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

by

Athira Vinod

Abstract

Under the Right to Education Act (2009), the Indian government introduced a policy that required private schools to reserve 25% of primary school places for children from socially disadvantaged households. This paper examines the impact of the RTE Act's reservation policy on private school expenditure by socially disadvantaged households. Leveraging the age of school entry and using a difference-in-difference approach, this paper finds a significant decrease in private school fees for disadvantaged children post-policy. This reduction is more pronounced in districts with higher enrolment rates under the policy. The change is attributed to a rise in low-cost private schools post-policy, facilitating cheaper education for disadvantaged students. Moreover, there exists a strong correlation between the growth of low-cost schools and increased policy enrolments at the district level.

JEL Classification: I21, I22, I24, I28

Keywords: Private schools, Disadvantaged groups, Right to Education Act, Reservation policy

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Outline

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1 Introduction

Like many developing countries of the world, India faces the problem of under-education and low literacy rates. Despite the expansion of schools in the last two decades, millions of children are not enrolled and dropout rates are high. Given that almost 80% of India's population is poor and socially disadvantaged, the issue of low school enrolment is almost entirely concentrated among lower social categories.[1] The National Sample Survey (NSS) of India found that in 2014, more than 75% of children aged 6-14 not enrolled in schools belonged to lower social categories. Furthermore, only 15% of children from low-income families are found to attend private schools in India (Alcott & Rose 2015).

To address these issues, the government of India introduced the Right to Education (RTE) Act in August 2009. One of the main provisions of the Act was subsidizing private education for the poor and socially disadvantaged through a reservation policy. It required private schools to reserve 25% primary school places for children from lower socio-economic backgrounds. The RTE Act's reservation policy is the first national-level policy in private education aimed at the social integration of primary-school-age children. It is one of the world's largest policies in education with the potential to benefit the lives of millions of children from lower social backgrounds.

The reservation policy should, in theory, increase private school enrolment and lower school fees through subsidized education. However, according to the Ministry of Education (MoE), even by 2019-20, less than 5% of all eligible children in India were enrolled under the policy. One reason for low enrolment is that not all states of India have systematically implemented the policy. The second reason is that even within states that have implemented the policy, many private schools have not filled all the available seats under the policy. The poor implementation in many states is mainly due to a lack of proper incentives for the schools, unclear rules regarding the admission procedure, and parents being charged non-tuition fees (Sarin et al. 2017).

As a result, nationally, only a small fraction of eligible children are studying in private schools free of cost. However, despite the low take-up, the policy could have some spillovers on the market for private schools by affecting the demand and supply conditions (see Hsieh & Urquiola (2006), Menezes-Filho et al. (2012), Böhlmark & Lindahl (2015)) or by influencing behaviour through 'signaling' (see Spence (1978), Weiss (1995), Lang & Manove (2011)). If the policy had an indirect effect on the supply of schools, it could have also led to changes in the price of private schooling.

In this paper, I investigate whether the reservation policy had a spillover effect on price, that is the tuition fees in private schools. To identify the effect of the policy on

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

fees, I exploit an exogenous variation in the age of starting school due to the timing of the policy. I use repeated cross-sectional household survey data and a difference-in-differences strategy to compare the fees of two age cohorts from lower social categories across two time periods– before and after the policy.

Due to large district-level variations in the takeup under the policy, I also incorporate a continuous measure of program intensity in the model, which makes the measure of treatment stronger. The intensity of the program is proxied using the rate of enrolment under the policy, which I calculate from administrative school-level data. Apart from district fixed effects, I also use household fixed effects and compare the outcome between siblings. This allows me to control for a large set of unobserved characteristics that are constant within a household, thus strengthening the identification.

I find that the reservation policy reduced annual private school fees by ₹223 ($p<0.1$).[2] The reduction in fees was larger among households with higher demand for private education (₹844, $p<0.05$). This includes households that were economically better off within lower social categories and were living in states where there was a more systematic implementation of the policy. The decrease in fees for these households was equivalent to around 2.5% of their monthly consumption expenditure. I also find that a 5% increase in the enrolment rate under the policy in a district reduced annual private school fees by ₹240 ($p<0.1$). 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 ($p<0.1$).

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 private schools in India. Five years after the policy, there were 79% more private schools that could, in principle, provide subsidized education to the less privileged. I find that these new private schools charged a much lower fee than the existing schools and therefore, had a higher take-up of children from lower social categories. Furthermore, the entry of new low-fee schools was strongly and positively correlated with the program intensity at the district level. Moreover, the new low-fee schools also had a relatively higher enrolment rate under the policy. The district-level variation in the enrolment rate under the policy therefore seems to be driven by the district-level variation in the entry of new schools.

