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Child Work and Schooling Costs in Rural Northern India

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ABSTRACT

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It is widely held that work by children obstructs schooling, so that working children in impoverished families will find it difficult to escape poverty. If children's school attendance and work were highly substitutable activities, it would be advisable to quell work in the interest of schooling and, if less child work were desirable for its own sake, to boost school attendance so as to reduce child work. Hence, this article examines the effects of schooling costs upon both children's propensities to work and to attend school in rural northern India in a bid to assess the extent of trade-off between the activities. Analyses of data from Uttar Pradesh and Bihar, two Northern Indian states, reveal a positive relation between child work and schooling costs, a negative relation between school enrollment and schooling costs, and that the decrease in the probability of child work from a decrease in schooling costs is comparable in magnitude to the corresponding increase in the probability of school enrollment, implying children's work and school attendance are strongly substitutable activities. Thus, unlike recent studies of child work in India's South Asian neighbors of Bangladesh and Pakistan, this paper uncovers evidence of substantial trade-off between child work and school attendance.

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I. INTRODUCTION

Binder and Scrogin (1999) advance four reasons for the objectionability of child labour. First, child labour reduces children's current welfare. Second, by reducing children's schooling, child labour may also lower children's future welfare. Third, reductions in children's schooling may slow the pace of national economic growth. Fourth, as argued by Basu and Van (1998), child labour may, by competing with adult labour, reduce adult wages, thereby increasing household dependence upon children's earnings, making for a vicious cycle of continued child labour.

While there is agreement that work by children may be harmful to them, the prime cause of child labour, and, therefore, the best suited policy to combat it, has not been settled upon. In India, and elsewhere, there appear to be two distinct policy positions. Some hold that poverty is the main reason for child labour in that poor families, reliant upon the income contributions of their children, must put them to work. Kept from school, the children shall grow to impoverished adulthood and shall, in turn, put *their* children to work, so that poverty is transmitted between generations as in a 'dynastic' poverty trap. Advocates of this view emphasize poverty alleviation in their policy prescription, as also the banning of the worst forms of child labour, regulation of its non-hazardous forms, and the provision of non-formal education for working children (Gayathri and Chaudhuri, 2002). However, empirical research often doesn't support this primacy of poverty. For instance, studies (Chandrashekhar, 1997; Padhi, 2004) employing aggregative data to examine the relation between poverty and child labour across Indian states report that the coefficient of correlation between poverty and child labour is low and lies in the range 0.10 to 0.15. The relation between income and child work is found to be weak in many micro-studies as well. Canagarajah and Nielsen's (1999) review of empirical studies upon Ivorian, Ghanaian, and

Zambian micro-data leads them to conclude that poverty isn't the primary determinant of child labour, and Bhatty's (1998) survey of field studies in India leads her to surmise that there isn't a clear association between the two.

Hence, others hold that social and cultural norms are at least as responsible as poverty for child labour and low school enrollment (Bhatty, 1998; Wazir, 2002; Nielsen and Dubey, 2002). If it isn't mainly poverty that drives children to work, child labour is less defensible, argue proponents of this view, and so all labour, by holding back the overall growth and development of children, may be considered hazardous to them. It follows child labour might be combated by efforts to change social norms and, more immediately, by educational interventions such as compulsory schooling or improvement in the quality of and access to education.[1] Indeed, the International Labour Organization (ILO) holds that 'the single most effective way to stem the flow of school-age children into abusive forms of employment is to extend and improve schooling so that it will attract and retain them' (ILO, 1998).

However, empirical studies don't always find a strong negative effect of access to schooling upon child work. For example, Grootaert (1999) reports that child labour force participation in rural Cote d'Ivoire is negatively related to school-access, but that such schooling costs aren't statistically significant correlates of child labour in urban Cote d'Ivoire. Cartwright and Patrinos (1999) find a strong positive relationship between schooling costs and child work in urban Bolivia. In contrast, Cartwright (1999) reports that higher schooling costs are associated with a lower probability of child work in Colombia. Using data from the Tanga region of mainland Tanzania, Akabayashi and Psacharopoulos (1999) report that

[1] The MV Foundation in Andhra Pradesh embraces this view. It's work is based on the principle that all children must attend full-time formal school and that the universalization of education will eliminate child labour. See www.mvfindia.org.

children work longer hours per day in localities with a lower school concentration but that, controlling for school concentration, distance from the closest public primary school is negatively related to children's hours of work.[2] Recent research upon India's South Asian neighbours, Bangladesh and Pakistan, suggests that the failure of some studies to find a strong positive (negative) relation between child work and schooling costs (access to schooling) may be due to two reasons. First, a strong negative relation between school enrollment and schooling costs may not translate to a strong positive relation between child work and schooling costs if children's leisure mitigates the trade-off between their work and schooling. Ravallion and Wodon (2000) find that while a school enrollment subsidy in the form of monthly food rations to households in rural Bangladesh reduces the incidence of child labour, the decline accounts for but a small proportion (between 11 and 22 per cent) of the increase in school enrollment, suggesting higher school attendance comes mainly at the expense of children's leisure. Second, all types of child work may not be responsive to changes in schooling costs. Indeed, some types of work may be entirely unresponsive, and if such work makes up a large portion of child work, child labour as a whole and schooling costs may not be strongly associated.[3] Hazarika and Bedi (2003) find that while schooling costs and school enrollment are negatively related in rural Pakistan, only children's extra-household (outside the home) work, for example, work for pay, is positively related to schooling costs. Children's intra-household work, the dominant form of child work is insensitive to changes in the costs of schooling. Both Ravallion's and Wodon's (2000) and

