Poverty, Household Size and Child Welfare in India

by

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Abstract

This study uses Indian unit record data from expenditure and employment surveys, in conjunction with State level indicators, to (a) investigate whether the backward classes and female headed households face higher poverty rates than others, and (b) examine the impact of poverty, along with a host of individual, family, socio economic and State characteristics, on child labour and child schooling. In studying (b), special attention is paid to the gender issue, and to the employment and schooling of children from the backward classes and female headed households. The richness of the data stems from the size of the sample, heterogeneity offered by variation in the State characteristics, and information on the employment and education of all the household members.

Household poverty and membership of a backward class are found to provide major stimuli to a child taking up wage employment and dropping out of schooling. Rising education levels of the adult members act in exactly the opposite direction in discouraging child employment and encouraging child schooling. The logit regression results point to the positive role that the State governments can play in improving child welfare. The results, also, suggest that as society becomes unequal, child labour initially falls but, then, rises at higher levels of inequality.

1.   Introduction

With the forthcoming World Development Report 2000/2001 focussing on 'Poverty and Development', the subject is back on the main agenda of the World Bank and other multilateral agencies. The latest global numbers on poverty, available in World Bank (1996), show that South Asia remains the poorest region in the World, with the absolute numbers of poor and the Head Count Poverty index, both registering much higher figures here than anywhere else. As the largest country in South Asia, India has been the focus of several studies on poverty [see, for example, Bardhan (1984) and the volume edited by Srinivasan and Bardhan (1988)]. Though the poverty estimates, based on income or expenditure, reveal an incomplete picture of the true extent of misery afflicting millions, they provide a useful starting point for investigating destitution and economic backwardness.

The recent availability, in unit record form, of household level expenditure and employment survey data collected by the National Sample Survey Organisation (NSS) offers exciting opportunities to contribute to the rich literature on poverty and welfare in India. The lack of reliable income in the NSS surveys has, however, meant that the poverty estimates are based on expenditure rather than income. [1] The central motivation of this study is to examine, on the NSS unit record data, the implications of household poverty on child welfare, especially that of children in female headed households and those belonging to the backward classes. These groups, it is widely believed, face higher poverty rates than others. [2] If this is true, and the study provides evidence on this, then children in such households are particularly vulnerable to the adverse effects of poverty.

The absence of separate expenditure figures on childrens' consumption in the household expenditure surveys prevents calculation of child poverty rates. It is now widely

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[1] See Slesnick (1993) for US evidence which shows that consumption based measures of household welfare may yield quite a different picture from that based on income.
[2] Bardhan (1984, Table 14.3) provides evidence that suggests that, within the class of agricultural labour, households belonging to scheduled castes are at higher risk from poverty than others; see Buvinic and Gupta (1997) for similar evidence on female headed households in Chile.

accepted that poverty estimates, based on aggregate household consumption figures, understate the deprivation of children in poor households since they conceal the biases against children in the intra household allocation of resources [see, for example, Haddad and Kanbur (1990)]. In the absence of child poverty figures, we attempt to get some idea of the extent of child deprivation in poor households by investigating the impact of household poverty, along with a host of demographic, caste and economic variables, on two aspects of child behaviour that are central to her welfare, namely, child labour and child schooling. There is a large and rapidly expanding literature on these topics, especially on child labour – see Grootaert and Kanbur (1995), Basu (1999) for surveys.

Before turning to the substantive issue of the implication of household poverty for child welfare, we need reliable estimates of equivalence scales for children, while admitting the possibility of economies of household size in consumption. The requirement of equivalence scale estimates stems from the household as the unit of behaviour in the NSS surveys, and the consequent need to take account of changing household size and composition. Previous studies on poverty in India have, generally, tended to ignore the question of economies of household size in consumption [see, for example, Gaiha (1988), Dreze and Srinivasan (1996), Dubey and Gangopadhyay (1998), Datt and Ravallion (1998)]. Traditional analysis of household poverty and welfare was conducted on a per capita basis, wherein households whose per capita incomes fall below a pre specified norm, are identified as being poor. While the importance of incorporating household size and composition in welfare analysis has long been recognised [see, for example, Buhmann, et al (1988)], empirical work on Indian data has been relatively scarce. One exception is the study by Dreze and Srinivasan (1997) who utilise disaggregated data on household size and composition to analyse the economic position of female headed households in India. They experiment with a variety of adult equivalence scales and economies of household size parameters for rural India. The Dreze and Srinivasan (1997) study, like Buhmann, et al (1988), does not estimate

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these parameters but examines the sensitivity of the results to the choice of a range of possible values of these parameters. Moreover, in common with most welfare analysis on Indian data, the Dreze and Srinivasan exercise does not allow the size economies and the adult equivalence scales to vary between the different regions in India. This practice is contrary to the evidence presented in Meenakshi and Ray (1999a) which shows that the impact of household size and composition on household expenditure varies sharply between the different States in India. Accordingly, the present study departs from the previous literature in using, in the welfare analysis, estimates of household size economies and of adult equivalence scales that we estimated separately for each of the constituent States of the Indian Union. As we report later, the presence of significant economies of household size in consumption has strong implications for the poverty [3] estimates, especially, of the female headed households.

To focus our minds more concretely on the principal features of this study, let us list below the substantive questions that we seek to answer.

(i)   How sensitive are the poverty estimates to economies of household size, and the adult/child relativities?

(ii) Do the backward classes and female headed households face higher poverty rates than the rest of the population?

(iii) Does a household's poverty status have a significant impact on the likelihood of a child's participation in the labour market and in schooling?

(iv) More generally, what are the principal determinants of child labour and child schooling? Ceteris paribus, does a child belonging to the backward classes or to a female headed household face a higher probability of being in employment and missing out on schooling than other children? Does the gender of a child exert a significant influence on her/his employment status, and schooling experience?