The increase in the number of private schools seems to be a supply-side response to an increased demand for private education. In India, there has been a growing demand for private education, which is well established in the literature (see Krishna et al. (2017), Bhattacharjee (2019), Kingdon (2020)). With the implementation of the policy, this increasing demand seems to have amplified, as now, children from lower social categories have the opportunity to attend private schools for free, especially in states

[2] 1 USD is roughly equal to ₹83.

that formally implemented the policy (Noronha & Srivastava 2013). This increased demand could have incentivized new private schools to enter. As these new schools were low-fee, it encouraged children from lower social categories to enrol in these schools.

A potential threat to identification is if there are other factors or other aspects of the RTE Act that led to a reduction in private school fees. The RTE Act also mandated free primary education in government-run schools as well as the establishment of these schools in areas where no such school existed. If the existence of new government-run free schools shifted the demand towards low-fee private schools that are deemed better, it could have resulted in lower fees. Another important aspect of the RTE Act is that it became mandatory for private schools to be recognized by the government. The growth of recognized private schools could have added to the increased supply of private schools, which could have direct implications on fees.

However, my findings are robust to the inclusion of a placebo group that was not eligible under the reservation policy but could have been affected by other provisions of the RTE Act. This includes children from higher social categories. Moreover, the reservation policy was the only policy at the time that was aimed at private education of lower social categories. As an additional robustness check, I estimate the model in states without formal implementation of the reservation policy but that may have seen a growth in recognized private schools. While the increase in low-fee private schools also seems to be prevalent in these states, there is no differential effect on fees for children eligible for free seats under the reservation policy. This suggests that although other provisions of the RTE Act could have increased the demand for private education and led to the growth of low-fee private schools, it did not necessarily translate into varied fee structures for the intended beneficiaries of the reservation policy.

My paper makes a contribution to mainly three strands of literature in education: supply-side interventions, school-choice programs, and affirmative action in India. In the context of developing countries, supply-side interventions have mainly taken the form of universal primary education programs (Deininger 2003, Grogan 2008, Nishimura et al. 2008) and school construction programs (Duflo 2001, Handa 2002, Burde & Linden 2013, Kazianga et al. 2013). Existing studies have found a positive effect of such interventions on enrolment in primary education. The RTE policy is also a large supply-side intervention that is aimed at increasing the number of places in private schools for poor and disadvantaged children. Studies on school-construction programs have shown how exogenous variation in birth and regional variation in intensity can be explored for causal inference by comparing cohorts differentially affected (Duflo 2001, Handa 2002). My paper uses a similar approach but is the first to do it in the context of the RTE policy.

Supply-side interventions to increase enrolment and improve educational attainment also include public-private partnerships (PPP), which have been extensively im-

plemented in countries such as Pakistan. PPP programs in Pakistan have been widely studied using both quasi-experimental methods (Barrera-Osorio & Raju 2015, Crawfurd 2018), and randomized control trials (Kim et al. 1999, Andrabi et al. 2020, Barrera-Osorio et al. 2022). Although such programs have been successful in increasing enrolment, they have had minimal effects on learning. Other studies that are not causal have investigated the relationship between PPP programs in Pakistan and learning outcomes (Amjad & MacLeod 2014) and the factors determining the type of school attended (Ansari 2020). To the best of my knowledge, my paper is the first to use a quasi-experimental approach to evaluate the causal effect of the RTE policy, which is the longest-running PPP program in education in India.

The literature on school-choice programs includes evaluation of policies initiated by the government (Hsieh & Urquiola 2006, Menezes-Filho et al. 2012, Böhlmark & Lindahl 2015, Dinerstein & Smith 2021) and the use of randomized experiments (Muralidharan & Sundaraman 2017, Dixon et al. 2019). The relationship between government-run school choice policies and the supply of private schools is well established in the literature. My paper corroborates the finding in these studies that school choice programs create a huge demand for private education which results in an increase in the supply of private schools. However, it is novel in providing empirical evidence on the relation between the RTE policy's school choice and the entry of new private schools as a result of the increased demand for private education in India.

This paper also adds to the limited literature on affirmative action in primary education in India. In recent years, two other papers have studied the effect of exogenous variation in the status of belonging to lower social categories on educational attainment (Cassan 2019) and pro-social behaviour (Rao 2019) but not in the context of the RTE policy. Existing studies of the RTE policy have investigated the impact on enrolment and educational attainment of children who are directly admitted under the policy through lotteries (Damera 2017, Dongre et al. 2018, Joshi 2020, Romero & Singh 2023). The papers by Damera (2017); Dongre et al. (2018) and Romero & Singh (2023) have found similar results. Lottery winners were more likely to attend private schools, which were largely English-medium and charged marginally higher fees. Moreover, all three studies found that children from economically better-off households and those with more educated parents were more likely to apply under the policy. However, the effects on learning outcomes have been mixed.

