with standard errors clustered at the state level. $***$, $**$, and $*$ denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Dependent var	ΔEnrolment (1)	ΔSchools (2)	ΔTeachers (3)
Edu CSR (scaled)	44.531**	0.078**	1.903**
	(2.405)	(2.086)	(2.270)
Edu CSR (scaled, lag)	22.274	0.020	0.138
	(1.103)	(0.217)	(0.127)
Observations	3,390	3,390	3,390
R-squared	0.603	0.569	0.688
State*Year*Urban5	Yes	Yes	Yes
Cluster	state	state	state