Evaluating the Impact of the National Scheme of Incentive to Girls for Secondary Education (NSIGSE) on Gender Parity and Educational Equity in India

A thesis submitted by

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In partial fulfillment of the requirements for the degree of

Master of Science

in

Economics

Tufts University

May 2025

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Abstract

This study evaluates the impact of the National Scheme of Incentive to Girls for Secondary Education (NSIGSE), an unconditional savings transfer program introduced in 2008 in India, on secondary school enrollment among girls from Scheduled Castes (SC) and Scheduled Tribes (ST). It uses repeated cross-sectional data from the India Human Development Survey (2004 and 2011), and a difference-in-difference framework with district fixed effects. The study looks at three different control groups –SC and ST boys, OBC girls, and older-aged SC and ST girls and finds statistically significant results only with SC and ST boys. The results derive that the probability of being enrolled in 9^{th} to 12^{th} grade for 14-year-old SC girls increased by 8.1 percentage points, relative to SC boys, holding all other factors constant. However, the effect diminished with age, and no significant impact was observed for ST girls. The findings suggest the scheme was more effective in promoting early secondary school enrollment (Grades 9–10) than in supporting retention through Grades 11 and 12.

Acknowledgements

I am deeply grateful for the support and guidance I have received throughout this thesis journey. I would like to express my heartfelt thanks to Professor Jeffrey Zabel, my thesis advisor. He made econometrics both intuitive and exciting and his support helped shape every stage of this project. He steered me in the right direction whenever I needed it and his thoughtful guidance, insightful feedback, and time and attention were central to the development of this paper.

I also want to thank Professor Julie Schaffner. Her patience, generosity, and willingness to help at every stage of this process meant more than I can express. Her insights pushed me to think more clearly and critically, and her encouragement gave me the confidence to keep moving forward.

Finally, I want to thank my family and friends for their unwavering belief in me. Their encouragement, empathy, and love carried me through the most challenging moments of this process. A special thanks to Ray for being a constant source of support, your presence and help truly made a difference.

Table of Contents

List of Tables

List of Figures

1. Introduction

In India, access to education has been recognized as a fundamental right in the last decade via the Right to Education (RTE) Act in 2009, which marked a significant milestone in the country's efforts to universalize elementary education (Malvankar, 2018). The Gross Enrollment Ratio (GER)[1] for primary education rose from 93% in 2002 to 108% in 2022, while the GER for secondary education increased from 47% to 79% (Waghmare, 2024). Although the figures for primary education indicate progress, the task of achieving universal access to quality education remains incomplete. The situation is even worse for marginalized groups such as the Scheduled Castes (SC) and Scheduled Tribes (ST) who are among the most socially and educationally disadvantaged groups in India. According to the existing literature, improvements in the education system in India have been slow for various reasons including uneducated parents, unaffordable education, and inadequate schooling facilities (Rao & Murthy, 2010).

The sources of deprivation for the scheduled castes and the scheduled tribes differ. For scheduled castes, their marginalization stems from the low place accorded to them in the Hindu caste system where at times, they were also considered untouchables. The scheduled tribes have suffered because of the long period of physical isolation as most of the tribes lived in remote and inaccessible forest areas and were thus cut off from modem civilization (Kamat, 2008).

[1] The Gross Enrollment Ratio (GER) is the number of children enrolled in an education level relative to their population. It measures enrollment in a particular education level, regardless of the age of the children enrolled. For instance, GER for elementary education (Class 1-8) is the ratio of enrollment in those classes to the total population between ages 6 and 13. Underage or overage students is one of the key reasons enrollment ratios can go above 100%. It may also happen due to grade repeaters.

By ensuring access to free and compulsory primary education, the RTE Act indirectly supported improved transition rates to higher education levels, including secondary school. However, despite these gains, the fraction of SC children enrolled in primary schools has remained between 18% and 20% from 2002 to 2006, while for ST children, it has been between 9% and 11% (Chauhan, 2008). These figures indicate that SC/ST children continue to experience disproportionately low enrollment rates compared to the general population. Challenges further increase for girls as when gender and caste intersect, disadvantage is potentially multiplied. Girls may be commodified within the family as sources of gendered labor, and are under pressure to marry early as their roles are defined to a large degree in terms of their marital status and childbearing potential (Siddhu, 2010). In 2004-05, only 36% of the girl students in India were retained up to grade 10. (Government of India, 2008). This is the combined result of several socio-economic factors, but a major contributor is the perception that the benefit of educating girls is not worth the cost .

This paper aims to examine a combined government policy response to increase educational equity for girls belonging to Scheduled Caste and Scheduled Tribe groups. It will focus on the impact of a 'Savings Transfer' program across all 28 states in India on the enrollment of female students belonging to SC and ST communities. The centrally sponsored "National Scheme of Incentive to Girls for Secondary Education (NSIGSE)" was launched in May 2008 in India, to give an incentive to female students enrolled in grade 9 to continue their education. The intent of this policy was to increase access to education for girls from SC, ST and low-income families and increase their likelihood of completing high school. The aims of the policy were to liberate them from the confines of household chores, alleviate burdensome familial responsibilities, and mitigate the risk of early marriage. The goal of the paper is to study whether the policy intervention significantly increased girl-child enrollment in secondary schools in the country.

The rest of the paper is organized as follows. Section II reviews the existing literature on various education policies and their impact on improving outcomes for girls. Section III describes the context and the program details. Section IV describes the data used and summary statistics. Section V presents the model, and Section VI presents the main results. Section VII conducts a robustness check and Section VIII concludes. All tables and figures are in the Appendix.

2. Literature Review

Barriers to education for marginalized communities in India, particularly SC/ST girls, are well-documented. Sadanandan (2021) highlights that children from these groups often face systemic discrimination, which leads to lower enrollment rates, high dropout rates, and reduced educational attainment when compared to higher-caste peers. Analyzing caste-related disparities, Kumar et al. (2023) use panel data from the India Human Development Survey to demonstrate that despite some progress, caste and gender continue to be significant factors that affect educational outcomes in India. SC/ST females, especially in rural areas, encounter further obstacles due to poverty, social stigma, and gender bias, which is often made worse due to limited access to educational facilities and economic pressures within their families. It is also not uncommon that girls experience challenges while getting access to proper education, especially in developing countries. Households generally under-invest in female education due to complex socio-economic factors, which often necessitates gender-targeted interventions. This review looks at various intervention programs in developing countries that aim to increase education and enrollment outcomes of low income or marginalized communities with the help of different types or structures of financial incentives. Many programs are similar to the one that this study evaluates, in that they focus on gender-targeted interventions and only target enrollment of female children. They also use difference-in-difference methodology and look at boys and older-aged cohorts who were not eligible for the programs as the control group (Muralidharan and Prakash, 2017; Chaudhury and Parajuli, 2010; Sen and Thamarapani, 2023). Evans and Yuan (2022) compare the impact of several general educational interventions with only girl-targeted interventions to see which is more likely to improve access and learning outcomes for girls. Their findings suggest that direct cash transfers and nontargeted programs tend to have a larger impact on girls' responsiveness to schooling trends.

While conditional cash transfers are often seen as effective in improving educational access, their success depends on how the program is designed and the specific challenges faced by the target population. In Colombia, Barrera-Osorio et al. (2011) showed that delaying a portion of cash transfers until re-enrollment significantly boosted attendance among students, especially those at risk of dropping out. Baird et al. (2011) highlight how school-age girls react differently to conditional vs unconditional transfer and how that impacts secondary school enrollment in Malawi. The study establishes that conditional cash transfers significantly increase educational outcomes in comparison to unconditional transfers, but unconditional transfers have a higher impact on significantly reducing the likelihood of early marriage and teenage pregnancy. Similarly, the Mexican government introduced a scholarship program in 2007 targeted at poor upper-secondary students who lived in urban areas, to increase graduation rates as well as to improve learning outcomes (Hoyos et al, 2023). They conducted a difference-in-difference analysis with an intention-to-treat methodology and provided monthly payments to the eligible cohort, which was determined through a lottery system. The results they obtained showed that the program was ineffective, and the incentive provided to individuals was not strong enough for this to become a well-targeted intervention. All these studies emphasize the need for good program designs to truly achieve the intended outcome, highlighting that well-targeted interventions may differ based on the country and specific target group.

