Affirmative action and private education expenditure by disadvantaged groups: evidence from India*

Athira Vinod†
University of Nottingham

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Abstract

Under the Right to Education Act (2009), the Indian government mandated private schools to reserve 25% of primary school places for socioeconomically disadvantaged children. This study examines the policy's spillover effect on private schooling costs. Using household survey data and a difference-in-differences approach, it compares private school fees for disadvantaged children across two age cohorts and survey rounds. Findings show fees decreased by ₹223–₹844 (0.05–0.25 SD) post-policy. A 5% enrolment increase led to a fee reduction of ₹240–₹470 (0.05–0.14 SD). The effects are driven by an increased supply of low-fee private schools facilitating cheaper private education for disadvantaged children.

Keywords: Affirmative action, Private education, Disadvantaged groups, School fees

JEL Classification: I21, I22, I24, I28

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†Corresponding author. Present address: National Council of Applied Economic Research (NCAER), New Delhi, India. Email: avinod@ncaer.org

1 Introduction

Like many developing countries of the world, India has witnessed a surge in the demand for private education (Krishna et al. 2017, Bhattacharjee 2019, Kingdon 2020). However, accessibility to private schools remains limited for children from low socioeconomic backgrounds. Data from Alcott & Rose (2015) reveals that only 15% of such children are able to attend private schools in India. To address this issue, the government of India introduced an affirmative action policy under the Right to Education (RTE) Act in August 2009. It required private schools to reserve 25% primary school places for socioeconomically disadvantaged children and provide them full fee waivers. The RTE Act's affirmative action policy is the first national-level policy that offers school choice to millions of such children in India.

Given its scale, the policy could have potential indirect spillovers on the market for private schooling, specifically on the pricing strategies. McEwan (2000) argues that the equilibrium price of private schools, which is determined by the demand and supply interactions, would be altered with the implementation of large-scale school choice programs. If the RTE policy indirectly increases the demand for private schools without a corresponding increase in supply, it could drive up the prices. Conversely, if it also expands the supply of schools—either through market entry or expansion of existing institutions—this could lead to competitive pricing, thereby making private education more accessible.

In this paper, I investigate whether the RTE affirmative action policy had a spillover effect on price, that is the fees in private schools. My paper is the first to explore the indirect spillover effects of the RTE policy. Furthermore, while getting a free seat under the policy in a private school could have positive implications for those directly admitted, the aim of the policy was the social integration of 'all poor and socially disadvantaged' children in India. Consequently, this paper is also the first to study the effects of the policy on all children who were eligible to apply under the policy due to their social category.[1] This approach aligns with Bertrand et al. (2010), who emphasize the importance of studying the effect of affirmative action on those who are actually targeted by the program.

To answer the research question, I primarily use a repeated cross-sectional household survey data, collected by the National Sample Survey (NSS) of India. I use the NSS education survey rounds corresponding to years 2007 and 2014, that collects indi-

[1] These include the Scheduled Caste (SC), the Scheduled Tribes (ST) and the Other Backward Classes (OBC).

vidual level information on schooling, such as the type of school attended and school fees. I further link the NSS data with district-level data on the enrolment rate under the affirmative action policy, leveraged from India's District Information System for Education (DISE). I also use the DISE data to explore the entry of private schools into the market post-policy and their associated quality and costs.

To identify the causal effect of the policy on fees, I exploit an exogenous variation in 'eligibility' for free seats under the affirmative action policy, based on children's social category and age at which they start school. This is because only disadvantaged children starting school after the implementation of the policy were eligible. Specifically, I use a difference-in-differences (DID) strategy to compare the fees of two age cohorts of socially disadvantaged children (younger and older) across the two rounds of NSS (before and after the policy). To control for unobserved characteristics between households, I use household fixed effects and compare the outcomes between siblings, which strengthens the identification. Additionally, to explore a large district-level variation in policy adoption, I include a continuous measure of program intensity in the model, proxied by the enrolment rate under the policy within each district.

I find that the affirmative action policy reduced annual private school fees by ₹223.[2] The reduction in fees was larger among households with higher demand for private education (by ₹844). This includes households that were economically better off within socially disadvantaged communities, living in states where there was a more systematic implementation of the policy. The effect size is equivalent to a 0.25 SD decline in annual private school fees. I also find that a 5% increase in the enrolment rate under the policy in a district reduced annual private school fees by ₹240. Among economically better-off households in the states with better implementation of the policy, this was associated with a reduction in annual private school fees of ₹470 (0.14 SD).

The main effect of the policy is, however, indirect. It is not directly driven by children studying in private schools for free but rather an increase in the supply of low-cost private schools in India. Five years following the policy's implementation, the number of private schools capable of offering free education to disadvantaged children increased by 79%. I find that these new schools incurred significantly lower costs than existing schools, and therefore charged lower fees. As a result, these schools attracted a higher proportion of students from socially disadvantaged communities, notably the cohort newly entering the education system. The increase in the number of private schools seems to be a supply response to an amplified demand for private education, especially in regions that rigorously implemented the policy.

[2] 1 USD is roughly equal to ₹83.

The mechanisms observed in this study are consistent with the theoretical framework proposed by Epple & Romano (1998), which suggests that school choice programs would increase competition between private and public schools—thereby influencing the demand for private education—and would result in the entry of new private schools. Supporting this notion, studies such as those by Hsieh & Urquiola (2006), Dinerstein & Smith (2021) show that the supply of private schools was highly responsive to the demand for private education following school-choice voucher programs in Chile and the US respectively. Moreover, a similar study by Bravo et al. (2010) found that the new private schools that entered after the voucher program in Chile were on average lower quality compared to the existing schools. The RTE policy is similar to a large-scale voucher program that in principle, gives school choice to children who are otherwise unable to access private education. Thus, the findings in this paper align with both theoretical predictions and empirical evidence regarding the impact of school choice initiatives on the education sector.

In evaluating the effect of the policy, ensuring the validity of causal inference is key. Due to the absence of individual-level fee data from multiple pre-RTE years, it is challenging to test the assumption of parallel trends. However, to address this limitation, I conduct two placebo tests. First, I estimate the DID model with children not targeted under the affirmative action policy, specifically children belonging to higher social categories. Second, even though RTE policy was enacted nationally, some states did not implement it even by 2014. So I estimate the DID model in states with no implementation of the policy. The findings remain robust across both analyses, showing no discernible effect on private school fees.

This paper makes a contribution to the literature on affirmative action (for an overview see Holzer & Neumark (2000) and Fryer Jr. & Loury (2005)). In the context of education, the paper mostly relates to the literature on affirmative action in India, targeting the SC/ST/OBC groups. This includes studies that explore the exogenous variation in the status of belonging to socially disadvantaged communities on educational attainment in general (Hnatkovska et al. 2012, Bertrand et al. 2010, Bagde et al. 2016, Cassan 2019, Rao 2019, Khanna 2020). However, my paper exploits this variation to study the effects of the RTE Act's affirmative action policy in private schools. Existing studies of the RTE policy have investigated the impact on enrolment and educational attainment of children who are directly admitted under the policy (Damera 2017, Dongre et al. 2018, Joshi 2020, Romero & Singh 2023, Agarwal 2023). My paper is the first to look at the indirect effect of the policy on the 'targeted' population. It also differs from the current papers by looking at the effect on private school fees using data sampled from all of India.

This paper also contributes to the literature on school choice programs. More specifically, it relates to studies that find spillover effects of school choice through large-scale voucher programs (Hsieh & Urquiola 2006, Bravo et al. 2010, Menezes-Filho et al. 2012, Böhlmark & Lindahl 2015, Dinerstein & Smith 2021), and charter schools (Glomm et al. 2005, Imberman 2011, Mehta 2017, Ferreyra & Kosenok 2018, Sorensen & Holt 2021) on the market equilibrium.[3] These studies show that school choice initiatives generate significant demand for education alternatives, resulting in an increased supply of such alternatives. Consistent with this, my paper finds that increased school choice under the RTE policy led to the entry of new private schools as a result of an increased demand for private education in India. Notably, it is the first study to investigate the market equilibrium effects of the largest school choice policy in India. Additionally, while the literature studies the effect of school choice on quality of education, this paper looks at the effect on the 'price' or cost of private schooling.

The rest of the paper is organized as follows. Section 2 provides details of the RTE affirmative action policy. Section 3 describes the datasets used in the paper. Section 4 explains the treatment and shows some descriptive evidence. Sections 5 and 6 present the DID models and report the main findings. Section 7 investigates the mechanisms that explain the results. Section 8 examines the robustness of the results and Section 9 concludes.

2 Institutional details: The affirmative action policy

The Right to Education Act implemented a affirmative action policy that mandates all private unaided[4] schools to reserve at least 25% of their seats at entry-level (a pre-primary grade or grade 1), for 'economically weaker sections' and 'disadvantaged groups'. Economically weaker sections include children whose parents earn an annual income that is below a certain threshold determined by the state government. Disadvantaged groups typically include three main social categories in India– Scheduled Caste (SC), Scheduled Tribe (ST) and Other Backward Classes (OBC). However, the formal definition of disadvantaged groups varies across states.[5]

[3] Epple et al. (2016) and Epple et al. (2017) offer an extensive review of studies investigating the effect of school choice through vouchers and charter schools, respectively.

[4] Private unaided schools are managed by an autonomous private body and do not receive any grants or funds from the government.

[5] Definitions of disadvantaged groups are given in the official notices of state governments: https://www.education.gov.in/en/rte_dws.

The admission process is consistent throughout the country but the timeline varies by state. In the application stage, parents of eligible children are required to choose 3-5 preferred schools from a list of private schools in the neighbourhood. Upon verification of all necessary documents, the system matches each child with their preferred school. In case there is oversubscription to schools, seats are allotted through a lottery system. All children admitted under the policy then receive free education till they complete grade 8 and for each child admitted, private schools receive reimbursement from the state government. The amount of reimbursement is equal to the per-child expenditure of the government or the actual per-child fee charged by the private school, whichever is lower.

Despite the affirmative action policy being one of the most important educational policies in India, its implementation has been sporadic. For instance, in states such as Madhya Pradesh, Rajasthan, and Chhattisgarh, the policy has been implemented more systematically, whereas, in Andhra Pradesh, the policy has still not been formally administered. Subsequently, there has been very little enrolment under the policy overall. According to the Ministry of Education, in 2014–15, less than 2% of eligible children were studying under the policy in India. By 2019–20, this increased to around 4.6%.

Apart from poor implementation, there are several other issues that might explain the low takeup of children under the policy. These have been extensively discussed in a report by Sarin et al. (2017). For instance, with many states switching to online portals for admission, the application procedure has become more complex as it now requires the knowledge of computers and technology. It also requires a good internet connection which many poor families might not have access to. There is also a lack of clarity on the rules among parents, and as a result, they are subjected to bureaucracy by government officials and schools. As a result, majority of the applicants of the affirmative action policy belong to economically better-off households (Damera 2017, Dongre et al. 2018, Romero & Singh 2023).

