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The Effect of School Construction on Educational Outcomes among Females: Evidence from Nepal

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ABSTRACT

We estimate the impact of increases in schools constructed from 1985 to 1995 on girls' educational outcomes in Nepal. We use a difference-in-differences framework by combining the across-district differences in the number of new schools with variation in exposure to these schools created by the virtue of individuals being of school-going-age during the school construction period. Our results indicate that the construction of an additional school (per 1,000 square kilometers) increased the probability to read and write among females by 1.5 percentage points and increased their highest level of schooling attained by 0.12 units but did not affect basic literacy skills among males. Our back-of-the-envelope calculations suggest that, on average, the increase in the number of schools can explain about a fourth of the total differences in the reading and writing outcomes between females who were of schooling age during the period of school constructions and those who were not. These results underscore the continued importance of increasing access to schooling in developing countries like Nepal.

Keywords: school construction, access to education, female education, female literacy

I. INTRODUCTION

Despite global improvements in school enrollment over the past decades, there were still 31 million girls of primary schooling age who were not enrolled in schools in 2013 (UNICEF, 2015).[1] The gender gap in education is particularly pronounced in South and West Asia, where 80 percent of out-of-school girls are unlikely to start school, compared to 16 percent for boys.[2] Policy interventions designed to encourage and retain school enrollment among females are a central focus in developing countries given the large positive externalities of female education on child health, fertility, and infant mortality (World Bank, 2011). Such interventions may be broadly categorized into demand and supply-side policies. An example of a supply-side policy undertaken in developing countries includes establishing new schools to increase access to education. But do more schools necessarily mean better educational outcomes for females?

The relationship between schooling infrastructure and educational outcomes may not be straightforward in developing nations. School-quality along with school availability can affect school enrollment and educational outcomes. Hanushek et al. (2008) focus in Egypt and find that a student is much more likely to drop out of school if attending a low-quality school. In Asia-Pacific region, where child labor is prominent, an estimated 122 million children between 5 and 14 years of age are compelled to work due to traditional norms and/or financial necessities.[3] While some families may not be able to afford schooling for their children, even at zero-price, there can be considerable opportunity costs for households to invest in children's education. Moreover, cultural norms that discourage education, particularly for females, can also further complicate the relationship between the availability of schools and schooling. Generally, girls in developing nations are expected to conduct household chores (e.g., cleaning, gathering water, cooking, and childcare) in addition to participating in agricultural activities such as sowing, harvesting, and livestock farming (*See* The World Bank's Report on Gender Issues in Child Labor). Finally, a household with limited resources may favor boys' education compared to girls'.

Based on existing research, empirical evidence regarding whether increases in schooling infrastructure improves educational outcomes has been far from conclusive. Previous studies have shown that availability of schooling infrastructure is positively correlated with improvement in educational outcomes (Bridsall, 1985; DeTray, 1988; Lee and Willis, 1994; Lavy, 1996; and Case and Deaton, 1996). The empirical concern with these studies is that the availability of schools may be correlated with other unobserved factors which may both affect schooling infrastructure and educational outcomes. For example, it is likely that schools are built in affluent neighborhoods where individuals have higher level of schooling and better health status. Alternatively, in a more centralized education system, government may choose to improve schooling infrastructure in regions that are lagging behind. In other words, schools are not randomly allocated.

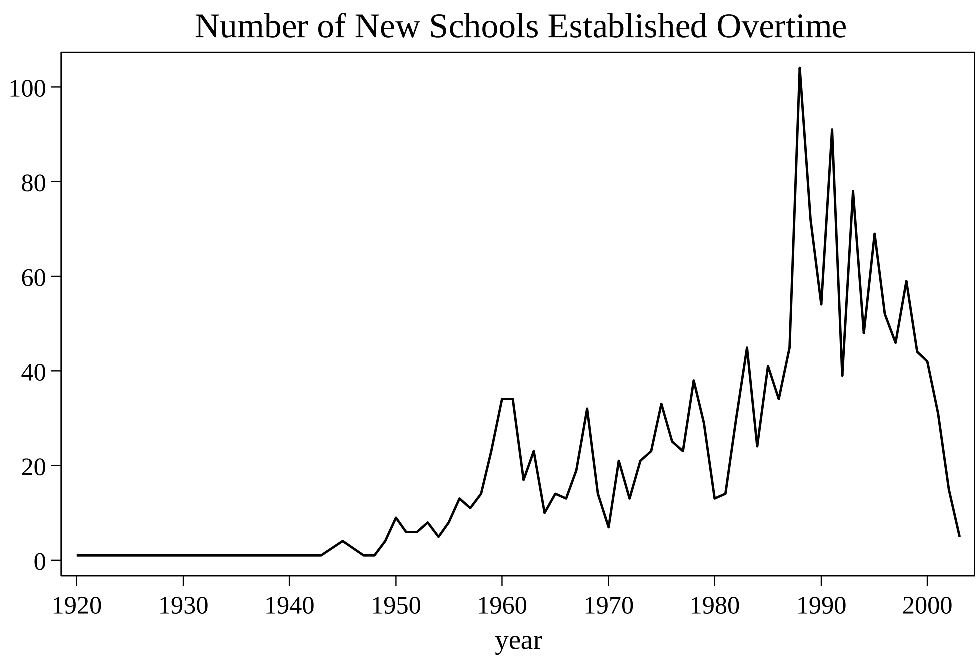
Using quasi natural experiments and applying appropriate econometric techniques, Duflo (2001) and Paxson and Schady (2002) conclude that policy-driven construction of new schools in Indonesia and Peru have led to improved educational outcomes in these countries. The authors do not separate their analysis by gender. Chou et al. (2010) evaluate the effect of increases of junior high schools in Taiwan following the extension of compulsory education from 6 to 9 years in 1968. The authors find that increases in junior high schools following the reform increased the number of formal schooling years both among females and males. There are, however, also examples of countries where the low quality of education has delinked schooling and improved educational outcomes (Prichett, 2001).

This study evaluates the causal effect of availability of schooling infrastructure on basic literacy skills such as the ability to read, the ability to write, and the years of formal education in rural areas of Nepal. Given the sizable gender gap in education, this study focuses primarily on female educational outcomes, although we consider male educational outcomes as well. Nepal provides an interesting venue for the current analyses due to three main reasons. First, there exist a significant gender gap in educational outcomes. According to the UNESCO Institute for Statistics' report, youth (15-24 years) literacy rate among female was 32.7 percent, compared to 68.2 percent for male.[4] Second, the education system in Nepal is relatively young as formal education was introduced only in 1950, after the establishment of the first democracy. Third, child labor is prominent in the nation. The Nepal Child Labor Report estimates that 1.6 million children in the nation are involved in various forms of labor. This may further impose a relatively higher opportunity cost of children attending school from a household's perspective.

The end of the autocratic Panchayat system and reemergence of democracy in Nepal in 1990 provided a much-needed impetus towards improved educational standards.[5] The new Nepali government joined the World Conference on Education for All (WCEFA) in 1990 with aspirations of providing greater access to basic and primary education (Caddell, 2007). This pact, along with the Nepali government increasing its capital expenditure in the education sector, led to an increase in the number of schools established in the early nineties. The trend in the establishment of schools in the communities of focus in this study is depicted in Figure 1. We use a difference-in-differences framework which combines within cohort variation of exposure to newly constructed schools given by school-going-age with across district variation in intensity of school construction to identify the causal effect of school construction on educational outcomes. We use cross-sectional data from the

2003-2004 Nepal Living Standards Survey (NLSS), a detailed survey conducted at the household and community-level by the Nepal Census Bureau of Statistics (CBS) and the World Bank.