The literature contributes to understanding how different methodologies and tools can be used to assess the effectiveness of a region-specific or national scheme. Comparative studies from other countries in South Asia also provide useful perspectives on the role of monetary relief in advancing female education. Chaudhury and Parajuli (2010) studied a female school stipend program in Punjab, Pakistan which also used difference-in-difference and triple differencing methods. The study revealed that regular attendance conditions were critical to the program's effectiveness, when the stipend eligibility was linked to an 80% attendance requirement, female school enrollment increased as parents were incentivized to maintain their daughters' consistent school attendance. It had modest but statistically significant effects on boosting female enrollment for grades 6-8, supporting the argument that attendance-based incentives can bolster educational engagement. Muralidharan and Prakash (2017) evaluated a secondary school enrollment intervention that provided bicycles instead of cash transfers to girls in Bihar. They also applied the intent-to-treat methodology using a difference-in-difference analysis. One limitation of their analysis was that they used single cross-sectional data. We will leverage repeated cross-sectional data to provide a more comprehensive view of enrollment trends over time, potentially offering deeper insights into the policy's long-term effects. Sen and Thamarapani (2023) looked at the Kanyashree Prakalpa (KP) program in West Bengal, India which offered unconditional financial compensation to delay early marriage and increase secondary school retention among adolescent girls. They found that KP significantly increased secondary school enrollment rates, particularly for girls from poorer households. KP's final payment condition required that beneficiaries remain unmarried until age 18 which effectively helped in keeping girls in school longer. This study will critically analyze NSIGSE's impact by using the tools adopted in prior research, and explore how its one-time, unconditional payment structure may or may not limit educational attainment for girls belonging to marginalized communities in India.

3. Background and Program Description

A. Program Description

The objective of the NSIGSE scheme is to promote enrollment and reduce dropout of girls belonging to the Scheduled Caste and Scheduled Tribes in secondary schools and improve their retention up to 18 years of age. As the Right to Education Act only provides free education up till the age of 14, children normally drop out of school after grade 8 and get involved in making nominal money or daily wages to help with household expenses. Additionally, girls face unique challenges that further hinder their educational journey. Factors such as early marriage, safety concerns, and fulfilling familial responsibilities at a young age lead to girls being pulled out of school when financial constraints arise (Bandyopadhyay and Subrahmanian, 2008).

To help families with financial constraints, the initiative deposits ₹3000[2] (Rupees three thousand only) into a term deposit or fixed deposit account in either a public sector bank or a post office, designated specifically for eligible girls. This deposit is established in the girl's name and stays active from the date of the deposit until the girl reaches 18 years of age. The scheme mandates that premature withdrawal of funds is not permitted and that funds can only be withdrawn when

[2] 3000 Rupees is 35 US dollars, and the average monthly income of SC/ST households is less than 5000 rupees (57 US $). The average monthly income data is collected from the Socio Economics and Caste Census, 2011.

the girl finishes high school. The girls are entitled to withdraw it along with interest upon reaching 18 years of age and passing the grade 10 examination.

The eligibility for the program includes all SC/ST girls who pass grade 8 and they must be enrolled in grade 9 State/UT Government, Government-aided or local body schools. Moreover, girls should be below 16 years of age (as of 31st March) on joining grade 9 and married girls, girls studying in private un-aided schools and enrolled in schools run by Central Government like KVS, NVS and CBS affiliated schools are excluded.

The number of girls covered by the scheme fluctuated in the ten years from 2009 to 2018 – from the year it was launched till the year it was discontinued. There were 152,660[3] girls covered in 2009, and it significantly increased to 543,532 girls in 2011. The numbers dropped sharply to 147.58 K in 2016 – the lowest level in the decade – before skyrocketing to an all-time high of 973.33 K in 2017. The reason for such drastic changes is possibly the variation in the amount of funds utilized by the government for effective program outreach.

The government allocated 45.8 million rupees in 2009 for the scheme, and it increased to 163.06 million rupees in 2011. The lowest amount of funds were utilized in 2016 – 44.27 million rupees, and the highest amount of funds were utilized in 2017- 292.38 million rupees. Figures 1 and 2 in the appendix represent the number of girls covered and the amount of funds utilized for the scheme for ten years in bar graphs.

[3] These statistics are obtained from Indiastat.com

B. Spillover of Primary Education

Education has always been recognized as a powerful tool for upward social mobility, which can help to build an inclusive society by reducing socioeconomic disparities. Several attempts have been made to empower weaker sections of the society in the education system by both the Central and State government (Chauhan, 2008). Although efforts have been made to improve access to both primary and secondary education, the focus has been more directed towards primary education.

One of the most notable interventions is the Sarva Shiksha Abhiyan (SSA), a flagship program launched in 2001-2002 to achieve Universal Elementary Education (UEE) for children aged 6 to 14 years. In partnership with state and local governments, SSA successfully provided elementary education to all children by 2010. The program contributed significantly to increasing primary school enrollment rates, which rose from 79 percent in 2001 to 90 percent in 2007 due to investments in public education, including building schools, improving infrastructure, and training teachers (Human Rights Watch, 2014).

The impact of SSA went beyond primary education, as it created a positive spillover effect on secondary education enrollment across various social groups, including marginalized communities. As highlighted in the *Data Section* and supported by Afridi and Barooah (2017), educational participation rates increased significantly between 2004-05 and 2011-12. Gains were particularly pronounced in younger age groups (5-7 years old) and later age groups (17-21 years old), which indicated improved transitions from primary to secondary education. During this period, marginalized socio-economic groups, including SC and ST, experienced significant increases in enrollment, which narrowed the gap between high castes and SC/STs by more than 6 percentage points (Afridi and Barooah, 2017).

C. Overlapping Policies

The Central Government operates notable scholarship schemes like the Pre-Matric and Post-Matric schemes, which are aimed at increasing enrollment, reducing dropout rates, and supporting students in completing their education. These scholarships are targeted at economically weaker sections among SCs, STs, and Minority Communities, and are administered by the Ministry of Social Justice and Empowerment (MoSJE), the Ministry of Tribal Affairs (MoTA) and the Ministry of Minority Affairs (MoMA) respectively and are implemented in the States/ UTs by the respective State Government and Union Territory (UT) Administration (Government of Kerala, 2024). 25% of the Indian population identify as SC and 9% identify as ST (Atske, 2021).

Numerous studies have highlighted inconsistencies in the implementation of these scholarship schemes. Different Central agencies and State governments adopt different procedures, conditions, and levels of support, which results in a fragmented approach to planning and execution. This lack of coordination diminishes the overall impact of these initiatives and complicates efforts to effectively evaluate the outcomes of these policies (Abidi et al., 2013).

The **Post - Matric Scholarship Scheme for SC and ST** students was announced by the Central government in 1944 to provide financial assistance to SC/ST students to pursue education after grade 10, covering senior secondary, undergraduate, postgraduate, and doctoral levels. Over time, the scheme was revised periodically, particularly during the five-year planning cycles, but significant implementation challenges have persisted. Many independent studies have reported that there were gaps between the estimated and actual number of beneficiaries which have highlighted deficiencies in planning and execution. According to Indiastat.com, the number of beneficiaries under the Post-Matric Scholarship for SC increased from 1,300,000 in 1997 to 2,500,000 in 2006. Similarly, the number of beneficiaries under the Post-Matric Scholarship for ST grew from 600,000 in 2001 to 800,000 in 2005.There have been delays in disbursement of funds which have affected eligible students. The overall monitoring mechanism of the scheme was weak and proper evaluation to assess the outcome was not conducted.

The **Pre - Matric Scholarship Scheme for SC and ST** students was announced by the government in 2012 which provides financial assistance to pursue education from Grade 1 to Grade 10. Like its predecessor, this scheme suffered from poor budgetary planning, inadequate monitoring, and significant discrepancies between the number of intended and actual beneficiaries. It is reported that the number of beneficiaries of the Pre-Matric Scholarship for SC ranged from 5 to 5.8 million[4] between 2003 and 2006. These recurring issues have reflected systemic shortcomings in the management of scholarship programs for disadvantaged groups.

The policy that is being studied in this paper - the National Scheme of Incentive to Girls for Secondary Education (NSIGSE) - was introduced in 2008 to address the intersectional challenges faced by SC/ST girls in accessing secondary education. Unlike the Pre-Matric and Post-Matric schemes, NSIGSE focuses on addressing gender disparities within marginalized communities. The evaluation of NSIGSE in this paper uses data from the India Human Development Survey (IHDS) from 2004 and 2011. As the Post-Matric Scholarship Scheme had been operational for over five decades before NSIGSE's implementation, its effects are unlikely to affect the analysis. The treated group had been treated long back, which will not affect the current

[4] These statistics are obtained from Indiastat.com

study. Similarly, the Pre-Matric Scholarship Scheme was introduced in 2012 which falls outside the time frame of this study. The data we focus on is from 2011 which is before the inception of this policy, and these conditions enable a clear assessment of NSIGSE's impact on the educational outcomes of SC/ST girls.

In 2006, the central government also announced **Pre-Matric and Post-Matric Scholarship for Students belonging to the Minority Communities** which aimed at relieving financial burden only for meritorious students belonging to minority communities from grade 1 to grade 10 and grade 11 to university – level education respectively. The scholarship is only awarded to students who have secured at least 50% marks in the previous final examination, which is not a requirement in any of the policies mentioned earlier or NSIGSE. Minority communities consist of Muslims, Sikhs, Christians, Buddhists, Jain and Zoroastrians (Parsis) religion. SC, ST, and OBC communities are not confined to a single religion, they are present across all major religious and minority groups in India, including Hindus, Muslims, Christians, Sikhs, Buddhists, and others. Hence, the policy explicitly states that "A student shall be eligible for only one scholarship out of all the available Scholarships of Central Government meant for SC/ST/OBC/minority." It is possible that the results of the NSIGSE evaluation may reflect some overlap with this policy, given the limitations of the dataset and the intent-to-treat methodology which does not distinguish the individuals who benefited from the effects of each specific policy.

