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Do scheduled caste and scheduled tribe women legislators mean lower gender-caste gaps in primary schooling in India?

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Abstract

Despite India's substantial investments in primary schooling, gaps in schooling persist across gender and caste—with scheduled caste and scheduled tribe (SC/ST) girls being particularly disadvantaged. The representation of SC/ST women in state legislatures may help to mitigate this disadvantage. Specifically, because of her intersecting gender and caste/tribe identities, a SC/ST woman legislator might maintain a strong sense of solidarity especially with SC/ST girls and women, and support legislative policies benefitting SC/ST girls. Consequently, for this reason, we expect that living in a district where SC/ST women represent in state legislatures in a higher proportion may increase SC/ST girls' primary school completion, progression and performance. We tested this hypothesis using district-level data between 2000 and 2004 from the Indian Election Commission, the 2004/5 India Human Development Survey, and the Indian Census of 2001. As expected, the representation of SC/ST women in state legislatures was positively associated with SC/ST girls' grade completion and age-appropriate grade progression but was apparent not SC/ST girls' primary-school performance. SC/ST women's representation in state legislatures may reduce gender-caste gaps in primary-school attainment in India.

Keywords

Women legislators; Intersectionality; Gender; Castes; Primary education; India

1. Introduction

At Independence in 1947, India pledged to legislate policies aiming to improve the social and economic wellbeing of its disadvantaged groups, including scheduled caste and scheduled tribe (SC/ST) members. Considering education as fundamental to wellbeing, India's 1968 and 1986 policies on education stated that the government must take "strenuous" efforts to provide free and compulsory education to all boys and girls up to 14 years of age (Government of India, 1986). Since then, the government has played an instrumental role in the provision of education. In 2002, the government made an even

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stronger commitment, allocating to education 12.7% of total public expenditures. This level of spending on education rivals that in China, at 12.8%— with China being the only other Asian country that parallels India in economic growth (India: 6.1%; China: 6.8%, 1980–2014) (Crost and Kambhampati, 2010; WDI 2015).

Still, India has yet to achieve universal primary education, enrolling 11% fewer children than China (UNICEF, 2011). Despite overall improvements in enrollment, large gaps persist across gender and caste—with SC girls being disadvantaged (IIPS and ORC Macro, 2007; Kingdon, 2007; Mehrotra, 2006). A *gender gap* or difference between boys and girls in primary-school enrollment is evident in all but five states, and certain northern states retain gaps, as high as between 15% and 24% (IIPS and ORC Macro, 2007). A *caste gap* or difference between non-SC and SC children in primary-school enrollment, of at least 6% is evident in all states; certain northern and eastern states have gaps, ranging between 16% and 36% (Deshpande, 2007; Mehrotra, 2006; Wu et al. 2007). However, the largest gaps persist at the intersection of gender and caste. Compared to non-SC boys, SC girls have a much lower level of enrollment in primary-school (IIPS and ORC Macro, 2007; Wu et al. 2007).[1]

In this study, we examine whether gender-caste gaps in primary schooling are lower in districts where SC/ST women's representation in state legislatures is higher. We argue that, amidst large investments in primary schooling, persisting gender-caste gaps may speak more to a *disregard* in policies for the institutional and cultural barriers to primary schooling than it may to a *deficit* in primary-schooling investments. Put differently, primary-schooling investments made, presumably, by non-SC/ST male legislators, may have neither removed nor redressed the sources of discrimination against SC/ST girls at home and school. Indeed, at school, SC/ST children experience avoidance of social and physical interactions from non-SC/ST members. Some non-SC teachers avoid touching SC children's work, and some non-SC students avoid sitting by SC peers or sharing with them utensils or water wells (Desai and Kulkarni, 2008; The PROBE Team, 1999). At home, compared to boys, girls often receive fewer educational investments, perhaps because girls leave the natal family upon marriage and are not expected to provide financial support to parents (Alderman and Gertler, 1997).

For SC/ST girls, the discrimination and hostility they face are the causes and consequences of their lower schooling attainment in India, a society, which is stratified primarily along caste and gender lines. Caste and gender systems ascribe all members of society to a social position, and such systems limit opportunities for status attainment, especially for SC/ST (Beteille, 1969; Fürer-Haimendorf, 1982; Galanter, 1984; Omvedt, 1993) and women (Miller, 1989; Murthi et al., 1995; Jeffery and Basu, 1996). To elaborate, the Hindu caste system stratifies the society into four castes (*varna*) (Vaid, 2014; Desai and Kulkarni, 2008), each associated with a type of occupation: *Brahmin* (priests and teachers), *Kshatriya* (rulers and warriors), *Vaishya* (traders) and *Shudra* (artisans and manual laborers).[2] Scheduled castes, the lowest in the hierarchy, tend to be employed in the occupations (e.g., skinning

[1]We used SC/ST, SC, ST or non-SC/ST with intentional reference to those scheduled groups.
[2]Each of these castes is further stratified into many smaller sub-castes (*jatis*), and each sub-caste into even smaller sub–sub castes (Vaid, 2014). In practice, however, caste hierarchies have never been universally accepted as those being of any one type across a region, and they were never fully rigid at any given time (Desai and Kulkarni, 2008; Vaid, 2014).

animal carcasses; butchery of animals; removal of human waste; attendance at cremation groups; washing clothes; fishing) that are considered profane by non-SC members.[3] Scheduled tribes do not belong to a caste because they are not Hindus. Still, scheduled tribes are poor and socially excluded due to differences in customs, practices and geographic isolation. Additionally, the gender system entitles men to more rights and privileges, resulting in many families on son preference, unequal treatment of daughters.

Against this backdrop, we argue that higher prevalence of SC/ST women legislators may improve SC/ST girls' primary schooling by influencing investments needed to mitigate the barriers facing SC/ST girls. We expect that, *ceteris paribus*, SC/ST women's representation in State Legislative Assemblies (SLAs) will be associated with SC/ST girls' primary schooling; non-SC/ST women's representation will have no associations. We test these hypotheses using a unique dataset combining district-level data on state legislatures from the Indian Election Commission, district-level data on socio-economic and demographic attributes from the Indian Census, and individual-level data on grade completion, progression and performance of children ages 8–11 years from the 2005 India Human Development Survey.