Figure 1: The Number of New Schools



Note: The figure is constructed by using data from the community file of NLSS (2003-2004).

Our results indicate that the establishment of an additional school in a 1,000 square kilometer area increased the probability to read and write for females by 1 percentage point. Similarly, an additional school (per 1,000 square kilometer) increased the highest level of schooling and the probability of completing fifth grade (primary education) among females by 0.09 units and 0.9 percentage points, respectively. However, we find no statistically significant effect of school construction on males' educational attainment. Since the majority of female population living in rural areas did not know how to read or write before 1990, we argue that the marginal benefit of the establishment of a school is higher for females compared to males. In addition, we show that the effect of school construction is concentrated at primary education (grades 2-5) and decreases with higher grade level. This can be explained by the fact that the majority of new schools built were primary schools. Overall, our findings highlight the importance of increasing access to education among socially overlooked population.

This study contributes to the literature on the effect of school construction on educational outcomes by estimating the causal effect of school construction on educational outcomes. Specifically, we conduct analyses in a country where educational outcomes among females are extremely poor compared to the venues of studies listed in the existing literature (Duflo, 2001, in Indonesia and Chou et al., 2010, in Taiwan). Nepal's female literacy rate (15-24 year olds) in 1991 was 32.7 percent compared to 95.1 percent (15-24 year olds) and 93.22 percent (note that this pertains to individuals over the age of 15) in Indonesia and Taiwan, respectively (UNESCO, 2012; MOE Taiwan). Nepal is one of the eight countries targeted by the United Nations International Children's Emergency Fund (UNICEF) and the Department for International Development (DFID) to ensure equality of education between women and men.[6] Given a pool of countries still with poor literacy rate among females, analyses of how increases in schooling infrastructure affects females' educational attainment is warranted.

The paper is organized as follows. In Section II. we briefly discuss the history of education in Nepal. Sections III and IV discuss the data we use and the empirical strategy we implement, respectively. In section V we provide the results. Section VI discusses robustness of findings and Section VII concludes.

II. BRIEF HISTORY OF EDUCATION IN NEPAL

Estimates from the United Nations Educational, Scientific, and Cultural Organization (UNESCO) point to a literacy rate of a mere 1 percent prior to the 1950 democratic revolution. The educational opportunities were extremely restricted during the Rana regime, an oligarchy rule, which existed in the country between 1846 and 1950. Even after the adaptation of formal education, societal norms deemed educating females as unnecessary, due to which their school enrollment levels were significantly lower than those of males (Savada, 1991).

Nepal was governed by the Panchayat system between 1960 and 1990. The adoption of the National Education System Plan in 1971 nationalized education in the country with an objective of expanding access to education by focusing on quality of education. After 1975, primary education was made available at zero cost (Savada, 1991). During the 1980s, the importance and availability of education in Nepal was heavily promulgated by international donors like the World Bank and United Nations. Two specific projects are worth mentioning. First, the Education for Rural Development Project, termed as the Seti Project, was funded by UNICEF, UNESCO, and UNDP (Benette, 1979). The objective of this project was to provide improved educational opportunities among six districts in the far western region of Nepal. Second, the Primary Education Project (PEP) was supported by UNICEF and the World Bank. This project was designed to improve the standards of primary education in 20 of the total 75 districts across the country.

The end of the Panchayat system and re-emergence of democracy in 1990 redefined the nation and brought upon the second major educational revolution in the country. The new government emerged with aspirations of developing the nation with processes linked to the international community (De Chene, 1996). In 1990, the World Conference on Education for All (WCEFA, 1990) instigated a declaration that called for a greater focus on basic and primary education (Caddell, 2007). The new Nepali government signed the WCEFA Declaration as the first international treaty in the country. Such an act signaled a desire for development and attracted financial support for development efforts (Caddell, 2007). During the post-Panchayat period, there was a general consensus that education would play a key role in bringing forth the necessary developments needed in Nepali society. There was a call for better opportunities for education among women, children, orphans, disabled, and the poor (Caddell, 2007). The per capita government education expenditures in 1981, 1991, and 1996 were \$2.7, \$4.09, and \$6.41, respectively.[7] According to UNESCO, between 1981 and 1991, the total number of schools in the country increased from 11,332 to 24,818. This rapid rise in school construction in the early 1990s is evident in Figure 1 and clearly resembles a break from the previous trend. In this study, we exploit this massive school-building effort to estimate the impact of increases in the number of schools on educational outcomes.

III. DATA

We use cross-sectional data from the 2003-2004 Nepal Living Standard Survey, which was conducted by the Nepal Central Bureau of Statistics in collaboration with the World Bank. The survey is a product of the development efforts aimed at reducing poverty in the country, and as such, includes data on education, health, employment, migration, and access to facilities. For our analysis, we utilize the individual, household, and community-level data from the survey. Table 1 provides a summary of the variables used in the present analysis. A substantial gender disparity in educational outcomes is evident in Table 1. Only 37 percent of females in the sample are able to read compared to 71 percent of males. In addition, about 6 percent of mothers were literate compared to 33 percent of fathers.

Nepal is divided into five developmental regions: 1) East; 2) Central; 3) West, 4) Midwest; and 5) Far West. There are three geographic belts in the country: 1) Mountain; 2) Hills; and 3) Terai plains and the country is made up of 75 districts, which are further divided into wards (analogous to counties in the United States). Our variable measuring the intensity of school-building efforts is calculated at the district level and is detailed below.

Education

In the NLSS survey, questions pertaining to education are given to individuals aged five and older. We focus on four educational outcomes: 1) Ability to read; 2) Ability to write; 3) Highest level of education; and 4) Completion of fifth grade (completion of primary schooling). While test scores for reading and writing would have served as ideal measures for the first two outcomes, we are constrained by available data and thus must rely on self-reported dichotomous responses for the ability to read and write.

We focus on the number of schools constructed between 1985 and 1995 in a specific district given a sharp increase in new schools built between these years (See Figure 1). A community-level file provides information regarding the list of schools available in wards where the interviews were conducted. First, the school name is provided, which is then followed by the year the school was founded. To obtain an overall measure of the school-building intensity in a district, we use data from the 2003-2004 survey to calculate the total number of schools available in a district per 1,000 square kilometers.[8] The measure of school intensity is merged with the individual level file by the district of birth. The summary statistics in Table 1 indicate that there were on average about six schools per thousand square kilometers.

Other Control Variables

Other individual specific variables accounted for in the model specifications (outlined in section 3) include ethnicity or caste, represented by categorical variables for Brahmins, Chettris, Newars and others; religious status (Hindu, Buddhist, and other religion); and father's and mother's literacy status, a binary variable that takes the value of "1" if a parent is literate and "0" otherwise. To account for any heterogeneity across wards, we control for two ward-specific variables: 1) The distance to closest school from the household (in minutes); and 2) The distance to closest dirt road from the household (in minutes). Although the survey includes several ward-specific variables, such as the percentage of households with electricity, percentage involved in agriculture, and land ownership, these variables are not included in the main specifications as they may be endogenous.