D. Supply – Side Incentives

While demand-side interventions such as scholarships and financial transfers played a role in increasing school enrollment among SC/ST girls, supply-side incentives also likely contributed during this period. Several large-scale government initiatives focused on expanding educational infrastructure, particularly in underserved areas and for socially disadvantaged groups. Programs such as **Sarva Shiksha Abhiyan (SSA)** – launched in 2002**, Kasturba Gandhi Balika Vidyalaya (KGBV)** – launched in 2004, and the **Rashtriya Madhyamik Shiksha Abhiyan (RMSA)** – launched in 2009 aimed to improve the availability and quality of schools by constructing classrooms, providing toilets and drinking water, hiring teachers, and establishing residential schools for girls in educationally backward blocks. These supply-side enhancements aimed to address accessibility challenges, such as long travel distances to schools and lack of gender-sensitive infrastructure. Research has shown that proximity to schools and better infrastructure correlate positively with enrollment, attendance, and years of schooling (Duflo, 2001). Moreover, KGBV focused exclusively on providing residential facilities and hostels for disadvantaged girls – belonging to SC, ST, and OBC groups - from grades 6 to 12. Although KGBV was launched four years before NSIGSE. Similarly, RMSA was launched after NSIGSE in 2009, and they constructed separate toilets for girls which could have differentially impacted the treatment group. However, the evidence on RMSA's effectiveness is mixed. While some findings indicate improved enrollment for girls (Das & Das, 2021), others show a decline in enrollment among SC and ST students despite infrastructure improvements (Mohalik, 2017). These overlapping timelines and policy goals suggest that the observed effects of NSIGSE may reflect the combined influence of both demand- and supply-side interventions.

4. Data & Methodology

The main data source is both the waves of the India Human Development Survey i.e. IHDS – 1 and IHDS – 2. These are nationally representative multi-topic panel surveys of 215,754 individuals in the first round and 204,569 individuals interviewed in the second round. The data includes household socioeconomic characteristics and a roster of all members in the household, their education attainment, and current schooling status. It covers all the states in India. The first wave of data come from 2004/05, which is before any girls have been exposed to the policy and the second wave of data is collected in 2011/12. The paper uses difference-in-difference (DID) methodology with district fixed effects, and leverages repeated cross-sectional data from before (2004/05) and after (2011/12) the introduction of the National Scheme of Incentive to Girls for Secondary Education (NSIGSE) in 2008.

The study examines the policy's impact on secondary school enrollment of SC/ST girls aged 14 to 17 in 2004 and 2011. The policy, which was introduced in May 2008, offered financial incentives to girls who completed Grade 8 and enrolled in secondary school (Grades 9–12) in government or government-aided schools. As May 2008 falls in the middle of the school year, we consider 2009 as the year of the implementation to capture the effect on enrollment.

We look at the target population of SC/ST girls aged 14-17 in 2004 and 2011 regardless of whether they completed grade 8 in a government/government-aided school and observe whether they are enrolled in secondary school at both the time periods. This is to study the overall effect of the policy on girls' enrollment, if we looked only at secondary enrollment impacts among girls who completed grade 8 in a government school, we might miss effects that take place through the channels of encouraging younger girls to move into government schools or to complete grade 8 to have access to this policy.

The main outcome of interest is high school enrollment, coded as 1 if a girl is enrolled in Grades 9–12 and 0 otherwise. As the year of implementation is 2009, those who are in grade 12 in 2011/12 and have completed grade 11 may have been influenced to enroll in grade 9 in 2009.

Similarly, those who are in grade 11 in 2011/12 and have completed grade 10 may have been influenced by the policy 2 years ago to enroll in 9th grade. Those who are in grade 10 may have been influenced a year ago, and those who are in Grade 9 may have enrolled in the same year (2011), depending on the timing. The same logic applies to age groups: girls who were 17 years old in 2011 (typically in Grade 12) would have been 15 in 2009. Since the policy eligibility criteria include girls who are under 16 years old and enrolling in Grade 9, 15-year-olds in 2009 could still be eligible. If they had already enrolled in Grade 9 by then, they would be beneficiaries. However, if they were out of school in 2009, we will study whether the policy influenced them to enroll in Grade 9 at age 15. Those who were 16 years old in 2011 (typically in Grade 11) would have been 14 in 2009 and eligible to enroll for the policy that year. Similarly, girls who were 15 in 2011 (Grade 10) would have been 13 in 2009 and likely enrolled in Grade 9 in 2010, and those who were 14 in 2011 (Grade 9) would have been 12 in 2009 and might have enrolled in Grade 9 in 2011.

We assess whether girls in this age group are enrolled in secondary school in 2011/12, with the key variable—enrollment—across the three summary statistics displaying the average impact of the policy on the entire age group. This represents an average effect for girls at varying intervals since becoming eligible to receive a savings account.

We also look at total annual income of households, the number of household assets owned by a family, years of education of both mother and father, number of siblings the individual has, and whether they live in an urban or a rural area. All the variables have been defined in Table 1.

After merging both IHDS -1 and IHDS - 2, the dataset consists of 420,323 individuals. Out of this, there are 208,455 females and 211,867 males in the sample. Among the female population, there are 42,915 SC women and 17,419 ST women. Further, we only look at girls aged 14 to 17 who are either enrolled in grades 9-12 or not enrolled in school at all. This narrows the treatment sample down to 2,897 SC girls and 1,177 ST girls.

Finally, this section is divided into three parts, corresponding to the different control groups.

A. Control group: Boys belonging to SC/ST

To begin with, we use boys belonging to the Scheduled Caste and Scheduled Tribe households as a control group. As in Muralidharan and Prakash (2017), boys serve as an interesting control group for the scheme as they experience similar social barriers and economic disparities as the treatment group, but they are *not eligible* for this program. However, given persistent gender preferences to boys and discrimination in the country, it is not fair to assume that that the enrollment growth of boys and girls would have been alike in the absence of the intervention program.

This is also clear with the Parallel-Pre-Trends Graph 3. Although the trend is broadly parallel for boys and girls belonging to both SC and ST groups, girls have significantly lower enrollment numbers than boys. Also, the SC group has higher enrollment than the ST group. This has historically been true irrespective of gender, as STs are socially, culturally, and geographically more isolated from mainstream society (Somanathan, 2006).

Notably, there is a visible upward trend for both SC girls and boys, and after the policy in 2008/09, there is a sharp increase in their enrollment. The gender gap within the STs has also considerably reduced in the 2020s. This aligns with broader national trends, as educational participation rates increased significantly between 2004-05 and 2011-12 in India and marginalized socio-economic groups, including SC and ST (Afridi and Barooah, 2017). A prominent factor in this improvement was the RTE Act in 2009 which created positive spillover effects beyond its primary education focus, as mentioned in the *background section* earlier.

Moving on to the merged IHDS database, the survey covers 43,492 SC boys and 17,366 ST boys. Out of this, the control group sample is restricted to boys who are 14-17 years old and are either enrolled in grades 9-12 or not enrolled in school at all. The brings the sample for SC and ST boys down to 2,909 and 1,087 respectively. The total sample size with SC boys and girls is 5,806 individuals and ST boys and girls is 2,264 individuals.

As per summary statistics – Table 2, 42% of SC girls and 49% of SC boys from this sample were enrolled in 9-12th grade before the treatment took place, and the enrollment for girls increased to 69% while the enrollment for boys increased to 70%, after the policy took place. This implies that average enrollment for SC girls increased by 6 percentage points relative to SC boys when comparing the post-treatment period to the pre-treatment period. Among STs, boys had higher enrollment rates than girls both pre- and post-policy. The average enrollment for ST girls also increased by 6 percentage points relative to ST boys when comparing the post-treatment period to the pre-treatment period. Again, the high jump in enrollment in secondary school for all the groups from 2004 to 2011, is most likely the spillover effect from primary education which increased during that time frame because of the Right to Free Education Act, 2009 and SSA which universalized elementary education by 2010 (Afridi and Barooah, 2017).

This still makes them an especially useful control group as they have been exposed to all the social, cultural, and economic changes in the country as the treatment group. We also test for parallel trends in boys' and girls' enrollment growth for 15 years prior to the program (from the

1990s to 2007) using national level data, and although girls' enrollment rate is much lower to begin with, we do not reject the null hypothesis of parallel trends (Graph 3).

B. Control group: Girls belonging to 'Other Backward Caste (OBC)'

Next, we use girls belonging to 'Other Backwards Caste (OBC)' as the control group. OBCs are communities that are socially and educationally backward but do not fall under the SC or ST categories. The OBC category came to the forefront in 1990 when they were recognized as other socioeconomically disadvantaged people in India besides SC or ST. We study girls belonging to the OBC group as a control group as they face very similar socio-economic exclusion and discrimination as the SC/ST group. Both groups tend to have low-income levels, high poverty rates, and limited access to quality education. Out of the total population in India, 25% identify as SC, 9% identify as ST, and 35% identify themselves as OBC (Atske, 2021). Among the subgroups, 44.4% of STs, 29.2% of SC, and 24.5% of OBCs are multidimensionally poor (Pradhan et al.,2022).