This study aims to inform a broader debate on the political economy of human development: does political power afforded to a disadvantaged group lead to improved wellbeing in members of that group? Although practiced in over 100 democracies worldwide (Krook, 2009), reserving seats in political office for disadvantaged groups is controversial. Supporters argue that empowering disadvantaged groups results in policies benefitting all in society at large (Deininger et al., 2015). Critics fear that such political engineering may bring to office individuals who may be unqualified and easily manipulated by traditional elites (Krook, 2009). In India, since 1996, similar sentiments have been echoed in the Lower House of the country's bipartite parliament by the legislators deliberating on the *Women's Reservation Bill* to reserve for women one third of seats in the central and state legislatures (Sanyal, 2008).

2. Institutional backgroud

2.1. The primary education system in India

Since Independence in 1947, the government of India has repeatedly vouched to provide free and compulsory education to all children up to the age of 14. The *National Policy on Education 1968* called for "strenuous" efforts to be made to fulfill this commitment (Tilak, 1996: 275). The *National Policy on Education 1986* reiterated the goal: "by 1995, all children will be provided free and compulsory education up to 14 years of age" (Government of India, 1986: 12, cited in Tilak, 1996). Further, the 1968 and 1986 policies recommended that schooling should be uniformly structured across all states (Govinda and Bandyopadhyay, 2008).

To fulfill the 1968 and 1986 policies and thereby reduce gender- and caste-based gaps in primary schooling, India launched in 1994 the District Primary Education Programme, and

[3]The justification is "they are so low that they do not deserve to be assigned a caste" (Desai and Kulkarni, 2008: 247).

in 2002 *Sarva Shiksha Abhiyan* (Education for All) and the National Programme of Education of Girls at Elementary Level (Govinda and Bandyopadhyay, 2008; GOI, 2007). To improve school availability and infrastructures as well as learning environments and outcomes, these programs set out to implement measures targeting children and schools. Measures for children included free or low-tuition education and free meals, uniforms and textbooks; measures for schools included the School Maintenance Grants, School Development Grants, and Teaching-Learning Material Grants. To elaborate on measures targeting schools, a primary school receives a School Development Grant in the range of 1000 Rupees (US$ 18.71 in constant 2005 exchange rate) for expenditures on chalk, dusters, blackboard, etc. A primary school teacher receives a Teaching-Learning Material Grant in the range of 500 Rupees (US$ 9.36 in constant 2005 exchange rate) for expenditures on teaching-learning aids (The PROBE Team, 1999).

The impacts of these programs have been sizeable. The Indian government has emerged as one of the largest providers of primary education in the world (Department of Education, 2003). In 2014, the net primary-school enrollment rate was 93% (WDI 2015), 13% points higher than at the inception in 2002 of *Sarva Shiksha Abhiyan*. Every year, 150 million children are taught in nearly 800,000 primary schools (Department of Education, 2003; Pratham USA, 2005). More recently, the government constructed 31,450 model schools in 3000 ‘Educationally Backward Blocks’; trained 197,000 teachers; supported 354,000 community nurseries and 50,000 early childhood care and education centers. Further, most states adopted a uniform, four-tiered structure of schooling: pre-primary (Grades <1), primary (Grades 1–8), middle (Grades 9–10) and secondary (Grades 11–12); children aged 7–14, 15–16 and 17–18 years attend the primary, middle and secondary school, respectively. In some states, however, primary school consists of Grades 1–7.

Still, each year, nearly 14 million children remain out of school, and only 58.2% of children complete primary school (Department of Education, 2003; IIPS and ORC Macro, 2007). Disparities persist across states, however. For example, Bihar, Jharkhand, Madhya Pradesh, Orissa, Rajasthan, Uttar Pradesh, and West Bengal had higher proportions of out-of-school children than the national average (Govinda and Bandyopadhyay, 2008). In primary-schools, gender gaps in enrollment range between 15% and 24% in all but five states; caste gaps of at least 6% persist in all states (IIPS and ORC Macro, 2007). In six of the poorest and most populous states of the North and East, SC/ST girls on average do not complete a single grade of schooling (IIPS and ORC Macro, 2007).

2.2. The political system in India

India’s political system is an asymmetric federalist one, with States and Union Territories (UTs) having unequal but enough decision-making power to self-govern (Tarlton, 1965). States control their own finances and bureaucracies and mainly decide their resource allocations. Elected members of SLAs play key roles in how the state’s budget for education is distributed across districts. State also provide the central government with venues needed to operate centrally funded education schemes such as mid-day meals. Districts are responsible for implementing decisions made at the state level (Clots-Figueras, 2011; Govinda and Bandyopadhyay, 2008).

Since independence, India has made several amendments to the constitution in an effort to increase representation of disadvantaged groups in the central and state legislatures. In 1950, India reserved up to one fourth of the seats in the central and state legislatures for SC/STs (Pande, 2003), who make up 25% of the population (Census of India, 2001). In 1992, the 73rd amendment to India's constitution called for one third of seven seats in the Panchayat Councils and one third of Pradhan (the head of a Panchayat Council) positions to be reserved for women. Notably, with the 73rd amendment, the government decentralized power and formally recognized the authority of district-, sub-district- and village-level bodies. After more than 50 years, Indian legislators have proposed constitutional amendments to reserve one third of the seats in the central and state legislatures for women (Sanyal, 2008), who comprise 48% of the population (Census of India, 2001). In 2010, these amendments were approved in the Upper House (*Rajya Sabha*) of India's bipartite parliament and have since been under political deliberation in the Lower House (*Lok Sabha*).

3. SC/ST women legislators, intersectional identities and SC/ST Children's primary schooling

Constitutional mandates to increase women's representation in legislatures is predicated on the assumption that legislators' identities may influence their political priorities and decisions (Phillips, 1995, 1998) and play a pivotal role in redistributing resources to the social groups with which these legislators identify (Pande, 2003; Besley et al. 2004). Stryker (1980: 60) defines identity as a person's "internalized positional designation," which may be operationalized with respect to gender, religion, caste, class, race, ethnicity, sexuality or other designation. Legislators, like other people, are not "a monolithic group" (Mohanty, 1995; Hill Collins, 2000; Hooks, 2002; Richter, 1990) and have multiple intersecting identities (Frederick, 2010; Hill Collins, 2000). Frederick (2010: 478) defines intersectional consciousness as the "simultaneous expression of solidarity with women, racial and ethnic minorities, and poor and working-class voters as well as concern for the socio-political status of these groups."

Applying to the Indian context these discourses on legislators' intersecting identities, we argue that SC/ST women legislators can play a larger role than their non-SC/ST counterparts in reducing gender-caste gaps in primary schooling.