These are clearly questions of considerable policy concern. Though these are posed and their answers attempted in the single country context of India, the results of this study,

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[3] Gaiha and Deolalikar (1993) distinguish between short run and long run poverty and show, using panel data, that the poverty estimates are quite sensitive to the definition of poverty used. Given the nature of the data used by us, we overlook this distinction in the present study.

especially those relating to the gender issue [4], have wider relevance in the context of underdevelopment. The Federal government in India has adopted poverty alleviation as an important criterion in the disbursement of Central assistance to the constituent States. Moreover, as attention has shifted in the poverty literature to the targeting [5] of antipoverty strategies at groups that are considered to be particularly vulnerable to poverty, the answers to (ii), (iii) hold special policy interest. These help us to portray the profile of a household that is particularly vulnerable to poverty and, quite crucially, to some of its adverse consequences. Having identified such household types, we examine the effects of poverty, along with other variables including caste and household headship, on child welfare.

The remainder of this paper is as follows. Section 2 describes the poverty line adjustments needed to incorporate the estimated economies of household size and the adult/child relativities. The data is described, and its principal features are discussed in Section 3. Section 4, which contains the results, is divided into two halves. Section 4.1 establishes that female headed households and those belonging to the backward classes face higher poverty rates than others. This sets up interest in the results presented in Section 4.2 on the impact of caste and female headedness, along with other variables including the household's poverty status, on the participation of children in labour market and in schooling. The main conclusions are summarised in Section 5.

2.   Methodology

2.1   *Size Economies and Equivalence Scales*

Most of the poverty studies assume a common functional form for the equivalence scale, namely, N^{θ} where N is household size i.e. the unweighted number of members in the

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[4] See, in this context, the gender studies on Indian data by Kynch and Sen (1983) and Basu (1992).
[5] See, Kanbur (1987) for a lucid discussion of the strategy of targeted poverty alleviation and of related issues in the context of macroeconomic adjustment.

household. The parameter θ is, therefore, relied upon to pick up not only the economies of household size but, also, changes in family composition between adults and children. The latter follows from the non identical consumption needs of adults and children, a fact that is central to the equivalence scale literature. The use of N^{θ} as the equivalence scale does not distinguish between the size and composition effects of the household in welfare comparisons. In developed countries, the two effects are likely to be related, since larger families will tend to be younger or, at least, will have more young children. The situation is quite different and more complex in the developing countries, especially in the Indian subcontinent, due to prevalence of the joint family system, and with children staying on with their parents to a much later age than in the advanced countries. The present study explicitly introduces household compositional variables in the equivalence scale specification by using N^{*} as the expenditure deflator, where $N^{*} = \left(n_a + \rho n_c\right)^{\theta}$. n_a, n_c denote the number of adults, children, respectively, in the household, and θ, ρ are the demographic parameters.

The estimates of θ and ρ were obtained by estimating the following Engel curve for Cereals, expressed in budget share terms w_c:

$$w_c = \alpha_c + \beta_c\left[\log\left(Y/N^{*}\right)\right] + \gamma_c\left[\log\left(Y/N^{*}\right)\right]^2 + u_c \qquad (1)$$

where Y is aggregate household expenditure, α_c, β_c, γ_c are the Engel curve parameters, and u_c is the disturbance term. Note that when $\theta = \rho = 1$, N^{*} specialises to the conventional treatment of household size as simply the number of members in the household. The equivalence scale parameters (θ, ρ) were estimated for each of the constituent States of the Indian Union. The estimates are not presented here for space reasons but have been reported and discussed at length in Meenakshi and Ray (1999b). It is worth reporting here that, consistent with the evidence presented in Meenakshi and Ray (1999a), the estimates of θ and

ρ vary widely between States, and that the restrictions $\theta = 1$, $\rho = 1$ were individually and jointly rejected in each State.

2.2 *Poverty Line Adjustments for Family Size and Composition*

Using the estimates of θ, ρ for each State, the demographically adjusted poverty lines were obtained as follows. Following Dreze and Srinivasan (1997, p 225), the State specific poverty lines, taking account of household size economies and adult/child relativities, were obtained by multiplying the per capita official poverty line (OPL) figures, reported for each State and, within it, separately for rural and urban areas in Dubey and Gangopadhyay (1998, Tables S2.2A, S2.3A), by $\left(\bar{n}_a + \rho\bar{n}_c\right)^{1-\theta}$, where $\bar{n}_a$ is the average number of adults, and $\bar{n}_c$ is the average number of children in the State sample. This convention implies that a household of average size and average composition is counted as 'poor' if it has a per capita expenditure below the OPL for its State and sector (rural/urban) of residence, <u>irrespective</u> of the value of θ. Within the framework set by the official poverty line, we obtain 4 versions of this line, namely, (a) OPL1 when ρ, θ take on their estimated values, (b) OPL2 when $\theta = 1$, and ρ takes on its estimated value under the restriction of no size economies, (c) OPL3[6] in the per capita case ($\rho = \theta = 1$), and (d) OPL4[7] when $\rho = 1$, and θ takes on its estimated value under the restriction of identical weights for adults and children.

2.3 *Estimation Methodology for Analysing Determinants of Child Labour and Child Schooling*

The analysis of determinants of child labour and child schooling is based on logit estimation of a child's participation[8] in the labour market and in schooling, regressed on a

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[6] OPL3 coincides with the OPL figures reported by Dubey and Gangopadhyay (1998).
[7] OPL4 is the case considered by Buhmann, et al (1988), Lanjouw and Ravallion (1995), Dreze and Srinivasan (1997).
[8] The dependent variable takes on the value 1 if the child participates, 0, otherwise.

selection of individual, household and sector/State level socio economic characteristics. Before analysing these two aspects of child behaviour that are central to her welfare, the study undertakes logit estimation of a household's poverty status[9] to establish that, once household size economies and adult/child relativities are fully incorporated and conditional on other factors remaining the same, female headed households and the backward classes do face higher poverty rates than others.