Our dataset consists of 69,956 girls belonging to the OBC group. As we are only looking at girls aged 14 to 17 who are either enrolled in grades 9-12 or not enrolled in school at all, the control group sample size comes down to 4,392 girls. The treatment group sample remains the same as 2,897 SC girls and 1,177 ST girls.

According to Table 3 – Summary Statistics, the average enrollment rates increased for all three groups over time. The average enrollment for SC girls increased by 3 percentage points and for ST girls it increased by 2 percentage points relative to OBC girls, but both remained lower than OBC girls when comparing the post-treatment period to the pre-treatment period. Average enrollment for SC girls increased from 42% to 69%, and 34% to 60% for ST girls. As shown in graph-1 earlier, STs have historically lower access to education than SCs which is what is reflected in this sample.

The central government also announced the **Centrally Sponsored Scheme of Pre-matric Scholarship to Other Backward Classes (OBC)** for Studies in India and the **Centrally Sponsored Scheme of Post-matric Scholarship to Other Backward Classes (OBC)** for Studies in India in 1998. Both aimed at relieving the financial burden for students belonging to the OBC group from grade 1 to grade 10 and grade 11 to university - level education respectively. Like previous central policies, the scheme criteria were revised periodically during the five-year planning cycles. The periodic revisions primarily focused on adjusting family income eligibility levels to account for inflation. Since the scheme was introduced in 1998—10 years before the NSIGSE and 6 years before the first wave of the IHDS dataset—it was consistently available for the OBC group and is unlikely to affect the impact of the NSIGSE. Although, the number of beneficiaries for both the schemes declined significantly over time, with the pre-matric scholarship beneficiaries dropping from 15 lakh in 2003 to 957,338 in 2006 and to 308,547 in 2007. Similarly, the post-matric scholarship beneficiaries decreased from 411,868 in 2006 to 221,829 in 2007[5].

Given the shared history of socioeconomic discrimination and poor education access with the SC and ST groups, using OBC girls as a control group supports a balanced comparison when evaluating the effect of NSIGSE, especially in the absence of an untreated SC/ST group. At the same time, they are not the perfect counterfactual as they had access to distinct educational support schemes since 1998, which have introduced baseline differences in enrollment trends. We also do not have data to support parallel trends for this group.

[5] These statistics are obtained from Indiastat.com

C. Control group: Girls belonging to the Older-aged Cohort

Finally, we follow the approach used by Sen and Thamarapani (2023) and treat older - aged cohorts who were not exposed to the program when they were making the transition to secondary school as the control group and younger-aged cohorts who were exposed to the program during this transition as the treatment group. The policy was implemented in 2008 to increase 9th grade enrollment of SC/ST girls which implies that it focused on those who were 14 and 15 years old at the time. Those who were 16 and 17 years old, were only a grade above the treated group, but never had the opportunity to be enrolled in the scheme. Although the policy was introduced in 2008 by the central government, the initial year of announcement often involves administrative challenges, such as implementation delays and disbursement issues. Therefore, to properly account for the policy's impact, we consider 2009 as the effective year of policy implementation. As the paper looks at the IHDS dataset from 2011/12 which is the post – policy time period, we study the individuals who are 16 and 17 years old as the treatment group (2 years after 2009) and individuals who are 18 and 19 years old as the control group. Similarly, in the pre-policy period i.e. 2004/05 those who are aged 16 and 17 are the treatment group and those who are aged 18 and 19 are the control group.

As mentioned earlier, after merging both IHDS -1 and IHDS - 2, the dataset consists of 420,323 individuals. Out of this, there are 208,455 females in the sample. Among the female population, there are 42,915 SC women and 17,419 ST women. We only look at SC and ST girls aged 16 to 19 in both pre- and post-policy periods, which brings the total sample of SC girls to 3,514 individuals and ST girls to 1,452 individuals. The treatment group (16- & 17-year-olds) consists of 1,704 SC girls and 690 ST girls, while the control group (18- & 19-year-olds) comprises of 1,810 SC girls and 762 ST girls. The model has been updated with the dependent variable being changed from enrollment (i.e., current grade enrolled in) to grade completion. Here, grade completion is defined as 1 if the highest grade completed is equal to or higher than grade 9, and 0 otherwise. This adjustment provides a more accurate measure for older individuals who may no longer be enrolled in school but have completed grades 9, 10, or 11, and were treated by the policy.

From Table 4 we can see that the average enrollment for both 16- and 17-year-old SC and ST girls increased by 2 percentage points relative to 18- and 19-year-old SC and ST girls when comparing the post treatment period to the pre-treatment period. This also serves as a good control group as it follows a credible difference-in-difference framework used by Duflo (2001), Muralidharan and Prakash (2017), and by Sen and Thamarapani (2023), and helps isolate the impact of the NSIGSE by comparing adjacent age groups that are otherwise demographically similar. The small age difference (just two years) reduces concerns about generational shifts or long-term policy spillovers.

5. Model

This section presents two difference-in-difference models that are being used to examine the impact of the NSIGSE policy on the enrollment of the treatment group and whether providing a savings account transfer encourages girls who belong to SC and ST groups to attend secondary school. The model captures how financial incentives may or may not influence the decision-making process of individuals, with particular attention to heterogeneity in responses across excluded social groups and genders.

$$Enrollment_{idt} = \beta_0 + \beta_1 Post\_policy_t + \beta_2 Treatment\_SC_i + \beta_3 Treatment\_ST_i + \beta_4\, Post\_policy_t * Treatment\_SC_i + \beta_5\, Post\_policy_t * Treatment\_ST_i + \sum_1^4 \beta_6\, \mathrm{Age}_{it} + \sum_1^4 \beta_7\, \mathrm{Age}_{it} * Treatment\_SC_i + \sum_1^4 \beta_8\, \mathrm{Age}_i * Treatment\_ST_i + \gamma X_{idt} + \delta_d + \epsilon_{idt} \quad (1)$$

In the first model, the main outcome variable of interest is $Enrollment_{idt}$ which is an indicator for an individual 'i' being enrolled in Grade 9, 10, 11 or 12 in district 'd' at time 't'. The DID approach is combined with a binary response model to estimate the probability of enrollment. $Post\_policy_t$ is a dummy variable for the pre- and post-policy time periods. $Treatment\_SC_i$ and $Treatment\_ST_i$ are indicators for being female and belonging to the SC and ST treatment group respectively. X_{idt} is a vector of control variables that vary across districts as well as over time that may influence enrollment which include –family income, rural or urban area, parent education, household assets, and number of siblings. δ_d is the district fixed effect which accounts for preexisting differences in enrollment rates across districts.

The estimation sample includes all individuals aged 14 to 17 who are ideally of school – going age from grade 9 to 12. This model is used to estimate the treatment effects for the same treatment group, with the following different control groups: when $Treatment\_SC_i$ and $Treatment\_ST_i$ are equal to 0, the control group comprises either girls from the OBC category, or boys from the SC/ST category. The coefficients on the interaction terms, β_4 and β_5, are the treatment effects that represent the differential impacts of the policy on SC and ST girls, respectively. Given that the policy specifically targets SC and ST girls, both β_4 and β_5 are expected to be positive, indicating a significant increase in enrollment rates for them after policy implementation.

The model also includes age dummies, with both the treatment indicators being interacted with the age dummies separately. This is being done to see the differential effect of age on the enrollment of the treatment groups, and how as the individuals get older, does enrollment increase or decrease with time. Age serves as a proxy for grade level, where we can assess whether more girls have completed secondary school up to Grade 12 or if the majority have only studied until Grade 10.

The second model looks at an additional control group and studies the effect of the policy on 16- and 17-year-old SC and ST girls and compares them with 18- and 19-year-old SC and ST girls.

$$
\begin{aligned}
Grade\_completion_{idt} \\
&= \beta_0 + \beta_1 Post\_policy_t + \beta_2 Treatment\_SC_i + \beta_3 Treatment\_ST_i \\
&+ \beta_4\, Post\_policy_t * Treatment\_SC_i + \beta_5\, Post\_policy_t * Treatment\_ST_i \\
&+ \beta_6\, Age\_17 + \beta_7\, Age\_19 + \gamma X_{idt} + \delta_d + \epsilon_{idt}
\end{aligned}
\tag{2}
$$

Here, the outcome variable is $Grade\_completion_{idt}$ which is equal to 1 if the highest grade completed is equal to or higher than grade 9, and 0 otherwise. $Treatment\_SC_i$ and $Treatment\_ST_i$ are indicators for being in the treated cohort which includes 16- and 17-year-old SC and ST girls respectively .They are equal to 0 for the control group which includes SC and ST girls aged 18 and 19, respectively. This model also includes age dummies for being 17 and 19 years old to control for any differences in grade completion that are specific to those ages. All the age effects are interpreted relative to being 16 and 18 years old respectively. The policy may affect 16- and 17-year-olds differently within the treatment group and 18- and 19-year-olds differently within the control group. The remaining variables in the model are defined as they were previously. The coefficient on the interaction terms , β_3 and β_4, are the treatment effects that represents the impact of the policy on SC and ST girls' enrollment respectively, and we expect them to be positive as well, which would indicate an increase in enrollment rates.