[2] Studies comprising an alternate strand of the literature adopt the more direct approach to studying trade-off between child work and schooling of comparing educational outcomes across work status (for example, Boozer and Suri, 2001, and Beegle, Dehejia and Gatti, 2003). The main critique of this approach is that it is likely schooling and child work decisions are simultaneous, making it difficult to identify a causal link between the two.

[3] Increases in school enrollment from reduction in schooling costs must then result mainly from decreases in children's leisure, and so this second reason may be viewed as expanding upon the first.

Hazarika's and Bedi's (2003) findings suggest that a policy of improving access to schooling shall have limited success in quelling child work.[4] Might this be true of neighbouring India as well, where educational interventions have lately been seen as crucial to the suppression of child work?

While there is a voluminous literature on the determinants of child labour and schooling in India[5], empirical work, which specifically examines the trade-off between the two activities is scant. Therefore, this study uses data from rural Uttar Pradesh and Bihar to estimate the effects of schooling costs upon both children's propensities to work and to attend school, in order to assess the extent of substitutability between the two activities and, hence, the efficacy of a policy of improving access to schooling in reducing child work. Recognizing that different types of work may react differently to policy stimuli, it also estimates the separate effects of schooling costs upon intra-household and extra-household labour, and upon domestic and economic (both intra-household and extra-household) labour. It is found that not merely is there a statistically significant positive relation between child work and schooling costs but also that the decrease in children's propensity to work from a reduction in schooling costs is comparable in magnitude to the corresponding increase in their propensity to enroll in school, implying child work and school attendance are strongly substitutable activities. Thus, in marked contrast to the findings for Pakistan and Bangladesh, this paper shows that, at least in two of the largest Indian states, a policy of

[4] It may, of course, be argued that weak trade-off between children's work and schooling makes child work less objectionable. On the other hand, child work is objectionable not merely because it reduces schooling.

[5] The literature is both voluminous and diverse, and includes papers that use aggregative state level data to study the correlation between state's proportions of working children and their socio-economic conditions (for example, Chandrashekhar, 1997, and Padhi, 2004), papers that use large and small household survey datasets to identify the determinants of child labour (for example, Nielsen and Dubey, 2002, and Chakraborty, 2004), and case studies that focus on particular parts of the country and/or particular industries to describe the conditions faced by working children (for example, Sharma and Sharma, 1997, Swaminathan, 1998, and Bhukuth, 2005).

improving access to schooling shall be successful in both reducing child work and raising school attendance.

The following section discusses the scope of child labour, both globally and in India. Section III describes the data and the empirical framework. Section IV contains results and compares these to evidence from neighbouring Pakistan and Bangladesh. The final section presents the study's conclusions.

II. CHILD LABOUR IN INDIA : SCOPE, LEGAL FRAMEWORK, AND POLICIES

II.1 Scope

According to the ILO, an economically active child is one who works at least one hour a week. All 5 – 11 year old economically active children are considered child laborers. On the other hand, an economically active 12 – 14 year old is considered a child laborer only if she performs at least fourteen hours of non-hazardous work per week, or at least one hour of hazardous work per week. The ILO considers work to be activity producing a marketable output. This includes work for pay as well as unpaid work in a household farm or non-farm enterprise but excludes children's domestic chores, performed mainly by girls, such as cooking, cleaning, and childcare. In light of this, it is likely that the ILO underestimates the magnitude of child work.

The concept of work used by the government of India is similar to the ILO definition. As mentioned in Lieten (2002b), according to the instruction manuals provided to Census and National Sample Survey enumerators, work is defined as "participation in any economically productive activity" (Census of India 1981, Volume 22). This definition includes unpaid intra-household work in a farm or a non-farm enterprise but excludes

chores such as cooking, cleaning, caring for cattle, collecting firewood and child care. Based on this narrow definition of work, the Census of India estimates that there were 11.28 million working children (5 – 14 years old) in the nation in 1991. A slightly lower figure of 10.4 million working children comes from the 55th round of the National Sample Survey conducted in 1999-2000. Based on a total of 210 million 5 – 14 year old children in 1991, the activity rate of children lies in the range of 5 – 5.2 per cent. In contrast, the ILO estimates that 13.5 per cent of boys and 10.3 per cent of girls were economically active in the period 1981-91 (ILO, 1995). A broadening of the definition of work to include domestic activities or, more unusually, considering all children not in school to be workers yields far higher estimates. For instance, UNICEF "cites figures ranging from seventy-five to ninety million child laborers under the age of fourteen" (Human Rights Watch, 1996). A report produced by the National Commission on Labour (2001) puts the number of working children at more than 100 million, which translates to an activity rate of about 48 per cent. Thus, depending on the definition used, the number of working children in India ranges from 10 to 100 million.