Despite the challenges and low uptake, there was still a significant demand among eligible parents for free seats under the affirmative action policy. According to Noronha & Srivastava (2013), parents of eligible children were enthusiastic about the opportunity of free private education and put in significant efforts to secure a spot. They often applied to multiple local schools and were prepared to try again the next year if they did not succeed. However, as noted by, Sarin et al. (2017), the admission timelines under the policy did not sync with regular admissions in some states. This led to delays in admissions, resulting in parents paying high tuition fees to secure places.

On the supply side, there are no clear incentives for private schools to offer free places to students, especially if they charge a high fee, as the reimbursement received would be lower than the actual fee charged by the school. Moreover, the reimbursement amount is set to match the government's per child expenditure, which is often under-reported than the actual expenditure incurred (Kingdon & Muzammil 2015, Dongre & Kapur 2016). As a result, private schools receive a reimbursement even lower than the stipulated amount. Moreover, Sarin et al. (2017) found that in many states, private schools did not receive timely reimbursements from the government.

Private schools also subjected parents to heavy non-tuition fees. In the city of Bangalore, Karnataka, parents raised complaints against 31 private schools that demanded non-tuition fees (books, uniform, transport) from students enrolled under the policy (Economic Times). Similar cases where parents were charged fees in the name of 'other charges' were also reported in the state of Gujarat (The Indian Express). In 2018, the Uttarakhand Commission for Protection of Child Rights (UCPCR) received over 70 complaints against private schools for demanding fees from students enrolled under the policy (Hindustan Times). In Chennai, Tamil Nadu, some private schools charged tuition fees from these students in 2019, due to delays in reimbursement from the state government in the previous year. In one of the schools, parents were asked to pay first, with the promise of reimbursement later, when the school received money from the government (Times of India).

Given such bureaucracies influencing fee structures and reimbursement mechanisms, the direct impact of free seats on private school fees for enrolled students may be negligible. Therefore, to study the direct effects on those enrolled, it is more realistic to concentrate on children in states where uptake has been notably high, and focus on the effect on their learning outcomes like the existing studies have done.

Nonetheless, given the scale of the policy, it could still have indirect implications on the market equilibirum through spillovers (McEwan 2000). Furthermore, despite the policy's failure to reach all potential beneficiaries, in 2019–20, the central government spent a total of ₹14.6 billion on reimbursements[6], which was 2.6% of the total funds[7] allocated to school education. The affirmative action policy is therefore, an important policy to study, and its indirect effects are worth investigating.

[6]Based on the information from the Ministry of Education, sought under the Right to Information Act, 2005.

[7]According to the Indian Economic Survey 2019–20, the central government allocated ₹565.37 billion to school education.

3 Data

3.1 National Sample Survey

The primary source of data for my paper is the National Sample Survey (NSS) of India, which allows me to study the effect of the RTE affirmative action policy on private school fees from the demand side. NSS is a nationally-representative survey of households, sampled from all Census districts of India. I use the 64th and 71st rounds of NSS,[8] which collected detailed information on education. The 64th round of the survey was carried out from July 2007 to June 2008, while the 71st round was carried out from January to June 2014. This allows for a comparison of outcomes before and after the affirmative action policy was implemented. However, NSS data is cross-sectional, so the households interviewed in both rounds are different.

In the 64th and 71st rounds, NSS collects schooling information of all children in the household above the age of 5. For all individuals aged 5–29, it records the status of current enrolment and attendance in an educational institute. For all children above the age of 5, who are at least attending a primary grade (grade 1 or above), the survey records the type of school attended, which can be either government, private aided, or private unaided.[9] In the data, those who attend private unaided schools are further asked if the schools are recognized by the government.[10] NSS also collects information on the amount of fees paid towards the course, uniform, books, transport, and private coaching for each child attending a primary grade or above.

The RTE Act's affirmative action policy was implemented only in recognized private unaided schools. For the remainder of this paper, I refer to recognized private unaided schools as simply private schools, unless mentioned otherwise. The sample of interest in the paper is the socially disadvantaged groups, hereafter disadvantaged groups, who are eligible under the policy due to their lower social category.[11]

[8] Data is collected by the National Sample Survey Office, Ministry of Statistics and Programme Implementation (2007-2015).

[9] Government schools in India are public schools run by the central, state or local government. Private aided schools are partly funded by the government and partly managed by a private committee of individuals.

[10] Recognized private schools are officially registered with the government when they meet certain requirements related to infrastructure, resources, expenditure and size.

[11] States such as Haryana, Mizoram, and Tamil Nadu do not enroll disadvantaged groups under the policy. Jharkhand, Meghalaya, and Tripura only include SC and ST from families below the poverty line. In Goa, only disabled children are eligible under the policy. No official definition of disadvantaged groups is available for Sikkim and Dadra and Nagar Haveli. These states are, therefore, excluded from the sample.

3.2 District Information System for Education

To further exploit the intensity of the policy, I link the NSS data with the District Information System for Education (DISE)[12] at the district level. DISE is a nationwide database of roughly 2 million recognized[13] schools in India and is available from 2005–06 to 2017–18 (18 million observations). From 2010–11 onward, DISE collects information on the number of students enrolled under the affirmative action policy at entry-level (typically grade 1) in private schools. Total enrolment under the policy by 2014—corresponding to round 71 in NSS—is, therefore, the sum of the number of children enrolled under the policy at the entry level from 2010–11 to 2014–15.

Although the affirmative action policy was introduced nationally, only 16 out of 33 states have formally implemented the policy according to the Ministry of Education (MoE).[14] Figure 1 shows the total enrolment under the policy as a percentage of the population of primary-school-going children (aged 5–9) in the largest 20 states of India. The enrolment data reported by schools in DISE is plotted against the enrolment data reported by the states to the MoE.[15]

As per both the MoE and DISE data, states such as Madhya Pradesh, Rajasthan, Karnataka, Uttarakhand, and Chhattisgarh have had the highest rate of enrolment under the policy. However, there is a discrepancy in the enrolment numbers calculated from DISE for these states and the enrolment reported by the MoE. In all states that did not formally implement the policy, and therefore report no data to the MoE, the calculated enrolment from DISE is 1% or less. Anomalies include Haryana and Himachal Pradesh. In Haryana, the enrolment calculated from DISE is almost 3%, while in Himachal Pradesh, it is around 2%. Nonetheless, there is a high positive correlation of 0.90 (in the 16 states) and 0.60 (in all 33 states) between the percentage of enrolment calculated using data from the MoE and DISE.

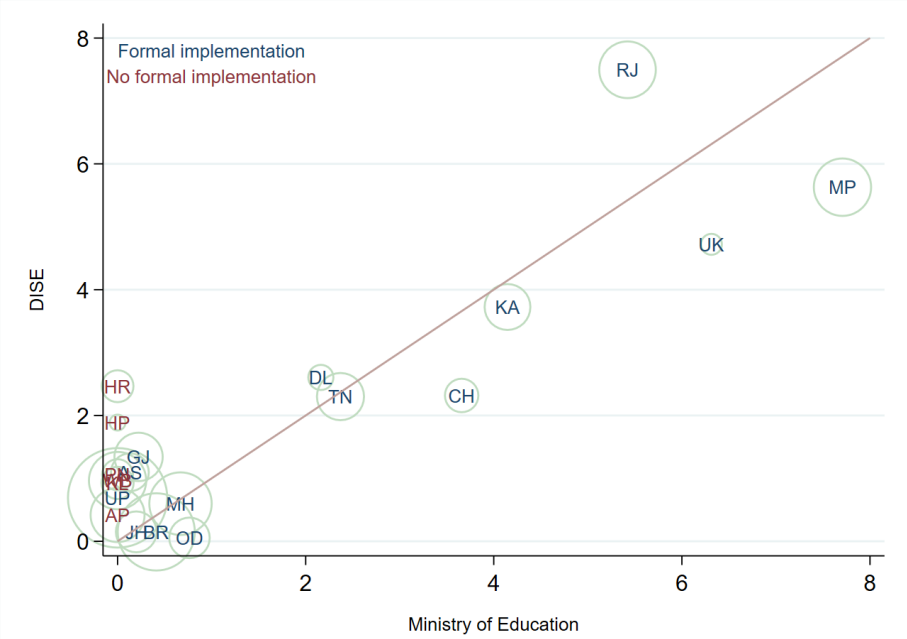
[12] Data is recorded by the National Institute of Educational Planning and Administration (NIEPA) (2005-2017).

[13] There are a large number of unrecognized private schools in India with high enrolment, but there are no official records on them (Kingdon 2020). As a result, only recognized private schools are included in DISE.

[14] These include Madhya Pradesh, Rajasthan, Karnataka, Tamil Nadu, Chhattisgarh, Uttarakhand, Maharashtra, Bihar, Delhi, Odisha, Gujarat, Jharkhand, Assam, Chandigarh, Andaman and Nicobar Islands, and Uttar Pradesh.

[15] The enrolment numbers from the MoE are based on the information sought under the Right to Information Act, 2005.

Figure 1. Percentage of children enrolled under affirmative action policy in largest 20 states by 2014–15



Note: States are weighted by the population of children aged 5–9. States with formal implementation of the policy are Madhya Pradesh, Rajasthan, Uttarakhand, Karnataka, Chhattisgarh, Tamil Nadu, Delhi, Maharashtra, Odisha, Bihar, Jharkhand, Uttar Pradesh, Assam and Gujarat. States with no formal implementation of the policy are Andhra Prdaesh, Kerala, West Bengal, Punjab, Haryana and Himachal Pradesh.

4 Identification strategy

4.1 Defining exposure to the policy

To examine the impact of the policy, I focus on the effects of 'exposure' rather than 'enrolment' within the policy framework. The reason for this is that the actual enrolment of disadvantaged children under the policy was relatively low. However, the sheer presence and awareness of the policy may have had broader implications for eligible children, influencing decisions and outcomes even if they were not directly enrolled under the policy's provisions.

As the RTE Act was introduced in August 2009, the policy is expected to have an effect on outcomes from the school year 2010–11[16] onwards. At the same time, free places under the policy were only made available to new entrants in school (pre-primary or grade 1). Therefore, children who were already attending schools (grade 2 or above) in 2010–11 were not exposed to the policy. In other words, children who are potentially exposed to the affirmative action policy are those who started school after August 2009.

To define exposure, I use the two cross-sectional surveys from NSS: round 64 and round 71. Interviews in round 64 took place between July 2007 and June 2008, and interviews in round 71 took place between January and June 2014. Children interviewed between July 2007 and March 2008 therefore, correspond to the school year 2007–08, while those interviewed between April and June 2008 correspond to the school year 2008–09. Similarly, in round 71, those interviewed between January and March 2014 correspond to the school year 2013–14 and those interviewed between April and June 2014 correspond to the school year 2014–15.

For all children attending schools, the present age and the age at which they entered grade 1 are reported in the data. Using these and the date of the survey, I calculate the school year in which all disadvantaged children in round 71 started school. I define a disadvantaged child in round 71 as 'exposed' if she started school after 2009, that is, any school year from 2010–11 onwards. She is 'not exposed' if she started school any time before 2010–11. I observe that 91% of children who started school after 2009 are aged 5–9, and 94% of children who started school before 2010 are aged 10–14 in round 71. Therefore, disadvantaged children aged 5–9 in round 71 form the treatment group, and older children, aged 10–14 form the control group.