The estimates of this model may not be causal as we are unable to test for parallel pre-trends using the IHDS data, which was only available for two years. The DID framework relies on the assumption that, in the absence of the NSIGSE intervention, the enrollment trends of SC/ST girls and the control group would have been similar. However, this assumption remains unverified for all control groups except boys who belong to the SC/ST group. We saw in Graph 3 which uses data from the Ministry of Education, Government of India, that the enrollment trends of SC/ST girls and boys have been parallel since 1990s. Although, the policy was also suspended in 2018-19 due to budget constraints and a change in India's ruling political party. It is important to consider whether any (if any) program impact can be attributed to the unconditional savings transfer mechanism itself or to broader enrollment trends in the country and other central policies implemented during the same time. While the model attempts to account for observed heterogeneity, it is possible that it did not have much of a causal impact on the stated object of increasing girls' secondary school enrollment. Given the sharp increase in primary school enrollment during the same period because of other concurrent policies (2001 – 2009) – Right to Free Education (RTE) and Sarva Shiksha Abhiyan (SSA) which aimed to universalize elementary education – the large post 2009 increases in SC and ST girls' secondary school enrollment may have taken place regardless of the Cycle program.

6. Results

We first investigate the effects of the NSIGSE on girls' secondary school education using equation (1). Table 5 represents the DID estimates using OLS regression with district fixed effects. All the values represented in the tables are probability derivatives. We look at the SC boys as the control group in Column (1), which suggests that the probability of being enrolled in 9th to 12th grade for 14-year-old SC girls increased by 6.1 percentage points relative to the control group, holding all other factors constant. This effect is statistically significant at 5% level. The probability of being enrolled in high school reduces rapidly as girls grow older. The probability of being enrolled in 9th to 12th grade for 15-year-old SC girls increased by 3.9 percentage points, for 16-year-olds it decreased by 5.2 percentage points, and for 17-year-olds it decreased by 1.5 percentage points, relative to the SC boys, holding all other factors constant. The results fall in place with the requirements of the policy as only those who are below 16 years of age are eligible to enroll, but they are only allowed to withdraw the money transferred in their savings account along with interest upon reaching 18 years of age – to ensure girls' retention in high school. This implies that although girls who are older have been exposed to the program for longer, the increase in the value of the financial incentive i.e. interest received on savings is very small. As they age, the opportunity cost of their time rises like getting married and helping their families out with household chores, which become more urgent alternate uses of their time. Hence, as they turn 16 years old, they tend to drop out of school and the financial incentive is not enough to make them stay in school after 10th grade. They still receive the savings account transfer with a 10th grade passing certificate (at the age of 15) and this implies that the program is more effective in increasing enrollment in early secondary (9th and 10th grade) rather than in later secondary (11th and 12th grade). At the same time, the effect of the policy on 14-year-old ST girls is not statistically significant (Table 5, Column 2).

Next, we look at OBC girls as the control group in Column (2). The main treatment effects i.e. *Post policy*SC* is positive and *Post policy*ST* is negative, but none of them are statistically significant (Table 5, Columns 3 & 4). This means that the probability of enrollment for 14-year-old SC and ST girls did not meaningfully increase after the policy was implemented in comparison to OBC girls. We studied this control group to see if the policy had an impact on SC and ST girls in comparison to another marginalized group with low education enrollment rates, however we do not observe a statistically significant increase.

Table 6 represents the DID estimates using equation (2) where we look at the older-aged cohort as the control group. Columns (1) and (2) show the estimates of $Treatment\_SC_i$ and $Treatment\_ST_i$ separately. It shows that the probability of completing grades 9-12 for 16- and 17-year-old SC girls increased by 1.5 percentage points relative to 18- and 19-year-old SC girls, holding all other factors constant. And the probability of completing grades 9-12 for 16- and 17-year-old ST girls increased by 2.8 percentage points relative to 18- and 19-year-old ST girls, holding all other factors constant. However, the results are not statistically significant for either of the groups. This suggests that NSIGSE had no significant effect on high school completion rates for SC and ST girls, compared to older girls.

As discussed earlier, this is a good control group as it follows a credible difference-in-difference framework used by Duflo (2001), Muralidharan and Prakash (2017), and by Sen and Thamarapani (2023). Previous studies that use similar designs often find significant effects, at the same time, each policy has a different structure and NSIGSE's unique incentive of an unconditional savings transfer entails it to have different results. While the older-aged cohort-based comparison remains valid and theoretically sound, the absence of significant results in this difference-in-difference estimation suggests that the policy's impact on increasing high school education was not significant in comparison to older-aged girls.

7. Robustness Check

We conduct a robustness check for the first control group we studied – SC and ST boys – which had a statistically significant effect on increasing secondary school enrollment for SC girls up till age 15. In that regression, we are comparing girls who are in the treatment group (aged 14 to 17) to boys who are not treated (aged 14 to 17). The assumption here is that if girls were not exposed to the policy, age would affect enrollment of both boys and girls similarly. However, this may not be true, and we conduct a robustness check to see if there is a difference in how age impacts enrollment for non-treated girls versus non-treated boys. We want to see if enrollment changes with age for girls, and particularly for SC girls, in comparison to boys. To analyze this, we run a regression using the following model –

$$Enrollment_{id} = \beta_0 + \beta_1 Female\_SC_i + \beta_2 Female\_ST_i + \sum_{18,19} \beta_3\, Age_i + \sum_{18,19} \beta_4\, Age_i * Female\_SC_i + \sum_{18,19} \beta_5\, Age_{it} * Female\_ST_i + \gamma X_{id} + \delta_d + \epsilon_{id} \quad (3)$$

Here, the dependent variable is the same as in Model (1) - $Enrollment_{id}$ which is an indicator for an individual 'i' being enrolled in Grade 9, 10, 11 or 12 in district 'd. $Female\_SC_i$ and $Female\_ST_i$ are indicators for being female and belonging to the SC and ST group respectively. We focus on 18- and 19-year-olds in the age variable, as these individuals are not eligible for the policy. By interacting age with $Female\_SC_i$ and $Female\_ST_i$, we isolate the effect of age on non-treated SC and ST girls, and examine how this affects their enrollment in secondary school compared to SC and ST boys. This also helps us isolate the effect of age on enrollment without the influence of the policy. X_{idt} is a vector of control variables that vary across districts that may influence enrollment which include –family income, rural or urban area, parent education, household assets, and number of siblings. δ_d is the district fixed effect which accounts for preexisting differences in enrollment rates across districts. The results for this regression are in Table 7. Columns (1) and (2) separately estimate the results for *Female SC* and *Female ST*.

Column (1) in Table 5 looks at SC and ST boys as the control group which suggests that the probability of being enrolled in 9th to 12th grade for 14-year-old SC girls increased by 6.1 percentage points relative to the control group, holding all other factors constant. In this regression, all SC girls aged 14 to 17 are in the treatment group, so we cannot study how whether the *drop in enrollment* after age 15 is due to the policy or something else. Our results show that the differential effect of age between 18- and 19-year-old SC girls and SC boys is -0.020 (Table 7, Column 1).

We are now controlling for the differential effect of aging between girls and boys, and how that affects their enrollment to secondary school. Although, this estimate is not statistically significant, we use this negative effect to adjust the treatment effects in our main regression, assuming the -0.020 effect holds for younger ages too. This indicates that the earlier values are underestimated. Now, our results are robust: The probability of being enrolled in 9th to 12th grade for 14-year-old SC girls increased by 8.1 percentage points, for 15-year-old SC girls increased by 5.9 percentage points, for 16-year-olds it decreased by 3.2 percentage points, and for 17-year-olds it increased by 0.5 percentage points, relative to the SC boys, holding all other factors constant.

This confirms that the policy does raise enrollment for SC girls, especially at younger ages. But the effect declines at age 16, which is when girls become eligible to receive the financial award (after passing 10th grade). These results suggest that SC girls may be enrolling just to qualify for the money and then dropping out afterwards. This makes our findings more robust and supports the idea that the policy leads to short-term increases in enrollment among the treated group. Similarly, Column (2) in Table 7 shows the results for the ST group.