3.   Data and Its Principal Features

This study is based on information combined from different sources. The information on expenditure and household characteristics came from the household budget survey, that on child employment and child schooling are contained in the accompanying employment survey, and the corresponding State/sector level socio economic indicators were collected from various published and unpublished reports. In the main, the data base is provided by the household level unit record data on expenditure, household composition and other demographic characteristics collected separately in the rural and urban areas of each of the States in India in the 50th round (July, 1993 – June 1994) of the National Sample Survey. In that round, approximately 70,000 Indian households were surveyed in the rural areas, and 45,000 households in the urban, giving us a sample of over 115,000 households in one of the largest sampling exercises of its kind undertaken anywhere in the world. The present study uses the original micro data from this survey. The sample size varies from State to State: while the number of observations for the smaller States is less than 500, those for the larger States is over 5000. While the information on consumer expenditure and household characteristics, used in estimating the equivalence scales and in calculating the poverty rates, is available in the main body of the data set (Schedule 1.0), the corresponding information on

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[9] See Bardhan (1984, Ch 14) and Gaiha (1988) for earlier examples of poverty studies on Indian data using logit estimation; see, however, Ravallion (1996, p 1334/35) for a critique of logit analysis in studying poverty, and of the concept of a 'conditional poverty profile' that such an analysis portrays.

child employment and child schooling was obtained from the Employment Survey (Schedule 10.0). The information on the State level socio economic characteristics was taken from Dreze and Sen (1995, Appendix Table A3) who had compiled this information from a variety of sources.

Tables 1, 2 present the sample mean values of 'per capita total expenditure' and household size in the rural, urban sectors, respectively, in each State. The tables also contain the corresponding information on the SC/ST and female headed households in each State. Household size is much more stable across States and between sectors than per capita total expenditure. Among the larger States, Punjab enjoys one of the highest living standards, Bihar one of the lowest. The SC/ST households, ie the backward classes, generally experience lower living standards than others and, in some cases, the differences are considerable. In contrast, the female headed households do not appear to be markedly worse off than others in per capita expenditure terms. However, as we report below, based on a comparison of poverty rates, the picture changes drastically if we allow economies of household size and non identical consumption needs between adults and children.

Tables 3, 4 present the household poverty rates in the rural and urban areas, respectively, of each State, under the alternative household size and composition adjustments of the poverty line, namely, OPL1 and OPL3, described earlier. The poverty rates under OPL2, OPL4 are not presented here for space reasons but are available on request. These tables also contain the corresponding information on the backward classes and on the female headed households. The following features emerge from these tables.

(i) Rural poverty exceeds urban poverty, and the backward classes face higher poverty rates than others. This is unambiguously true for each of the poverty line adjustments.

(ii) In contrast, and consistent with the per capita expenditure figures, under OPL3, female headed households (FHH) do not experience substantially higher poverty rates than others. In the absence of household size economies, the FHH poverty rates are only marginally higher than the overall rates in the urban areas, and marginally lower in the rural. That such an observation can be seriously misleading is evident from a comparison of the poverty rates under

the general demographic adjustment, OPL1. In the presence of size economies and adult/child relativities, female headed households constitute one of the most impoverished sections of the community [10].

Tables 5, 6 present for the rural and urban areas, respectively, and for each of the States in India, the mean values of the child participation rate in some form of 'economic activity'[11] and in schooling at the time of the survey. Keeping in mind the issues raised earlier, these tables also provide corresponding information for the subsamples consisting of female headed households and the backward classes. The following features emerge from these tables:

(i) Notwithstanding the wide variation across States in the child labour participation rates, the All India figure seems fairly stable between the rural and urban sectors. In contrast, the child schooling participation rates in the urban areas exceed the rural rates in nearly all the States. The All India figures confirm the urban bias in child schooling for all groups of children.

(ii) Boys are more likely than girls to work, and to be enrolled in schooling in both rural and the urban areas. The former feature, possibly, reflects the omission of domestic duties from 'economic activity'. The gender bias, in the rural areas, in favour of boys schooling far exceeds that in the urban areas. Among the larger States, Kerala leads the way in child schooling, while Bihar, Rajasthan record some of the worst performances in this regard. The gender divide is particularly wide in rural Rajasthan with girls recording less than half the school attendance rates of the boys there.

(iii) In the urban sectors, though not in the rural, children in the female headed households record higher than average labour force participation rates. While rural children in female headed households face the same probability of attending school as the others, rural children from the backward classes experience less schooling than other children. We ought to stress here, however, that these remarks apply to the All India figures only for, as the tables show, there is considerable variation across States in the child participation rates.

The school enrolment rates present an incomplete picture of the educational experience of the child, since they register her schooling attendance or otherwise only at the

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[10] See Meenakshi and Ray (1999b) for further discussion and explanation of this result; see, also, Lancaster, Ray and Valenzuela (1999) for cross country evidence on the impact of alternative demographic adjustments of the poverty line on the poverty rates.

[11] An 'economic activity' has been defined in the employment survey as "any activity that results in production of goods and services that adds value to national product". Such activities include "production of all goods and services for market, and the production of primary commodities for own consumption and own production of fixed assets."

time of the survey. The survey, also, provides information on the "general education" of the child through a variable which records a value of 1 for a child who is "not literate", then increasing with the length of education received, assuming a value of 6 for a child who has completed "primary education", and reaching the value of 10 for one who has completed "higher secondary" education. Table 7 presents the mean value of this variable for various categories of children[12]. It is significant and, quite disconcerting, that even after nearly five decades of planned economic development in India, in case of no category of children has "primary education" been attained by a child on average. The State figures reveal a similar picture with the isolated exception of Kerala. Similar to the picture on child participation rates in schooling, the gender divide in the child's experience of 'general education' in favour of boys is considerably larger in the rural areas than in the urban. In contrast, children in female headed households or those belonging to the backward classes do not exhibit, on average, markedly different educational attainment from other children. The table also provides evidence on the adverse impact of child labour on the child's educational attainment – in both sectors, the sample of children involved in economic activities records a lower mean than the overall average for all children. The last point is, also, established by comparing the sample means of child workers and school children.