Table 1: Summary Statistics (Mean and standard deviation)

Variables	Whole Sample	Female	Male
Ability to Read	0.522	0.378	0.710
	(0.008)	(0.010)	(0.011)
Ability to Write	0.500	0.354	0.691
	(0.008)	(0.010)	(0.011)
Highest level of Education	3.673	2.471	5.227
	(0.067)	(0.080)	(0.103)
Fifth Grade	0.312	0.210	0.443
	(0.007)	(0.008)	(0.012)
Number of Schools	5.668	5.826	5.463
	(0.060)	(0.080)	(0.090)
Father Literate	0.333	0.333	0.333
	(0.007)	(0.010)	(0.011)
Mother Literate	0.061	0.061	0.061
	(0.004)	(0.005)	(0.006)
Brahmin	0.168	0.175	0.159
	(0.006)	(0.008)	(0.008)
Chettri	0.123	0.132	0.111
	(0.005)	(0.007)	(0.007)
Newar	0.047	0.049	0.045
	(0.003)	(0.004)	(0.005)
Other Ethnicity	0.661	0.643	0.685
	(0.007)	(0.010)	(0.011)
Literacy Rate (1981)	0.21	0.207	0.203
	(0.001)	(0.002)	(0.002)
Hindu	0.811	0.821	0.798
	(0.006)	(0.008)	(0.009)
Buddhist	0.093	0.091	0.095
	(0.004)	(0.006)	(0.007)
Other Religion	0.096	0.088	0.107
	(0.005)	(0.006)	(0.007)
Gender (Female=1)	0.566	1.000	0.000
	(0.008)	(0.000)	(0.000)
Minutes to Closest School (Foot)	13.420	13.426	13.413
	(0.153)	(0.207)	(0.228)
Minutes to Dirt Road (Foot)	5.751	5.930	5.519
	(0.166)	(0.223)	(0.247)
Observations	4,279	2,420	1,859

Note: N = 4,094 for Fifth Grade and Highest level of Education.

IV. EMPIRICAL METHODS

Identification Strategy

We use a combination of two different variations and utilize a difference-in-differences framework to estimate any causal impact that school-building may have on educational outcomes. Given our priors that the impacts differ systematically across genders, the specification below is analyzed separately for females and males. First, we exploit the timing of the spurt in school construction in the late 1980s and early 1990s to create a treated group of school-age children. In Nepal, children normally attend primary school between the ages of five and ten (Savada, 1991). Thus an individual's exposure and benefit from the school construction program would have depended on the age of the individual in 1990. Children aged seventeen years or older in 1990 are less likely to have benefited from the establishment of school as they would have completed their primary education by 1990. As such, we treat children between the ages of five to fourteen in 1990 as the cohort potentially affected by the school construction. It should be noted that fourteen year olds in 1990 were nine year olds in 1985, the year which signifies the onset of the construction of the new schools. We use those individuals aged seventeen to thirty in 1990 as the comparison group. The effect of school construction should be a decreasing function of one's age in 1990 since the comprehensive effect of schools built were experienced by younger individuals. This is a testable hypothesis and we discuss the findings in the results section.

The second source of variation follows from the rigor of the school-building efforts across districts. Districts receiving a higher number of schools per 1,000 square kilometers are more likely to have experienced the effect of a rise in school construction. This assumption requires that respondents attend schools in the district of birth; traveling across districts in search of better schools will bias the effect of the establishment of a school. To avoid such issues, we focus on the rural communities of Nepal, where traveling is difficult due to the undulating landscape and the majority of travel is done by foot. Combining the two identification sources, our basic empirical model is of a difference-in-differences specification. We estimate the effect of school establishment on education by estimating the following equation:

$$E_{idl} = \alpha + \beta_1(S_d * T_i) + \beta_2(P_{idl} * T_i) + \beta_3 P_{idl} + \beta_4(TL_{1981} * T_i) + \beta_5 \mu X_{idl} + \beta_6 w_d + \tau_d + \rho_b + e_{idl} \qquad (1)$$

Where E_{idl} represents the educational outcome of an individual i born in district d in birth-year l, S_d is the number of schools constructed per 1,000 square kilometers in district d between 1985 to 1995, T_i indicates the treated age group (5-14 in 1990), P_{idl} includes father's and mother's literacy status, which are respectively interacted with the treated group. TL_{1981d} represents the total literacy rate of district d in 1981 (pre-treatment) and is interacted with the treated group; X_{idl} is a vector of individual specific characteristics such as ethnicity, religion, and gender (in specifications including both males and females); and w_d is ward specific characteristics (household's closest distance to school and the dirt road, respectively). τ_d is district of birth dummies and ρ_b is a vector of birth year dummy. The coefficient of interest in equation (1) is β_1 which reflects the effect of a 1 unit increase in school construction per 1,000 square kilometers on the educational outcomes of the affected group. Equation (1) is estimated by OLS and standard errors are clustered at the household level to account for the correlation within the households.[9]

Identifying Assumptions

The identification of equation (1) relies upon the assumption that in absence of school construction, the trend in educational outcomes of individuals born in districts receiving a higher number of schools would not be systematically different from the trend in educational outcomes of individuals born in districts receiving a low number of schools. This identification assumption cannot be taken for granted. For example, the establishment of schools can be a function of the literacy rate — districts with a high demand for education may have constructed a higher number of schools and vice-versa. In contrast, government may have deployed resources to build schools in districts that were lagging behind (need-driven allocation of schools). We identify four ways to address potential endogeneity and test the underlying assumption of the identification strategy of this study. These tests are briefly mentioned below and the results are described in the Results section.

1. The specification given in equation (1) controls for mother's and father's literacy status and also allows for the effect of mother's and father's literacy to vary across the treated and control groups. In addition, the specification includes district specific literacy rate in 1981 (before the time span of this study) interacted with the treatment group. If establishment of schools are demand driven and is a function of literacy rate, controlling for district specific literacy rate, prior to the timing of the study, will alleviate the concern (to a certain extent) that districts with educated population are able to lobby for more schooling infrastructure.
2. We evaluate the effect of school construction on parental educational outcomes. If school establishments were not demand driven or need driven, the status of parental education should be unaffected by the school-building episode of the early 1990s. If the estimated effect is not zero, then it indicates that school construction is correlated with literacy status of respective districts.
3. Next, we compare the educational outcomes between two control groups that should not have been affected by the establishment of schools across the two district types (high and low intensity districts). These groups include individuals who are 15-25 (pseudo-treatment group) and 26-35 (control group) years old in 1990. In this case, the effect of school construction on educational outcomes should be close to zero, as school construction would not affect the individuals in these older cohorts. The assumption used by this study posits that the difference in educational outcomes for the two groups, conditional on the covariates, is not statistically different from zero. A rejection of the above hypothesis would raise doubts about the validity of the underlying assumption.
4. Finally, we directly test whether the effect of school construction on educational outcomes is a decreasing function of age. This test provides suggestive evidence regarding whether or not there may have been other district-specific changes, excluding school construction that may have affected educational outcomes. Also, it provides empirical evidence regarding the implicit assumption that 5-14 year olds are affected and 17-30 year olds are unaffected by the school construction.