Because of gender identity, a SC/ST woman legislator is likely to support educational policies benefiting girls—SC/ST or otherwise. Empirical studies have found important behavioral differences across genders using experimental and survey methods in rich and poor countries (Dollar et al. 2001). According to Dollar et al. (2001: 423), "women are more likely to exhibit 'helping' behavior (Eagly and Crowley, 1986); vote based on social issues (Goertzel, 1983); score more highly on 'integrity tests' (Ones and Viswesvaran, 1998); take stronger stances on ethical behavior (Glover et al. 1997; Reiss and Mitra, 1998); behave more generously when faced with economic decisions (Eckel and Grossman, 1998)." Extending the discussion to the political sphere, several scholars have argued that women have distinct political interests and bring different values, experiences and expertise to

politics compared with men (Goertzel, 1983; Reiss and Mitra, 1998; Eckel and Grossman, 1998). In *The Politics of Presence*, Anne Phillips (1995) even suggests that women legislators are best equipped to represent the political interests of women. Empirically, research has shown that, when in control of household or state resources, women spend more on education, nutrition, and health (e.g., Lundberg et al. 1997; Thomas, 1990, 1997; Duflo, 2003) and less on personal (material) gain (Dollar et al. 2001). In the U.S. and Western Europe, the policy preferences of women and men have differed, with women more likely to support redistributive policies, such as spending on child care and child-related issues (e.g., Lott and Kenny, 1999; Edlund and Pande, 2001; Edlund et al. 2005). In India, SC women legislators have favored women-friendly laws, such as amendments to the Hindu Succession Act, proposed to give women the same inheritance rights as men (Clots-Figueras, 2011).

Because of caste or tribe identity, a SC/ST woman legislator is likely to support policies benefiting SC/ST children—girls and boys alike. In general, SC/ST legislators invest more to benefit SC/ST members' socio-economic status than they do to benefit that of non-SC/ST members. For example, Pande (2003) found that SC members' representation in state legislatures predicted an increase in redistribution of resources favoring SC members. Besley et al. (2004) found that SC members' greater representation in village governments increased SC households' access to toilets, electricity connection, and private-water connection. Although prior studies did not consider the gender of SC legislators, the discussion above suggests that SC women legislators are at least as likely as their male counterparts to support investments in SC members.

However, the caste and tribe systems further divide Hindu women, broadly, into those belonging to non-SC/ST and SC/ST. A SC/ST woman's identity, as a result, is shaped not only by her gender but also by her group's experiences of discrimination and hostility. Because of intersectional identities, a SC/ST woman legislator is likely to maintain a stronger sense of solidarity with members of SC/ST and especially with SC/ST girls and women, and to be most supportive of policies benefitting SC/ST girls. The hypothesis of intersectional solidarity has been tested more in western settings than in India. In the U.S., comparisons of state legislators by gender and race have supported the primacy of intersectional identity (Barrett, 1995). Specifically, black women resembled nonblack women in their support for pro-women policies, and resembled black men in their support for pro-minority policies. Yet, black women showed near-full agreement on the policies that most affected black women, and they were most likely to pursue these in office, including policies on education, health care and employment (Barrett, 1995).

Would SC/ST women be more effective in their roles as legislators when more SC/ST women are elected to legislatures (i.e., descriptive representation) or when SC/ST women are doing more in legislatures (i.e., substantive representation)? Predicting a link between descriptive and substantive representation, Phillips (1995: 47) argues that the former form of representation is desirable for the latter to take effect: "It is representation … with a purpose, it aims to subvert or add or transform." Further, the concept of "critical mass" (Kanter, 1977), or an approximate 30% level of political representation, is deliberated in the literature to identify a threshold at which the presence of women legislators becomes impactful.

However, studies find little support for critical mass as being essential for affecting policy changes (Paxton et al. 2007). This finding implies that any number of women legislators is preferred to none, especially when the legislatures open for women opportunities for participation in legislative procedures (e.g., making speeches, serving in committees, fundraising, and bargaining with lobbyists). Studies in the US find that, compared to men, women were as successful in passing bills addressing women's interests regardless of the levels of their occupation of legislative seats (Bratton, 2005; Bratton and Haynie, 1999). Likewise, in India, a lower level of representation did not preclude women legislators from convincing their male colleagues to introduce bills addressing women's interest or to vote affirmatively on those introduced by women legislators (Mishra, 2000).

Based on the preceding discussion, we expect that SC/ST women legislators may play a larger role than non-SC/ST women in increasing SC/ST girls' primary schooling and, thereby, reducing gender-caste gaps. Non-SC/ST women legislators tend to have higher socioeconomic backgrounds and to invest in higher tiers of education (Clots-Figueras, 2011). This background may entail that they do not support policies benefitting girls' or SC children's primary schooling (Gotell and Brodie, 1996; Mohanty, 1995; Richter, 1990).

3.1. Other determinants of children's primary schooling

Other child-, household-, and district-level factors are likely associated with levels of primary schooling and gender gaps therein. Among child characteristics, age is important to learning achievement (Dreze and Kingdon, 2001). Receipt of parental as well as governmental educational investments remains critical for primary schooling (Huston, 1991; Duncan et al. 1994; Garrett et al., 1994; Duncan and Brooks-Gunn, 1997; Tilak, 1996). The child's views about school may be as important as parental or governmental education investments for attendance of primary schooling (Dreze and Kingdon, 2001). Finally, the type of school that the child attends and the distance that the child travels to school measures the accessibility of school (Tooley and Dixon, 2003; Dostie and Jayarama, 2006).

Among household attributes, poverty strongly predicts lower levels of schooling, especially for girls (Ramachandran, 2003; Desai and Kulkarni, 2008). Children of more-schooled parents are more likely to attend school and to complete more grades (Filmer, 2000; Borooah and Iyer, 2005), and mother's schooling is especially important for girls (Dreze and Kingdon, 2001; Ramachandran, 2003). Historically, SC/ST children have had low attendance and attainment, and SC girls were even more disadvantaged than same-caste boys (Dreze and Kingdon, 2001), though, in recent years, this caste disadvantage has decreased for girls and boys (Desai and Kulkarni, 2008).