A simple comparison of the treatment and control groups would result in biased estimates if the outcomes are different for younger and older children due to their age,

[16] A school year in India typically starts in April and ends in March next year.

or due to other differences which are correlated with age. Therefore, I also construct the same treatment and control groups from the round 64 interviews, which took place before the policy was introduced. The 'treated' are disadvantaged children who are aged 5–9 and the 'controls' are those aged 10–14 at the time of the round 64 interviews. The difference in the outcome variable between these two groups serves as the pre-treatment difference, such that the difference-in-differences remove any age effects. If Y is the outcome, the DID estimate can be represented as:

$$[\mathrm{Y}(\text{5–9 in round 71}) - \mathrm{Y}(\text{10–14 in round 71})] - [\mathrm{Y}(\text{5–9 in round 64 }) - \mathrm{Y}(\text{10–14 in round 64})] \quad (1)$$

4.2 Descriptive evidence

I begin my analysis by simply comparing the schooling outcomes of disadvantaged children in both rounds of NSS. In Table 1, the younger cohort aged 5–9 form the treatment group, while the older cohort aged 10–14 form the control group. By round 71, there is a significant increase in the share of disadvantaged children attending schools. Surprisingly, the increase in the share is around 3 percentage points higher for the older cohort (control group). There is also an increase in the share of disadvantaged children attending private schools. This is consistent with Indias trend of rising enrolment in private schools. However, for both treatment and control groups, the increase has been the same (around 8 percentage points).

For the treatment group, the increase in private school enrolment seems to be almost entirely offset by a decrease in government school enrolment, whereas for the control group, there was no change in government school enrolment. This means that among the younger cohort, there was a shift away from government to private schools. Children who would have otherwise gone to government schools chose to go to private schools after the policy. Among the older cohort, the increase in private school enrolment is almost entirely driven by the fact that there was a higher proportion of these children attending schools by round 71. This suggests that compared to round 64, the older cohort in round 71 had better access to education perhaps due to more availability of private school places.

Table 1. Proportion of disadvantaged children in school

	Round 64 Mean	**Round 71** Mean	**Difference**	**Std. error**
Treatment group				
Attends school	0.78	0.87	0.09	0.005
Attends government school	0.58	0.52	-0.06	0.006
Attends recognized private school	0.09	0.17	0.08	0.004
Attends unrecognized private school	0.02	0.03	0.01	0.002
Observations	19,080	11,843		
Control group				
Attends school	0.80	0.92	0.12	0.004
Attends government school	0.61	0.61	0.00	0.005
Attends recognized private school	0.07	0.15	0.08	0.003
Attends unrecognized private school	0.01	0.02	0.01	0.001
Observations	19,345	14,099		

Source: National Sample Survey
Notes: Remaining children attend private aided schools. Disadvantaged children who do not know if their private school is recognized or unrecognized are dropped (less than 5%). The differences and standard errors of differences are based on a paired sample t-test.

Table 2 shows the average fees of disadvantaged children attending recognized private schools. I observe that by round 71, the fees for both groups in private schools significantly increased, even in real terms. However, compared to the control group, the increase in real fees of the treatment group was much lower. This is despite an equal increase in their share attending private schools as seen in Table 1. In other words, younger disadvantaged children in round 71 were paying a 25% lower fee than their older counterparts in private schools, compared to younger disadvantaged children in round 64.

Next, I restrict the sample to only richer disadvantaged households that were more likely to apply for free seats under the affirmative action policy, as found by Damera (2017), Dongre et al. (2018) and Romero & Singh (2023). This is largely because of a lack of resources for the poor and a complicated application process. I define a 'richer' disadvantaged household as one that has an annual real consumption expenditure higher than the median consumption expenditure of all disadvantaged households in the round in which the household is surveyed.

Finally, I restrict the sample to the top 5 states in India with the highest enrolment rates under the affirmative action policy. As per the data from the Ministry of Education and DISE, these states include Rajasthan, Madhya Pradesh, Karnataka, Chhattisgarh,

and Uttarakhand. I find that in both cases, the difference consistently increases in magnitude. When I further restrict the sample to richer disadvantaged households in the top RTE states, who were most likely to participate in the policy, the increase in fees of the treatment group was even lower than that of the control group, by more than ₹1,000. However, this estimate is imprecise and not significant at conventional levels.

Table 2. Average annual fees of disadvantaged children in private schools

	Round 64		**Round 71**		**Difference**	**DID**
	Obs.	Mean	Obs.	Mean		
	(1)	(2)	(3)	(4)	(5)	(6)
Whole sample						
Treatment group	1,598	2,746	2,009	3,857	1,111***	
Control group	1,303	2,638	1,975	4,112	1,474***	-363*
Richer households						
Treatment group	1,229	3,145	1,289	4,756	1,611***	
Control group	949	3,098	1,333	5,026	1,928***	-317
Top RTE states						
Treatment group	356	2,864	329	4,765	1,901***	
Control group	260	2,659	324	5,331	2,672***	-771
Richer households in top RTE states						
Treatment group	301	3,137	234	5,379	2,242***	
Control group	221	2,889	228	6,185	3,296***	-1,054

Source: National Sample Survey
Notes: Fee includes tuition fee, examination fee and other compulsory payments. Reported fee is in real terms, deflated by the Consumer Price Index (2010=100). All values in columns (2), (4), (5) and (6) are in Indian rupees (1 USD= ₹83). Results in column (5) are based on a paired sample t-test. Results in column (6) are the relative differences in the change in fees of younger and older children reported in column (5). *** p<0.01, ** p<0.05, * p<0.1

To check if the lower increase in fees of the younger cohort was driven by free places under the affirmative action policy, I use other expenditure-related information in the data reported in Table A.1. For each child in school, NSS collects information on whether education is free. Education is considered free if it applies to the whole institution and not to the student's specific situation. It is still defined as free if there is no tuition fee in a school but a fixed amount of money is charged in the form of development fee, library fee, etc. Education in government schools in most states is free.[17] Students whose education is not free in both rounds are asked if their tuition fee was waived (fully/partly/not) due to special circumstances. The reason for waiver

[17]The Right to Education Act made education in government schools free and compulsory in primary grades (1–8).

is also recorded which includes the disadvantaged categories (ST, SC, OBC), disability, merit, financially weak, or others.

If fees were waived for children enrolled under the affirmative action policy in private schools— that are otherwise not free—this would reflect in the household's response to the question of whether the tuition fee was waived due to special circumstances. Furthermore, for disadvantaged children, who are eligible on the basis of caste (social category), the reason recorded would be SC, ST or OBC. Table A.1 shows that only a small proportion of children in the treatment group had their tuition fees waived in private schools, even after the affirmative action policy was implemented. Therefore, any effect on fees seen in Table 2 cannot be driven by fee waivers.

I find that there is a notable shift from government to private schools for disadvantaged groups following the introduction of the RTE Act. However, there is no differential increase for the younger disadvantaged cohort, as one would expect if the affirmative action policy increased access to children who started school after the policy was implemented. Nonetheless, descriptive evidence shows that after RTE, the younger disadvantaged cohort's private school fees grew almost 25% more slowly. Furthermore, among those more likely to apply for free seats under the policy, the difference in fee growth was an added 7%. However, using additional information on education expenditures from the data, I find that very few of the disadvantaged children were studying in private schools for free or had their fees waived. This implies that the slower growth in their private school fees cannot be attributed to free seats provided under the affirmative action policy.

5 Effect of exposure on fees

Descriptive evidence shows that enrolment directly under the affirmative action policy could not have driven the reduction in fees for the younger disadvantaged cohort after RTE. To see if affirmative action policy indirectly influenced the changes in fees, I conduct a more robust investigation of its effects.

To establish a causal relationship between the affirmative action policy and fees, it is not sufficient to show that the relative increase in fees was lower for the treatment group (column 6 in Table 2). There could be individual-level and household-level confounding factors such as gender or household income that could determine exposure to the policy while also being correlated with fees. To account for these factors, I estimate a difference-in-differences (DID) model controlling for a series of pre-determined

characteristics. I also incorporate district fixed effects and household fixed effects that leads to comparisons within a district and within a household respectively. Refining the model by adding controls and fixed effects also improves the precision of the estimates.

5.1 Basic DID model

I begin by estimating a standard DID equation. The outcome variable is the 'annual course fees of a child attending a private school'. Course fees include tuition fees, examination fees, and other compulsory payments such as lab fees and library charges.

$$Fee_i = \beta_0 + \beta_1 Young_i + \beta_2 Post_i + \beta_3 Young_i \times Post_i + \gamma_0 X_i + \alpha_d + \varepsilon_i \tag{2}$$

Fee_i is the real[18] annual school fee of a disadvantaged child i currently attending a private school. $Young_i$ is a dummy variable that indicates whether child i belongs to the treatment group. $Young = 1$ if the child is aged 5–9 and 0 if the child is aged 10–14. $Post_i$ is the post-treatment time dummy. $Post = 1$ if the child is interviewed in round 71 and 0 if interviewed in round 64. $Young_i \times Post_i$ is the interaction of treatment and time dummy, such that β_3 captures the DID effect. X_i is a vector of individual and household-level observable characteristics.[19] α_d controls for district fixed-effects and ε_i is the unobserved error term.

Exposure to the policy reduces school fees if the difference in the fees of the younger cohort in private schools is significantly lower in round 71. The DID estimates rest on the assumption that in the absence of the policy, the fees for the two age groups would have changed in the same manner. Due to the lack of panel data and the absence of children's fee information in years between rounds 64 and 71 of the NSS, I was unable to conduct an event study on the pre-trends or formally estimate the DID model for years prior to the policy implementation. However, one way I test the identifying assumption is by estimating Equation (2) for groups that were not exposed to the affirmative action policy even after August 2009. These include non-disadvantaged households and those living in areas where there was no formal implementation of the policy.

Another strategy is to estimate the model within disadvantaged households, which would compare the fees of younger and older siblings. A within-household model is

[18] It is the nominal fees reported in the data deflated by the Consumer Price Index (2010 = 100). CPI data is obtained from World Bank for the years 2007, 2008, 2013 and 2014. This is because data reported by India is based on the fiscal year, which begins in April (same as the school year).

[19] Individual and household-level characteristics include log of household size, and dummies for rural area, female, religion, medium of instruction in school, private coaching and distance to child's school. These are based on a paper by Mukherjee & Sengupta (2021) that analyzes the factors affecting private education expenditure in India using NSS data.

useful because it controls for unobservables that are fixed within a disadvantaged family. So, I estimate the same DID model for siblings within disadvantaged households as the trends in fees are more likely to be parallel in the absence of the policy. I do this by restricting the sample to disadvantaged households that each has at least 1 child in the treatment group (aged 5–9) and 1 child in the control group (aged 10–14). I then undertake a within-household estimation of the following form:

$$Fee_{ih} = \beta_0 + \beta_1 Young_{ih} + \beta_2 Post_{ih} + \beta_3 Young_{ih} \times Post_{ih} + \gamma_0 X_{ih} + \mu_h + \varepsilon_{ih} \quad (3)$$

where the dependent variable Fee_{ih} is the real annual school fee of disadvantaged child i in household h, currently attending a private school. $Young = 1$ if child i in household h is aged 5–9 and 0 if the child is aged 10–14. $Post = 1$ if child i in household h corresponds to round 71 and 0 if the child corresponds to round 64. However, since the households in both rounds are different, with household-fixed effects, outcomes within the same household cannot be observed over time. As a result, β_2 drops out of the model. β_3 still captures the DID effect, which is the relative difference in fees between siblings in round 71 and siblings in round 64. I also control for gender, medium of instruction, private coaching and distance to school. μ_h controls for household fixed effects.