V. RESULTS

The Effect of School Establishment on Educational Outcomes

Table 2 shows the effect of an additional school establishment per 1,000 square kilometers on the ability to read, write, the highest level of education achieved, and completion of fifth grade.

Table 2. Effect of School Construction on Educational Outcomes

	Read	Write	Highest Education	Fifth Grade
Interaction between treatment dummy and school intensity	0.009***	0.010***	0.091***	0.009***
	(0.003)	(0.003)	(0.030)	(0.003)
Father literate	0.273***	0.272***	2.190***	0.193***
	(0.023)	(0.023)	(0.206)	(0.024)
Mother literate	0.141***	0.147***	2.131***	0.197***
	(0.046)	(0.046)	(0.467)	(0.055)
Gender	-0.359***	-0.363***	-2.871***	-0.252***
	(0.012)	(0.012)	(0.103)	(0.012)
N	4,279	4,279	4,094	4,094
R-sq	0.398	0.409	0.455	0.359

Note: Additionally, the model includes ethnicity dummies, district specific literacy rate of 1981 interacted with the treatment group, parental literacy status interacted with the treatment group, religion dummies, minutes to closest school, minutes to closest dirt road (by foot), and district of birth and year of birth fixed effects. Standard errors are clustered at the household level. *** represent significance at a 1% level, ** at a 5% level, and *** at a 10% level.

The coefficient on the interaction term implies that a one unit increase in school per 1,000 square kilometers increases the probability that an individual can read and write by 0.9 and 1 percentage points, respectively. These coefficients are significant at the one percent level. The coefficients on the interaction term also suggest that a one unit increase in school per 1,000 square kilometers increases highest level of formal education by 0.09 years and increases the probability of completing fifth grade by 0.9 percentage points. Both of these coefficients are significant at a 1 percent level.

Table 3 presents results from estimating equation (1) after stratifying the sample by gender. Panel A of Table 3 pertains to females; whereas, Panel B represents results for males. The coefficients on the interaction term for females (Panel A) reveals that school construction increased females' ability to read and write, as well as their highest level of education and the probability of completion of fifth grade. On average, an increase in one unit of school per 1,000 square kilometers led to a rise in the ability to read and write by 1.4 and 1.5 percentage points, respectively. Similarly, an increase in one unit of school (per 1,000 square kilometer) increased formal schooling among females by 0.12 years and also increased the probability of completing fifth grade by 1.2 percentage points. These coefficients in Table 3 are statistically significant at a 1 percent level. In contrast, the coefficient on the interaction term for the males (Panel B) is not statistically different from zero at any conventional levels, thereby indicating that school construction may not have affected educational outcomes for males.

Table 3. Effect of School Construction on Educational Outcomes

Panel A (Females)	Read	Write	Highest Education	Fifth Grade
Interaction between treatment dummy and school intensity	0.014*** (0.004)	0.015*** (0.004)	0.122*** (0.033)	0.012*** (0.004)
Father literate	0.237***	0.242***	1.301***	0.092***
	(0.032)	(0.032)	(0.224)	(0.025)
Mother literate	0.185**	0.181**	2.365***	0.186**
	(0.076)	(0.077)	(0.671)	(0.081)
N	2,420	2,420	2,308	2,308
R-sq	0.432	0.442	0.494	0.396
Panel B (Males)	Read	Write	Highest Education	Fifth Grade
Interaction between treatment dummy and school intensity	-0.001 (0.005)	-0.001 (0.005)	0.008 (0.049)	0.004 (0.006)
Father literate	0.323***	0.314***	3.301***	0.318***
	(0.030)	(0.032)	(0.317)	(0.040)
Mother literate	0.131**	0.144**	2.110***	0.202***
	(0.055)	(0.057)	(0.551)	(0.071)
N	1,859	1,859	1,786	1,786
R-sq	0.281	0.292	0.373	0.311

Note: Additionally, the model includes ethnicity dummies, district specific literacy rate of 1981 interacted with the treatment group, parental literacy status interacted with the treatment group, religion dummies, minutes to closest school, minutes to closest dirt road (by foot), and district of birth and year of birth fixed effects. Standard errors are clustered at the household level. *** represent significance at a 1% level, ** at a 5% level, and *** at a 10% level.

To interpret the results as a causal relationship between school construction and educational outcomes, in absence of school construction the trend in educational outcomes of districts receiving more schools would not have been systematically different from the districts receiving low number of schools. As previously mentioned, it is plausible that school construction may be demand-driven or need-driven. To account for the measure of pre-existing literacy rate, we control for parents' literacy status and parents' literacy status interacted with the treatment group in the model specifications. Accounting for parental literacy status will control for differences in pre-existing sentiment regarding education across districts. In addition, the model specification includes district-specific literacy in 1981 (pre-treatment period) interacted with the treatment group. If the intensity of school construction depended on demand for education, including district-specific literacy rate and controlling for father's and mother's literacy status in our model specification will account for pre-existing differences in demand for education across districts (to a certain extent). Parental education status is crucial in the specification as it also partially accounts for the spillover effects of schooling. Those individuals who decided to attend school might have done so specifically because of their parents. If parental education and district-specific literacy rate is positively correlated to school construction, the estimated effect of school construction is likely to be biased upwards in absence of these variables in the model specification.

One way of examining whether the intensity of school construction in the late 1980s and early 1990s was higher in districts that already had an increasing trend in educational outcomes is to use parental educational status as the dependent variable in equation (1). This is a more direct test that provides evidence regarding whether or not schools built (per 1,000 kilometer square) is a function of literacy rates. If the intensity of school construction was higher in districts with more educated individuals, the coefficient on the interaction term should be positive. In contrast, if the intensity of school building was higher in districts that were lagging behind in educational outcomes, the coefficient on the interaction term is likely to be negative. Table 4 shows the results when parental literacy status is used as the dependent variable. The coefficients on the interaction term when using father's and mother's literacy status as the dependent variable are small, statistically insignificant, and close to zero. The results presented in Table 3 indicate that conditional upon the covariates, education status between the districts receiving higher number of schools and districts receiving lower number of schools (per 1,000 square kilometer) in the late 1980s and early 1990s is not systematically different.

Table 4. Effect of School Construction on Parental Education Status

	Father Literate	Mother Literate
Interaction between treatment dummy and school intensity	0.003 (0.004)	0.003 (0.002)
Gender	-0.019 (0.013)	-0.002 (0.007)
N	4,279	4,279
R-sq	0.176	0.103

Note: Additionally, the model includes ethnicity dummies, district specific literacy rate of 1981 interacted with the treatment group, religion dummies, minutes to closest school, minutes to closest dirt road (by foot), and district of birth and year of birth fixed effects. Standard errors are clustered at the household level. *** represent significance at a 1% level, ** at a 5% level, and *** at a 10% level.

To ensure that the results presented in Table 3 are not driven by other unobserved factors correlated to school construction and the literacy rate of a district, we perform an additional falsification test by comparing individuals aged 15 - 25 in 1990 with 26 - 35 year olds. In this falsification exercise, 15 - 25 year olds are treated as a hypothetical treatment group and 26 - 35 year olds are the comparison group. If the coefficient on the interaction term is positive and statistically significant, then we cannot rule out the possibility that the results in Table 3 may be spurious. In other words, the effect may have been prominent even in the absence of a rise in school construction. The findings from such a falsification exercise are presented in Table 5. The coefficient on the interaction term is small, close to zero, and statistically insignificant at any conventional levels. This provides further suggestive evidence that the obtained estimates in Table 4 are not driven by unobserved factors not accounted for in the specification.