The district characteristics that may be associated with academic achievement include the percentage of the population that is urban, which captures the socio-economic environment as well as the overall level of infrastructure (Meyer and Rowan, 1977; Soysal and Strang, 1989; McLendon et al. 2005; Renzulli and Roscigno, 2005); the percentage of the population that is SC or ST, which captures the socio-economic and cultural environment (Soysal and Strang, 1989; Renzulli and Roscigno, 2005); the sex ratio of the population, which captures the overall extent of gender bias (e.g., Clots-Figueras, 2011; Echávarri and Ezcurra, 2010; Pal and Ghosh, 2008; Svaleryd, 2009); and region, which captures

geographic differences in the social, economic, and cultural environment (e.g., Meyer and Rowan, 1977; Renzulli and Roscigno, 2005; Roy et al., 2000; McLendon et al. 2005).

Based on the preceding discussion, two hypotheses follow. First, we expect that SC/ST women's representation in state legislatures will be most positively associated with schooling attainment and performance for SC/ST girls, more modestly positively associated with these outcomes for SC/ST boys and for non-SC/ST girls, and not associated with these outcomes for non-SC/ST boys. Thus, SC/ST women's representation in state legislatures should predict smaller gaps in primary-school attainment and performance, especially between SC/ST girls and non-SC/ST boys, because of greater benefits accrued to SC/ST girls. Second, we expect that non-SC/ST women's representation in state legislatures will not be associated with gender-caste gaps in primary schooling, mainly because the political presence of non-SC/ST women will not improve primary schooling achievements for SC/ST children.

4. Data and measurements

For this analysis, we linked three data sources: the 2005 India Human Development Survey (IHDS), the Election Commission of India (ECI), 2000–2004, and the 2001 Census of India projected in the 2003/4 District Information Survey for Education (DISE) dataset. The IHDS is a nationally representative survey that includes household-level information on health, education, employment, economic status, marriage, fertility, gender relations, and social capital, and assessments by IHDS surveyors and village key informants of primary-school and healthcare facilities. An innovative feature of the IHDS is its direct assessments of writing, reading, and arithmetic for children aged 8–11 years in children's homes rather than in schools, thus including children who were not attending school. Tests were developed with local consultation and informed by material taught during the first three years of school. The non-profit organization Pratham developed the assessment tools, which were widely pre-tested. Trained assessors administered the tests in 13 languages (Desai et al. 2007).

The ECI produces and disseminates reports on the results of all elections to India's State Legislative Assembly since 1951 (Election Commission of India 2009). These reports include data for all electoral constituencies on: contestants' background, including gender, membership in a SC/ST, and political party; performance, including votes won in absolute and relative number; and counts of all electors and voters, overall and by gender. To link and then aggregate constituency-level data from the ECI to districts, we followed the guidelines for mapping constituencies to districts demonstrated by Bose and Singh (1988a, b, c; 2000a,b). These assignments were based on delimitation rules set in 1985, which held for the election years under study (2000–2004). This procedure yielded a dataset of 404 districts and district composites. The 2001 Census provides information for each district on socio-demographic attributes in 2000.

For each data source, we followed published guidelines (Kumar and Somanathan, 2009) and created a dataset of the districts comprising India in 1981, the census year reflecting the

district boundaries that existed when the 1985 delimitation rules linked electoral constituencies to districts.

In the IHDS, 12,324 children participated in the academic tests; 10,223 of them from 369 districts were Hindu (nonscheduled or scheduled castes) or scheduled tribes, and, therefore, are eligible for analysis. In merging ECI districts with IHDS data, 10,127 children could be merged, living in 229 districts available in all datasets, accounting for the majority of Indian districts.

4.1. Variables

Six outcome variables captured children's grade completion, age-appropriate grade progression, and performance in reading, writing, and math, individually and combined. *Grade completion* captured the highest number of grades completed. *Grade progression* indicates whether a child is on track given his or her age, so data on the child's age and grades completed were used to assess whether each child was behind, on schedule, or ahead for age, with age six being the standard age of school entry and age seven being the standard age for completing class 1. For India, the standard age of entry into primary school has remained steady for the years between 1995 and 2014 (WDI 2015). Thus, an eight-year-old was on schedule if she had completed first or second grade, was behind if she had not completed first grade, and was ahead if she had completed third grade. We converted age-appropriate grade progression into percentile rankings, indicating each child's performance relative to the population distribution.

The IHDS assessed *ability to write* dichotomously (0 = cannot write, and 1 = writes with 2 or fewer mistakes), *ability to read* using a five-level scale (0 = cannot read at all, 1 = can read letters but not form words, 2 = can put letters together to read words but not read whole sentences, 3 = can read a short paragraph of 2–3 sentences but not fluent enough to read a whole page, and 4 = can read a one page short story), and mathematics aptitude using a four-level scale (0 = cannot read numbers above 10, 1 = can read numbers up to 99 but cannot do more complex number manipulation, 2 = can subtract a two-digit number from another, and 3 = can divide a number between 100 and 999 by another number between 1 and 9). Also, we used principal components analysis (PCA) to create a score of students' overall performance in writing, reading and mathematics. Component scores were derived from the coefficients for the first PC of each performance domain. For this PCA score, the Chronbach's alphas and Kaiser-Meyer-Olkin measures of sampling adequacy were adequate, at 0.83 and 0.69 respectively.

The explanatory variables of main interest were, in elections occurring between 2000 and 2004, (a) the percentage of SLA seats in the district that were *reserved* for SC/ST and that were won by SC/ST women, and (b) the percentage of *general* or non-reserved SLA seats in the district that were won by non-SC/ST women. Notably, districts are divided into constituencies in which SLA contestants are elected in first-past-the-post elections. Geographic boundaries ensure an equal number of inhabitants per constituency, with districts having a median of 11 constituencies. Ensuring that the main explanatory variables were measured before (2000–2004) the year for which the outcomes were measured (2005) established a temporal ordering of the explanatory variables and outcomes. Establishing

temporality may neither eliminate endogeneity nor permit claims of causality but allows us to present associations with more confidence.

Finally, thirteen child-, five household-, and five district-level controls that may be associated with the explanatory variables and outcomes were included. Child-level controls were age (8–11 in years); gender (male, female); SC or ST membership (yes, no); school type (public, private); relation to household head (son, daughter, other); a sum of caregivers' expenditures (in rupees) on school fees, supplies, and tuition in the last academic year; six measures of the child benefits from governmental investments in primary schooling: distance in kilometers to a primary school; whether the child received free grain or a midday meal; and whether the child had received in the prior academic year free books; uniforms; school fees, waived; government scholarships); and child's enjoyment of school (yes, no).[4] Household-level controls included highest grade completed by any male and by any female member at least 21 years old, a measure of household poverty, dependency ratio (adults at least 21 years to children less than 15 years), and type of community (urban, rural). District-level control variables were the female-to-male ratio in the total population, the literacy rate for females at least 7 years old, decennial population growth rate, the percentage of the population living in urban areas, the percentage of the population SC and regional location.