I first estimate Equations (2) and (3) for the whole sample, which includes all disadvantaged children aged 5–14. Then I restrict the sample to disadvantaged children aged 5–14 from 'richer' disadvantaged households and states that had a better implementation of the policy. These samples were more likely to apply for free seats under the policy and therefore would reflect a higher demand for private education. As per the data from the Ministry of Education and DISE, the states with the highest enrolment under the policy include Rajasthan, Madhya Pradesh, Karnataka, Chhattisgarh, and Uttarakhand. Finally, I estimate both equations for a sample of children from 'richer' disadvantaged households in these five states.

5.2 Results

Table 3 presents the results from the basic DID model, where exposure only varies by time. It is similar to Table 2 but includes control variables and district fixed effects. It also reports results from the within-household estimation. I find that before the policy (round 64), fees of younger disadvantaged children in private schools were lower than that of older children within districts (columns 1–4), as well as within households (columns 5–8). After the policy (round 71), fees increased for both groups, but the

increase was relatively lower for younger children. However, in the model with only district fixed effects, the difference is not statistically significant due to large standard errors (columns 1–4).

The specifications with household fixed effects produce more precise estimates-(columns 5–8). I find that within disadvantaged households, there was a significant reduction in the fees of younger children post-policy. Among the whole sample, the annual private school fees of younger children was around ₹223 or 0.05 SD lower than that of their older siblings in round 71 relative to round 64 (column 5). The effect is significantly larger among richer disadvantaged households, where younger children paid ₹329 or 0.07 SD lower fees (column 6).

Additionally, the effect is larger among households that were more likely to apply for free seats under the affirmative action policy. In the 5 states with the highest enrolment rates under the policy (column 7), the annual fees of younger children were lower than that of their older siblings by almost ₹650 or 0.19 SD compared to round 64.Within richer disadvantaged households in these states (column 8), which were even more likely to apply for free seats under the policy, annual fees of younger children were ₹844 or 0.25 SD lower post policy. Furthermore, given a monthly consumption expenditure of ₹2,784 (₹33,048 annually) in round 71, such disadvantaged households with only younger children saved about 2.5% of their expenditure due to the policy (Table A.2).

Results from the basic model are consistent with the descriptive evidence in Table 2. Post RTE, there was a lower increase in the fees of younger disadvantaged children, who were exposed to the affirmative action policy compared to the older disadvantaged children, who were not. Among samples that exhibit a higher likelihood to apply for free seats under the policy, the increase in the fees of younger disadvantaged children was even lower. The DID estimates with household fixed effects have a lower standard error and therefore, generate more precise estimates. However, the effect of the policy has largely been small to moderate.

Table 3. Effect of exposure to RTE on school fees

	Whole sample				Sibling sample			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES								
Young	-0.355***	-0.326**	-0.256	-0.150	-0.342***	-0.386***	-0.222**	-0.156
	(0.114)	(0.145)	(0.258)	(0.289)	(0.070)	(0.085)	(0.104)	(0.115)
Post	0.902***	1.293***	1.601***	1.813***				
	(0.159)	(0.225)	(0.346)	(0.497)				
Young x Post	-0.251	-0.346	-0.502	-0.428	-0.223*	-0.329**	-0.649**	-0.844**
	(0.166)	(0.213)	(0.399)	(0.472)	(0.117)	(0.161)	(0.322)	(0.390)
Constant	1.983***	3.090***	3.405***	4.022***	1.988***	2.379***	1.712**	1.864**
	(0.255)	(0.379)	(0.825)	(1.361)	(0.301)	(0.390)	(0.692)	(0.781)
Observations	6,885	4,800	1,269	984	3,233	2,214	554	426
R-squared	0.46	0.47	0.44	0.46	0.96	0.96	0.96	0.96
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District FE	Yes	Yes	Yes	Yes	No	No	No	No
Household FE	No	No	No	No	Yes	Yes	Yes	Yes

Notes: Dependent variable is the real annual fee in private school (in thousand rupees). Fee includes tuition fee, examination fee and other compulsory payments. Columns (1) and (5) correspond to all households. Columns (2) and (6) correspond to a sample of children from richer households, that have a real consumption expenditure higher than the median consumption in the round in which they are surveyed. Columns (3) and (7) correspond to a sample of top RTE states: Rajasthan, Madhya Pradesh, Chhattisgarh, Karnataka, and Uttarakhand. Columns (4) and (8) correspond to a sample of richer households in the top RTE states. Standard errors are clustered at the district level. *** p<0.01, ** p<0.05, * p<0.1

6 Effect of district-variation in exposure on fees

In the basic DID model, the 'treatment', which is the exposure to the affirmative action policy, is simply based on eligibility as a result of age and disadvantaged status. Given the decentralized nature of the policy's implementation, its effects might not be uniform across states. In fact, in districts within states, the implementation and administering of the policy falls under the jurisdiction of the District Education Officer.[20] Many children in the treatment group are less exposed to the policy if, for instance, they live in regions where only a few places were offered under the policy in private schools. Despite being a national-level policy, its implementation has not been consistent across states, with states such as Madhya Pradesh and Rajasthan implementing the policy well, and states such as Andhra Pradesh not implementing the policy even after five years. Columns (3) and (7) in Table 3 suggest that the extent of exposure at the state level matters. This provides a rationale for a model in which 'local exposure' matters for the size of the treatment effect.

Descriptive evidence from the administrative school data shows that enrolment under the affirmative action policy varies not only across states but also within states. In Figure A.1, I map the enrolment rate under the affirmative action policy at the district

[20] As per the Standard Operating Procedures for Implementation of Section 12(1)(c) of the Right to Education Act 2009.

level for all of India using data from DISE. As seen in the map, even within states, some districts had a higher take-up under the policy. District-level variation in enrolment under the policy may arise from differences in administration, availability of private schools, or the proportion of disadvantaged children in the district

The district-level variation can strengthen the identification as exposure to the policy varies based on the district in which a disadvantaged child resides. I use the enrolment rate under the policy as a proxy measure of exposure/program intensity. It is calculated as the percentage of children aged 5–9 enrolled under the affirmative action policy in each district.[21] I also formally check the district-level variation by first regressing the percentage of RTE enrolment in a district on state dummies and then including district dummies. When I include only state dummies, the adjusted R^2 is 0.21. However, when I include district dummies, the adjusted R^2 increases to 0.34. It means that 13% more variation in RTE enrolment is explained by districts within the states.

Moreover, even within states that had a systematic implementation, some districts had higher exposure to the policy than others (Figure A.2). If the effect on fees is driven by the policy, albeit indirectly, districts with higher exposure would have a larger effect on fees.

6.1 DID model with regional variation

To estimate the effect of district-level exposure to the policy, I exploit regional variation in policy intensity[22] to assess its impact on the fees for 'treated' children in private schools. I use the enrolment under the affirmative action policy at the district level as a continuous proxy measure of program intensity. Specifically, using data from DISE and Census 2011, I calculate the percentage of children aged 5–9 enrolled under the affirmative action policy in private schools in each district. This is given by:

$$RTE_{dt} = \frac{\text{Total enrolment under RTE at the primary level in district } d \text{ and round } t}{\text{Population of children aged 5–9 in district } d} \times 100$$

where total enrolment under RTE at the primary level (grades 1-5) in district d in round 71 is the sum of enrolment under the affirmative action policy at the entry-level in district

[21] Population data is used from Census 2011. Out of 640 districts in the Census, 625 matched with DISE.

[22] Several other studies have used a similar strategy of exploiting cohort and regional variation in exposure to supply-side interventions in education. Notable examples include Duflo (2001), Handa (2002) and Lucas & Mbiti (2012). Duflo (2001) and Handa (2002) explore regional variation in new schools in the context of a school construction program in Indonesia and Mozambique respectively. Lucas & Mbiti (2012) use variation in the number of new test-takers to study the effect of a free primary education program in Kenya.

d in the post-RTE period. This is calculated from school years 2010–11 to 2014–15, as school years after 2014 are not relevant to round 71. Since the policy did not exist in round 64, RTE_{dt} is 0 in round 64 for all d.

Then I match this district-level measure with the household data, such that for each child, I know the percentage of children that were enrolled under the policy in the child's district of residence. Using this measure of program intensity, I estimate the following equation:

$$Fee_i = \beta_0 + \beta_1 Young_i + \beta_2 RTE_{dt} + \beta_3 Young_i \times RTE_{dt} + \gamma_0 X_i + \alpha_d + \varepsilon_i \qquad (4)$$

The specification is similar to Equation (2) except here, RTE_{dt} denotes the enrolment rate under the policy in district d and round t. β_2 measures the change in the real annual fees of older children in private schools associated with a 1% increase in the policy enrolment in a district. The variable of interest is $Young_i \times RTE_{dt}$, such that β_3 captures the DID effect. It measures the change in the fees of younger children relative to older children when the rate of enrolment under the policy in a district increases by 1%. All other variables remain the same.

I also estimate the program intensity model for siblings within disadvantaged households, similar to Equation (3):

$$Fee_{ih} = \beta_0 + \beta_1 Young_{ih} + \beta_2 RTE_{dt} + \beta_3 Young_{ih} \times RTE_{dt} + \gamma_0 X_{ih} + \mu_h + \varepsilon_{ih} \qquad (5)$$

With household-fixed effects, β_2 drops out as the same household cannot be observed in both rounds. As in the basic model, Equations (4) and (5) are estimated for the whole sample, a sample of children from 'richer' disadvantaged households, a sample of children from the top RTE states, and a sample of children from 'richer' disadvantaged households in the top RTE states.

Exposure to the affirmative action policy has a positive effect on fees if the difference in the fees of younger children was significantly lower than that of older children in districts with higher enrolment under the policy. Furthermore, the magnitude of the effect would be larger among samples that had a higher demand for private education.

6.2 Results

Table 4 reports the results from the model with district-level variation in exposure, where the effect on fees is estimated not only over time but also by the rate of enrolment under the policy in a district. When there was no enrolment under the policy in a district,

that is in round 64, younger disadvantaged children paid a lower fee than older children in private schools. This is consistent with the basic model. Similarly, an increase in the enrolment rate under the policy in a district—that captures a change in time—is associated with a higher fee for both groups. However, similar to the basic model, the DID estimates are not statistically significant due to large standard errors (columns 1–4).

The results from the within-household estimation (columns 5–8) are nonetheless more precise. I find that an increase in the RTE enrolment rate resulted in lower fees for younger children. For instance in column (5), when the RTE enrolment rate in a district increased by 1%, the annual private school fees of younger children were significantly lower than that of their older siblings by ₹48. This means that if the enrolment rate increased by 5% in a district, younger children paid ₹240 or 0.05 SD less than their older siblings (column 5).