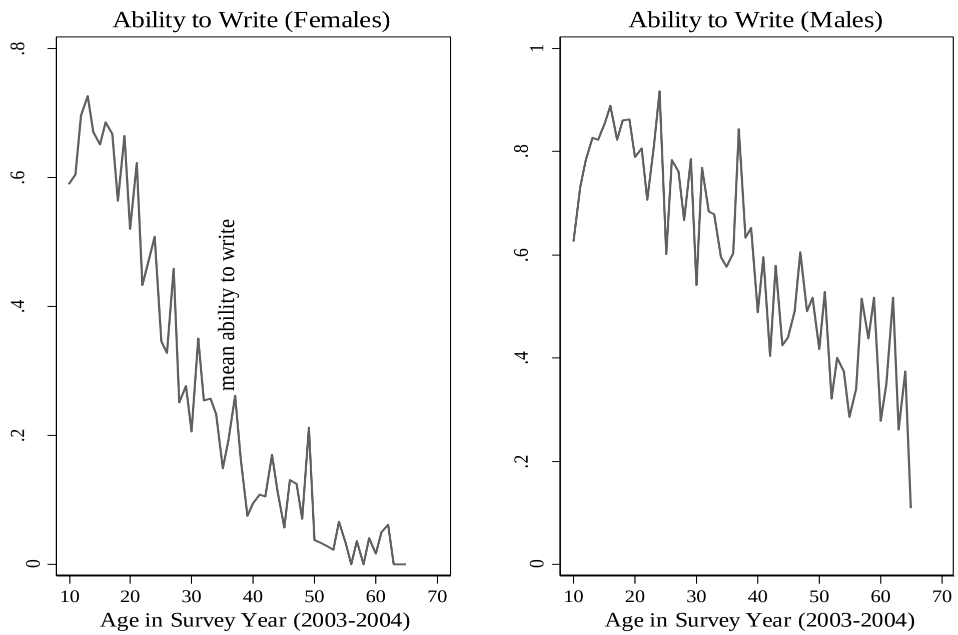
Table 5. The Effect of School Construction on Educational Outcomes (Falsification Exercise)

	Read	Write	Highest Education	Fifth Grade
Interaction between treatment dummy and school intensity	0.005	0.006	0.027	0.001
	(0.005)	(0.005)	(0.031)	(0.003)
Father literate	0.171***	0.165***	0.388*	0.007
	(0.043)	(0.041)	(0.221)	(0.022)
Mother literate	0.185	0.210	2.098**	0.223*
	(0.136)	(0.135)	(0.980)	(0.116)
N	1,637	1,637	1,553	1,553
R-sq	0.315	0.318	0.364	0.253
	Read	Write	Highest Education	Fifth Grade
Interaction between treatment dummy and school intensity	0.001	0.004	0.055	0.005
	(0.006)	(0.006)	(0.057)	(0.007)
Father literate	0.364***	0.377***	3.508***	0.318***
	(0.039)	(0.041)	(0.423)	(0.053)
Mother literate	0.086	0.023	0.960	0.053
	(0.097)	(0.110)	(0.990)	(0.115)
N	1,372	1,372	1,276	1,276
R-sq	0.290	0.303	0.390	0.331

Note: Additionally, the model includes ethnicity dummies, district specific literacy rate of 1981 interacted with the treatment group, parental literacy status interacted with the treatment group, religion dummies, minutes to closest school, minutes to closest dirt road (by foot), and district of birth and year of birth fixed effects. Standard errors are clustered at the household level. *** represent significance at a 1% level, ** at a 5% level, and *** at a 10% level.

A question that arises from the results in Table 3 is why did the establishment of schools affect educational outcomes of females but had no effect on educational outcomes among males? We believe there are at least two reasons that can explain this observation in the data. First, the literacy rate of males in 1990 was substantially higher than the literacy rate of females. For instance, females who were born between 1965 and 1975 reported having a literacy rate of 21 percent; whereas, the rate for the males was 52 percent (Source NLSS 2003-2004). Although the formal education in Nepal was introduced after the first democracy in 1950, the educational attainments of females remained largely unaffected as females were discouraged from attending schools. This allows us to speculate that the effect of school construction may vary systematically according to gender.

Figure 2: Ability to Write by Gender



Source: NLSS (2003-2004)

Figure 2 demonstrates the mean ability to write as a function of age among female and male group (Source NLSS 2003-2004). Although the younger age group is more likely to be able to write, the drop is sharp and prominent for females when compared to males. Only 35 percent of females who were twenty-five years old in the 2003-2004 survey were able to write compared to over 78 percent of twenty-five years old males. Figure 2 depicts a huge gender disparity in ability to write. Since the majority of female population living in rural areas did not know how to write before 1990, the marginal benefit of new schools is likely to be higher for females compared to males. Second, it is likely that relatively highly educated males migrated to urban areas and, hence, did not enter the sample. If educated individuals are likely to migrate to urban parts of the country for better jobs and a higher standard of living, the effect of school construction will be underestimated. Unfortunately since the survey data does not have detailed information on people who migrated from a particular household to another location, we cannot test this pathway.

Validity of the Treatment and Control Groups

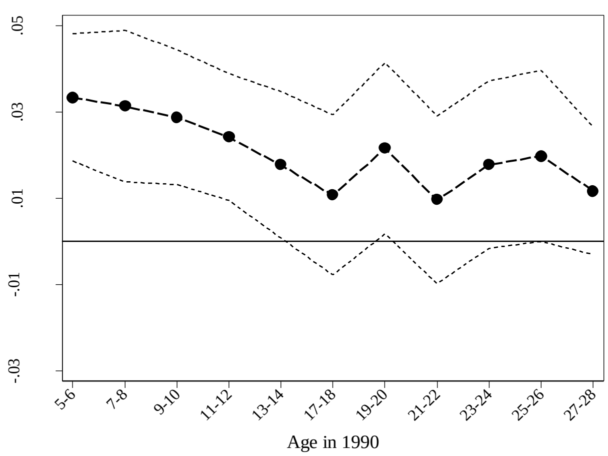
Until now, we have implicitly assumed that five to fourteen year olds in 1990 are affected by the burst of school construction in the late 1980s and early 1990s; whereas, seventeen to thirty year olds are unaffected. This assumption need not be taken as a given. The implicit assumption that younger cohorts are affected more by the establishment of schools, following Duflo (2001), is a testable hypothesis and can be estimated by the following regression:

$$E_{idl} = \alpha + \sum_{j=5-6}^{27-28} \beta_j (S_d * T_{ij}) + \beta_2 (P_{idl} * T_i) + \beta_3 P_{idl} + \beta_4 (TL_{1981} * T_i) + \beta_5\ \mu X_{idl} + \beta_6 w_d + \tau_d + \rho_b + e_{idl} \qquad equ(2)$$

All the variables in equation (2) are similar to those of equation (1) with the exception that T_{ij} is a dummy variable indicating whether individual i is in age interval j in 1990 and is interacted with the school intensity measure S_d (schools available per 1,000 square kilometers in district d). Age interval of two years is used to avoid issues associated with small sample size which is encountered if an exact age is used instead. We use those individuals who are 29 to 30 years old in 1990 as the omitted (comparison) group. In equation (2), β_j indicates the effect of a one unit increase in school (per 1,000 square kilometers) on individuals aged j as compared to those aged 29 to 30 years in 1990. If the analysis satisfies an implicit assumption that younger cohort is more affected by the establishments of schools, β_j should be a decreasing function of age.