By excluding domestic work, the figures provided by the government certainly underestimate the extent of child work. On the other hand, the assumption that children not in school must be workers likely overestimates the magnitude of child work. This paper does not aim to resolve the diversity in estimates of the number of working Indian children. It does, however, consider definitions of child work in that, following Hazarika and Bedi (2003) and heeding the arguments of authors such as Anker (2000) and Lieten (2002a), it draws distinctions between different types of work. Household domestic work is distinguished from economic work, as is intra-household work from extra-household work. Such distinctions are desirable since different types of work may be dissimilarly motivated.

For instance, parents in dire financial need may have their children work for wages, that is, engage in extra-household labour, for the purpose of augmenting household income, whereas child work in family farms or businesses may be driven by multiple parental motives including one that such work is an essential component of upbringing. Hence, it is plausible that different types of child work shall exhibit differing sensitivities to policy interventions. If extra-household economic work is primarily motivated by household financial need, it may respond to changes in schooling costs. On the other hand, domestic or economic work within the household may not respond to such stimuli if it is viewed as essential training that cannot be acquired elsewhere. Accordingly, this paper examines the effect of schooling costs upon intra-household and extra-household work separately. Further, given that the ILO, by considering work to consist only of activity producing a marketable output, distinguishes between economic work and toil in household domestic chores, this paper examines the effect of schooling costs upon economic work and household domestic work separately as well.

II.2 Legal framework and policies

India is a signatory to several international conventions designed to secure the rights of children. In addition, Article 24 of the Indian Constitution states that "No child below the age of fourteen years shall be employed to work in any factory or mine or employed in any hazardous employment". Article 39(e) of the Constitution directs the State to ensure that "the tender age of children" is "not abused and that citizens are not forced by economic necessity to enter avocations unsuited to their age or strength". The Child Labour Act of 1986 prohibits the employment of children below age 14 in specified hazardous occupations and processes. Thus, laws in India offer child workers a measure of protection. However,

as in many other less developed countries, their enforcement is grievously wanting. In any case, labor laws may not be depended upon to stamp out child work since unpaid labour in a household farm or non-farm enterprise, the predominant form of child work, is usually beyond the scope of legislation.

Recognizing the limitations of a purely legal approach, policy makers in India and elsewhere are increasingly looking to educational interventions to combat child labour.[6] The two major child labour and educational programs of the Government of India are the National Child Labour Projects (under the aegis of the National Child Labour Policy of 1987) and the Sarva Shiksha Abhiyan (SSA) program. The National Child Labour Projects (NCLP) focus on districts where child labour is widespread and attempt to provide educational opportunities to working children. Their strategy includes the establishment of schools to provide non-formal education, the promotion of additional income and employment generation opportunities for parents, and the founding of programs to raise public awareness.

The SSA program, launched in 2001, aims to ensure that all children will begin completing elementary education (grades 1 – 5) by 2007 and upper primary education (grades 6 – 8) by 2010.[7] In addition to its other activities, the program finances the construction and repair of schools, the payment of teachers' salaries, the provision of free textbooks to girls, and the establishment of crèches for the younger siblings of children of

[6] For example, the Food-for-Education Program in Bangladesh (Ravallion and Wodon, 2000), *Progresa* in Mexico (Skoufias and Parker, 2001), and Bolsa Escola and PETI in Brazil (World Bank, 2001) provide subsidies to households, conditional upon children attending school, in a bid to reduce the opportunity costs of children's school attendance.

[7] As part of its commitment to primary education the 93rd amendment to the Indian constitution was passed by Parliament in 2002. This amendment made free and compulsory education for all children in the age group 6-14 a fundamental right.

school going age. Various reports (Wu, Kaul and Sankar, 2005) suggest the program has been successful in improving the quality of educational inputs and increasing school enrollment. The SSA program has nonpartisan political support, and substantial monetary and human resources have been devoted to it. Its 2006-07 budget is 41 per cent higher than in the previous year and it is expected that 500,000 additional classrooms will be constructed and 150,000 more teachers will be appointed (Government of India Union Budget, 2006-07). Although it is not directly concerned with child labour, an expected favourable side-effect of its activities is decline in the incidence of child work.

III. DATA, EMPIRICAL STRATEGY, AND DESCRIPTIVES

III.1 Data

The study's empirical analyses are conducted upon data from the 1997-98 Survey of Living Conditions in rural Uttar Pradesh and Bihar, part of the Living Standards Measurement Survey (LSMS) series of the World Bank. The Survey covered 2,250 households drawn from 120 villages in 25 districts of Uttar Pradesh and Bihar. With nearly 176 million inhabitants, Uttar Pradesh is India's most populous state. Bihar, with a population of nearly 83 million is India's third-most populous state.[8] By almost any indicator of poverty and socio-economic development, these two states are ranked amongst the lowest in the Indian Union (National Human Development Report, 2001).