While getting a free seat under the policy in a private school could have positive implications, as found in the literature, the aim of the policy was the social integration of 'all poor and disadvantaged' children in India. My paper differs from the existing studies by focusing on all children who were eligible to apply under the policy due to their social category. It also differs by looking at the policy's indirect spillovers on families' education expenditure using national sample survey data.

The rest of the paper is organized as follows. Section 2 provides details of the RTE reservation 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 reservation policy

The Right to Education Act implemented a reservation policy that mandates all private unaided[3] 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.[4]

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 reservation policy being one of the most important educational policies in India, its implementation has been sporadic. For instance, in states such as Tamil Nadu, 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 children in the eligible age group were studying under the policy in India. By 2019-20, this increased to around 4.6%.

[3]These schools are managed by an autonomous private body and do not receive any maintenance grants or funds from the government. Private unaided schools are referred to as simply private schools in the paper unless mentioned otherwise.

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

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.

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. According to Sarin et al. (2017), in many states, private schools do not receive timely reimbursements from the government.

Sarin et al. (2017) also found that 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. 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).

Although the reservation policy has failed to achieve its full potential in terms of enrolment, given its scale, it could still have indirect implications on the market through spillovers. 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[5], which was 2.6% of the total funds[6] allocated to school education. The reservation policy

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

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

is therefore, an important policy to study, and its effects are worth investigating.

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 reservation policy on education expenditure 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, 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 reservation 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.[7] In the data, those who attend private unaided schools are further asked if the schools are *recognized*[8] by the government. 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 reservation 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 disadvantaged groups, who are eligible under the policy due to their lower social category.[9]

[7] 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.

[8] Private unaided schools are recognized by the government upon fulfillment of certain standards and requirements in terms of infrastructure, enrolment, and expenditure.

[9] 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) at the district level. DISE is a nationwide database of roughly 2 million recognized[10] 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 reservation 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 reservation policy was introduced nationally, only 16 out of 33 states have formally implemented the policy according to the Ministry of Education (MoE).[11] 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.[12]

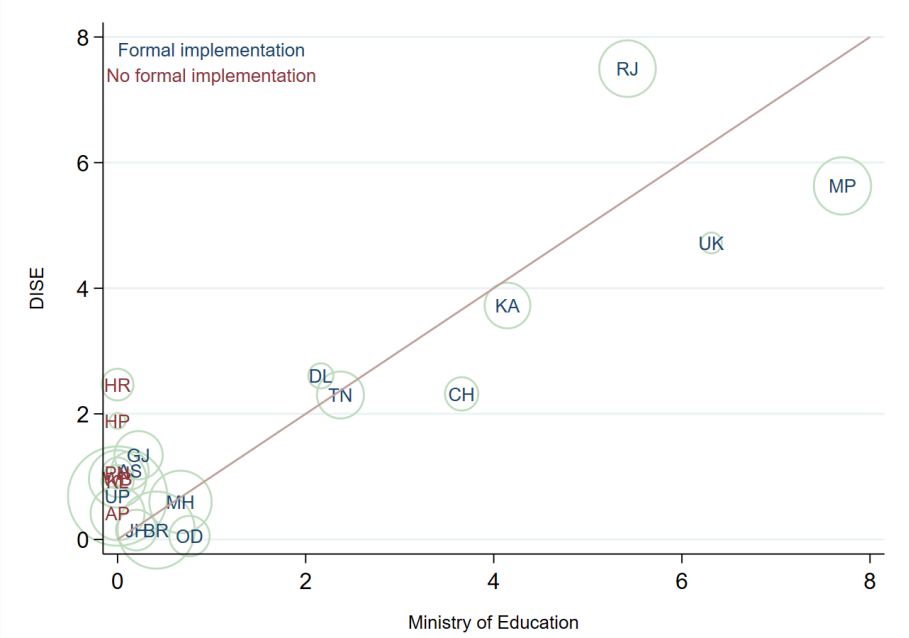
States such as Madhya Pradesh, Rajasthan, Karnataka, Uttarakhand, and Chhattisgarh have the highest enrolment under the policy. However, there is a discrepancy in the enrolment calculated from DISE for these states and the enrolment reported by the MoE. In all states that did not formally implement the 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.

[10] All recognized private schools are included but unrecognized private schools are not.

[11] 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.

[12] 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 reservation 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 not formal implementation of the policy are Andhra Prdaesh, Kerala, West Bengal, Punjab, Haryana and Himachal Pradesh.

4 Identification strategy

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 enrollment 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.

Section 4.1 provides a comprehensive explanation of how I define 'exposure' to the policy. Essentially, I leverage the exogenous variation in eligibility to receive free seats under the policy. Using data on social category and age at which schooling starts from the NSS, I identify the cohort aged 5-9 from disadvantaged groups (SC/ST/OBC) as children exposed to the policy.