Table 8 presents summary eviden ce on the impact of household poverty on a child's education level, school attendance and employment status. The sample means are quite revealing: (a) children from 'poor' households are, nearly, twice as likely as those from 'non poor' households to be involved in some form of 'economic activity', and (b) household poverty does cause a sharp drop in the child's school attendance and, more generally, on the child's educational attainment. With respect to the latter feature, it is noticeable from a comparison of Tables 7 and 8 that the adverse effect of poverty on child education is

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[12] For space reasons and for clarity of presentation, we have reported only the All India figures. The State figures are available upon request.

comparable to the sharp gender divide in favour of boys education in India, on which much has been written. Clearly, the two factors interact to put a girl child in a poor household, especially a poor, rural, girl child, at the highest risk of missing out on schooling and suffering severe deprivation in the level of education received by her.

The summary features of the data discussed above reveal an incomplete and, possibly, misleading picture on the impact of poverty, caste and female headedness on child labour and child schooling, since they do not control for the other variables that, also, influence child behaviour. Nor do the sample averages reflect the wide variation in the household poverty or the child participation rates that prevail. To take advantage of the whole range of information contained in the expenditure and employment surveys, in conjunction with the State level information, let us now turn to estimation.

4. Estimation Results

4.1 *Logit Estimation Results of Household's Poverty Status*

Table 9 presents the parameter estimates of the logit regression of the qualitative variable P, denoting a household's poverty status (1, if the household is poor, 0, otherwise) on a selection of its demographic, socio economic and State level characteristics. The estimation, using the SAS computer package, was performed on the data set consisting of 88,302 observations obtained by pooling the rural and urban samples. The use of State level indicators, obtained from Dreze and Sen (1995), meant that we had to delete observations from some of the smaller States and Union territories for which such information was not available. The following conclusions emerge from the table.

(i)   The estimated coefficients confirm our earlier remark that the backward classes and female headed households are more likely than others to live in poverty. Between these two groups, the backward classes are at greater risk from poverty than female headed households.

(ii)   The educational experience of the adults in the household plays a strong and significant role in reducing that household's poverty.

(iii)   The importance of admitting economies of household size and adult/child relativities, via the use of OPL1 as the poverty line, is reflected in the negative coefficient estimates of the variables denoting the number of boys and girls in the household.[13]

(iv)   The negative coefficient estimates of the State level variables denoting 'households with electricity connection' and 'per capita supply of foodgrains through the public distribution system' point to the effective role that State governments can play in improving a household's poverty status. The small, though significant, negative estimated coefficient of the 'per capita State domestic product' variable shows that a household will have to wait for an indefinitely long period for the "trickle down" effect of rising prosperity in its State of residence to pull it out of poverty.[14]

4.2   Logit Estimation Results of Child Participation in Employment and in Schooling

Tables 10, 11 present the parameter estimates of the logit regression of a child's participation in an 'economic activity' on a selection of demographic, socio economic and State level characteristics. The estimation was performed on a data set consisting of 127,897 observations on children. Tables 10, 11, also, contain evidence on the sensitivity of the regression results to alternative definitions of child labour by presenting the parameter estimates in the presence (Table 10) and absence (Table 11) of non wage labour in the specification of an "economic activity". The following conclusions follow from the tables.

(i)   Ceteris paribus, a child in a female headed household or one belonging to the backward classes is more likely to be involved in wage based child labour than other children (Table 11). That the primary reason for this is the higher level of impoverishment of these socio economic groups is evident from the fact that the direction of impact of the headship variable on child employment participation is reversed with the inclusion of non wage labour in the definition of child employment (Table 10). Given the economic and social obstacles that limit the income earning opportunities of their adults, the backward classes and female headed households are more dependent than others on the labour earnings of their children.

(ii)   The size and high significance of the poverty coefficient in the case of wage based[15] child labour confirms that household poverty is one of the main reasons for children entering the labour market. This result provides some support to the 'Luxury Axiom', discussed in Basu (1999), which states that a

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[13] Contrast this with the significantly positive coefficient estimates reported in Meenakshi and Ray (1996b) based on the use of OPL3 as the poverty line.

[14] See Meenakshi and Ray (1999b) for a more detailed discussion of the impact of demographic, socio economic and State level variables on household poverty.

[15] Note that this significance disappears on the inclusion of non wage child labour in the definition of an 'economic activity'.

household will send its children to work if its income from non child labour falls to very low levels – see Ray (1999) for evidence on Peruvian and Pakistani data.

(iii) Ceteris paribus, boys are more likely than girls to participate in an 'economic activity'.[16] Child age has a strong, positive effect on child employment rate, with the negative estimate of the quadratic coefficient showing that the age effect weakens in the case of older children. The direction of rural/urban difference in the child participation rate is sensitive to the inclusion/omission of non wage child labour as an 'economic activity'. This has to do with the fact that child labour in the rural areas, unlike in the urban, largely takes the form of working on family farms or, what the survey calls, "household enterprises". Such types of work, typically, do not involve wage payment.

(iv) Rising education levels of adult members exert a strong, negative impact on the propensity of a household to put its children into employment. The negative impact of the interaction term between the poverty and female education variables, in the case of wage based child labour, suggests that rising female education weakens the link between household poverty and wage based child employment. Note, however, that this interaction term loses its significance on the inclusion of non wage economic activity in the definition of child labour. In contrast, rising male education strengthens the link between household poverty and child employment. The sensitivity of the interaction term involving male education is robust to the definition of an 'economic activity'.

(v) Household composition has a strong impact on the propensity of a child to enter the wage based labour market, with the number of boys and girls exerting opposite influences on child employment using the narrower definition of an 'economic activity' (see Table 11).

(vi) The State level variables also exert significant influence on child labour. Ceteris paribus, child residents of a State which has pursued a successful child education program, as measured by the proportion of its children completing primary education, are less likely to enter the labour market (Table 10). It is worth noting, however, that this impact weakens and becomes statistically insignificant in case of the wage labour component of a child's 'economic activity' (Table 11).

(vii) Rising inequality initially reduces child labour. However, the large positive magnitude of the squared Gini coefficient suggests a U shaped relationship with rising inequality leading to increased child labour at higher levels of the former.