5. Methods

Descriptive data analyses provided an assessment of the completeness and distributions of variables. Missing data on control variables was low, generally around 1%, and was handled by imputing the mean (for continuous variables) or mode (for categorical variables), and including a binary indicator for imputed observations. Bivariate analyses of the explanatory variables and covariates did not indicate problems of colinearity, as the highest correlation among any two covariates was 0.51. As a test for multi-colinearity, we estimated the variance inflation factors, and all were well below the recommended cut point of 10 (1.02–2.87) (O'Brien, 2007).

In regression analyses, we tested the associations of women's district-level representation in non-reserved and reserved SLA seats with the child's (a) grade completion, progression and overall performance and (b) ability to read, write and mathematics aptitude, as conditional on the child's gender and caste identity, using Eqs. (1) and (2):

$$\mathrm{Y}_{yi,}=\beta_{y0}+\beta_{y1}NW_k+\beta_{y2}SW_k+\beta_{y3}NW_k\times GC_i+\beta_{y4}SW_k\times GC_i+\beta_{y5}\mathrm{X}_i+\varepsilon_{yi}. \quad (1)$$

where, Y_{yi} denotes a vector of y outcome variables capturing schooling completion, progression, and overall performance of the child i;

[4]In India, scheduled caste is further subdivided into many sub groups. Since the IHDS collects data on membership in the scheduled caste, as opposed to a specific denomination within scheduled caste, we treat all scheduled caste children as one.

$$Log\left(\frac{A_{ij}}{1-A_{ij}}\right)=\alpha_{ij}+\boldsymbol{\beta}'\boldsymbol{X_i}, \quad (2)$$

where $A_{ij} = \Pr(y_i > j | y_i \geq j)$, y_i is reading abilities, writing abilities or mathematics aptitudes of child i, j is the total number of ordinal categories, and

$$\beta'\boldsymbol{X_i}=\beta_1 NW_k+\beta_2 SW_k+\beta_3 NW_k \times GC_i+\beta_4 SW_k \times GC_i+\beta_5 X_i$$

In Eqs. (1) and (2), NW_k denotes the percentage of general (or non-reserved) SLA seats held by women in district k, and SW_k the percentage of reserved (SC/ST) SLA seats held by women in district k; GC_i denotes the gender and caste (female SC/ST, male SC/ST, female non-SC/ST or male non-SC/ST) identity of the child i; and X_i denotes a vector of child-, household-, and district-level control variables and region and state dummy variables. In the regressions estimating performance, child-level controls also include child *i's* current enrollment in school. We estimated the equation using survey-adjusted ordinary least squares regressions (OLS) or ordered logistic regressions, as appropriate for the level of measurement for the dependent variables, with robust standard errors: parameter estimates are weighted using the sampling design weights, as provided in IHDS, and standard errors are clustered at the village or urban block level.

6. Results

6.1. Summary statistics

Table 1 presents summary statistics for all variables, disaggregated by gender-caste group and *t*-test results of the mean differences between SC/ST girls and SC/ST boys, non-SC/ST girls, and non-SC/ST boys.

On average, SC/ST girls had completed 3.01 primary-school grades; 68% had completed a grade appropriate or advanced for their age. SC/ST girls completed fewer grades than non-SC/ST boys (3.36) *and* girls (3.38), and were behind same-aged non-SC/ST boys (74%) and girls (74%) in age-appropriate grade progression. However, SC/ST girls completed as many grades and progressed as age-appropriately as SC/ST boys (3.07 grades completed; 69% at the age-appropriate grade). Still, SC/ST girls read (52%), wrote (64%), and did math (44%) more poorly than non-SC/ST children and SC/ST boys.

On average, families provided for SC/ST girls' schooling 861.91 *rupees* ($16.13 in constant 2005 exchange rates) annually, which is two to three times lower than what families provided to non-SC/ST girls (1861.33 *rupees* or US $ 34.83 in constant 2005 exchange rates) and non-SC/ST boys (2238.94 *rupees* or US $ 41.90 in constant 2005 exchange rates). SC/ST girls attended a public school more often (81%) than did SC/ST boys (78%), non-SC/ST girls (65%) or non-SC/ST boys (59%), but traveled fewer kilometers to school (1.34; one way) than all other children (1.48–1.74 km). SC/ST girls benefitted more from government investments in primary schooling than all other children: 60% received grain or

a mid-day meal; 74% received textbooks; 25% received uniforms; 21% received scholarships; and 19% had school fees paid.

Most children lived in households headed by their parents (68%–79%) in rural areas (66%–81%), which, with a dependency ratio of 1.03–1.37, were above the poverty line (86%–65.38%). Education among household women and men ranged between 2.90 and 6.13 and between 5.71 and 8.97, respectively, across the gender-caste groups of our sample.

On average, women held 6% and 11% of general and reserved SLA seats in a district, respectively. The districts had an average sex ratio of 933 women per 1000 men, and female literacy rate of 54%; districts were on average 28% urban; scheduled castes accounting for 22% of populations. Finally, districts had the following regional representation: Northeast (3%), North (22%), South (17%), and West (15%), East (17%) and Central (26%).

6.2. Multivariate results

Table 2 presents survey-adjusted OLS and Ordered Logistic Regression estimates for associations between nonscheduled and scheduled-caste women's political representation and children's primary schooling outcomes.

SC/ST women's political representation had a positive and significant association with grade completion for all children, a stronger association for SC/ST girls than for non-SC/ST children, and a similar association for SC/ST girls and boys (Block 1; Model 2). Compared to SC/ST girls, non-SC/ST boys and girls completed fewer grades and SC/ST boys as many grades, when they lived in a district where SC/ST women held a higher percentage of SLA seats. Non-SC/ST women's political representation had no associations with grade completion for children.

Likewise, SC/ST women's political representation had a positive and significant association with age-appropriate grade completion for all children, and a stronger association for SC/ST girls (Block 2: Model 2). Compared to SC/ST girls, non-SC/ST boys and girls had a significantly lower percentile ranking, indicating non-SC/ST children's fewer grade completion for their age, when they lived in a district where SC/ST women held a higher percentage of SLA seats. Also, compared to SC/ST girls, SC/ST boys had completed fewer grades for their age, marginally significant at $p \leq 0.10$. Non-SC/ST women's political representation had no significant associations with children's age-appropriate grade progression.