If the reservation policy is effective, it would lead to higher enrolment in private schools among children who are eligible and thus exposed to the policy. Furthermore, it would lead to higher overall enrolment among these children in schools if there is no substitution from government to private schools. On the other hand, if the effects of the policy have been largely indirect, the increased private school enrolment could be due to reduced private school fees. To explore these effects, I first look at the descriptive

evidence from the NSS data in Section 4.2.

4.1 Defining exposure to the policy

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[13] 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 reservation 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, 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

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

outcome, the DID estimate can be represented as:

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

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 India's 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 33% 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 reservation policy. Studies such as Romero & Singh (2023), Dongre et al. (2018) and Damera (2017) have found that within the eligible groups, the majority of the applicants of the reservation policy belong to economically better-off households. This is largely because of low awareness about the policy among 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.

Then I restrict the sample to states that had a better implementation of the reservation policy and subsequently a higher enrolment under the same. 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 con-

sistently 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 reservation 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 forms of development fee, library fee, etc. Education in government schools in most states is free.[14] 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 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 reservation policy in private

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

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 reservation 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 reservation 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 reservation policy.

5 Effect of exposure on fees

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

To establish a causal relationship between the reservation 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.

$$Fee_i = \beta_0 + \beta_1 Young_i + \beta_2 Post_i + \beta_3 Young_i \cdot Post_i + \gamma_0 X_i + \alpha_d + \varepsilon_i \quad (2)$$

Fee_i is the real[15] 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. $Young_i \cdot Post_i$ 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[16]. 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. One way to check this is by estimating Equation (2) for groups that were not exposed to the reservation 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 useful because it will control for unobservables that are fixed within a disadvantaged family. So, I estimate the same 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:

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

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

[15] 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).

[16] 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.

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 difference-in-differences 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, the difference is not statistically significant with district fixed effects as the standard errors are high (columns 1-4).

In the specifications with household fixed effects (columns 5-8), I find that within disadvantaged households in round 71, the fees of younger children were significantly lower than that of their older siblings relative to round 64. Additionally, the magnitude of the effect is larger within households that were more likely to apply under the reservation policy.

In the states with the best implementation of the policy (column 7), the annual fees of younger children were lower than that of their older siblings by almost ₹650 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 lower by ₹844 after RTE. This means that given a monthly consumption expenditure of ₹2,784 (Table A.2), disadvantaged households with only younger children saved about 2.5% of their expenditure due to the policy.

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

Results from the basic DID 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 reservation 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.

6 Effect of district-variation in exposure on fees

In the basic DID model, the 'treatment', which is the exposure to the reservation policy, is simply based on eligibility as a result of age and disadvantaged status. 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 un-

der the reservation policy varies not only across states but also within states. In Figure A.1, I map the enrolment rate under the reservation policy at the district 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 could arise because of variation in the availability of private schools or variation in 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 reservation policy in each district.[17] 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 this regional variation[18] in the intensity of the policy to estimate the effect on the fees of 'treated' children in private schools. I use the enrolment under the reservation 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 reservation 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 reservation policy at the entry-level in district d in the post-RTE period. This is calculated from school years 2010-11 to 2014-15, as

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

[18] Other studies that have used a similar strategy to investigate the effect of supply-side interventions in education 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.

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:

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

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 $Young_i \cdot RTE_{dt}$, 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):

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

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 reservation policy has a positive effect on fees if the difference in the fees of younger children was significantly lower than that of older children when policy enrolment increased in a district by 1%. Consequently, the difference would be larger in districts that had a 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 – was

associated with a higher fee for both groups. I find that within districts (columns 1-4), an increase in the RTE enrolment rate resulted in lower fees for younger children.

The results from the within-household estimation (columns 5-8) are however more precise. 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. If the enrolment rate increased by 5% in a district, younger children paid ₹240 less than their older siblings (column 5).

Similar to 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 implied that annual fees paid by younger children were lower than that of their older siblings by ₹380. In richer disadvantaged households in these states (column 8), it implied that younger children's annual fees were lower by ₹470 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 reservation policy reduced private education expenditure. 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 reservation policy.

A potential mechanism driving the effect could be the increase in the entry of new low-fee private schools after the reservation policy was implemented. If the policy encouraged many new private schools to enter and if these schools were low-cost or low-fee, it could explain why younger children 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.

Existing studies in the literature find evidence of the responsiveness of private school supply to school choice policies that increase the demand for private education and subsequently the enrolment in these schools. The reservation 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.

According to Noronha & Srivastava (2013), parents of children who were eligible for free seats under the RTE reservation policy were enthusiastic about the opportunity and put in significant effort 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. This increased demand could have encouraged more private schools to enter the market.

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 the states with the best implementation of the policy. To test this hypothesis, I study the trends in the growth of private schools using data from DISE in Section 7.1. I find that following the implementation of the RTE Act, there was a surge in the number of private schools in India.