The Survey elicited information about 10 – 14 year old children's work activities. Hours in intra-household work producing a marketable output and in extra-household work were reported. However, only dichotomous participation in household domestic work is

[8] In 2000, the two states were subdivided. Uttaranchal was carved from Uttar Pradesh and Jharkhand from Bihar.

known. This study considers child work to include household domestic work since its exclusion would likely bias gender perspectives of India's child labour problem. The unavailability of a continuous gauge of household domestic work therefore necessitates the measurement of child work in binary fashion. Children's dichotomous enrollment in school is known as well. The data are rich in household and community descriptors. They permit measurement of the costs of schooling in four ways, namely, by the distance in kilometers to the closest primary (grades 1 – 5) school, the distance to the closest middle (grades 6 – 8) school, the distance to the closest secondary (grades 9 – 10) school, and by the village-average monetary cost of primary schooling. The first three measures pertain to the time, or opportunity, cost of school attendance, while the fourth gauges the direct cost of schooling.

III.2 Empirical strategy

In order to assess the efficacy of a policy of improving access to schooling in reducing child work in India, this study aims to estimate the effects of schooling costs upon both children's propensities to work and to enroll in school. If a fall in schooling costs is found to increase the probability of school enrollment while comparably decreasing the probability of child work, it might be inferred that children's work and school attendance are substitutable activities so that a policy of improving access to schooling would be effective in steering children away from work toward school. Hence, the equations

$$work^* = a_1 + b_1.\ schooling\ costs + c_1.\ other\ correlates + u_1, \quad (1)$$

and

$$enrolled\ in\ school^* = a_2 + b_2.\ schooling\ costs + c_2.\ other\ correlates + u_2, \quad (2)$$

are estimated, where *work** measures a 10 – 14 year old child's dichotomous participation in work, *enrolled in school** measures her dichotomous enrollment in school, and the u are regression errors. These are estimated upon a sample of 1239 10 – 14 year old children.

Assuming u_1 and u_2 are each normally distributed, the equations may be estimated by probit ML. Vectors b_1 and b_2 comprise the coefficients of primary interest. While the coefficients in vector b_1 are expected to be positive, it is anticipated that those in b_2 shall be negative.

III.3 Descriptives

By NSS (1999-2000) data, the economic activity rate of children in Bihar is 5 per cent and that in Uttar Pradesh is 6.4 per cent. In contrast, as shown in table 1, these LSMS data indicate that 12 per cent of children in the two states, albeit in their rural areas, were engaged in economic work in the year preceding the Survey, with no substantial difference between the participation rates of boys (12.8 per cent) and girls (11.7 per cent). About 18 per cent of the children participated in household domestic work. Clearly, far more girls (36.6 per cent) than boys (3.8 per cent) performed domestic chores. As regards work as a whole, 27.76 per cent of the children undertook it in the preceding twelve months, with 44.16 per cent of the girls but only 15.14 per cent of the boys doing so. The figures in table 1 show that this substantial gender difference is due to the much higher participation rate of girls in household domestic work. Thus, girls face the double burden of engaging in economic work at the same rate as boys as well as participating very substantially in household domestic work. By table 2, about 70 per cent of the children were enrolled in school at the time of the survey. However, with 80.6 per cent of the boys but only 55.8 per cent of the girls enrolled, there is a large gender difference.

Table 3 presents sample descriptive statistics. The average age of these 1239 10 – 14 year olds is close to twelve years. Average distances to the closest primary, middle, and secondary schools are approximately 0.6, 2.8, and 5.2 kilometers, respectively. It is notable in this connection that only about half the children live in villages with access to paved roads. The average annual direct cost of primary schooling is about Rs. 328. Close to half

the children reside in households headed by illiterate persons. About 3.5 per cent of the children come from households headed by women. The average child is one of approximately eight household members. Close to 10 per cent of the children were Muslim, about 16 per cent belonged to Hindu upper castes, and about 2 per cent to Hindu middle castes, implying that the majority of the children were lower caste Hindus.

IV. RESULTS

Table 4 presents probit estimates of (1). Given the descriptive statistics in table 1 that point to much higher participation by girls in household domestic work, it is not surprising that boys are 32 percentage points less likely to work than girls. Older children appear more likely to work. The marginal effect of age upon the probability of work ranges from 2 percentage points for boys to 9.5 percentage points for girls. A boy in a household with an illiterate head is 11 percentage points more likely to work whereas an equivalent girl is about 20 percentage points likelier to do so. Children in large families appear less likely to be called upon to work. Somewhat surprisingly, given that, traditionally, mainly girls care for their younger siblings, work by both boys and girls is likelier in households with greater numbers of younger children. Girls in female-headed households are 23 percentage points likelier to work perhaps because they must shoulder more domestic chores as the adult females engage in necessary economic work. A girl's propensity to work significantly decreases in her household's unearned income. There appear to be inter-caste differences in children's propensities to work though no significant inter-faith differences. For example, upper caste Hindu boys and girls are, respectively, 6 percentage points and 35 percentage points less likely to work. Variables plausibly associated with household demand for child

labour, such as landholdings and the type of non-farm enterprises operated by families, are statistically insignificant correlates of child work.