Table 12 presents the coefficient estimates of the logit estimates of a child's school enrolment on a selection of his/her individual, family and State characteristics. Table 13

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[16] The logit regressions were, also, estimated separately for the boys and girls in our sample. The estimated coefficients are, generally, very similar between the child sexes. A significant exception occurred in the case of the "Region of residence" coefficient estimate which changed sign from being significantly positive for girls to significantly negative for boys on the wider definition of child labour to include non wage economic activities.

contains the sensitivity of the results to child gender by presenting the parameter estimates for

boys and girls in their separate logit regressions. The following results are established:

(i)   Ceteris paribus, children of both sexes from the backward classes are less likely to attend schools than other children. In contrast, children from female headed households are more likely to be in schooling than those from male headed households.

(ii)   The sign, size and significance of the poverty coefficient confirms the strong negative link that exists between schooling and poverty – economic deprivation is a major obstacle to childrens' education. This is true of both child sexes.

(iii)   The size and significance of the estimated coefficient of the child gender variable in the combined regression on all children (Table 12) confirms the strong gender bias against girls' schooling in India – see, Dreze and Sen (1995, Ch 6) for a comprehensive discussion of education, especially female education, in India.

(iv)   Household size and composition significantly affect child schooling – children from larger families are less likely to receive schooling than those from smaller families. This picture seems quite robust to child gender.

(v)   In contrast, the nature of impact of a child's region of residence on her/his schooling is highly sensitive to child gender (Table 13). In case of girls, there is an urban bias in education – in other words, urban girls are more likely than their rural counterpart to attend schooling. The reverse, ie a rural bias, is indicated for boys' schooling. The former result, partly, reflects a more liberal attitude towards girls schooling in the urban areas compared to the rural. In case of boys, however, the increased earnings opportunities from wage labour in the urban areas means that the urban boy child is more likely to work [17] and, consequently, less likely to attend school than his rural counterpart.

(vi)   Rising adult education in the household exerts a strong impact in increasing the schooling opportunities of its children. This mirrors the result, seen earlier, on the strong negative link between adult education and child labour.

(vii)   The State variables are, also, highly significant in their impact on child schooling. For example, after conditioning on other variables, a State's record in the area of primary education has a positive and significant impact on the school enrolment of its children. Note, from Table 13, that the magnitude of this impact is much larger in case of girls than boys. This point to the effective role that the State can play in improving girls' schooling in India. The estimated coefficient of the per capita State domestic product suggests that the "trickle down" effect of a State's economic prosperity on child schooling is extremely small. As the Kerala experience shows, and the parameter estimates of Tables 12, 13 confirm, measures aimed at increasing the awareness of the adult members, and improving the schooling infrastructure will prove more effective in increasing the school enrolment rates of children.

(viii) A comparison of the inequality coefficient estimates between Tables 11, 12 shows that, while rising inequality has a qualitatively, similar impact on child

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[17] This was confirmed by the highly significant, negative coefficient estimate of the 'Region of Residence' variable in the child labour regression of boys involved in wage labour.

labour and child schooling, the magnitude of this impact is much weaker in case of the latter in relation to the former. In fact, Table 13 reveals strong gender differences – unlike for girls, inequality does not significantly affect the school enrolment rates of boys.

5.   Summary and Conclusion

As both a cause and consequence of underdevelopment, poverty has generated a large literature, one that is of pivotal importance in the context of economic development. While much of this literature has focussed attention on measurement issues involved in calculating poverty rates for the aggregate population, the present study uses unit record data to analyse the effect of poverty on child welfare or, more precisely, the two aspects of child behaviour that are central to her welfare, namely, child labour and child schooling. In doing so, we examine the impact of a host of individual, family, socio economic and State characteristics, including the poverty status of the household that the child belongs to, on the child's participation in an 'economic activity' and in schooling. The study identifies certain types of households, namely, the backward classes and female headed households as being exposed to a greater risk than others from poverty. Consequently, the child welfare analysis pays special attention to the education levels, employment and schooling of children from the backward classes and those belonging to female headed households.

This paper exploits the rich information from the 50 [th] round of the National Sample Survey of household expenditure and the accompanying Employment Survey in rural and urban India conducted in 1993/94 and recently made available in its original unit record form. We combine the expenditure, demographic and employment information contained in the unit records of nearly 90,000 households, including approximately 130,000 children, with the socio economic indicators on various States, compiled by Dreze and Sen (1995), to analyse the likely determinants of child labour and child schooling. The richness of the data stems not only from the size of the sample, which is one of the largest of its kind anywhere, but, also, from the heterogeneity afforded by the variation in the State characteristics. The cross State

regressions, that our study is based on, resembles the cross country regressions in the literature on inequality and poverty without suffering from the data related comparability problems that often characterise such welfare comparisons between countries.

The principal conclusions can be summarised as follows:

(i)   Since the household is the unit of behaviour, it is important, from the viewpoint of poverty and subsequent welfare analysis, to allow and estimate simultaneously economies of household size and adult/child relativities. The estimates confirm the simultaneous rejection of no size economies and of identical consumption needs of adults and children. The importance of this result is established from the sensitivity of poverty estimates to the presence of size economies and adult/child relativities. If one ignores them, then, we tend to overstate the poverty of the larger households with more children, and understate the poverty of female headed households with typically small household size.

(ii)   Having made proper adjustments to the poverty line to take note of household size and composition, this study finds that backward classes and female headed households do face higher poverty rates than others. This focuses attention on the issue of child welfare in such households in the subsequent analysis in this study of child labour and child schooling.

(iii)   At both an informal and formal level, the study provides evidence to show that household poverty acts as a strong stimulus to children taking up work, and dropping out on schooling. The informal evidence is based on a comparison of sample means which shows that a child from a poor household has almost twice the likelihood of working than one from a household that is above the poverty line. Correspondingly, poverty leads to a sharp drop in the general educational experience of the child. At a more formal level, the poverty coefficient was found to be highly significant in the logit regressions of wage based child labour and child schooling participation. A comparison of the sample means shows that child employment leads to a sharp drop in the general educational attainment by the child.