8. Conclusion

This study examines the impact of an unconditional savings transfer program on secondary school enrollment rates among girls from disadvantaged castes (SC and ST) in India. We use data from repeated cross sectional individual surveys from the India Human Development Survey. Our findings reveal that the program had a statistically significant effect for SC girls only when we used boys as a control group. The probability of being enrolled in 9th to 12th grade for 14-year-old SC girls increased by 8.1 percentage points, for 15-year-old SC girls increased by 5.9 percentage points, for 16-year-olds it decreased by 3.2 percentage points, and for 17-year-olds it increased by 0.5 percentage points, relative to the SC boys, holding all other factors constant. These results, supported by the parallel pre-trends graph, suggest that the policy did have a measurable impact on enrollment – at least when compared to male counterparts within the same caste. The program was more effective at increasing enrollment in early secondary school (grades 9–10), as the financial incentive is received after passing grade 10 and you can see the probability of enrollment declining as they turn 16 years old. Despite longer exposure, older girls are more likely to drop out, making the policy less effective in grades 11 and 12. This raises an important question for policymakers and has policy implications. Could alternative designs—such as staggered increment in payments over the years instead of a one-time payment until they complete grade 12—encourage girls to remain in school longer?

That said, we explore three different control groups to compare our results : SC and ST boys, OBC girls, and older SC and ST girls. Boys and older-aged cohorts are commonly used control groups and are theoretically considered a good counterfactual to study (Duflo, 2001; Muralidharan and Prakash, 2017; Sen and Thamarapani, 2023). This is because they share the same broad social and cultural characteristics as the treatment group and are essentially identical.

On the contrary, using OBC girls as the control group is more challenging. The list for those who belong to the 'Other Backward Caste (OBC)' category is extensive and dynamic. Each state has a unique list of those who qualify as OBCs, and this makes it harder to compare them as a counterfactual for the treatment group or harder to assume that in the absence of the treatment the two groups are identical. OBC girls have historically higher baseline enrollment rates than SC and ST girls (Thorat and Khan, 2023). They do not face the same level of disadvantage as SCs or STs. Although this control group was relevant to study based on our research question and the treatment groups – as they also face historical disadvantage and social discrimination – there are pre-existing differences between OBCs and SCs and STs (Vakilsearch, 2023).

SC and ST boys are the strongest control group because they belong to the same caste as the treatment group and face similar social and economic disadvantages. In addition, the use of district – level fixed effects in our model, helps ensure that boys and girls are only compared within the same district and avoids any regional variation or bias. Pre-policy trends in enrollment for SC and ST boys and girls were also broadly parallel, which fulfills a key assumption of the DID approach. Though boys had higher baseline enrollment than girls, the difference was stable over time**.** While gender norms do lead to different educational paths for boys and girls, this is precisely what the policy aims to address. Comparing girls to boys provides a clearer picture of the policy's impact in a setting affected by systemic gender inequality.

It is still interesting to look at the results from all these different control groups as they provide valuable insights . However, there are several limitations to consider. Regression results indicate that the policy only benefitted SC girls and not ST girls. Scheduled Tribes include a wide range of India's indigenous communities, many of whom speak different languages and maintain distinct cultural identities. These groups often reside in remote or tribal areas, which limits their access to education, healthcare, and economic opportunities (Dragomir, 2017). High illiteracy rates, semi-nomadic lifestyles, and poor infrastructure could all contribute to the lower policy impact among ST girls.

It is also important to contextualize our findings within the broader educational policy landscape in India. The National Scheme of Incentives to Girls for Secondary Education (NSIGSE) was implemented in 2008 and it coincided with the enactment of the Right to Education Act in 2009, which guaranteed free and compulsory education for children aged 6-14. Hence, some of the observed improvements in secondary education may represent spillover effects from increased primary education access. Overall, even though it is plausible that NSIGSE had some effect on SC girls' enrollment in early secondary school , when comparing them with SC boys' , its design limits its effect on higher grades and on ST girls. Future education policy could take into consideration staggered or greater incentives to encourage continued schooling to grade 12 and more appropriately target geographically isolated tribal girls.

Appendix

Tables

Table 1: Table of Variable Definitions

$Enrollment_{idt}$	= 1 when individual 'i' in district 'd' and time 't' is enrolled in 9th / 10th /11th /12th grade = 0, otherwise
$Grade\_completion_{idt}$	= 1 if the highest grade completed is equal to or higher than grade 9 for individual 'i' in district 'd' and time 't' = 0, otherwise
$Post\_policy_t$	= 0 before the policy was implemented in time 't' in 2004, = 1 after the policy was implemented in time 't' in 2011
$Treatment\_SC_i$	Dummy for SC girls (=1 if SC, =0 otherwise)
$Treatment\_ST_i$	Dummy for ST girls (=1 if ST, =0 otherwise)
$Female\_SC_i$	= 1 if SC girls = 0 if SC boys
$Female\_ST_i$	= 1 if ST girls =. 0 if ST boys
Family Income	Total annual income of household in 1000s of rupees
HHASSETS	Asset index for the number of household assets owned by a family
Mom education	Years of education of mother
Dad education	Years of education of father
NSIB	Number of siblings
$URBAN_i$	= 0 when individual 'i' resides in a rural area = 1 when individual 'i' resides in an urban area
Age	Age of individual
δ_d	District dummies

Table 2 : Summary Statistics – Control group: SC & ST Boys

Variables	Pre-treatment (2004/05)				Post-treatment (2011/12)			
	Control group (SC Boys)	**Treatment group (SC girls)**	**Control group (ST Boys)**	**Treatment group (ST girls)**	**Control group (SC Boys)**	**Treatment group (SC girls)**	**Control group (ST Boys)**	**Treatment group (ST girls)**
Enrollment	**0.49**	**0.42**	**0.42**	**0.34**	**0.70**	**0.69**	**0.62**	**0.60**
	(0.5)	(0.49)	(0.49)	(0.47)	(0.46)	(0.46)	(0.49)	(0.49)
Family Income	70.32	70.69	80.89	98.09	103.91	103.87	94.99	103.15
	(68.36)	(71.72)	(316.97)	(389.64)	(93.61)	(111.14)	(123.12)	(159.92)
Household Assets	10.63	10.89	8.39	8.36	14.21	14.28	11.29	11.68
	(5.58)	(5.58)	(5.08)	(5.43)	(5.72)	(5.81)	(5.79)	(6.08)
Mom Education	1.73	1.75	1.41	1.48	2.34	2.53	1.73	2.02
	(3.32)	(3.29)	(3.09)	(3.11)	(3.56)	(3.76)	(3.27)	(3.86)
Dad Education	3.67	3.7	2.97	2.89	4.13	4.41	3	3.27
	(4.44)	(4.48)	(4.15)	(4.06)	(4.46)	(4.57)	(4.24)	(4.53)
No. of siblings	6.04	6.4	6.16	6.48	5.61	6.01	5.72	6.04
	(2.32)	(2.34)	(3.34)	(2.71)	(2.05)	(2.22)	(2.27)	(2.07)
Urban	0.28	0.31	0.13	0.16	0.3	0.3	0.13	0.17
	(0.45)	(0.46)	(0.33)	(0.37)	(0.46)	(0.46)	(0.34)	(0.38)
Age	15.61	15.55	15.62	15.56	15.63	15.57	15.57	15.49
	(1.06)	(1.06)	(1.05)	(1)	(1.11)	(1.12)	(1.14)	(1.11)
Number of Obs.	**1478**	**1488**	**598**	**647**	**1431**	**1409**	**489**	**530**

Note: Standard errors are in parentheses

Table 3: Summary Statistics – Control group: OBC girls

Variables	**Pre-treatment (2004/05)**				**Post-treatment (2011/12)**			
	Control group (OBC girls)	**Treatment group (SC girls)**	**Control group (OBC girls)**	**Treatment group (ST girls)**	**Control group (OBC girls)**	**Treatment group (SC girls)**	**Control group (OBC girls)**	**Treatment group (ST girls)**
Enrollment	**0.49**	**0.42**	**0.49**	**0.34**	**0.73**	**0.69**	**0.73**	**0.60**
	(0.5)	(0.49)	(0.5)	(0.47)	(0.45)	(0.46)	(0.45)	(0.49)
Family Income	78.74	70.69	78.74	98.09	125.25	103.87	125.25	103.15
	(93.8)	(71.72)	(93.8)	(389.64)	(252.54)	(111.14)	(252.54)	(159.92)
Household Assets	11.77	10.89	11.77	8.36	15.18	14.28	15.18	11.68
	(5.62)	(5.58)	(5.62)	(5.43)	(6.07)	(5.81)	(6.07)	(6.08)
Mom Education	2.67	1.75	2.67	1.48	3.34	2.53	3.34	2.02
	(3.9)	(3.29)	(3.9)	(3.11)	(4.32)	(3.76)	(4.32)	(3.86)
Dad Education	4.84	3.7	4.84	2.89	5.19	4.41	5.19	3.27
	(4.61)	(4.48)	(4.61)	(4.06)	(4.82)	(4.57)	(4.82)	(4.53)
No. of siblings	6.54	6.4	6.54	6.48	6.1	6.01	6.1	6.04
	(3.29)	(2.34)	(3.29)	(2.71)	(2.52)	(2.22)	(2.52)	(2.07)
URBAN	0.3	0.31	0.3	0.16	0.29	0.3	0.29	0.17
	(0.46)	(0.46)	(0.46)	(0.37)	(0.46)	(0.46)	(0.46)	(0.38)
Age	15.55	15.55	15.55	15.56	15.55	15.57	15.55	15.49
	(1.04)	(1.06)	(1.04)	(1.00)	(1.1)	(1.12)	(1.1)	(1.11)
Number of Obs.	**2302**	**1488**	**2302**	**647**	**2090**	**1409**	**2090**	**530**