In line with the basic DID model, the difference is larger in samples that were more likely to apply for free seats under the policy and had a higher demand for private schools. In the top RTE states (column 7), a 5% increase in enrolment implied that annual fees paid by younger children were lower than that of their older siblings by ₹380 or 0.11 SD. In richer disadvantaged households in these states (column 8), it implied that younger children's annual fees were lower by ₹470 or 0.14 SD compared to their older siblings.

Although the results from columns (1)–(4) are insignificant, the estimated effects are quite consistent with those from columns (5)–(8). Moreover, the estimates in each column of Table 4 are consistent with the corresponding estimates in Table 3. For instance, in both models, the effect among the richer disadvantaged households in the top RTE states (column 4) is lower than that among all disadvantaged households in these states (column 3). But when I include household fixed effects in both models, the effect becomes largest among the richer disadvantaged households in the top RTE states (column 8). However, the size of estimates in Table 4 is much smaller due to the fact that the overall enrolment under the policy was less than 5% of all eligible children. If the policy had been successful, it would have had a much higher enrolment rate overall which would presumably have had a much larger effect on fees.

Table 4. Effect of district-level variation in RTE places on school fees

	Whole sample				Sibling sample			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES								
Young	-0.465***	-0.505***	-0.302	-0.215	-0.423***	-0.501***	-0.340**	-0.332**
	(0.097)	(0.130)	(0.245)	(0.305)	(0.071)	(0.094)	(0.138)	(0.164)
RTE enrolment rate	0.154***	0.206***	0.159***	0.177***				
	(0.045)	(0.070)	(0.042)	(0.058)				
Young x RTE enrolment rate	-0.040	-0.027	-0.086*	-0.066	-0.048*	-0.069	-0.076*	-0.094*
	(0.031)	(0.051)	(0.049)	(0.061)	(0.027)	(0.046)	(0.040)	(0.056)
Constant	2.255***	3.324***	3.693***	4.296***	1.983***	2.377***	1.707**	1.874**
	(0.257)	(0.383)	(0.847)	(1.417)	(0.301)	(0.388)	(0.690)	(0.775)
Observations	6,885	4,800	1,269	984	3,233	2,214	554	426
R-squared	0.46	0.46	0.43	0.46	0.96	0.96	0.96	0.96
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District FE	Yes	Yes	Yes	Yes	No	No	No	No
Household FE	No	No	No	No	Yes	Yes	Yes	Yes

Notes: Dependent variable is the real annual fee in private school (in thousand rupees). Fee includes tuition fee, examination fee and other compulsory payments. Columns (1) and (5) correspond to all households. Columns (2) and (6) correspond to a sample of children from richer households, that have a real consumption expenditure higher than the median consumption in the round in which they are surveyed. Columns (3) and (7) correspond to a sample of top RTE states: Rajasthan, Madhya Pradesh, Chhattisgarh, Karnataka, and Uttarakhand. Columns (4) and (8) correspond to a sample of richer households in the top RTE states. Standard errors are clustered at the district level. *** p<0.01, ** p<0.05, * p<0.1

7 Mechanisms

Results from the difference-in-differences model show that exposure to the affirmative action policy reduced private school fees. Younger disadvantaged children paid a lower fee than older children in private schools after the policy, especially in districts where enrolment under the policy was higher. Additionally, the effect was stronger for children who were more likely to have applied to the policy. However, from Table A.1, it is evident that the effect was not directly driven by free places offered under the affirmative action policy.

A potential mechanism driving the effect could be the adjustment in the market equilibrium of private schooling due to increased school choice. As argued by McEwan (2000), increased competition from school choice policies may lead to changes in the equilibrium price of private schools. The affirmative action policy gave school choice to children who in principle, could not afford private education. The increased school choice could have, in theory, led to an increase in the demand for private education among these children despite a low takeup directly under the policy. Due to the limited availability of seats under the policy, the prevailing high demand for private education could have been amplified. Studies such as the one by Noronha & Srivastava (2013) illustrate that parents engaged in extensive efforts to avail the free seats guaranteed under the policy often applying to several schools and showing readiness to persist in their efforts if initial attempts were unsuccessful.

With increased competition among private schools, private schools could lower the fees for the younger cohort, newly starting school. However, existing private schools face several constraints that make it difficult to reduce fees easily, including high fixed costs, the need to maintain a perception of quality, and limited capacity (UNESCO 2021). On the other hand, as theorised by Epple & Romano (1998), the school choice policy could be followed by the entry of private schools in the market. Existing studies in the literature find evidence on the responsiveness of private school supply to school choice policies that increase the demand for private education and the entry of these schools (Hsieh & Urquiola 2006, Bravo et al. 2010, Menezes-Filho et al. 2012, Böhlmark & Lindahl 2015).

If these new private schools are low-cost or low-fee, it could explain why the younger cohort paid a lower fee in the post-RTE round. This is because new schools are most likely to enroll new entrants, that is children who newly start school, as opposed to older children who already attend existing schools. The low-fee schools are more likely to cater to the disadvantaged communities, whose demand for private education increased after the policy, but who cannot afford high-fee private schools. Subsequently, the new schools would have had a higher take-up of these children, especially in places where demand for private education was higher. This would explain why the effect of exposure was stronger and more significant for disadvantaged children from better-off families, particularly in states with the best implementation of the policy.

7.1 Entry of new schools

First, I check whether the affirmative action policy increased the entry of new private schools. Table 5 shows the total stock of private schools in India and the change in the stock over time. These are reported from the raw DISE data. I find that the net change in the number of private schools was 79% higher in the post-RTE period (2010–2014). Moreover, one year after the policy became effective, that is between 2010 and 2011, the total number of private schools in DISE increased by 31,700, which was much higher than the increase in any of the preceding years.

It is possible that the increase in the supply of private schools was driven by previously unrecognized schools becoming recognized due to the mandatory requirement of the RTE Act. The RTE Act made it compulsory for all private schools to be recognized by the government. If schools failed to get recognized, they were to be shut down. Therefore, many schools that were established before 2010 but entered DISE after 2010 might have been previously unrecognized. These schools might have started reporting

data under DISE only after getting formal recognition, as DISE does not collect information from unrecognized private schools. Private schools now had an incentive to become recognized to avoid being closed down. Furthermore, only recognized private schools could offer free seats under the affirmative action policy. So there could be a correlation between recognition and reservation.

To see if the period following RTE also saw an increase in the number of schools constructed, I study the trends in the growth of 'newly built schools'. Using the information on the 'year of establishment'—reported by each school—I exclude schools that were established before RTE but enter DISE only after RTE. Similarly, out of the schools that enter in the pre-RTE period (2006–2009), I exclude schools that were established before 2006. As a result, the remaining schools in the pre-RTE and post-RTE periods are certainly 'newly built'. These are reported in the last column of Table 5. The period following the implementation of the affirmative action policy also saw a big increase of 42,432 newly built recognized private schools in India, which was 10% higher than the pre-RTE period.

Table 5. Total private in India as reported in DISE

School year	No. of schools	Change in stock	New schools
2005–06	124,270		
2006–07	143,982	19,712	14,081
2007–08	156,118	12,136	9,684
2008–09	155,631	-487	7,816
2009–10	168,768	13,137	6,853
Total		**44,498**	**38,434**
2010–11	178,404	9,636	5,437
2011–12	210,104	31,700	11,078
2012–13	222,080	11,976	8,639
2013–14	233,337	11,257	7,059
2014–15	248,638	15,301	10,219
Total		**79,870**	**42,432**

Notes: The 'change in stock' is the total number of schools in year t – the total number of schools in year $t-1$. 'New schools' are the actual newly built schools each year.

The affirmative action policy in private schools could have indirectly signaled to socially disadvantaged groups that private schools in fact provide better quality education. It could have also signaled to entrepreneurs that setting up private schools is profitable. This could result in higher post-entry profits for private schools and more private schools entering, as predicted by Menezes-Filho et al. (2012). Therefore, an increase in school choice could have resulted in an increase in the demand for private

education and subsequently led to private schools either becoming recognized or newly constructed.

Results from the program intensity model show that exposure to the policy in a district also had an effect on fees. Therefore, I investigate the relationship between the entry of new schools and the enrolment rate under the policy at the district level. I use a scaled measure of 'new places': the number of new schools per 10,000 children (aged 5–9). This is based on a few similar studies in the literature.[23]

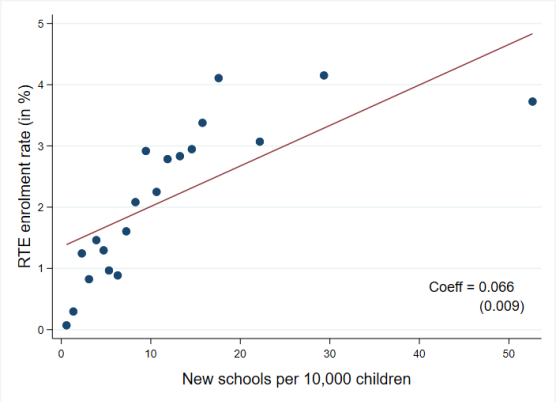
Figure 2 shows that there exists a very strong and positive relationship between new schools entering after RTE and the enrolment rate under the policy in a district. In Figure 2a, 10 new schools per 10,000 children (1 new school per 1,000 children) in a district is roughly associated with a 0.7 percentage points increase in the enrolment rate under the policy. Only looking at the newly built schools (Figure 2b), this correlation is even stronger. 10 new schools per 10,000 children in a district is associated with a 1.9 percentage points increase in the enrolment rate under the policy. Both figures show that districts that had a higher number of new private schools also had a higher enrolment under the policy.

A higher number of new private schools in a district would in principle drive up the stock of private schools in the district. This would mechanically imply a higher enrolment rate under the affirmative action policy. However, I also find that these new schools themselves had a higher enrolment rate under the policy, as shown in Figure 3. If a district had 10 new schools per 10,000 children, it was associated with an additional 0.1 percentage points enrolment under the policy in the new school (Figure 3a). Newly built schools had approximately 0.2 percentage points more enrolment under the policy (Figure 3b).

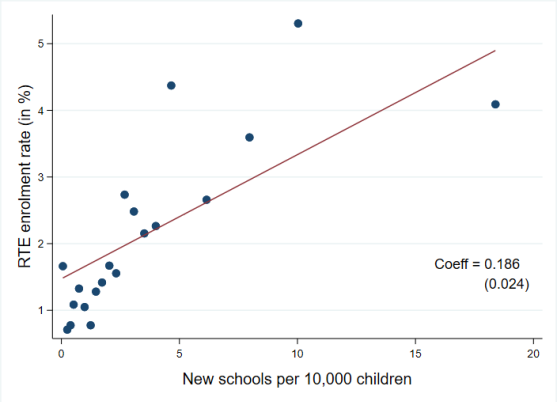
The growth of private schools after the RTE Act could be driven by the affirmative action policy, compulsory recognition of private schools, or both. Furthermore, the district-level variation in the number of new private schools seems to be driving the district-level variation in enrolment under the affirmative action policy. Evidence shows that the new private schools are also filling more places directly under the policy. Moreover, the variation in policy enrolment had a higher correlation with the variation in private schools 'newly built' after the policy. This suggests that private schools constructed after the policy were at least in part associated with an increased demand for such schools due to the affirmative action policy.