It may be seen that a child's propensity to work is by and large significantly related to measures of the costs of schooling. Since most villages have a primary school, it is not surprising that distance to primary school has no statistically discernible effect upon child work. On the other hand distances to the closest middle and secondary schools and the monetary cost of primary schooling have statistically significant effects upon a child's propensity to work, though there are notable gender differences. The monetary cost of primary schooling is a more pronounced determinant of work by boys. The estimates suggest that reducing the average annual monetary cost of primary schooling by one standard deviation (Rs. 179) would cause the probability of work by the average boy to decrease by 3.7 ($0.179 \times 0.207 \times 100$) percentage points while having no statistically discernible effect upon a girl's propensity to work. In contrast, proximity to schools has a stronger influence upon work by girls. A kilometer reduction in the distance to the closest middle school would result in a 1 percentage point decrease in the probability of work by the average boy, whereas the probability that the average girl shall work would fall by as much as 2.8 percentage points. Further, a kilometer reduction in the distance to the closest secondary school would cause the likelihood of work by the average girl to decrease by 2.6 percentage points while having no significant effect upon a boy's propensity to work.

Table 5 presents probit estimates of (2). For the most part, these mirror the estimates of the work participation equation, (1). It may be seen that, but for distance to the closest primary school, the school cost variables are statistically significant correlates of school enrollment, though there are significant gender differences. The monetary cost of primary schooling has a statistically significant retardant effect only upon boys' enrollment.

By the estimates, a one standard deviation reduction in the monetary cost of primary schooling would increase the probability of the average boy's enrollment in school by about 3.3 percentage points. On the other hand, proximity to schools is the stronger influence upon the enrollment of girls. For example, a kilometer reduction in the distance to the closest middle school would cause the probability of the average girl's enrollment in school to increase by 2.7 percentage points while having no significant effect upon a boy's propensity to enroll.

Taken together, the estimates in tables 4 and 5 indicate that there is a strong degree of substitution between children's work and schooling. While there are some gender differences in the effects of the school cost measures, the results suggest that a policy of reducing schooling costs would increase the school enrollment of, and decrease work by, both boys and girls. According to the estimates, a kilometer decrease in distances to the closest middle and secondary schools would increase the probability of the average girl's school enrollment by 2.5 to 2.7 percentage points, and, correspondingly, decrease the probability of her working by 2.6 to 2.8 percentage points. Further, a one standard deviation decrease in the monetary cost of primary schooling would increase the probability of the average boy's school enrollment by 3.3 percentage points while reducing the probability of his participation in work by 3.7 percentage points. These results are distinctly unlike Ravallion's and Wodon's (2000) finding that increases in school enrollment in rural Bangladesh from a reduction in schooling costs come mainly at the expense of children's leisure since child work decreases by little.

In light of Hazarika's and Bedi's (2003) finding that the effects of schooling costs upon children's extra-household work differ from their effects upon intra-household work, child work is separated into that outside the ambit of the household and work within it.

Column 1 of table 6 presents probit estimates of the determinants of children's extra-household work. Of the four school cost measures, only distance from the closest secondary school is a statistically significant determinant of children's extra-household work. In contrast, by the estimates in column 2 of table 6, children's propensity to work within the ambit of the household significantly increases in three of these four measures, namely, in distances to the closest middle and secondary schools and in the monetary cost of primary schooling. The estimates indicate that a one standard deviation decrease in the village-average annual monetary cost of primary schooling would cause a reduction in the probability of intra-household work by the average child of 3.5 percentage points. It is also indicated that a kilometer decrease in the distance to the closest middle school would reduce this probability by 2.1 percentage points. As shown in table 1, 24.2 per cent of the sampled children engage in intra-household work with only 4.5 per cent working outside the ambit of the household. In other words, intra-household work is the dominant form of child work in rural Northern India. Therefore, the strong positive relation between schooling costs and child intra-household work makes for the observed strong positive relation between schooling costs and child work as a whole reported in column 1 of table 4. This finding differs sharply from Hazarika's and Bedi's (2003) discovery that only children's extra-household work is responsive to changes in schooling costs in rural Pakistan.

Finally, since the ILO as well as the Government of India distinguish between child economic work, that is, work producing a marketable output, and household domestic work, in that they consider child work to include only the former, table 7 reports estimates of the effects of schooling costs upon children's propensities to engage in these two types of work. It is indicated that the probability a child shall engage in economic work, whether intra-household or extra-household, is positively and significantly related to the direct cost of

primary schooling and to the distance from the closest secondary school, though, curiously, negatively related to the distance from the closest primary school. The probability that a child shall perform domestic chores significantly increases in the direct cost of primary schooling and in the distance from the closest middle school. For example, a one standard deviation reduction in the direct cost of primary school would reduce economic and domestic work by, respectively, 1.7 and 1.5 percentage points.