Turning to primary-school performance, SC/ST women's political representation had a stronger association for SC/ST girls than for non-SC/ST and SC/ST boys, and as strong an association for non-SC/ST and SC/ST girls. Compared to SC/ST girls, non-SC/ST and SC/ST boys showed poorer abilities to read and to write, read and compute mathematics, overall, when they lived in a district where SC/ST women held a higher percentage of SLA seats (Block 3: Model 6; Block 6: Model 12). Non-SC/ST women's political representation had no association with children's primary schooling performance (Block 3–6).

7. Conclusion and discussion

In India, the number of women in political office is rising. Women occupy one fifth of the seats in local governments; pending new legislation reserving seats for women, they could occupy one third of the seats in central and state legislatures. Political reservations for a disadvantaged group, such as women, are seen as a compensatory measure, effective in reducing gaps between groups. However, the concept of political reservation is contested. Many believe that women elected to office will affect legislative changes, putting in effect measures to redress gaps in primary schooling. Critics argue how women legislators' gender identities interact with their caste and class identities will be the ultimate determinant.

To inform these discussions, we examined whether women's occupation of state legislative assembly seats was associated with reductions in the gender-caste gaps in primary schooling in India. Particularly, we examined whether SC/ST women's occupation of state legislative assembly seats was associated with increased primary schooling for SC/ST girls. We found that SC/ST women's political representation was associated with primary-school-aged children's grade completion and age-appropriate progression, and that these associations were stronger for SC/ST girls than they were for non-SC/ST children. SC/ST girls would have completed, approximately, one more grade, on average, than non-SC/ST children, if they had lived in a district where SC/ST women occupied 100% of the SLA seats. Also, we found that, with grade completion and age-appropriate progression, SC/ST women's political representation had no differential associations between SC/ST girls and boys. SC/ST women's political representation was associated with reading and overall performance more strongly for SC/ST girls than it was for nonscheduled and scheduled boys. SC/ST women's political representation had no association with SC/ST girls writing and math performance. This pattern of association may follow from the fact that SC/ST women legislators appear to be less favorable to investments in increasing the overall number of teachers in primary schools (Halim et al. 2015). When inadequately staffed, schools may not provide students with the quantity or quality of attention or instruction needed to perform well in school (Krueger, 1999; Finn and Achilles, 1999).

Non-SC/ST women legislatures were not associated with SC/ST or non-SC/ST children's grade completion and age-appropriate progression. Put differently, if non-SC/ST women hold more seats in the state legislative assembly, SC/ST children may continue completing fewer primary school grades than non-SC/ST children; they may take more time doing so than non-SC/ST children; and gender-caste gaps in primary schooling may persist. This association may follow from the fact that non-SC/ST women tend to favor investments in higher education over primary education (Mohanty, 1995; Richter, 1990; Clots-Figueras, 2011). Therefore, when non-SC/ST women have higher representation in the state legislatures, the extent of government support for primary schooling may maintain the status quo. This hurts SC/ST children who mostly rely on government-funded schools for primary education.

This study extends prior research on the political economy of human development. First, we have measured identity more comprehensively than prior studies, operationalizing legislators' identity with gender and caste; prior studies did so with gender or caste (Kalt and

Zupan, 1984; Levitt, 1996). Second, by examining how legislators' identities are associated with schooling outcomes, we have combined two strands of literature: one that examines the associations between legislators' identities and education policies, the other that examines the associations between education policies and outcomes.

Future studies can advance this research beyond establishing associations to understanding the mechanisms as follows. First, school distance, price, lack of female teachers and unfavorable treatment by teachers are detrimental factors for SC/ST girls' schooling (Glick, 2008). Relative to non-SC/ST women legislators, SC/ST women legislators are more favorable to investments in primary schooling in general (Clots-Figueras, 2011) and to investments in selected school amenities, school-cost reductions, and female teachers, in particular (Halim et al. 2015). Put together, it is plausible that SC/ST legislators may influence spending of primary-school investments in a manner that may ultimately reduce costs for families and improve learning environments for SC/ST girls.

Second, parents remain critical for SC/ST girls' schooling: they decide if and for how long daughters attend school (Duncan et al. 1994; Garrett, Ng'andu & Ferron, 1994; Duncan and Brooks-Gunn, 1997). Since the market returns to schooling still are higher for boys than girls, (poor) parents must optimally use the funds available for boys' schooling costs and for daughters' dowries. If SC/ST women legislators' primary-school investments make it cheaper for parents to educate daughters, they may be more amenable to SC/ST girls' education. Also, SC/ST legislators' gender may alter parents' images about women's roles in society (Beaman et al., 2009; DePaola et al. 2010), making parents more amenable to SC/ST girls' education.

Finally, Indian children's lack of interest (23%) dominates over high school costs (18%) or household chores (14%) as the main reason for not attending school (IIPS and ORC Macro, 2007). When educated SC/ST women hold elected office, SC/ST girls may become more interested in education because the legislators demonstrate the opportunities—beyond a good marriage—that education can bring to women (Lockwood, 2006; Banducci and Karp, 2000; Heath et al. 2005).

Furthermore, future studies may explore whether the associations observed between SC/ST women's political representation and primary schooling depend on whether SC/ST women represent a district in North or South India. Variations in gender and caste activism are present between North India and South India with Southern Indian states being less patriarchal than Northern states, with more egalitarian norms about gender (Dyson and Moore, 1983). These variations may influence the extent to which SC/ST girls experience discrimination at home and school, and SC/ST women are present and effective in legislatures.

This study provides a strong rationale for understanding these mechanisms and regional differences in future studies.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Appendix A. Supplementary data

Supplementary data related to this article can be found at http://dx.doi.org/10.1016/j.ssresearch.2016.01.002.