In Section 7.2, I show that all the new private schools that entered after RTE in fact charged a lower fee than existing schools on average. Thus, lower private school fee for the younger disadvantaged cohort after RTE is driven by these new low-fee private schools.

7.1 Entry of new schools

First, I check whether the reservation 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 reservation 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 reservation 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.

Additionally, the RTE Act made education in government schools free. This might have resulted in more children from low-income families and poorer socio-economic backgrounds enrolling in government schools and private schools cream-skimming children from better-off families. This could result in higher post-entry profits for private schools and more private schools entering, as predicted by Menezes-Filho et al. (2012). Free government education along with the reservation 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. 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.[19]

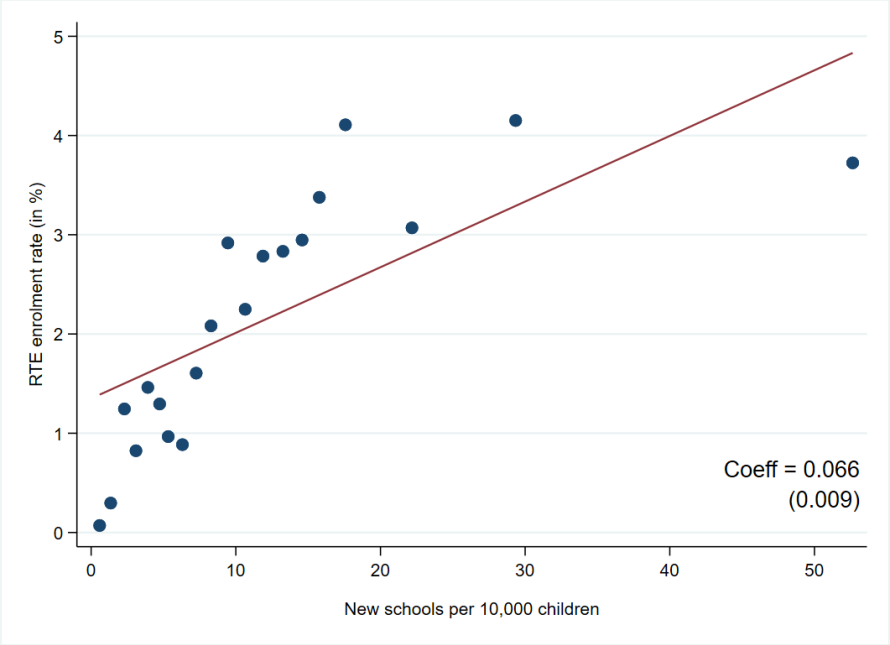
Figure 2 shows that there exists a very strong and positive relationship between new schools entering after RTE and the enrolment rate under the policy in a district. In Figure 2a, 10 new schools per 10,000 children (1 new school per 1,000 children) in a district is roughly associated with a 0.7 percentage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

[19] 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.

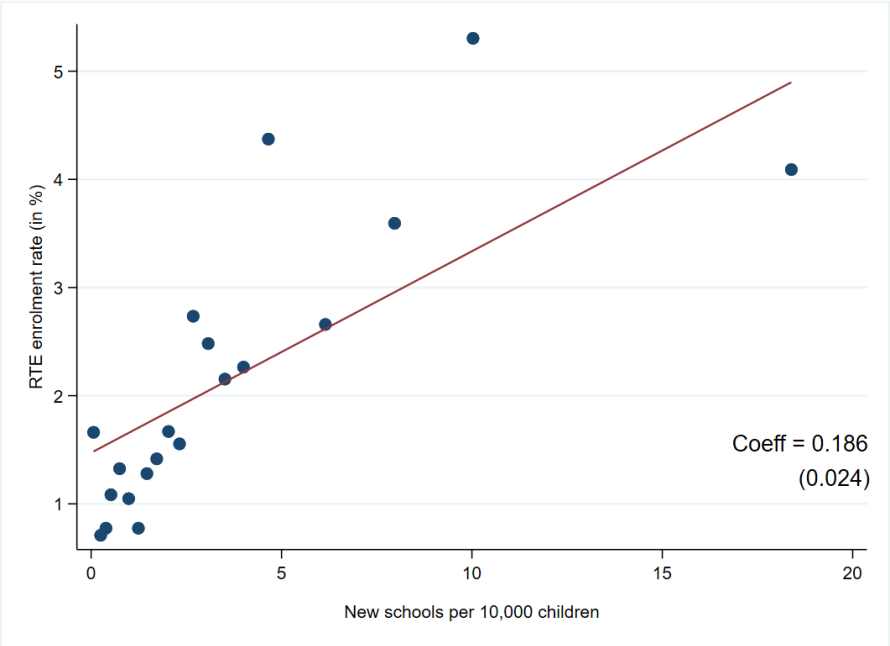
even stronger. 10 new schools per 10,000 children in a district is associated with a 1.9 percentage points increase in the enrolment rate under the policy. Both figures show that districts that had a higher number of new private schools also had a higher enrolment under the policy.