V. CONCLUDING REMARKS

The prime cause of child labour, and, therefore, the best suited policy to combat it, has not been settled upon. There seem to be two distinct policy positions. By one view, poverty is the main reason for child labour. Proponents of this view emphasize poverty alleviation in their policy prescription, as also the banning of the worst forms of child labour, regulation of its non-hazardous forms, and the provision of non-formal education for working children. By an alternate view, social and cultural norms are at least as responsible as poverty for child labour and low school enrollment. Thus, child labour might be combated by efforts to change social norms and, more immediately, by educational interventions such as compulsory schooling or improvement in the quality of and access to education.

Recent empirical work on Bangladesh and Pakistan yields evidence challenging the efficacy of educational interventions in reducing child work. Such interventions would lower child work only if there were significant trade-off between children's work and schooling, for only then would increases in school enrollment from educational interventions result in less child work. Hence, to assess the extent of substitution between children's work and schooling in neighbouring India, this paper uses data from rural Uttar Pradesh and Bihar, two northern Indian states, to estimate the effect of schooling costs upon both children's

propensities to work and to attend school. It is found that not only is there a statistically significant positive relation between child work and schooling costs but also that the decrease in children's propensity to work due to a reduction in schooling costs is comparable in magnitude to the corresponding increase in their propensity to enroll in school, implying child work and school attendance are strongly substitutable activities. It is also found that this strong substitution is mainly driven by significant trade-off between child intra-household work, the dominant form of work in rural India, and schooling. Finally, it is found that both domestic and economic work are about equally responsive to changes in the monetary costs of schooling. In sum, rural Northern India seems markedly different from rural Pakistan and rural Bangladesh. First, unlike as in rural Bangladesh, child work and schooling appear highly substitutable activities. Second, it appears this is due to significant trade-off, unlike as in rural Pakistan, between child intra-household work and schooling.

Notable gender differences in the responsiveness of child work and schooling propensities to changes in the costs of schooling suggest that policy measures ought to be gender sensitive. Lowering the monetary cost of schooling seems to be the better approach to reducing boys' work and increasing their enrollment. On the other hand, reducing distances to schools appears to be the better approach for girls. Perhaps this is because mainly poverty drives boys away from school to work, whereas it is mainly parents' security concerns and social and cultural norms that impede girls' school enrollment.

This study finds that, at least in two of India's poorest and most populous states, educational interventions shall be successful in both reducing child work and raising school attendance. Hence, the Government of India as well as NGOs such as the MV Foundation seem well-advised in their use of educational interventions to combat child work.

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TABLE 1

WORK PARTICIPATION RATES (per cent) OF 10-14 YEAR OLD CHILDREN IN RURAL UTTAR PRADESH AND BIHAR, 1997-98

	Male	Female	Total
Domestic work – within the household	3.86	36.55	18.08
Economic work – within the household	7.43	7.98	7.67
All intra-household work	11.29	41.00	24.21
Economic work – outside the household	4.29	4.82	4.52
All work	15.14	44.16	27.76
N	700	539	1239

TABLE 2

SCHOOL ENROLLMENT RATES (per cent) OF 10-14 YEAR OLD CHILDREN IN RURAL UTTAR PRADESH AND BIHAR, 1997-98

	Male	Female	Total
Enrolled in school	80.57	55.8	69.8
N	700	539	1239

TABLE 3
FULL SAMPLE DESCRIPTIVE STATISTICS

Variable	Mean	Std. Dev.
Dependent Variables		
Working = 1	0.278	0.448
Engaged in intra-household work	0.242	0.429
Engaged in extra-household work	0.045	0.208
Engaged in household domestic work	0.181	0.385
Engaged in economic work	0.116	0.321
Enrolled in school =1	0.698	0.459
Child Attributes		
Male = 1	0.565	0.496
Age	11.72	1.417
Costs of Schooling		
Distance to closest primary school (kilometers)	0.592	0.918
Distance to closest middle school (kilometers)	2.771	2.497
Distance to closest secondary school (kilometers)	5.156	4.300
Village-average annual direct cost of primary schooling (thousands of Rupees)	0.328	0.179
Household Attributes		
Household head is illiterate = 1	0.454	0.498
Landholding (acres)	2.810	5.931
Transfer payments received by household (hundreds of Rupees)	12.54	75.60
Family size	8.251	4.235
Number of children, 0-4 age group	0.860	1.036
Number of children, 5-9 age group	1.362	1.234
Female headed household = 1	0.035	0.183
Number of enterprises run by household	0.542	0.780
Household has a handicraft enterprise	0.014	0.116
Household has a retail enterprise	0.165	0.371
Muslim = 1	0.100	0.300
Hindu, upper caste = 1	0.157	0.364
Hindu, middle caste = 1	0.023	0.149
Community and Regional Controls		
Village average daily male wage in agriculture (Rupees)	24.90	8.177
Access to paved road = 1	0.502	0.500
Access to irrigation = 1	0.262	0.440
Residing in Bihar = 1	0.438	0.496
N	1239	