(iv)   Ceteris paribus, a child from the backward classes is more likely to be involved in wage based labour, and less likely to be enrolled in schooling than other children. The corresponding evidence is mixed with respect to the impact of the headship variables on child education. While children from female headed households are more likely than others to be engaged in wage based paid employment, they are, also, more likely to be attending schools than their counterpart from male headed households. This is consistent with informal evidence based on comparison of sample means which does not point to any systematic and large educational deprivation of children from female headed households. These results suggest that children from female headed households combine schooling with employment unlike those from the backward classes who drop out of schooling completely to enter the labour market.

(v)   Rising levels of awareness of the adult members of the household, as measured by their general level of education, act strongly to reduce child labour and

increase child schooling. Similarly, and, in addition, a State's success in the sphere of primary education for its children has a strong positive impact in improving the school enrolment rates of its children. In contrast, rising economic prosperity of a State has only a small influence on child labour and child schooling. In other words, if the policy makers relied entirely on the "trickle down" effects from a State's economic advancement for its children to quit the labour market and attend schools, instead, it will take a very long time indeed for that to happen, if at all.

A good deal of attention has been paid, quite rightly, to the issue of gender bias in the intra household allocation of resources to children. No less significant in the Indian context, but receiving much less attention, is the child welfare implication of the social divide between the backward and advanced classes, of the economic divide between the 'poor' and 'non poor' households, and of the demographic divide between female headed and male headed households. In addition, there is the divide between working and non working children. The present study attempts to throw light on the child welfare implications of these distinctions in terms of the two aspects of child behaviour that are central to her welfare, namely, child employment and schooling. A fuller and more satisfactory treatment requires intra household consumption data, especially of children from the backward classes, the female headed households and those below the poverty line. Such data is rarely available. The present results point to the need to collect such data for future investigations to proceed in an area that is, obviously, of considerable policy concern.

Table 1: Summary Statistics of Key Variables[a] in Rural Areas

State	All Households			SC/ST Households		
	No. of Households	Per Capita Total Expenditure	Household Size	No. of Households	Per Capita Total Expenditure	Household Size
1 Andhra Pradesh	4908	308.53	4.16	1299	258.87	4.05
2 Arunachal Pradesh	1065	360.35	4.59	912	323.88	4.84
3 Assam	3199	267.70	5.09	804	262.73	5.07
4 Bihar	6979	230.34	4.99	2125	207.26	4.58
5 Goa	146	503.87	4.29	13	463.12	4.04
6 Gujarat	2219	326.70	5.05	746	287.29	4.92
7 Haryana	1040	412.77	5.55	265	303.83	5.46
8 Himachal Pradesh	1875	395.56	5.01	525	329.84	4.94
9 Jammu & Kashmir	820	386.42	5.65	235	351.82	5.70
10 Karnataka	2617	288.59	5.11	706	243.02	4.99
11 Kerala	2555	422.91	4.56	270	319.52	4.27
12 Madhya Pradesh	5313	265.27	5.11	2473	223.71	4.79
13 Maharashtra	4440	293.99	4.73	1273	245.54	4.58
14 Manipur	1000	308.82	5.33	460	307.65	4.98
15 Meghalaya	1117	368.13	4.44	1062	362.75	4.46
16 Mizoram	470	414.57	5.01	465	414.76	5.02
17 Nagaland	460	465.76	5.29	440	458.74	5.33
18 Orissa	3338	234.03	4.71	1446	205.76	4.36
19 Punjab	2046	455.85	5.19	722	378.86	4.98
20 Rajasthan	3097	346.06	5.23	1040	307.26	4.99
21 Sikkim	480	347.14	4.11	129	346.76	4.19
22 Tamil Nadu	3901	309.22	4.04	984	252.61	4.03
23 Tripura	1530	361.41	4.45	592	328.13	4.41
24 Uttar Pradesh	9010	293.26	5.35	2178	242.98	4.91
25 West Bengal	4480	293.06	4.99	1751	256.04	4.81
All India	68105	308.27	4.90	22915	272.35	4.71

[a] The figures denote sample means; the per capita total expenditure figures relate to expenditure (in Rupees) over 30 days.

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Table 2: Summary Statistics of Key Variables[a] in Urban Areas

State	All Households			SC/ST Households		
	No. of Households	Per Capita Total Expenditure	Household Size	No. of Households	Per Capita Total Expenditure	Household Size
1 Andhra Pradesh	3644	449.97	4.37	393	384.17	4.52
2 Arunachal Pradesh	239	570.91	3.51	64	487.30	3.57
3 Assam	880	525.20	4.31	119	463.71	4.24
4 Bihar	2155	413.55	4.92	373	322.70	4.79
5 Goa	213	611.93	3.98	13	764.39	2.93
6 Gujarat	2372	505.99	4.62	356	397.46	4.67
7 Haryana	697	541.60	4.48	105	428.04	4.75
8 Himachal Pradesh	400	992.80	3.68	69	633.61	3.88
9 Jammu & Kashmir	528	601.56	4.83	88	450.92	4.72
10 Karnataka	2469	494.29	4.66	353	334.70	4.81
11 Kerala	1830	576.92	4.47	108	479.94	4.68
12 Madhya Pradesh	3233	473.20	4.92	701	379.54	4.81
13 Maharashtra	5528	608.85	4.39	848	427.77	4.51
14 Manipur	699	339.59	5.29	92	345.88	4.30
15 Meghalaya	478	603.64	3.95	322	574.52	4.02
16 Mizoram	957	579.87	4.56	939	578.16	4.60
17 Nagaland	240	582.69	4.88	159	580.60	5.51
18 Orissa	1037	469.94	4.37	230	372.59	4.29
19 Punjab	1947	569.53	4.50	387	482.18	4.29
20 Rajasthan	1799	486.88	4.70	289	398.24	4.31
21 Sikkim	160	621.64	3.57	39	696.51	3.18
22 Tamil Nadu	4042	483.76	4.05	576	371.45	3.77
23 Tripura	560	537.89	4.14	116	458.86	3.85
24 Uttar Pradesh	4451	447.49	5.19	587	320.45	4.89
25 West Bengal	3338	537.57	4.05	593	462.32	3.87
All India	43896	513.92	4.53	7919	433.43	4.45

[a] The figures denote sample means; the per capita total expenditure figures relate to expenditure (in Rupees) over 30 days.