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Table 1

Univariate Statistics for Primary-School Outcomes, Women's Political Representation, and Child-, Household-, and District-level Control Variables, *n* = 10,127 children 8–11 years in India, 2005

	(1) SCST girl (*n* = 3595)				(2) SCST boy (*n* = 4030)				(3) Non-SCST girl (*n* = 1168)				(4) Non-SCST boy (*n* = 1334)				$M_1 = M_2$	$M_1 = M_3$	$M_1 = M_4$
																	p	*p*	*p*
	Mean	(SD)	Min	Max	Mean	(SD)	Min	Max	Mean	(SD)	Min	Max	Mean	(SD)	Min	Max			
Primary education																			
Grades completed	3.01	(1.52)	0.00	7.00	3.07	(1.46)	0.00	7.00	3.38	(1.43)	0.00	7.00	3.36	(1.45)	0.00	7.00		***	***
Grade progression	67.57	(29.23)	2.00	100.00	69.14	(27.20)	2.00	100.00	74.15	(24.10)	2.00	100.00	74.15	(23.48)	2.00	100.00		***	***
Performance 1: reading, scored 0 – 4	2.32	(1.41)	0.00	4.00	2.51	(1.32)	0.00	4.00	2.95	(1.18)	0.00	4.00	3.02	(1.17)	0.00	4.00	***	***	***
Performance 2: writing, scored 0 – 1	0.61	(0.49)	0.00	1.00	0.67	(0.47)	0.00	1.00	0.77	(0.42)	0.00	1.00	0.81	(0.39)	0.00	1.00	***	***	***
Performance 3: math, scored 0 – 3	1.30	(1.03)	0.00	3.00	1.52	(1.00)	0.00	3.00	1.81	(1.01)	0.00	3.00	1.98	(0.98)	0.00	3.00	***	***	***
Performance 4: principal component 1-performance 1,2,3	2.862	(1.630)	0.000	5.097	3.080	(1.556)	0.000	5.097	3.703	(1.371)	0.000	5.097	3.810	(1.369)	0.000	5.097	***	***	***
Women's representation in State Legislative Assemblies (SLAs)																			
% general (non-SC/ST) SLA seats held by women	5.79	(7.62)	0.00	66.67	5.83	(7.82)	0.00	66.67	5.66	(7.45)	0.00	66.67	6.10	(7.78)	0.00	66.67			*
% reserved (SC/ST) SLA seats held by women	11.17	(21.54)	0.00	100.00	11.26	(21.37)	0.00	100.00	11.47	(23.13)	0.00	100.00	11.33	(22.13)	0.00	100.00			
Child-level attributes																			
Age	9.46	(1.06)	8.00	11.00	9.47	(1.08)	8.00	11.00	9.49	(1.04)	8.00	11.00	9.52	(1.11)	8.00	11.00			
Relation to household head (child = 1)	78.91	(40.80)	0.00	1.00	78.16	(41.32)	0.00	1.00	67.54	(46.84)	0.00	1.00	67.58	(46.83)	0.00	1.00		***	***
School type (public = 1)	81.32	(38.98)	0.00	1.00	77.71	(41.62)	0.00	1.00	65.24	(47.64)	0.00	1.00	58.94	(49.21)	0.00	1.00	***	***	***
Caregiver's prior year investments in primary schooling in *rupees*	861.91	(1370.34)	0.00	23000.00	978.84	(1497.05)	0.00	25080.00	1861.33	(2763.50)	0.00	32000.00	2238.94	(4257.78)	0.00	69000.00	***	***	***
Public investments in primary schooling, child received:																			
Distance to school in kilometers	1.34	(1.24)	1.00	25.00	1.48	(1.71)	1.00	32.00	1.59	(1.78)	1.00	20.00	1.74	(2.30)	1.00	40.00	***	***	***
Free grain/mid-day meal (yes = 1)	59.66	(49.06)	0.00	1.00	58.11	(49.34)	0.00	1.00	46.52	(49.90)	0.00	1.00	44.42	(49.71)	0.00	1.00	***	***	***
Free books (yes = 1)	73.53	(44.12)	0.00	1.00	66.22	(47.30)	0.00	1.00	56.07	(49.65)	0.00	1.00	47.82	(49.97)	0.00	1.00	***	***	***
Free uniforms (yes = 1)	25.35	(43.51)	0.00	1.00	16.34	(36.98)	0.00	1.00	15.09	(35.81)	0.00	1.00	10.43	(30.58)	0.00	1.00	***	***	***
School fees (yes = 1)	18.79	(39.07)	0.00	1.00	18.41	(38.76)	0.00	1.00	13.33	(34.01)	0.00	1.00	11.44	(31.84)	0.00	1.00		***	***
Scholarships (yes = 1)	21.33	(40.97)	0.00	1.00	14.95	(35.67)	0.00	1.00	7.11	(25.72)	0.00	1.00	6.59	(24.82)	0.00	1.00	***	***	***
Child enjoys school (yes = 1)	94.35	(23.10)	0.00	1.00	94.25	(23.29)	0.00	1.00	97.88	(14.39)	0.00	1.00	97.74	(14.86)	0.00	1.00		***	***
Household-level attributes																			
Highest grades completed among adult women over age 21	2.90	(4.10)	0.00	15.00	2.83	(4.03)	0.00	15.00	6.21	(4.83)	0.00	15.00	6.13	(4.91)	0.00	15.00		***	***