TABLE 4
DETERMINANTS OF PROBABILITY OF WORKING
OF 10-14 YEAR OLD CHILDREN IN RURAL UTTAR PRADESH AND BIHAR, 1997-98

	(1)	(2)	(3)
Variable	Probit Marginal Effects (Full Sample)	Probit Marginal Effects (Boys)	Probit Marginal Effects (Girls)
Male	-0.323***	.	.
	(0.026)		
Age	0.050***	0.020**	0.095***
	(0.009)	(0.008)	(0.018)
Distance to closest primary school	-0.016	-0.005	-0.034
	(0.015)	(0.013)	(0.030)
Distance to closest middle school	0.019***	0.010*	0.028***
	(0.006)	(0.005)	(0.011)
Distance to closest secondary school	0.012***	0.004	0.026***
	(0.003)	(0.003)	(0.007)
Direct cost of primary schooling	0.207***	0.207***	0.106
	(0.081)	(0.072)	(0.157)
Household Head is Illiterate	0.148***	0.109***	0.204***
	(0.028)	(0.027)	(0.050)
Landholding	-0.004	-0.001	-0.007
	(0.003)	(0.003)	(0.007)
Transfer	-0.0009*	-0.00003	-0.002**
	(0.0005)	(0.0003)	(0.001)
Family Size	-0.031***	-0.031***	-0.033***
	(0.006)	(0.007)	(0.011)
Number of children 0-4 age group	0.035**	0.036**	0.047
	(0.017)	(0.017)	(0.030)
Number of children 5-9 age group	0.035**	0.023	0.050*
	(0.015)	(0.016)	(0.027)
Female headed household	0.145*	0.047	0.235*
	(0.085)	(0.079)	(0.126)
Number of enterprises	0.020	0.006	0.053
	(0.021)	(0.020)	(0.038)
Handicraft enterprise	0.047	0.101	-0.059
	(0.116)	(0.156)	(0.180)
Retail enterprise	-0.042	0.0002	-0.077
	(0.038)	(0.039)	(0.074)
Muslim	-0.0003	0.013	-0.009
	(0.042)	(0.045)	(0.076)
Hindu-Upper Caste	-0.181***	-0.063*	-0.347***
	(0.026)	(0.030)	(0.053)
Hindu-Middle Caste	0.074	0.025	0.134
	(0.101)	(0.089)	(0.194)
Average Male Wage in Agriculture	-0.002	-0.001	-0.004
	(0.002)	(0.002)	(0.003)
N	1239	700	539
Log Likelihood	-549.40	-254.06	-289.89
Pseudo R^2	0.249	0.146	0.241

Notes: The numbers in parentheses are standard errors. Other regressors include indicators of the presence of a paved road, the presence of irrigation, and a state-specific indicator for Bihar. *, **, *** indicate significance at the 10 per cent, 5 per cent, and 1 per cent levels, respectively.

TABLE 5
DETERMINANTS OF PROBABILITY OF BEING ENROLLED IN SCHOOL
OF 10-14 YEAR OLD CHILDREN IN RURAL UTTAR PRADESH AND BIHAR, 1997-98

	(1)	(2)	(3)
Variable	Probit Marginal Effects (Full Sample)	Probit Marginal Effects (Boys)	Probit Marginal Effects (Girls)
Male	0.280***	.	.
	(0.027)		
Age	-0.047***	-0.013	-0.095***
	(0.009)	(0.008)	(0.017)
Distance to closest primary school	-0.010	-0.003	-0.022
	(0.015)	(0.012)	(0.028)
Distance to closest middle school	-0.015***	-0.005	-0.027***
	(0.006)	(0.005)	(0.011)
Distance to closest secondary school	-0.015***	-0.008***	-0.025***
	(0.004)	(0.003)	(0.007)
Direct cost of primary schooling	-0.182***	-0.182***	-0.175
	(0.081)	(0.073)	(0.148)
Household Head is Illiterate	-0.217***	-0.132***	-0.283***
	(0.028)	(0.027)	(0.049)
Landholding	0.007*	0.005	0.010
	(0.004)	(0.004)	(0.007)
Transfer	0.0015*	0.002***	0.0018
	(0.0008)	(0.0007)	(0.0012)
Family Size	0.033***	0.022***	0.043***
	(0.006)	(0.007)	(0.011)
Number of children 0-4 age group	-0.039***	-0.012	-0.071***
	(0.017)	(0.015)	(0.029)
Number of children 5-9 age group	-0.057***	-0.031**	-0.084***
	(0.016)	(0.015)	(0.028)
Female headed household	-0.100	-0.155*	-0.021
	(0.082)	(0.104)	(0.117)
Number of enterprises	-0.022	-0.006	-0.046
	(0.023)	(0.022)	(0.038)
Handicraft enterprise	-0.070	-0.047	-0.063
	(0.139)	(0.150)	(0.196)
Retail enterprise	0.067	0.036	0.091
	(0.039)	(0.034)	(0.075)
Muslim	-0.021	-0.074	0.059
	(0.044)	(0.052)	(0.073)
Hindu-Upper Caste	0.185***	0.132***	0.244***
	(0.030)	(0.023)	(0.063)
Hindu-Middle Caste	-0.017	0.022	-0.138
	(0.101)	(0.072)	(0.198)
Average Male Wage in Agriculture	0.003	0.002	0.003
	(0.002)	(0.002)	(0.004)
N	1239	700	539
Log Likelihood	-564.51	-270.97	-281.62
Pseudo R^2	0.256	0.213	0.239

Notes: The numbers in parentheses are standard errors. Other regressors include indicators of the presence of a paved road, the presence of irrigation, and a state-specific indicator for Bihar. *, **, *** indicate significance at the 10 per cent, 5 per cent, and 1 per cent levels, respectively.