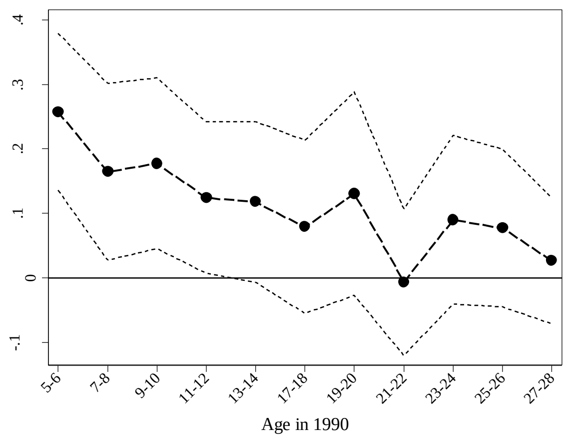
Figure 3 plots the estimates of β_j obtained from estimating equation (2) along with the 95 percent confidence intervals when the ability to write is used as a dependent variable. The coefficients are positive and statistically significant in most cases before the age of fourteen. However, coefficients pertaining to age groups greater than or equal to seventeen years old are statistically insignificant at any conventional levels, and fluctuate around zero. Similarly, Figure 4 replicates Figure 3 except the dependent variable used is the highest level of formal education. It is evident from Figure 4 that the effect of school construction on formal level of schooling is a decreasing function of age. Figures 3 and 4 empirically advocate the assumption undertaken by this study. Furthermore, the results presented in Figures 3 and 4 indicate that other district-specific unobserved factors, which are correlated to both the educational outcomes and intensity of schooling measure, are not driving the results presented in Table 4. In summary, the results from our battery of tests collectively support the underlying assumption used in this study.

Figure 3: Coefficients on the Interaction term between the Number of schools and Age in 1990



Note: The figure plots the coefficients on the interaction terms obtained after estimating equation 2 for females. The dependent variable used is the ability to write. 95 % confidence interval is given by the dotted lines.

Figure 4: Coefficients on the Interaction term between the Number of schools and Age in 1990



Note: The figure plots the coefficients on the interaction terms obtained after estimating equation 2 for females. The dependent variable used is the highest level of formal schooling. 95 % confidence interval is given by the dotted lines.

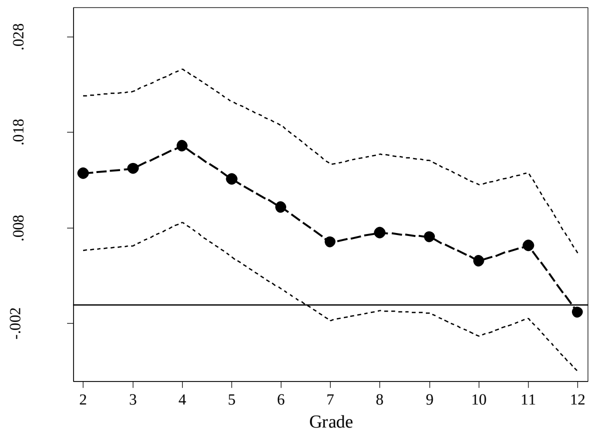
Which Grade Levels Were Affected?

Thus far, we have demonstrated that school construction affected the educational outcomes of females. To investigate what grade levels were most affected by the establishment of schools, we estimate the following regression by using the OLS:

$$L_{idlk} = \alpha + \beta_k S_d * T_i + \beta_2(P_{idl} * T_i) + \beta_3 P_{idl} + \beta_4(TL_{1981} * T_i) + \beta_5\ \mu X_{idl} + \beta_6 w_d + \tau_d + \rho_b + e_{idl} + \varepsilon_{idl} \qquad (3)$$

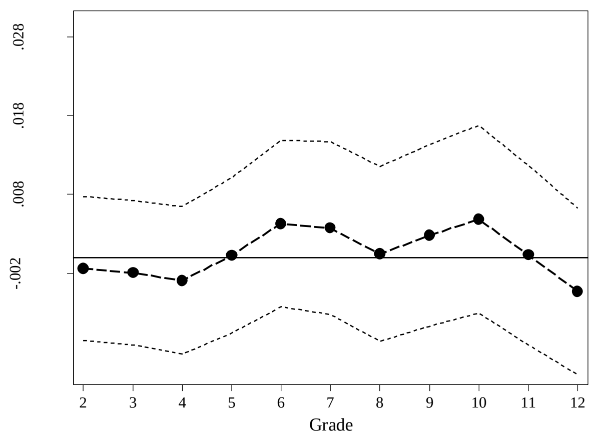
where all of the variables are similar to equation (1) with the exception of L_{idlk}, which represents whether an individual completed at least k years of education (k ranges from 2 to 10). The coefficient on β_k will indicate the effect of school construction on the completion of k^{th} level of education. The estimates of parameters β_k are plotted in Figure 5 along with the grade level and the 95 percent confidence intervals.

Figure 5: Effect of School Construction by Grade Level



Note: The figure plots the coefficients on the interaction term between treatment group and the measure of school intensity after estimating equation (3) for females. 95 % confidence interval is given by the dotted lines.

Figure 6: Coefficients on the Interaction term between the Number of schools and Age in 1990 (Among Males)



Note: The figure plots the coefficients on the interaction term between treatment group and the measure of school intensity after estimating equation (3) for males. 95 % confidence interval is given by the dotted lines.

Figure 5 shows that the effect of school construction decreases with grade level among females. The effect of an additional school per 1,000 square kilometers is positive and statistically significant at a 5 percent level until the 6th grade, after which, though positive, the coefficients are imprecisely estimated. Hence, Figure 5 indicates that school construction increased the completion rate in the lower grades among females, but had no impact on the completion of higher grade levels. This is consistent with the fact that the majority of schools built in the late 1980s and early 1990s were primary schools. Figure 6 replicates Figure 5 but for males. The coefficients fluctuate around zero suggesting that school construction had no effect on the reported grade levels for males.

VI. MECHANISM AND CONFOUNDING FACTORS

Variation in quality of the new schools constructed is a mechanism that may potentially help explain the impact on educational gains. School quality may also confound the impact of an increase in the number of schools. If schools are demand or needs driven, the quality of the schools may be correlated with the quantity of schools being established. It is possible that areas with a higher number of schools also attracts a higher quality of schools. This would mean that our estimated impacts of the establishments of schools are biased upwards. Alternatively, there may exist a quality-quantity trade-off in the establishment of schools. Areas with a higher number of schools may potentially suffer from lower quality due to greater division of limited resources. This would, in turn, bias our estimates downwards. The effect of quality on educational outcomes is unclear *a priori*.