	(1) SCST girl (*n* = 3595)				(2) SCST boy (*n* = 4030)				(3) Non-SCST girl (*n* = 1168)				(4) Non-SCST boy (*n* = 1334)				$M_1 = M_2$	$M_1 = M_3$	$M_1 = M_4$
	Mean	**(SD)**	**Min**	**Max**	**Mean**	**(SD)**	**Min**	**Max**	**Mean**	**(SD)**	**Min**	**Max**	**Mean**	**(SD)**	**Min**	**Max**	***p***	***p***	***p***
Highest grades completed among adult men over age 21	5.71	(4.63)	0.00	15.00	5.77	(4.60)	0.00	15.00	9.18	(4.40)	0.00	15.00	8.97	(4.49)	0.00	15.00		***	***
Household living in poverty (yes = 1)	34.62	(47.58)	0.00	1.00	31.33	(46.39)	0.00	1.00	14.96	(35.69)	0.00	1.00	14.02	(34.73)	0.00	1.00	**	***	***
Household dependency ratio[a]	1.37	(0.70)	0.13	5.00	1.24	(0.66)	0.13	6.00	1.17	(0.73)	0.13	6.00	1.03	(0.57)	0.11	5.00	***	***	***
Household residence (urban = 1)	18.74	(39.03)	0.00	1.00	17.56	(38.05)	0.00	1.00	34.02	(47.40)	0.00	1.00	33.74	(47.30)	0.00	1.00		***	***
District-level attributes																			
Decennial growth rate	930.28	(39.79)	766.00	1009.00	928.35	(41.15)	766.00	1035.00	913.52	(43.90)	771.00	995.00	914.36	(43.78)	771.00	995.00	***	***	***
Sex ratio female: male, 0–6 years	937.12	(51.73)	777.00	1146.00	935.80	(52.89)	754.00	1146.00	924.09	(65.46)	752.00	1146.00	923.06	(59.81)	777.00	1146.00	***	***	***
Adult (≥7 years) female literacy rate	50.98	(13.79)	18.60	94.30	51.03	(13.88)	18.60	96.30	54.68	(14.20)	18.60	94.30	55.00	(13.54)	18.60	94.30		***	***
% of population living in urban areas	24.09	(18.09)	0.00	100.00	23.96	(18.22)	0.00	100.00	30.86	(23.85)	1.50	100.00	29.87	(23.25)	2.80	100.00		***	***
% of population scheduled caste (SC)	21.42	(7.66)	2.50	73.30	21.52	(7.82)	2.50	78.10	22.14	(9.79)	2.50	62.50	21.86	(9.46)	2.50	62.50		***	*
Region																			
North	10.14	(30.18)	0.00	1.00	11.14	(31.47)	0.00	1.00	15.97	(36.65)	0.00	1.00	14.86	(35.58)	0.00	1.00	***	***	***
South	17.88	(38.33)	0.00	1.00	18.22	(38.60)	0.00	1.00	9.21	(28.93)	0.00	1.00	7.48	(26.32)	0.00	1.00		***	***
Northeast	2.13	(14.45)	0.00	1.00	2.44	(15.44)	0.00	1.00	0.90	(9.44)	0.00	1.00	1.78	(13.23)	0.00	1.00		***	
East	22.37	(41.68)	0.00	1.00	23.71	(42.53)	0.00	1.00	16.72	(37.33)	0.00	1.00	18.60	(38.93)	0.00	1.00		***	***
West	14.10	(34.81)	0.00	1.00	14.27	(34.98)	0.00	1.00	27.21	(44.52)	0.00	1.00	29.24	(45.50)	0.00	1.00		***	***
Central	33.10	(47.06)	0.00	1.00	29.92	(45.80)	0.00	1.00	29.88	(45.79)	0.00	1.00	27.94	(44.89)	0.00	1.00		**	***

* $p \leq 0.05$,

** $p \leq 0.01$,

*** $p \leq 0.001$.

Notes. SCST = Scheduled Caste/Scheduled Tribe. SLA = State Legislative Assembly.

[a]Number of children (age 0–14) divided by number of adults (age > 21).

Table 2

Survey-Design Adjusted Regression Estimates of Primary Schooling Outcomes on Women's Representation in State Legislative Assemblies (SLAs), n = 10,127 Children between 8 and 11 years in India, 2005

	Block 1: OLS		Block 2: OLS		Block 3: ordered logistic regression		Block 4: ordered logistic regression		Block 5: ordered logistic regression		Block 6: OLS	
	Grade completion		Grade progression		Reading		Writing		Math		Overall	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	β	β	β	β	OR	OR	OR	OR	OR	OR	β	β
	(s.e.)	(s.e.)	(s.e.)	(s.e.)	(s.e.)	(s.e.)	(s.e.)	(s.e.)	(s.e.)	(s.e.)	(s.e.)	(s.e.)
Women's representation in SLAs:												
% non-SC/ST SLA seats held by women	0.004 (0.002)	0.005 (0.006)	0.054 (0.051)	0.104 (0.131)	0.992** (0.003)	0.989** (0.004)	1.001 (0.004)	1.002 (0.006)	0.992*** (0.002)	0.991 (0.005)	−0.006** (0.002)	−0.008** (0.003)
% SC/ST SLA seats held by women	0.003*** (0.001)	0.004*** (0.001)	0.036* (0.018)	0.085*** (0.022)	0.998 (0.002)	1.002 (0.003)	0.998 (0.002)	0.999 (0.002)	0.998 (0.002)	1.000 (0.002)	−0.002 (0.002)	0.001 (0.002)
% non-SC/ST SLA seats held by women ×												
Child is male & SC/ST		−0.002 (0.007)		−0.084 (0.151)		1.004 (0.007)		0.998 (0.012)		1.002 (0.008)		0.001 (0.005)
Child is female & non-SC/ST		0.004 (0.009)		−0.018 (0.175)		1.012 (0.010)		0.997 (0.012)		0.996 (0.006)		0.004 (0.005)
Child is male & non-SC/ST		−0.004 (0.008)		−0.118 (0.177)		1.005 (0.008)		0.993 (0.018)		1.012 (0.007)		0.004 (0.006)
% SC/ST SLA seats held by women ×												
Child is male & SC/ST		−0.001 (0.001)		−0.051 (0.032)		0.995** (0.002)		0.999 (0.002)		0.996 (0.002)		−0.004* (0.001)
Child is female & non-SC/ST		−0.004* (0.002)		−0.111* (0.047)		0.997 (0.004)		0.994 (0.004)		0.998 (0.003)		−0.002 (0.002)
Child is male & non-SC/ST		−0.005* (0.003)		−0.144** (0.048)		0.990** (0.004)		0.993* (0.003)		0.997 (0.004)		−0.006* (0.002)
Control	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2	0.39	0.39	0.22	0.22	–	–	–	–	–	–	0.34	0.34

* $p \leq 0.05$,

** $p \leq 0.01$,

$^{***}p \leq 0.001$.

Notes. SC/ST = Scheduled Caste/Scheduled Tribe. All estimates are adjusted for (a) the individual child's age; relation to household head (child = 1), school type (public = 1), caregiver's prior year investments in primary schooling in rupees, distance to school in kilometers, child's receipt of free grain/mid-day meal (yes = 1), child's receipt of free books (yes = 1), child's receipt of free uniforms (yes = 1), school fees paid by the govt. (yes = 1), child's receipt of scholarships (yes = 1), child enjoys school (yes = 1); (b) highest grades completed among adult women over age 21; highest grades completed among adult men over age 21; household living in poverty (yes = 1); household dependency ratio; household residence (urban = 1); (c) the district's decennial growth rate, the percentage of the population Scheduled Caste, the sex ratio (female: male) of children 0–6 years, the adult (≥7 years) female literacy rate, the percentage of the population living in urban areas; (d) region dummy variables; and (e) state dummy variables.