TABLE 6
DETERMINANTS OF EXTRA-HOUSEHOLD AND INTRA-HOUSEHOLD WORK
OF 10-14 YEAR OLD CHILDREN IN RURAL UTTAR PRADESH AND BIHAR, 1997-98

	(1)	(2)
	Extra-Household Work	Intra-Household Work
Variable	Probit Marginal Effects	Probit Marginal Effects
Male	-0.003	-0.313***
	(0.010)	(0.025)
Age	0.011	0.033***
	(0.004)	(0.008)
Distance to closest primary school	-0.004	-0.014
	(0.006)	(0.013)
Distance to closest middle school	-0.002	0.021***
	(0.002)	(0.005)
Distance to closest secondary school	0.003***	0.008**
	(0.001)	(0.003)
Direct cost of primary schooling	0.005	0.196***
	(0.033)	(0.072)
Household Head is Illiterate	0.043***	0.095***
	(0.012)	(0.025)
Landholding	-0.002	-0.003
	(0.002)	(0.003)
Transfer	0.006	-0.142**
	(0.014)	(0.055)
Family Size	-0.008***	-0.024***
	(0.003)	(0.005)
Number of children 0-4 age group	0.003	0.031**
	(0.007)	(0.015)
Number of children 5-9 age group	0.016***	0.018
	(0.006)	(0.014)
Female headed household	0.038	0.079
	(0.035)	(0.073)
Number of enterprises	-0.016	0.029
	(0.010)	(0.018)
Handicraft enterprise	*Dropped*	0.078
		(0.113)
Retail enterprise	0.009	-0.053
	(0.020)	(0.032)
Muslim	0.008	-0.025
	(0.018)	(0.035)
Hindu-Upper Caste	*Dropped*	-0.147***
		(0.023)
Hindu-Middle Caste	0.021	0.013
	(0.052)	(0.088)
Average Male Wage in Agriculture	-0.0002	-0.002
	(0.001)	(0.002)
N	1027	1239
Log Likelihood	-184.99	-521.61
Pseudo R^2	0.149	0.239

Notes: The numbers in parentheses are standard errors. Other regressors include indicators of the presence of a paved road, the presence of irrigation, and a state-specific indicator for Bihar. *, **, *** indicate significance at the 10 per cent, 5 per cent, and 1 per cent levels, respectively. *Dropped* indicates the variable, and corresponding observations, were dropped since it perfectly predicted failure in the probit model.

TABLE 7

PROBABILITY OF PARTICIPATING IN ECONOMIC AND DOMESTIC WORK OF 10-14 YEAR OLD CHILDREN IN RURAL UTTAR PRADESH AND BIHAR, 1997-98

	(1)	(2)
	Economic Work	Domestic Work
Variable	Probit Marginal Effects (Full Sample)	Probit Marginal Effects (Full Sample)
Male	-0.010	-0.319***
	(0.015)	(0.023)
Age	0.026***	0.019***
	(0.005)	(0.006)
Distance to closest primary school	-0.015*	-0.001
	(0.008)	(0.009)
Distance to closest middle school	0.001	0.014***
	(0.003)	(0.003)
Distance to closest secondary school	0.006***	0.004
	(0.002)	(0.002)
Direct cost of primary schooling	0.093**	0.087**
	(0.043)	(0.047)
Household Head is Illiterate	0.054***	0.080***
	(0.016)	(0.018)
Landholding	-0.0004	-0.001
	(0.002)	(0.001)
Transfer	-0.0002	-0.0008***
	(0.0003)	(0.0003)
Family Size	-0.018***	-0.012***
	(0.004)	(0.004)
Number of children 0-4 age group	0.023***	0.015
	(0.009)	(0.011)
Number of children 5-9 age group	0.015*	0.016
	(0.008)	(0.010)
Female headed household	0.054	0.051
	(0.047)	(0.051)
Number of enterprises	0.017	0.006
	(0.013)	(0.013)
Handicraft enterprise	0.030	-0.017
	(0.087)	(0.068)
Retail enterprise	-0.005	-0.034
	(0.024)	(0.022)
Muslim	-0.022	0.020
	(0.019)	(0.029)
Hindu-Upper Caste	-0.085***	-0.071***
	(0.014)	(0.018)
Hindu-Middle Caste	0.030	0.0003
	(0.062)	(0.060)
Average Male Wage in Agriculture	0.0001	-0.0018
	(0.001)	(0.0012)
N	1239	1239
Log Likelihood	-384.72	-405.56
Pseudo R^2	0.136	0.307

Notes:: The numbers in parentheses are standard errors. Other regressors include indicators of the presence of a paved road, the presence of irrigation, and a state-specific indicator for Bihar. *, **, *** indicate significance at the 10 per cent, 5 per cent, and 1 per cent levels, respectively.