[23] For example, Duflo (2001) uses new schools built per 1000 children in the region of birth as a measure of program intensity to investigate the impact of a school construction program in Indonesia.

Figure 2. Correlation between new schools and RTE enrolment at the district level



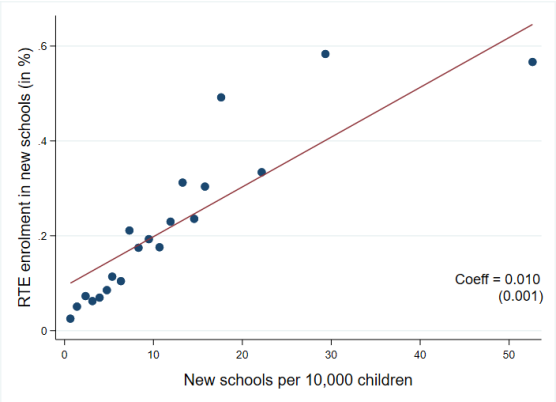
(a) All new recognized private schools



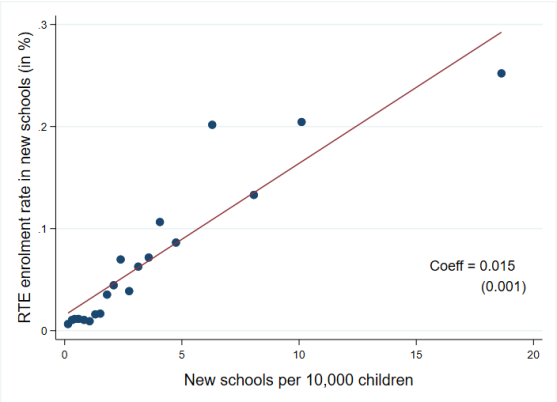
(b) Newly built recognized private schools

In Figure 2a, the number of new schools is calculated as the total number of new recognized private schools in the post-RTE period, that is from 2010 to 2014. These include private schools that were newly built and schools that might have been previously unrecognized. Figure 2b includes only those schools that were newly built after the policy.

Figure 3. Correlation between new schools and RTE enrolment in new schools at the district level



(a) All new recognized private schools



(b) Newly built recognized private schools

In Figure 3a, the number of new schools is calculated as the total number of new recognized private schools in the post-RTE period, that is from 2010 to 2014. These include private schools that were newly built and schools that might have been previously unrecognized. Figure 3b includes only those schools that were newly built after the policy. In both figures, the enrolment rate under RTE is calculated only in the new schools.

7.2 'Low-fee' new schools

The high number of new schools entering after the affirmative action policy only explains the effect on fees if these new schools charged a lower fee than the existing schools. A limitation of DISE is that it does not collect data on school fees. However, it does collect information on infrastructure and facilities that are indicative of the quality

of a school and the costs incurred by the school. DISE also includes data on the number of qualified teachers in a school, which enables me to calculate the pupil-teacher ratio for each school. The pupil-teacher ratio is also a good indicator of quality, and a higher ratio implies lower access for students to qualified teachers.

Using these measures of quality, I compare new and existing recognized private schools after RTE. Table 6 shows that new schools which entered in the post-RTE period (2010–2014), were on average lower in quality than existing schools. They had a higher pupil-teacher ratio and fewer facilities. New schools had around 42 students per teacher while existing schools had around 33 students per teacher. They were more likely to have only primary grades. New schools were also less likely to have computers, playgrounds, libraries, and tap water for drinking than existing schools. They were also less likely to conduct medical checkups for students. I find similar differences when I compare only the newly built private schools with the existing schools (Table 7).

I find strong evidence that after RTE, new private schools had fewer facilities than existing schools. Fewer facilities and resources in schools may lead to reduced operational costs. As a result, these schools may need to charge students a lower fee to attract enrolment, especially when competing with existing schools that offer better amenities. The lower fee can also reflect the reduced quality of education provided. So, if parents are paying less, they might be getting less in terms of educational standards, facilities, or resources.

On comparing new and existing schools in the pre-RTE period (2006–2009), I find that new schools before RTE also had fewer facilities than existing schools (Table A.3). This suggests that new private schools in India, in general, are lower in cost and quality than existing schools, which implies that they also charge a lower fee. When new schools enter, they have fewer facilities but over time, they improve in quality. This difference in new and existing schools did not change after RTE except for the pupil-teacher ratio. However, for the mechanism to work, this is not a necessary condition. The main channel driving the effect on fees is the increased supply of such low-fee schools.

Table 6. Characteristics of new and existing recognized private schools after RTE

	Existing	**New**	**Difference**	**Std. error**
Pupil-teacher ratio	33.00	42.00	9.00	0.121
Primary grades only	0.36	0.39	0.03	0.001
Facilities				
Computers available	0.49	0.46	-0.03	0.001
Playground available	0.84	0.71	-0.13	0.001
Library available	0.68	0.59	-0.09	0.001
Girls toilet available	0.90	0.90	-0.00	0.001
Source of drinking water: taps	0.44	0.36	-0.08	0.001
Medical check-ups conducted	0.58	0.51	-0.07	0.001

Source: DISE raw data
Notes: The differences and standard errors of differences are based on a paired sample t-test. All differences are significant at the 1% level.

Table 7. Characteristics of newly built and existing recognized private schools after RTE

	Existing	**New**	**Difference**	**Std. error**
Pupil-teacher ratio	35.00	38.00	3.00	0.193
Primary grades only	0.37	0.43	0.06	0.002
Facilities				
Computers available	0.49	0.44	-0.05	0.002
Playground available	0.81	0.70	-0.11	0.001
Library available	0.66	0.56	-0.10	0.002
Girls toilet available	0.90	0.90	-0.00	0.001
Source of drinking water: taps	0.42	0.36	-0.06	0.002
Medical check-ups conducted	0.57	0.50	-0.07	0.002

Source: DISE raw data
Notes: The differences and standard errors of differences are based on a paired sample t-test. All differences are significant at the 1% level.

Not only did the number of new private schools increase after RTE, but in districts where there was a higher number of new schools, there was also a higher enrolment under the affirmative action policy. Since the new schools were low-cost or low-fee compared to the existing schools, they had a higher take-up of children from disadvantaged families. Further, as these new schools were smaller and less likely to have upper primary grades, it was the younger cohort that enrolled in these low-fee schools. As a result, children exposed to the policy in private schools (disadvantaged and aged 5–9) paid a lower fee than children not exposed (disadvantaged and aged 10–14).

However, considering there were other regulations under the RTE Act such as manda-

tory private school recognition, it is possible that the fee reduction for the younger cohort was not due to the affirmative action policy. I address these concerns in the next section, where I show that aspects other than the affirmative action policy do not seem to be correlated with fee changes for the younger disadvantaged cohort.

8 Robustness Checks

8.1 Placebo group

The DID estimates rely on the assumption that private school fees for the treatment and the control groups would have changed in the same way over time in the absence of the affirmative action policy. One way I check this is by estimating the DID model for a group that was not exposed to the policy following the implementation of the RTE Act. This includes children from socially non-disadvantaged households, who do not belong to the lower social groups and thus are not eligible to apply for free seats under the policy.

The results from the basic DID model and the DID model with program intensity for non-disadvantaged groups are reported in Table 8. I only report the within-household estimates as it produces lower standard errors. The results are somewhat similar to those in Table 3. There was a lower increase in the fees of the younger non-disadvantaged children compared to their older siblings in round 71 (columns 1 and 2). However, unlike disadvantaged groups, the magnitude of the effect for non-disadvantaged groups is smaller in the top RTE states and richer households in these states (columns 3 and 4). Moreover, these differences are not statistically significant.

Columns (5)–(8) show the results from the program intensity model for non-disadvantaged groups. Similar to disadvantaged groups, the younger non-disadvantaged children paid lower fees than their older siblings in private schools, when there was no RTE enrolment in a district. However, when RTE enrolment in a district increased by 1%, the fees of younger and older siblings within non-disadvantaged households were not significantly different, unlike disadvantaged households as seen in Table 4.

Table 8. Effect of exposure to RTE on school fees of non-disadvantaged children

	Simple DID				Program intensity			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES								
Young	-0.665***	-0.745***	-0.672***	-0.788***	-0.857***	-0.960***	-0.693***	-0.761***
	(0.099)	(0.141)	(0.085)	(0.124)	(0.148)	(0.206)	(0.098)	(0.135)
Young x Post	-0.449**	-0.529*	-0.252	-0.172				
	(0.209)	(0.310)	(0.173)	(0.268)				
Young x RTE enrolment rate					-0.023	-0.034	-0.032	-0.036
					(0.027)	(0.036)	(0.020)	(0.026)
Constant	4.195***	5.128***	3.238***	3.948***	4.203***	5.144***	3.240***	3.949***
	(0.577)	(0.751)	(0.178)	(0.199)	(0.582)	(0.761)	(0.180)	(0.203)
Observations	4,578	2,978	1,767	1,150	4,578	2,978	1,767	1,150
R-squared	0.94	0.94	0.96	0.96	0.94	0.94	0.96	0.96
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Household FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Dependent variable is the real annual fee in private school (in thousand rupees). Fee includes tuition fee, examination fee and other compulsory payments. Columns (1) and (5) correspond to all households. Columns (2) and (6) correspond to a sample of children from richer households, that have a real consumption expenditure higher than the median consumption in the round in which they are surveyed. Columns (3) and (7) correspond to a sample of top RTE states: Rajasthan, Madhya Pradesh, Chhattisgarh, Karnataka, and Uttarakhand. Columns (4) and (8) correspond to a sample of richer households in the top RTE states. Standard errors are clustered at the district level. *** p<0.01, ** p<0.05, * p<0.1

Comparing the fees for younger and older 'non-disadvantaged' groups, who were not eligible under the policy, I observe a slower growth in the fees for the younger cohort relative to the older cohort. This is similar to the trends for disadvantaged groups. However, in places with greater demand for private education and higher enrolment under the policy, the difference between the fees of younger and older non-disadvantaged groups is lower and insignificant whereas, for disadvantaged groups, the difference is higher and significant.

The results confirm that while the policy had no effect on fee waivers directly, there is evidence of an indirect effect of the policy on fees of children exposed to the policy. This, as I find, is through the entry of new low-fee schools. While these new schools also took up non-disadvantaged children, they predominantly catered to disadvantaged children at least in states where the policy was implemented well. As a result, it was primarily the younger disadvantaged cohort that enrolled in the new low-fee private schools. This suggests that increased school choice for the disadvantaged boosted demand for affordable private education, likely resulting in more low-fee private schools.