Table 6A. Effect of School Construction on Highest Education with Quality Measures (Female)

Interaction between treatment dummy and school intensity	0.128*** (0.034)	0.137*** (0.034)	0.126*** (0.034)	0.127*** (0.034)
Interaction between treatment dummy and number of classrooms	0.026 (0.089)			
Interaction between treatment dummy and student-teacher ratio		-0.028** (0.011)		
Interaction between treatment dummy and toilet availability			0.122 (0.455)	
Interaction between treatment dummy and proportion of female teachers				0.672 (0.409)
N	2,297	2,284	2,297	2,297
R-sq	0.495	0.497	0.495	0.495

Note: The dependent variable is the highest level of formal schooling. Additionally, the model includes ethnicity dummies, district specific literacy rate of 1981 interacted with the treatment group, parental literacy status interacted with the treatment group, religion dummies, minutes to closest school, minutes to closest dirt road (by foot), and district of birth and year of birth fixed effects. Standard errors are clustered at the household level. *** represent significance at a 1% level, ** at a 5% level, and *** at a 10% level.

To test whether our results are driven and/ or confounded by the quality of schools, we re-estimate equation (1) including measures of school quality. We analyze multiple variables proxying for school quality at the district level including the number of classrooms, student-teacher ratio, proportion of schools with toilets, proportion of schools with at least one female teacher. These quality measures are extracted from the community level data file of the NLSS 2003-2004 survey year. We emphasize that the quality measure pertains to the survey year itself; hence, caution should be provided when interpreting the results.

Table 6B. Effect of School Construction on Highest Education with Quality Measures (Male)

Interaction between treatment dummy and school intensity	-0.005 (0.049)	0.001 (0.049)	-0.001 (0.050)	0.003 (0.049)
Interaction between treatment dummy and number of classrooms	-0.175 (0.129)			
Interaction between treatment dummy and student-teacher ratio		0.013 (0.016)		
Interaction between treatment dummy and toilet availability			0.326 (0.719)	
Interaction between treatment dummy and proportion of female teachers				-0.280 (0.634)
N	1,776	1,772	1,776	1,776
R-sq	0.374	0.373	0.373	0.373

Note: The dependent variable is the highest level of formal schooling. Additionally, the model includes ethnicity dummies, district specific literacy rate of 1981 interacted with the treatment group, parental literacy status interacted with the treatment group, religion dummies, minutes to closest school, minutes to closest dirt road (by foot), and district of birth and year of birth fixed effects. Standard errors are clustered at the household level. *** represent significance at a 1% level, ** at a 5% level, and *** at a 10% level.

Schools with lower student-teacher ratios and those equipped with toilets are arguably better funded and also of greater quality.[10] Schools with female teachers are more likely to have amicable attitude towards educating females. In fact, evidence from sub-Saharan Africa show a correlation between the number of female teachers and girls' enrollment. Although such evidence is not entirely causal, the necessity of female teachers is highly emphasized in developing nations (See UNESCO, 2006). Accounting for female teachers may also help capture across district differences in educating females, given that districts with a higher proportion of female teachers are more likely to favor girls' education.

Tables 6A and 6B report related results from the estimations for males and females, respectively. Across both gender types, we find that the impact of school establishments is unaffected by the inclusion of measures of school quality. The quality measures used in this study seems to have no effect on educational outcomes for males. However, an increase in student-teacher ratio is associated with a reduction in highest level of formal schooling among females. Although the coefficients on the interaction terms pertaining to the number of classrooms, proportion of schools with toilets, and proportion of female teachers are positive, they are statistically insignificant at the conventional levels. Based on these results, estimate for the impact of school establishments on educational outcomes is unlikely to be driven by school quality.

Until now we have assumed that individuals go to school in their respective birth-districts. It is problematic if individuals migrate across districts in search of better education. Using migration files from the NLSS survey (2003-2004) we replicate the findings presented in Table 3 by focusing on individuals who reported not migrating across-district. The findings are presented in Table 7. These findings are virtually identical to those presented in Table 3, suggesting that across district migration is not driving the main results of this paper.

Table 7. Effect of School Construction on Educational Outcomes (individuals who did not migrate across district)

Panel A (Females)	Read	Write	Highest Education	Fifth Grade
Interaction between treatment dummy and school intensity	0.013***	0.014***	0.115***	0.012***
	(0.004)	(0.004)	(0.034)	(0.004)
Father literate	0.243***	0.247***	1.318***	0.095***
	(0.033)	(0.033)	(0.231)	(0.026)
Mother literate	0.163**	0.157**	2.087***	0.135*
	(0.078)	(0.078)	(0.679)	(0.080)
N	2,298	2,298	2,192	2,192
R-sq	0.442	0.450	0.502	0.401
Panel B (Males)	Read	Write	Highest Education	Fifth Grade
Interaction between treatment dummy and school intensity	-0.002	-0.001	0.005	0.006
	(0.005)	(0.005)	(0.053)	(0.006)
Father literate	0.335***	0.325***	3.332***	0.314***
	(0.032)	(0.035)	(0.338)	(0.043)
Mother literate	0.122*	0.134**	2.232***	0.227***
	(0.064)	(0.067)	(0.597)	(0.072)
N	1,717	1,717	1,646	1,646
R-sq	0.289	0.300	0.377	0.314

Note: Additionally, the model includes ethnicity dummies, district specific literacy rate of 1981 interacted with the treatment group, parental literacy status interacted with the treatment group, religion dummies, minutes to closest school, minutes to closest dirt road (by foot), and district of birth and year of birth fixed effects. Standard errors are clustered at the household level. *** represent significance at a 1% level, ** at a 5% level, and *** at a 10% level.

VII. DISCUSSION AND CONCLUSION

Policy interventions designed to increase female educational attainment is highly sought for in developing nations given the large positive externalities of education in forms of better health, reduction in fertility, and higher wages. UNESCO's (2015) statistics estimate that of the 57 million out-of-school children of primary school-going-age, 31 million are girls.[11]

In this study, we evaluate the causal effect of increases in schooling infrastructure, a prominently used supply side policy in developing nations, on educational outcomes among females in Nepal. The rapid building of schools in the early 1990s increased the ability to read and write, as well as the highest level of formal schooling among females in rural Nepal. Our findings indicate that a 1 unit increase in schools per 1,000 square kilometers led to a rise in females' ability to read and write by 1.5 percentage points. To place these effects in some perspective, the raw difference in mean ability to read and write between females who were 17 - 30 years of age in 1990 (control group) and the females who were 5-14 years of age in 1990 (treatment group) was about 31 percentage points. There were on average about 5.5 schools built during the period per 1,000 square kilometers. A simple back-of-the-envelope calculation then suggests that, on average, the establishments of schools can account for 8 percentage points or approximately a fourth of the total difference between the control and treatment groups.[12]

Additionally, the construction of new schools improved the primary school completion rate among females (until fifth grade); whereas, their secondary and higher level education was unaffected. The results also suggest that school-building did not affect educational outcomes among males. One possible explanation regarding this finding is that the marginal benefit of the presence of schools for females may have been higher than that for males, as the literacy rate of females in the 1990s was severely lower than the literacy rate of males (32.7 percent for females versus 68.2 percent for males, Source: UNESCO). It has to be noted that those females whose education levels improved due to increases in schooling infrastructure are likely to belong to a segment of the population who were deprived of schooling. Increases in schooling infrastructure may have provided them with an opportunity of attending school.