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 reservation 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).

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



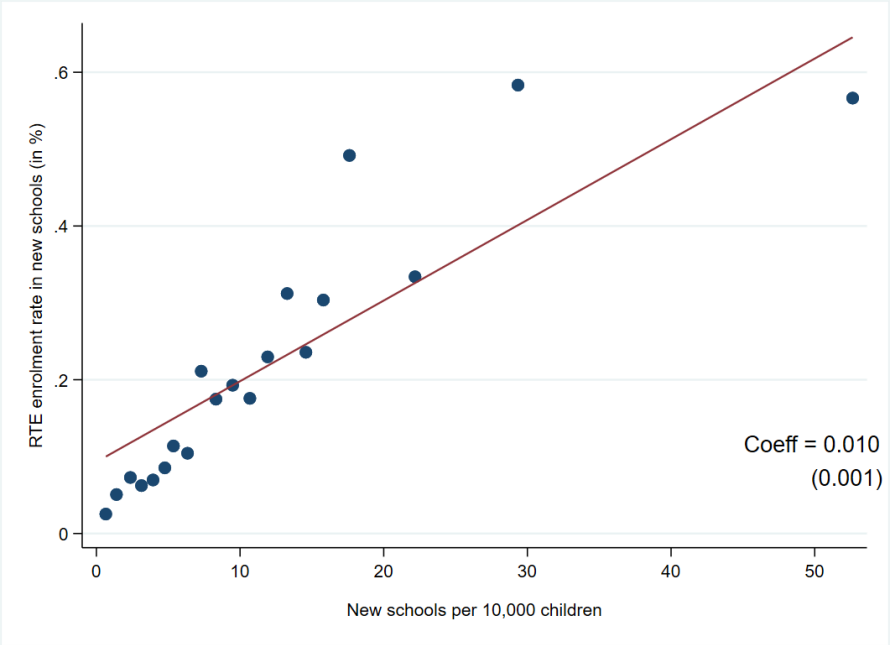
(a) All new recognized private schools



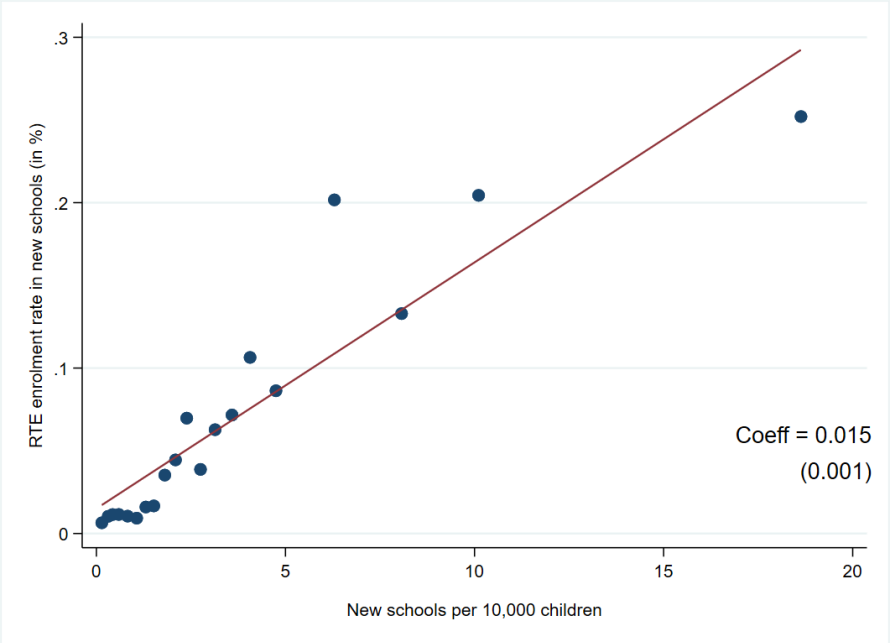
(b) Newly built recognized private schools

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.

The growth of private schools after the RTE Act could be driven by the reservation policy, compulsory recognition of private schools, or free government education. It could also be a combined effect of all three aspects. Furthermore, the district-level variation in the number of new private schools seems to be driving the district-level variation in enrolment under the reservation policy. Evidence shows that the new private schools are also filling more places 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 reservation policy.

7.2 'Low-fee' new schools

The high number of new schools entering after the reservation 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.

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.

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.

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 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 that mandatory private school recognition or free government education could have also contributed to the growth of low-fee private schools, it is possible that the fee reduction for the younger cohort was not due to the reservation policy. I address these concerns in Section 8, where I show that aspects other than the reservation 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 reservation policy. One way I check this is by estimating the DID model for a group that was not exposed to the reservation policy even after August 2009. This includes children from 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 catered more to disadvantaged children at least in states where the policy was implemented well. As a result, it was predominantly the younger disadvantaged cohort that enrolled in the new low-fee private schools. This again suggests that increased school choice for the disadvantaged did result in the availability of more cheaper schools.