Note: Standard errors are in parentheses

Table 4: Summary Statistics – Control group: Older-aged cohort

Variables	Pre-treatment (2004/05)				Post-treatment (2011/12)			
	Control group - SC (18 & 19 years old)	**Treatment group - SC (16 & 17 years old)**	**Control group - ST (18 & 19 years old)**	**Treatment group - ST (16 & 17 years old)**	**Control group - SC (18 & 19 years old)**	**Treatment group – SC (16 & 17 years old)**	**Control group – ST (18 & 19 years old)**	**Treatment group – ST (16 & 17 years old)**
Grade completion	**0.35**	**0.39**	**0.35**	**0.34**	**0.56**	**0.62**	**0.51**	**0.52**
	(0.48)	(0.49)	(0.48)	(0.47)	(0.5)	(0.49)	(0.5)	(0.5)
Family Income	75.01	72.89	64.71	106.2	112.63	102.16	108.06	89.64
	(69.63)	(73.3)	(63.77)	(405.59)	(109.09)	(110.05)	(138.65)	(113.42)
Household Assets	11.09	11.21	8.74	8.94	14.55	14.26	11.42	11.31
	(5.45)	(5.55)	(4.94)	(5.76)	(5.75)	(5.8)	(5.74)	(5.68)
Mom Education	1.16	1.69	1.18	1.52	1.6	2.35	1.35	1.76
	(2.68)	(3.24)	(2.75)	(3.22)	(3.2)	(3.61)	(3.08)	(3.43)
Dad Education	2.48	3.68	2.39	2.93	3.11	4.35	2.66	3.14
	(3.95)	(4.38)	(3.93)	(4.29)	(4.26)	(4.53)	(4.17)	(4.28)
No. of siblings	6.34	6.42	6.4	6.56	6.06	5.93	6.11	6.22
	(2.7)	(2.28)	(3.01)	(2.47)	(2.33)	(2.25)	(2.37)	(2.24)
Urban	0.27	0.32	0.14	0.17	0.29	0.29	0.12	0.15
	(0.45)	(0.47)	(0.35)	(0.38)	(0.46)	(0.46)	(0.33)	(0.36)
Age	18.38	16.43	18.35	16.38	18.53	16.49	18.6	16.46
	(0.49)	(0.5)	(0.48)	(0.49)	(0.5)	(0.5)	(0.49)	(0.5)
Number of Obs.	**894**	**870**	**394**	**390**	**916**	**834**	**368**	**300**

Note: Standard errors are in parentheses

Table 5: Difference in Difference estimation using SC/ST Boys and OBC Girls as the control group

Variables	(1) **Y = Enrollment (OLS)**	(2) **Y = Enrollment (OLS)**	(3) **Y = Enrollment (OLS)**	(4) **Y = Enrollment (OLS)**
Treatment group	SC girls	ST girls	SC girls	ST girls
Control group	SC boys	ST boys	OBC girls	OBC girls
Post policy	0.119***	0.152***	0.171***	0.174***
	(0.020)	(0.035)	(0.014)	(0.015)
Treatment SC	-0.025		-0.004	
	(0.028)		(0.027)	
Post policy * SC	0.061**		0.005	
	(0.024)		(0.022)	
Treatment ST		-0.087**		-0.087**
		(0.040)		(0.034)
Post policy * ST		0.009		-0.020
		(0.036)		(0.029)
Family Income (log)	-0.048***	-0.067***	-0.017**	-0.025***
	(0.010)	(0.016)	(0.007)	(0.008)
Household Assets	0.027***	0.027***	0.023***	0.024***
	(0.002)	(0.004)	(0.002)	(0.002)
Mom education	0.016***	0.013***	0.012***	0.009***
	(0.002)	(0.005)	(0.002)	(0.002)
Dad education	0.017***	0.016***	0.020***	0.018***
	(0.002)	(0.003)	(0.001)	(0.002)
Number of siblings	-0.008**	0.004	-0.007***	-0.006**
	(0.003)	(0.004)	(0.002)	(0.003)
URBAN	-0.053**	0.025	0.013	0.037*
	(0.025)	(0.049)	(0.018)	(0.022)
Age 15	-0.002	-0.043	-0.005	-0.008
	(0.022)	(0.038)	(0.018)	(0.017)
Age 16	0.027	-0.066*	-0.083***	-0.090***
	(0.023)	(0.039)	(0.017)	(0.017)
Age 17	-0.095***	-0.099**	-0.170***	-0.175***
	(0.024)	(0.040)	(0.019)	(0.019)
Age 15 * Treatment SC	-0.022		-0.007	
	(0.030)		(0.028)	
Age 16 * Treatment SC	-0.113***		-0.003	
	(0.032)		(0.027)	
Age 17 * Treatment SC	-0.076**		-0.006	
	(0.032)		(0.029)	
Age 15 * Treatment ST		0.048		0.022
		(0.052)		(0.040)
Age 16 * Treatment ST		0.044		0.072*
		(0.046)		(0.038)
Age 17 * Treatment ST		-0.026		0.055
		(0.051)		(0.044)
Constant	0.381***	0.397***	0.256***	0.287***
	(0.042)	(0.053)	(0.028)	(0.032)
Observations	5,743	2,232	7,171	5,468

R-squared	0.231	0.196	0.274	0.267
Number of distid	339	213	366	363
District Fixed Effects	Yes	Yes	Yes	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: Age 14 omitted as base category due to dummy variable trap; all age coefficients are relative to age 14. The target age group is 14 to 17 years old.

Table 6: Difference in Difference estimation using older-aged cohort as the control group

VARIABLES	(1) **Y = Grade completion (OLS)**	(2) **Y = Grade completion (OLS)**
Treatment group	16- & 17-year-old SC girls	16- & 17-year-old ST girls
Control group	18- & 19-year-old SC girls	18- & 19-year-old ST girls
Post policy	0.106***	0.094**
	(0.024)	(0.037)
Treatment SC	-0.029	
	(0.020)	
Treatment ST		0.002
		(0.039)
Post policy * Treatment SC	0.015	
	(0.028)	
Post policy * Treatment ST		0.028
		(0.052)
Family Income (log)	-0.001	-0.046***
	(0.012)	(0.013)
Household Assets	0.029***	0.027***
	(0.002)	(0.004)
Mom education	0.017***	0.011
	(0.003)	(0.007)
Dad education	0.019***	0.014***
	(0.002)	(0.005)
Number of Siblings	-0.012***	-0.009*
	(0.004)	(0.005)
URBAN	-0.025	0.052
	(0.030)	(0.056)
Age 17	0.053***	-0.021
	(0.020)	(0.035)
Age 19	-0.023	0.021
	(0.018)	(0.034)
Constant	0.075**	0.103**
	(0.033)	(0.045)
Observations	3,514	1,452
R-squared	0.231	0.186
Number of distid	334	179
District Fixed Effects	Yes	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: The target age group is 16 to 19 years old. Age 17 coefficient is represented relative to Age 16 and Age 19 coefficient is represented relative to Age 18.