8.2 Placebo states

In addition to the affirmative action policy, the RTE Act implemented several important regulations within the education sector. First, it made education in government schools free up to the age of 14. Second, it mandated the construction of government schools within 3–5 km of a household where no such school previously existed. Third, as dis-

cussed in Section 7.1, it required all private schools to be compulsorily recognized by the government. If these aspects of the RTE Act influenced private school fees of the treatment group, then the identifying assumption would not hold, and the effect of the affirmative action policy would not be causal.

The absence of fees in government schools for children up to the age of 14 implies that any spillovers on private school fees from the availability of free government education—potentially due to increased competition—should have a similar effect on the younger and older cohort. This is because the older cohort includes children aged 10–14, who are also exposed to free government education. Any effect of free government education would be mitigated when taking the difference in private school fees between the pre and post-RTE rounds.

However, construction of government schools and compulsory recognition of private schools could have a differential effect on the younger disadvantaged cohort in round 71. Both result in an increased supply of 'new schools' in the market. If the new schools have only primary grades (up to grade 5) as they predominantly do (see Table 6), then only the younger cohort in round 71 (new entrants after RTE) would be enrolled in these schools. Moreover, given that the new government schools are free and new private schools are low-fee, any potential influence on private school fees might primarily affect the fees of the younger disadvantaged cohort as they have now have more school choice. To check if the effect on private school fees is driven by other aspects of the RTE Act, I estimate the DID model for states that had no formal implementation of the affirmative action policy even by 2014–15. As per the Ministry of Education these include Andhra Pradesh, Himachal Pradesh, Kerala, Punjab and West Bengal (see Figure 1).

There could be a concern that states failing to formally implement the affirmative action policy also had weak implementation of other requirements of the RTE Act. However, free government education, construction of government schools, and formal recognition of private schools have been more widely and systematically implemented throughout the country (RTE Forum 2015). Additionally, the implementation and administration costs of these mandates were shared between the central and state governments, whereas the costs associated with the affirmative action policy were solely borne by the state governments until 2014–15. Therefore, state-level variation in the implementation of the affirmative action policy need not be correlated with the variation in the implementation of other RTE Act regulations.

Columns (1) and (2) in Table 9 show the within-household estimates from the simple DID model. I find that after the policy, the increase in fees was lower for younger disadvantaged children in private schools than for their older siblings even in these states.

The magnitude is high although the estimates are not statistically significant. Comparing it to the estimates from the main DID model, I find that the effect sizes are similar but the standard errors are much lower in the model with all states (see columns 5–6 in Table 3). This could be due to a larger sample size. However, in the top RTE states and richer households in these states, the size of the effect is much larger and highly significant (see columns 7-8 in Table 3) despite a sample size that is smaller and closer to the sample size with the placebo states in Table 9.

The results from the program intensity model are also similar. Despite the placebo states having no formal implementation, they report some (albeit very little) enrolment under the affirmative action policy in DISE. This enables me to calculate the rate of RTE enrolment at the district level in these states. In columns (3) and (4), I find that a 1% increase in RTE enrolment is not associated with a significant difference in the fees between younger and older disadvantaged siblings. Even though the magnitude of the estimates is higher compared to the estimates in Table 4, the standard errors are also much higher.

Results from Table 9 imply that even in states with no formal implementation of the affirmative action policy, the younger disadvantaged children did pay a lower fee, which was also potentially due to the entry of new low-fee schools. However, the difference between the fees of younger and older children was not statistically significant. This suggests that the supply of new schools in these states did not increase the enrolment of the younger disadvantaged in the new low-fee private schools as much as it did in the states with a formal implementation of the policy. Therefore, the affirmative action policy did alter the demand for private schooling among disadvantaged children and indirectly reduced their fees following the availability of new low-fee private schools.

Table 9. Effect of exposure on fees in states with no formal implementation

	Simple DID		Program intensity	
	(1)	(2)	(3)	(4)
VARIABLES				
Young	-0.820***	-0.875***	-0.954***	-1.024***
	(0.221)	(0.225)	(0.255)	(0.285)
Young x Post	-0.387	-0.436		
	(0.457)	(0.530)		
Young x RTE enrolment rate			-0.144	-0.142
			(0.311)	(0.368)
Constant	3.727***	3.844***	3.793***	3.906***
	(1.226)	(1.422)	(1.220)	(1.417)
Observations	465	378	465	378
R-squared	0.95	0.95	0.95	0.95
Controls	Yes	Yes	Yes	Yes
Household FE	Yes	Yes	Yes	Yes

Notes: Columns (1)-(4) present results from the within-household estimation for the states of Andhra Pradesh, Himachal Pradesh, Punjab, Kerala and West Bengal. The dependent variable is the real annual fee in private school (in thousand rupees). Fee includes tuition fee, examination fee and other compulsory payments. Columns (1) and (3) correspond to all households. Columns (2) and (4) correspond to a sample of children from richer households, that have a real consumption expenditure higher than the median consumption in the round in which they are surveyed. Standard errors are clustered at the district level. *** p<0.01, ** p<0.05, * p<0.1

8.3 All disadvantaged children

The RTE Act could have spillover effects on all disadvantaged children in the eligible age group, and not just children in private schools. A possible concern is that focusing only on the private sector misses what happens to disadvantaged children in general. In principle, free government education, the affirmative action policy and the growth of both government and private schools could have an effect on the enrolment trends of all disadvantaged children, as well as their cost of schooling.

Therefore, I estimate the simple DID model in Equation (2) on the sample of all disadvantaged children aged 5–14. The treatment group is still the younger cohort (aged 5–9) and the control group is the older cohort (aged 10–14). I incorporate only the within-household estimation as it produces more precise estimates. The results are reported in Table 10. Columns (1) and (2) show that post-policy increase in fees was significantly lower for younger disadvantaged children relative to their older siblings. The effect is larger in magnitude among the richer disadvantaged households (column 2). This is similar to the results in Table 3, where I estimate the effect on fees within the private sector. This implies that all younger disadvantaged children benefited from a lower fee and not just those attending private schools.

Columns (3) and (4) report the estimates from the top RTE states. I find that while the younger disadvantaged cohort pays a lower fee overall than the older cohort post-policy, the difference is not statistically significant. Even though the magnitude is higher among the richer disadvantaged households (column 4), the estimate is still insiginificant. Therefore, in the states where the affirmative action policy was implemented more effectively, only younger disadvantaged children in private schools benefited from a lower fee (as shown in Table 3).

Table 10. Effect of exposure on fees of all disadvantaged children

VARIABLES	(1)	(2)	(3)	(4)
Young	-0.068***	-0.099***	-0.082***	-0.121***
	(0.017)	(0.030)	(0.023)	(0.040)
Young x Post	-0.117**	-0.256***	-0.108	-0.301
	(0.046)	(0.092)	(0.107)	(0.190)
Constant	0.427***	0.733***	0.465***	0.839***
	(0.039)	(0.075)	(0.061)	(0.115)
Observations	25,520	12,019	4,627	2,176
R-squared	0.90	0.90	0.94	0.95
Controls	Yes	Yes	Yes	Yes
Household FE	Yes	Yes	Yes	Yes

Notes: The dependent variable is the real annual fee in school of all disadvantaged children (in thousand rupees). Fee includes tuition fee, examination fee and other compulsory payments. Columns (1) corresponds to all households. Column (2) correspond to a sample of children from richer households, that have a real consumption expenditure higher than the median consumption in the round in which they are surveyed. Column (3) corresponds to a sample of top RTE states: Rajasthan, Madhya Pradesh, Chhattisgarh, Karnataka, and Uttarakhand. Column (4) corresponds to a sample of richer households in the top RTE states. Standard errors are clustered at the district level. *** p<0.01, ** p<0.05, * p<0.1

To understand the mechanisms, it is useful to study the trends in enrolment. Table 1 shows that overall there was an increase in private school enrolment of disadvantaged children. However, for the younger cohort it was accompanied by a decline in government school enrolment, while for the older cohort there was no such decline. Despite the same proportion of older cohort studying in government schools (for free post-policy) and a decline in government school enrolment for the younger cohort, Table 10 shows a lower average fee for the younger cohort post-policy.

The decline in government school enrolment for the younger cohort indicates a stronger preference towards private schools. The shift towards private schools among the younger cohort could have led to increased competition among private schools, resulting in more competitive fee structures. This competition might be more pronounced for the younger cohort, who were newly entering the education system and whose parents were making fresh enrolment decisions. In section 7, I showed that there was an increase in the growth of low-fee private schools after the RTE Act.

On the other hand, for the older cohort, the increase in private school enrolment was not accompanied by a departure from government schools. In fact, the increase is driven by overall higher school attendance rates rather than a shift in preferences. As a result, private schools might not have felt the same pressure to adjust fees competitively for

this cohort. Additionally, as the older cohort attending private schools in round 71 are essentially children who would not have otherwise gone to school, the average fees of the cohort is higher post policy.

In the top RTE states, I find that there was a shift from government to private schools for both younger and older cohorts of disadvantaged children (Table 11). There seems to be a strong preference for private schools among both younger and older children in these states. The increase in private school enrolment is equal for both cohorts although the accompanying decrease in government school enrolment is 3 percentage points larger for the younger cohort.

A larger decline in government school enrolment among the younger cohort implies a relatively larger share of older children in government schools paying no fees. This could offset the difference in fees between the cohorts in the private sector and could explain why there is no difference in fees overall. Moreover, private schools might not need to reduce fees drastically to attract students if there are other compelling reasons for families to choose private education over free government education, such as the affirmative action policy which was much more systematically implemented in these states.

Table 11. Proportion of disadvantaged children in school in the top RTE states

	Round 64 Mean	**Round 71** Mean	**Difference**	**Std. error**
Treatment group				
Attends school	0.82	0.88	0.06	0.010
Attends government school	0.62	0.56	-0.06	0.014
Attends recognized private school	0.10	0.16	0.06	0.009
Attends unrecognized private school	0.01	0.01	0.00	0.002
Observations	3,437	2,052		
Control group				
Attends school	0.81	0.90	0.10	0.009
Attends government school	0.66	0.63	-0.03	0.012
Attends recognized private school	0.07	0.13	0.06	0.008
Attends unrecognized private school	0.00	0.01	0.01	0.002
Observations	3,566	2,562		

Source: National Sample Survey
Notes: Remaining children attend private aided schools. Disadvantaged children who do not know if their private school is recognized or unrecognized are dropped (less than 5%). The differences and standard errors of differences are based on a paired sample t-test.

In summary, post-RTE, the younger disadvantaged cohort paid significantly lower fees in general than their older counterparts. However, in states where the demand for private education was larger due to better implementation of the affirmative action policy, only the younger disadvantaged cohort attending private schools paid relatively lower fees. This further lends credibility to the causal effect of the affirmative action policy on private school fees of children exposed to the policy.

9 Conclusion

This paper finds an indirect spillover effect of the affirmative action policy of the RTE Act on the expenditure on private school fees of socially disadvantaged children in India. It uses a difference-in-differences methodology to estimate the effect of the policy by exploring time and regional variation in exposure. It compares the outcome across two age cohorts of disadvantaged groups, starting school at different times, that is before and after the policy was introduced. Regional variation in exposure is proxied with a measure of enrolment rate under the policy, calculated at the district level.