Our findings in this paper resonate with those of Duflo (2001) and Paxson and Schady (2002). Unlike these findings and the findings showing a positive correlation between schooling infrastructure and educational outcomes (Bridsall, 1985; DeTray, 1988; Lee and Willis, 1994; Lavy, 1996; and Case and Deaton, 1996), our results feature the added caveat of the differential effect of school construction for female and male children.

With respect to the debate on the quality/quantity trade-off for schooling infrastructures in developing countries like Nepal, our results are relevant and illuminating. While we certainly do not wish to underemphasize the importance of a quality education, our present findings indicate that the pursuit of quality education also should not occur at the expense of broader access to education. Female educational outcomes in several developing countries such as Somalia, Mali, Niger, Pakistan, Burkina Faso and Yemem are still poor, specifically among poor families.[13] When existing levels of education are low to begin with and there is considerable potential for gain—as was the case with female education prior to the mid-1980s—we cannot discount the importance of increasing the sheer quantity of schools.

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Notes

1 Source: http://www.unicef.org/education/bege_70640.html

2 Source: http://www.uis.unesco.org/Education/Pages/oosc-data-release-2015.aspx

3 Source: http://www.ilo.org/asia/areas/child-labour/lang--en/index.htm

4 Source: http://www.uis.unesco.org/literacy/Documents/UIS-literacy-statistics-1990-2015-en.pdf

5 Panchayat refers to a form of local government historically found in the Indian subcontinent.

6 See Department for International Development's (2005) report. The other countries include Ethiopia, Pakistan, India, Zambia, Malawi, Tanzania, and Bangladesh.

7 The per capita expenditure for 1981, 1991, and 1996 are calculated using national education expenditure estimates and population estimates provided by the World Bank. See http://www.indexmundi.com/facts/nepal/education-expenditure

8 To account for differences in the size of districts, we use number of schools in a given time period per 1,000 square kilometers.

9 Our results are robust to the level at which errors are clustered. In results not included here, we have clustered at ward and district levels as well. These results are available upon request.

10 A measure of student-teacher ratio is a widely used variable to proxy for school quality (See Card and Krueger, 1992; Heckman, Farrar and Todd, 1995; Andrews, Li and Lovenheim, 2012; Duflo, Dupas and Kremer, 2015).

11 Source: http://www.unesco.org/new/en/media-services/single-view/news/closing_gender_gap_in_education/#.WBDbti0rKCg

12 The calculation simply entails the product of the average number of schools per 1,000 square kilometers and the effect per school.

13 http://en.unesco.org/gem-report/sites/gem-report/files/girls-factsheet-en.pdf (Accessed: October 28, 2016)

REFERENCES

Andrews, Rodney J., Jing Li, and Michael F. Lovenheim (2012). "Quantile treatment effects of college quality on earnings: Evidence from administrative data in Texas." *National Bureau of Economic Research*, w18068.

Bennett, N. (1979). "New Education for Old Problems: Can Education Be Made a Force for Rural Development in Nepal?" *CERID, Education for Rural Development: National Seminar Kathmandu, Tribhuvan University*, 20-38.

Birdsall, Nancy (1985). "Public inputs and child schooling in Brazil." *Journal of development Economics* 18(1), 67-86.

Caddell, Martha (2007). "Education and Change: A Historical Perspective on Schooling, Development and the Nepali Nation-state." *Education and Social Change in South Asia*. New Delhi: Orient Longman, 251-284.

Card, David, and Alan B. Krueger (1992). "Does School Quality Matter? Returns to Education and the Characteristics of Public Schools in the United States." *The Journal of Political Economy* 100(1), 1-40.

Case, Anne, and Angus Deaton (1998). *School quality and educational outcomes in South Africa*. No. 993. Princeton University, Woodrow Wilson School of Public and International Affairs, Center for Research on Child Wellbeing.

Chou, Shin-Yi, Jin-Tan Liu, Michael Grossman, and Ted Joyce (2010). "Parental education and child health: evidence from a natural experiment in Taiwan." *American Economic Journal: Applied Economics* 2(1), 33-61.

De Chene, M. (1996). "In the Name of Bikas." *Studies in Nepali History and Society*, 1(2), 259-270.

Department for International Development (2005). *Girls' Education: Towards a Better Future for All*. The Department for International Development. http://www2.ohchr.org/english/issues/development/docs/girlseducation.pdf

De Tray, Dennis (1988). "Government policy household behavior and the distribution of schooling: a case study of Malaysia." Greenwich Connecticut JAI Press: 303-36.

Duflo, Esther (2001). "Schooling and Labor Market Consequences of School Construction in Indonesia: Evidence from an Unusual Policy Experiment," *American Economic Review*, 91(4): 795-813.

Hanushek, Eric A., and Victor Lavy (1994). *Do Students Care about School Quality?: Dropout Behavior and Achievement Bias in Developing Countries*. Hebrew University of Jerusalem, Department of Economics.

Duflo, Esther, Pascaline Dupas, and Michael Kremer (2015). "School governance, teacher incentives, and pupil–teacher ratios: Experimental evidence from Kenyan primary schools." *Journal of Public Economics* 123: 92-110.

Heckman, James, Anne Layne-Farrar, and Petra Todd (1995). "Does measured school quality really matter? An examination of the earnings-quality relationship". *National Bureau of Economic Research*, w5274.

International Labour Organization. *Child Labour in Asia and the Pacific*. n.d. http://www.ilo.org/asia/areas/child-labour/lang--en/index.htm. 23 October 2016.

Lavy, Victor (1996). “School supply constraints and children's educational outcomes in rural Ghana.” *Journal of Development Economics*, 51(2), 291-314.

Lillard, Lee A., and Robert J. Willis (1994). "Intergenerational educational mobility: Effects of family and state in Malaysia." *Journal of Human Resources*: 1126-1166.

Ministry of Education Republic of China (Taiwan) (2007). *Historical Illiteracy Rates of Nationals over the Age of 15*. Feb 5. Accessed 10 27, 2017. http://english.moe.gov.tw/ct.asp?xItem=7444&ctNode=1184&mp=1.

Paxson, Christina, and Norbert R. Schady (2002). “The Allocation and Impact of Social Funds: Spending on School Infrastructure in Peru”. *The World Bank Economic Review* 16(2), 297-319.

Pritchett, Lant (2001). "Where has all the education gone?." *The world bank economic review* 15.3 : 367-391.

Psacharopoulos, George (1994). “Returns to Investment in Education: A Global Update” *World Development* 22(9), 1325-1343.

Savada, Andrea Matles (1991). *Nepal: A Country Study*, Washington: GPO for the Library of Congress.

Unterhalter, Elaine, Amy North, Madeleine Arnot, Cynthia Lloyd, Lebo Moletsane, Erin Murphy-Graham, Jenny Parkes, and Mioko Saito (2014). "Girls’ education and gender equality." *DFID (UK Department for International Development), London*.

UNESCO Institute for Statistics (UIS) (2012). "Adult and youth literacy, 1990-2015: analysis of data for 41 selected countries."

UNESCO Institute of Statistics. *Out of School Children Data Release (2015)*. 7 June 2015. http://www.uis.unesco.org/Education/Pages/oosc-data-release-2015.aspx. 20 October 2016.

World Bank Group (2011). “Learning for All: Investing in People's Knowledge and Skills to Promote Development.” *Education Strategy 2020*.

The World Bank. August (2005). *Gender Issues in Child Labor.* Prem Notes, The World Bank.