Table 3: Estimates of Head Count Poverty Rate[a] in Rural Areas

State	All Households[b]		SC/ST Households[b]	
	OPL1	OPL3	OPL1	OPL3
1 Andhra Pradesh	13.9	23.4	24.6	37.1
2 Arunachal Pradesh	29.9	40.3	31.3	41.4
3 Assam	43.9	49.5	43.2	52.1
4 Bihar	47.3	57.6	65.3	71.5
5 Goa	5.5	8.9	0.0	0.0
6 Gujarat	17.6	23.7	28.3	34.2
7 Haryana	13.7	22.5	26.0	40.0
8 Himachal Pradesh	15.0	26.6	22.5	35.8
9 Jammu & Kashmir	9.3	13.7	14.5	20.0
10 Karnataka	19.8	28.2	33.1	43.1
11 Kerala	20.1	25.8	34.8	39.3
12 Madhya Pradesh	17.4	30.5	21.6	42.0
13 Maharashtra	24.4	42.0	42.5	56.2
14 Manipur	25.6	29.8	34.1	38.9
15 Meghalaya	22.2	26.1	22.1	26.4
16 Mizoram	8.1	8.3	8.2	8.4
17 Nagaland	2.0	3.5	2.0	3.4
18 Orissa	34.9	47.9	49.7	61.8
19 Punjab	8.2	11.9	17.6	24.5
20 Rajasthan	12.4	20.1	22.3	32.7
21 Sikkim	25.6	29.4	29.5	36.4
22 Tamil Nadu	22.2	33.8	32.1	48.5
23 Tripura	20.1	28.2	27.9	36.7
24 Uttar Pradesh	26.7	33.8	44.2	49.6
25 West Bengal	31.9	43.8	43.2	54.1
All India[c]	25.0 (0.17)	34.4 (0.18)	34.6 (0.31)	44.7 (0.33)

[a] The poverty rate estimates are expressed in percentage terms.
[b] While OPL3 corresponds to the per capita case, OPL1 refers to the case where the expenditure deflator incorporates the estimates of relativities – see text for more details.
[c] Figures in brackets denote standard errors of the poverty rates; these were calculated only for the All India poverty estimates.

Table 4: Estimates of Head Count Poverty Rate[a] in Urban Areas

State	All Households[b]		SC/ST Households[b]	
	OPL1	OPL3	OPL1	OPL3
1 Andhra Pradesh	16.6	28.5	26.2	39.2
2 Arunachal Pradesh	11.3	13.8	10.9	14.1
3 Assam	6.7	8.2	14.3	11.8
4 Bihar	25.7	36.4	40.2	51.7
5 Goa	8.9	16.9	7.7	7.7
6 Gujarat	17.0	22.8	32.0	37.9
7 Haryana	6.6	11.3	10.5	20.0
8 Himachal Pradesh	0.8	3.3	2.9	5.8
9 Jammu & Kashmir	0.8	1.7	0.0	1.1
10 Karnataka	18.9	26.8	39.4	45.9
11 Kerala	22.0	27.0	30.6	34.3
12 Madhya Pradesh	23.5	36.6	38.2	52.9
13 Maharashtra	14.2	25.5	29.6	47.1
14 Manipur	13.2	21.7	19.6	25.0
15 Meghalaya	1.9	3.6	2.2	4.3
16 Mizoram	0.1	0.2	0.1	0.2
17 Nagaland	0.8	1.3	0.0	0.6
18 Orissa	23.8	33.6	40.4	49.1
19 Punjab	2.4	4.8	6.7	12.4
20 Rajasthan	17.6	24.7	29.4	39.4
21 Sikkim	1.9	2.5	5.1	5.1
22 Tamil Nadu	20.6	34.8	41.0	56.3
23 Tripura	3.0	5.5	5.2	8.6
24 Uttar Pradesh	21.5	29.5	34.9	43.4
25 West Bengal	8.2	14.7	16.7	26.5
All India[c]	15.8 (0.17)	24.3 (0.20)	23.7 (0.48)	32.4 (0.53)

[a] The poverty rate estimates are expressed in percentage terms.
[b] While OPL3 corresponds to the per capita case, OPL1 refers to the case where the expenditure deflator incorporates the estimates of relativities – see text for more details.
[c] Figures in brackets denote standard errors of the poverty rates; these were calculated only for the All India poverty estimates.

Table 5: Participation Rates (in percentages) of Rural Children in Wage Employmen

State	Employment						Child Gender	
	Child Gender		SC/ST	Female Headed House-holds	Overall		Child Gender	
	Boys	Girls					Boys	Girls
1 Andhra Pradesh	12.1	10.0	15.6	11.1	11.1		64.0	48.5
2 Arunachal Pradesh	0.6	0.7	1.3	0.7	0.7		68.4	59.3
3 Assam	4.0	1.9	2.1	3.1	3.1		79.3	74.8
4 Bihar	4.3	1.8	5.7	3.2	3.2		64.8	42.0
5 Goa	1.6	2.7	0.0	2.2	2.2		87.5	87.8
6 Gujarat	8.0	5.6	8.6	6.9	6.9		72.7	56.5
7 Haryana	3.4	1.8	5.3	2.7	2.7		82.2	65.8
8 Himachal Pradesh	1.0	0.4	0.9	0.7	0.7		90.7	80.0
9 Jammu & Kashmir	1.7	0.2	1.8	1.0	1.0		83.5	65.6
10 Karnataka	7.6	7.0	11.9	7.3	7.3		72.3	59.9
11 Kerala	2.1	0.9	2.7	1.5	1.5		91.5	90.8
12 Madhya Pradesh	4.3	3.1	5.8	3.8	3.8		65.1	45.8
13 Maharashtra	5.5	5.2	9.5	5.4	5.4		82.2	72.4
14 Manipur	0.4	0.9	0.5	0.6	0.6		89.8	86.5
15 Meghalaya	2.8	1.9	2.3	2.5	2.5		67.5	68.8
16 Mizoram	4.1	3.5	1.6	3.8	3.8		78.9	83.5
17 Nagaland	0.2	0.2	0.2	0.2	0.2		93.1	90.1
18 Orissa	4.6	2.2	5.2	3.4	3.4		67.5	54.6
19 Punjab	6.5	1.1	8.7	4.0	4.0		75.8	66.7
20 Rajasthan	3.2	1.8	6.0	2.6	2.6		70.5	32.1
21 Sikkim	1.9	2.1	4.3	2.0	2.0		87.5	86.9
22 Tamil Nadu	8.2	10.9	15.1	9.5	9.5		76.4	65.0
23 Tripura	2.4	1.4	2.0	2.0	2.0		86.0	82.1
24 Uttar Pradesh	2.4	0.4	3.8	1.5	1.5		71.1	46.6
25 West Bengal	6.9	2.2	6.2	4.7	4.7		69.8	61.7
All India	4.6	3.0	5.8	3.9	3.9		73.3	58.6