This paper finds that the growth in the annual fees for younger disadvantaged children in private schools was slower than their older counterparts after the policy. There was a consistently larger effect among households with a higher demand for private education. These were the richer disadvantaged households, who were more likely to apply for free seats under the policy and households in the states that adhered more to the affirmative action policy. However, overall, the effect of the policy was small to moderate. Nonetheless, through increased school choice, the policy does seem to have resulted in a huge demand for private education among disadvantaged communities.

This paper also finds that following the implementation of the RTE Act, there was a large increase in the number of private schools in India. In addition, these new private schools were found to be low-cost or low-fee compared to the existing schools, which led to a higher enrolment of younger disadvantaged children in the new schools. There was also a district-level variation in the enrolment under the policy, which was strongly associated with the entry of new schools. Therefore, in districts that had a higher enrolment under the policy, younger disadvantaged children paid a relatively lower fee in private schools.

The findings imply that although few disadvantaged children were admitted directly under the policy in private schools, after RTE, there was a higher proportion of disadvantaged children in private schools which were largely low-fee. The results are robust

to the inclusion of non-eligible groups like non-disadvantaged children and states with no formal implementation of the policy. New low-fee schools were not exclusive to disadvantaged groups, but disadvantaged households with a higher demand for private education were more likely to enroll children in these new schools. This implies that they were willing to pay a lower fee to secure a place in a private school even if they did not receive a free place under the policy.

However, the exact channel that resulted in an increased supply of private schools after the RTE Act is challenging to entangle. It could have been due to an increase in the stock of 'recognized' private schools, as after RTE, it was compulsory for private schools to be recognized by the government. It could also have been due to the perception that free education in government schools is of poor quality. Nonetheless, in states that formally implemented the policy, increased school choice does seem to have increased the supply of low-fee private schools. As a result in these states, the affirmative action policy increased the enrolment of disadvantaged children in such schools. School choice was greater among the better-off disadvantaged families who were even more likely to send their children to low-fee private schools and therefore benefited from paying a lower fee.

The affirmative action policy to some extent is regressive as private schools mostly accommodated fee-paying disadvantaged children, especially from better-off families, who could afford private education. The findings from the paper are consistent with the argument in Bertrand et al. (2010), that affirmative action primarily benefits a narrow segment of the population— those who are economically well-off among the disadvantaged groups. Due to its weak implementation, the poorest of the poor are still left out and might be forced to attend government schools.

If private schools cream-skim children from better-off families and government schools mostly include children from low-income backgrounds, the RTE policy could have negative implications on the quality of government education. On the other hand, government schools might be pressured to improve the quality of education to makeup for the declining enrolment. Additionally, as the policy resulted in disadvantaged children attending low-fee, and therefore, low-quality private schools, there could be a negative effect on their learning outcomes. School choice resulting in sorting of students across schools and the potential effects on quality of education has been discussed in McEwan (2000). In the context of the RTE policy, these are aspects that future research can explore.

A Appendix

A.1 Figures

Figure A.1. Percentage of children enrolled under the affirmative action policy by 2014–15 (district-level)

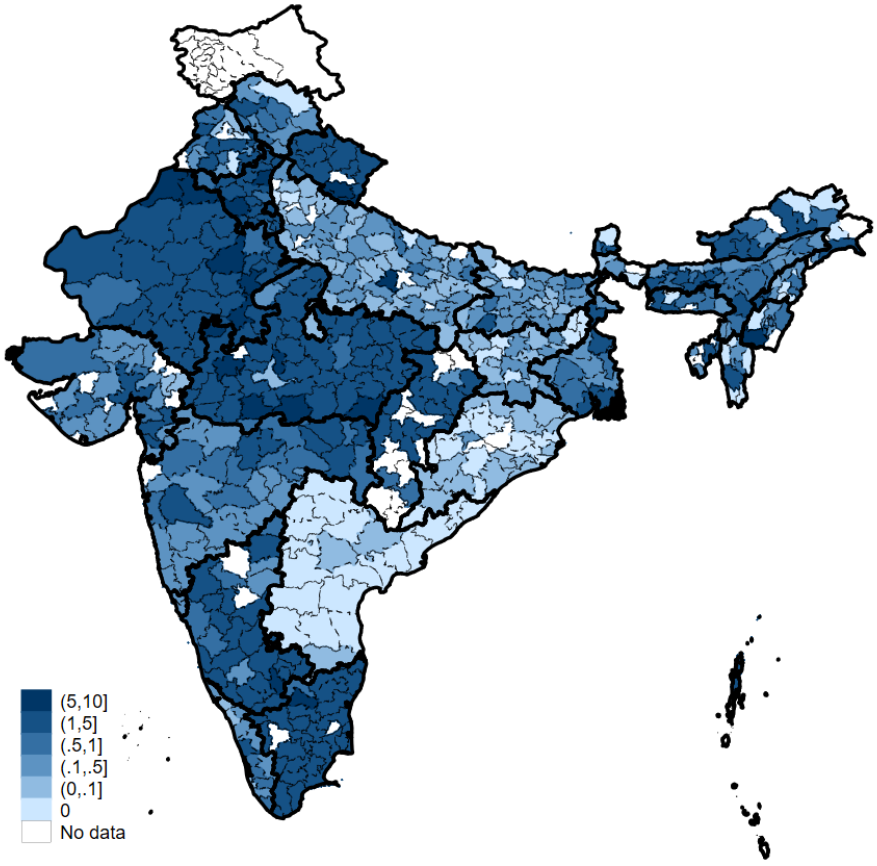
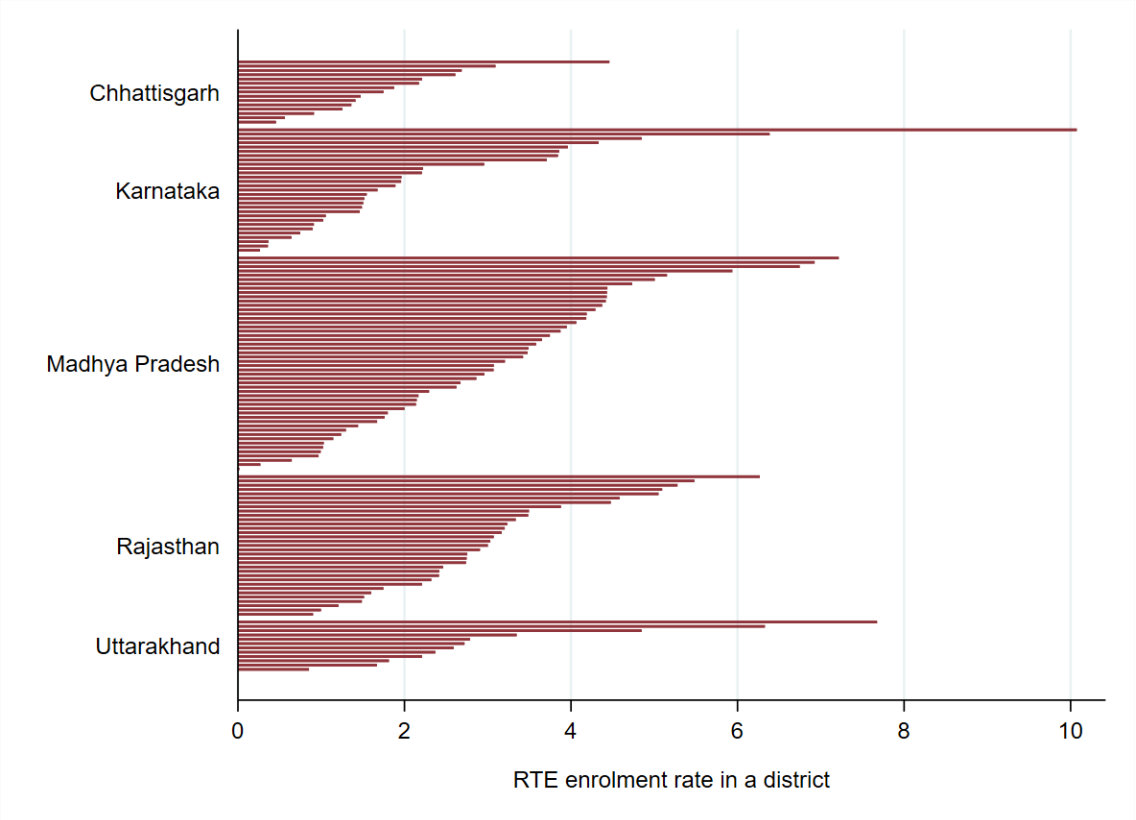


Figure A.2. Percentage of children enrolled under the affirmative action policy in the top RTE states



Top RTE states correspond to the top 5 states that had the highest enrolment rate under the affirmative action policy. The enrolment rate reported here is the average enrolment rate from 2010–11 to 2014–15.

A.2 Tables

Table A.1. Free and subsidized education of disadvantaged children in private schools

	Round 64		Round 71		Difference	Std. error
	Obs.	Mean	Obs.	Mean		
Treatment group						
Education						
Free	105	0.07	48	0.02	-0.05	0.007
Not free	1,497	0.93	1,961	0.98	0.007	
Total	**1,602**		**2,009**			
Tuition fee waived						
Fully	34	0.02	26	0.01	-0.01	0.004
Partly	17	0.01	17	0.01	-0.00	0.003
Not waived	1,446	0.97	1,918	0.98	0.01	0.006
Total	**1,497**		**1,961**			
Control group						
Education						
Free	90	0.07	54	0.03	-0.04	0.007
Not free	1,216	0.93	1,921	0.97	0.04	0.007
Total	**1,306**		**1,975**			
Tuition fee waived						
Fully	17	0.01	14	0.01	-0.01	0.004
Partly	20	0.02	28	0.01	-0.00	0.004
No waiver	1,179	0.97	1,879	0.98	0.01	0.006
Total	**1,216**		**1,921**			

Source: National Sample Survey
Notes: The differences and standard errors of differences are based on a paired sample t-test.

Table A.2. Average monthly consumption expenditure of disadvantaged households with children in private schools

	Round 64 (₹)	**Round 71** (₹)	**Difference** (₹)
Whole sample	2,281	2,300	19
Richer households	2,532	2,683	151***
Top RTE states	2,356	2,195	-161***
Richer households in top RTE states	2,756	2,784	28

Source: National Sample Survey
Notes: Consumption expenditure per adults is in real terms, deflated by the Consumer Price Index (2010=100). Results in column (5) are based on a paired sample t-test. *** p<0.01, ** p<0.05, * p<0.1

Table A.3. Characteristics of new and existing private schools before RTE

	Existing	**New**	**Difference**	**Std. error**
Pupil-teacher ratio	37.00	34.00	3.00	0.244
Facilities				
Computers available	0.37	0.32	-0.05	0.002
Playground available	0.81	0.71	-0.10	0.002
Library available	0.61	0.45	-0.16	0.002
Girls toilet available	0.94	0.91	-0.03	0.001
Source of drinking water: taps	0.43	0.37	-0.04	0.002
Medical check-ups conducted	0.55	0.46	-0.11	0.002

Source: DISE raw data
Notes: The differences and standard errors of differences are based on a paired sample t-test. All differences are significant at the 1% level.

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