8.2 Placebo states

If other aspects of the RTE Act— such as free government education or compulsory recognition of private schools which also led to the entry of new schools— directly affected younger disadvantaged children more than older disadvantaged children then the identifying assumption would not hold. To check this I estimate the DID model for states that had no formal implementation of the policy even by 2014-15. These include Andhra Pradesh, Himachal Pradesh, Kerala, Punjab and West Bengal (see Figure 1).

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 (see columns 5-6 in Table 3), I find that the effect size is similar but the standard errors are much lower in the model with all states. 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. This is despite a sample size that is smaller and closer to the sample size with the placebo states (see columns 7-8 in Table 4).

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 reservation 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 reservation 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. If any other aspect of the RTE Act resulted in the entry of low-fee private schools, it also seems to be correlated with the reservation policy. Therefore, the reduction in the fees for disadvantaged children does seem to be an effect of the policy.

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. There could be a concern that focusing only on the private sector misses what happens to disadvantaged children in general. In principle, free government education, the reservation 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 reservation 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. RTE Act made government education free up to age 14, which means even the older cohort in government schools in round 71 were studying for free. 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 enrollment 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 also 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.

Essentially, those who would have gone to government schools are attending private schools in round 71 among both cohorts. However, 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 reservation policy which was much more systematically implemented in these states.

To summarize, 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 reservation policy, only the younger disadvantaged cohort attending private schools paid relatively lower fees. This lends credibility to the idea that the impact on private school fees is largely tied to the reservation policy.

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.

9 Conclusion

My paper finds an indirect effect of the reservation policy of the RTE Act on the expenditure on private education of 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. My paper 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.

I find 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, households in the states that adhered more to the reservation policy, and richer disadvantaged households in these states.

My paper 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 unclear. 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 an increased preference for private education as a result of free primary education in government schools. Nonetheless, in states that formally implemented the policy, increased school choice does seem to have also increased the supply of low-fee private schools. As a result in these states, the reservation policy increased the enrolment of disadvantaged children

in these schools. School choice was greater among the better-off disadvantaged families who were even more likely to send their children to these schools and therefore benefited from paying a lower fee.

Descriptive evidence from the household survey data shows that disadvantaged children were more likely to attend private schools after RTE. While the younger cohort shifts from government to private schools, the older cohort does not. However, the older cohort is 3 percentage points more likely to be in school after RTE. The DID results show that the younger cohort pays a significantly lower fee in private schools after RTE. This indicates that within the private sector, the younger cohort was enrolled in the new low-fee schools. On the other hand, the older cohort seems to be attending the existing higher-fee private schools.

In the household data, I only have information on whether a child attends a private school. While I do know how much fees are paid for each child in a private school, I do not know if the school is 'low-fee' or 'high-fee'. Consequently, a school classified as "low-fee" in one round might be classified differently in the second round, solely based on how the median shifts. As a result, I cannot accurately see if the younger cohort was significantly more likely to attend low-fee private schools than the older cohort after the policy using the household data.

The reservation policy to some extent is counter-intuitive as private schools mostly accommodated fee-paying disadvantaged children, especially from better-off families, who could afford private education. Due to its weak implementation, the poorest of the poor are still left out and are forced to attend government schools. If government schools mostly include children from low-income backgrounds, the reservation policy could have negative implications on the quality of government education. Similarly, as the policy resulted in exposed children attending low-fee, and therefore, low-quality private schools, there could be a negative effect on their learning outcomes. These are two aspects that future research can explore.