Table 7: Differential Effect of Age and Gender on Enrollment

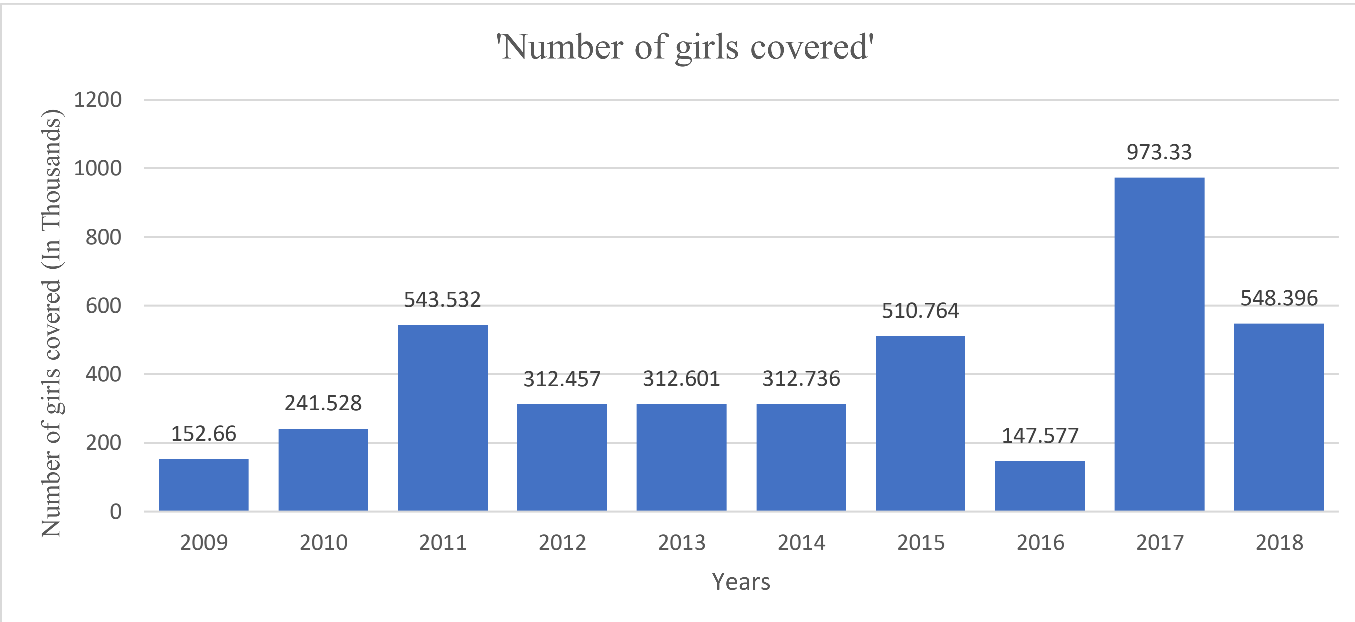
VARIABLES	(1) **Y = Enrollment (OLS)**	(2) **Y = Enrollment (OLS)**
Female SC	-0.101***	
	(0.020)	
Female ST		-0.034
		(0.031)
Family Income (log)	-0.031***	-0.036**
	(0.012)	(0.014)
Household Assets	0.018***	0.020***
	(0.002)	(0.004)
Mom education	0.025***	0.016**
	(0.004)	(0.007)
Dad education	0.014***	0.021***
	(0.003)	(0.004)
Number of Siblings	-0.006*	-0.006*
	(0.003)	(0.003)
URBAN	-0.001	0.023
	(0.035)	(0.052)
Age 19	-0.095***	-0.044
	(0.023)	(0.036)
Age 19*Female SC	-0.020	
	(0.027)	
Age 19*Female ST		0.004
		(0.048)
Constant	0.106***	0.085*
	(0.028)	(0.043)
Observations	3,201	1,332
R-squared	0.153	0.144
Number of distid	331	177
District Fixed Effects	Yes	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: Age 18 omitted as base category due to dummy variable trap; all age coefficients are relative to age 18. *Female SC* is a binary variable equal to 1 for SC girls and 0 for SC boys; *Female ST* is a binary variable equal to 1 for ST girls and 0 for ST boys.

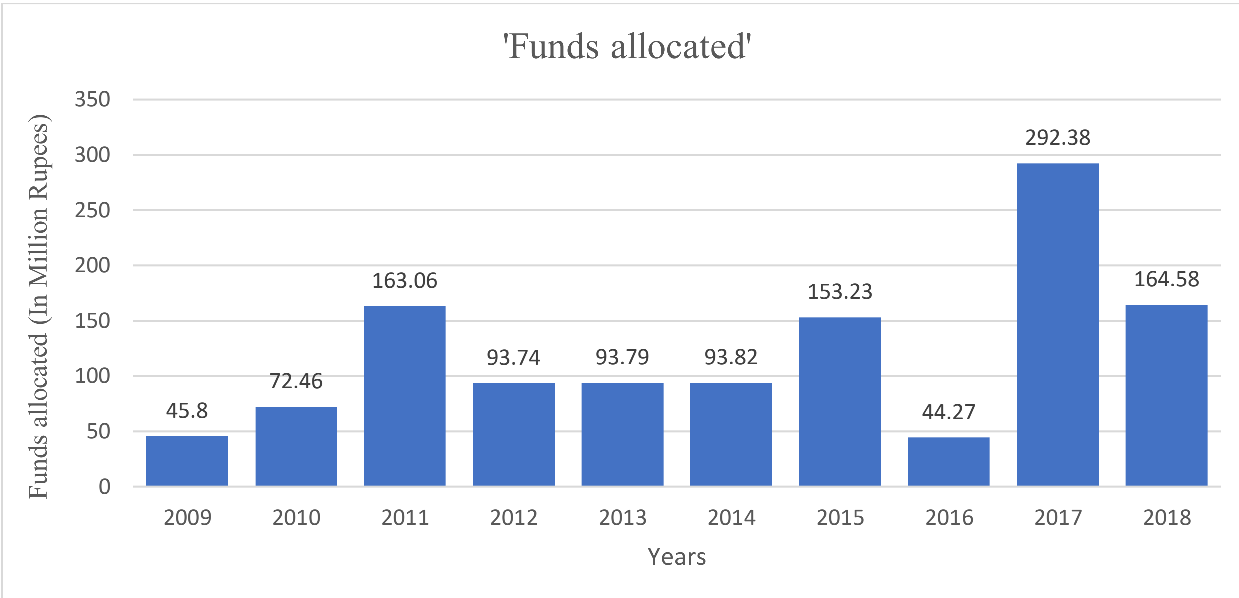
Figures

Figure 1: Number of girls covered by NSIGSE (2009-2018)



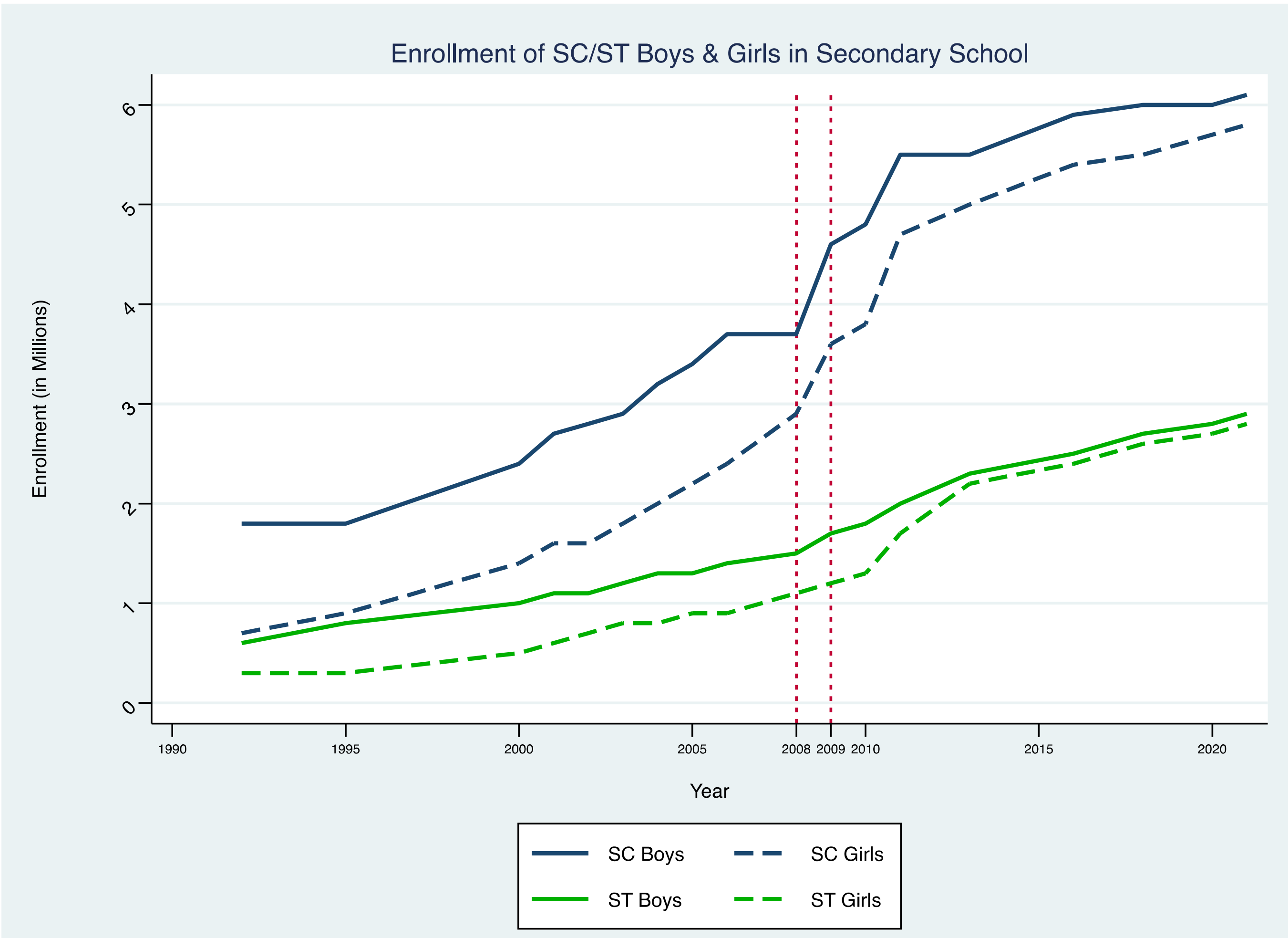
Data Source: Indiastat.com

Figure 2: Funds allocated to NSIGSE (2009 - 2018)



Data Source: Indiastat.com

Figure 3: Enrollment of SC & ST Boys & Girls in 9-12th Grade (1990-2020)



Data Source: Ministry of Education, Government of India

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