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A Appendix

A.1 Figures

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

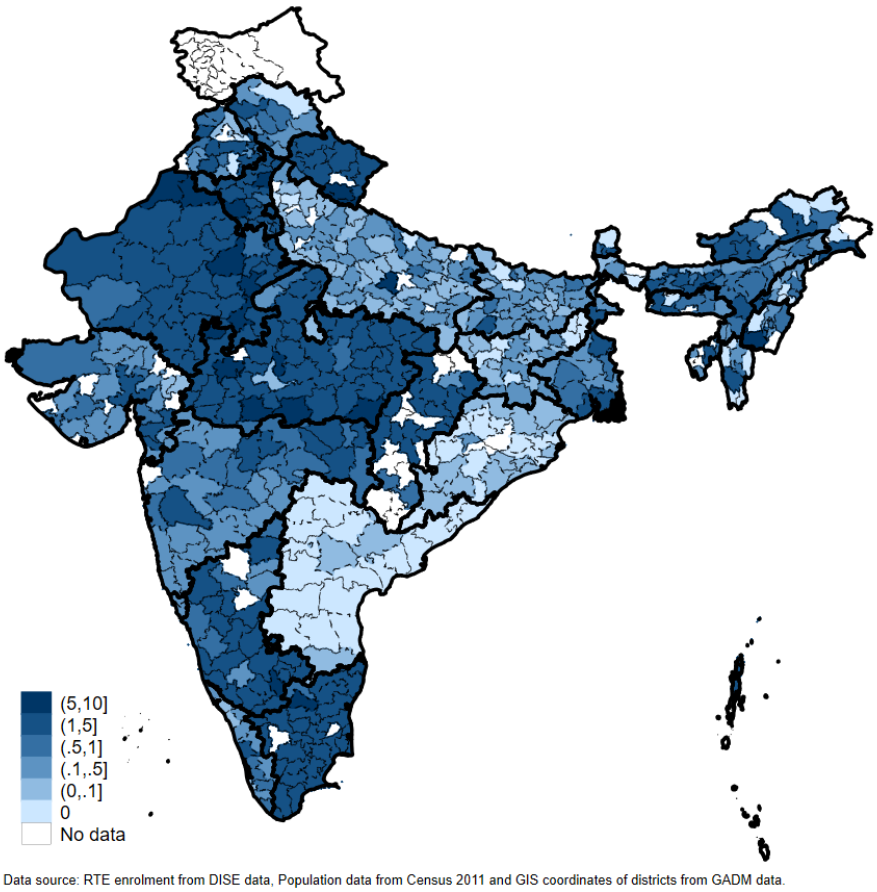
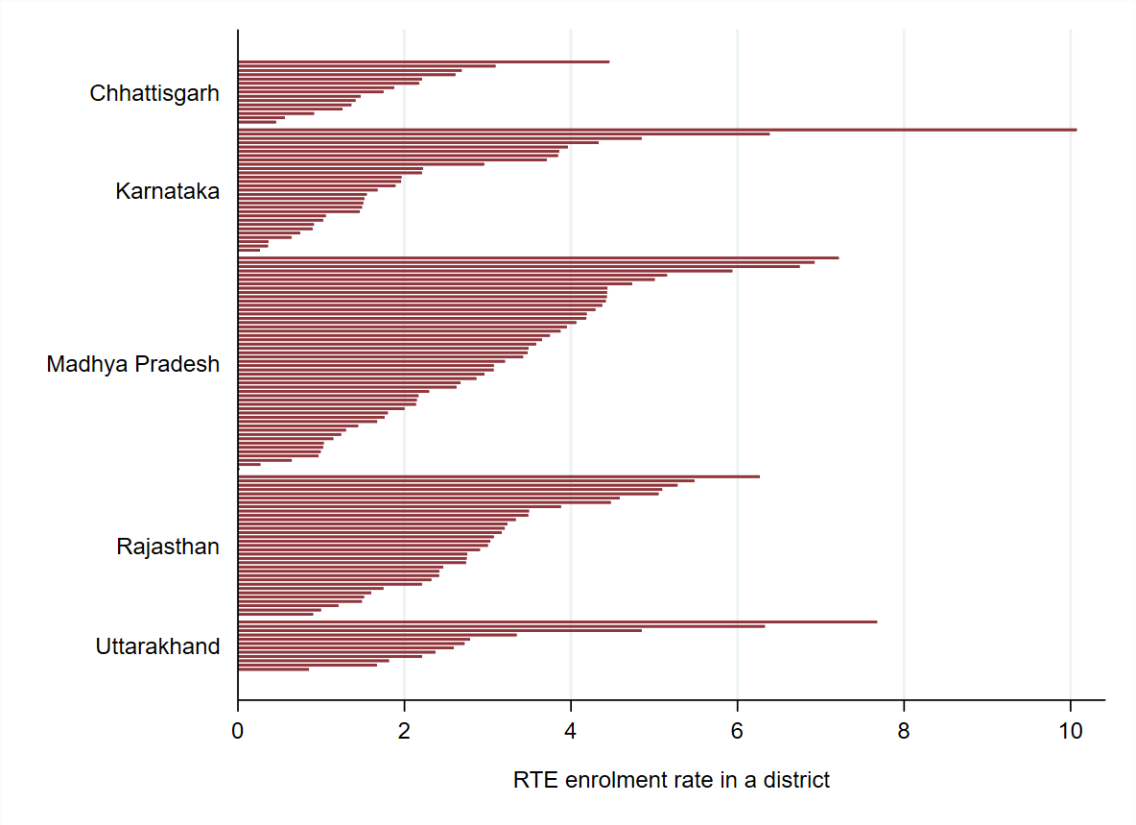


Figure A.2. Percentage of children enrolled under the reservation policy in the top RTE states



Top RTE states correspond to the top 5 states that had the highest enrolment rate under the reservation 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.