Table 6: Participation Rates (in percentages) of Urban Children in Wage Employme

State	Employment						Child Gender	
	Child Gender		SC/ST House-holds	Female Headed House-holds	Overall		Child Gender	
	Boys	Girls					Boys	Girls
1 Andhra Pradesh	7.1	3.8	8.8	17.0	5.5		80.9	75.2
2 Arunachal Pradesh	6.1	4.8	0.0	11.0	5.5		89.4	87.1
3 Assam	4.3	5.8	4.7	3.0	5.1		83.4	83.0
4 Bihar	3.3	1.0	3.6	1.0	2.3		77.3	71.8
5 Goa	1.9	4.5	0.0	5.0	3.1		88.6	80.7
6 Gujarat	5.7	2.3	5.7	8.0	4.1		83.3	77.3
7 Haryana	4.6	0.3	5.5	3.0	2.7		80.0	83.9
8 Himachal Pradesh	3.0	0.6	0.0	2.0	2.0		90.5	88.5
9 Jammu & Kashmir	2.1	2.0	2.4	4.0	2.1		91.6	90.7
10 Karnataka	9.5	2.5	6.9	11.0	6.1		80.0	79.8
11 Kerala	2.8	2.7	5.2	2.0	2.7		89.6	89.0
12 Madhya Pradesh	2.6	1.2	2.2	7.0	1.9		85.2	80.0
13 Maharashtra	4.2	2.1	4.3	7.0	3.2		87.7	83.8
14 Manipur	0.0	0.6	0.0	0.0	0.3		95.4	95.8
15 Meghalaya	3.6	1.5	2.9	4.0	2.6		91.0	90.2
16 Mizoram	0.9	0.0	0.5	1.0	0.5		95.6	96.2
17 Nagaland	0.8	0.0	0.6	0.0	0.5		89.2	88.0
18 Orissa	3.0	1.0	3.1	6.0	2.0		79.4	73.3
19 Punjab	6.3	1.1	6.2	7.0	3.9		82.5	84.8
20 Rajasthan	4.3	0.4	2.7	2.0	2.5		79.3	67.5
21 Sikkim	2.9	0.0	0.0	0.0	1.4		87.1	93.4
22 Tamil Nadu	9.1	6.4	8.6	13.0	7.7		81.3	76.0
23 Tripura	2.4	2.2	3.0	5.0	2.3		90.5	85.9
24 Uttar Pradesh	4.0	0.4	2.5	6.0	2.4		74.4	65.8
25 West Bengal	5.5	2.9	4.4	7.0	4.3		81.4	74.4
All India	4.8	2.1	3.7	6.0	3.5		82.7	78.5

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Table 7: Level of Gevel Education[a] of the Child[b]

Sector	Sample Size	Overall	Boys	Girls	Child Labourers	Chi Atte Sch
Rural	97997	4.19	4.55	3.77	3.19	5
Urban	55153	5.27	5.35	5.19	4.21	5

[a] The variable "general education" records a value of 1 for an "illiterate" child, then increases with the length of education received, reco "primary education", 9 for completing "secondary" and 10 for completing "higher secondary" education.
[b] The figures denote the sample mean of the "general education" variable for the corresponding group of children in the age group 5 – 1

Table 8: Sensitivity of Sample[a] Means of Children[b] Education Levels, ar
Employment and Schooling Participation Rates to Household Pover

Child Poverty Rate[c] (age)	Level of General Education[d]			Current Attendance in Educational Institutions[e]			Employment Participation (age)		
	Poor	Non Poor	Overall	Poor	Non Poor	Overall	Poor	Non Poor	O
21.93	3.71	4.62	4.42	3.48	4.36	4.17	3.61	1.86	

[a] The sample is All India, ie, rural and urban combined.
[b] The figures relate to all children in the age group 5 – 15 years in our sample.
[c] Out of a total of 144792 children in the age group 5 – 15 years, 31752 children belonged to households below the poverty line, OPL1 age group.
[d] The variable "general education" records a value of 1 for an "illiterate" child, then increases with the length of education received, rec "primary education", 9 for completing "secondary", and 10 for completing "higher secondary" education.
[e] The variable "current attendance" records a value of 1 for a child not attending any educational institution, then increases with the deg attended, recording a value of 5 for primary education, and 7 for secondary and higher secondary education.

Table 9: Logit Estimates[a] of a Household's Poverty Status Variable, P, on Selected Household and State Characteristics

Variable	Coefficient Estimate	Variable	Coefficient Estimate
Constant	4.0014[c] (1.0071)		
Household Characteristics		**State Level Characteristics**	
No. of Adults	.0024 (.0071)	Price Level of Subsistence Items	3.7533[c] (.1298)
No. of Boys	-.0660[c] (.0083)	Per Capita State Domestic Product at 1991/92 Prices	-.00016[c] (.000012)
No. of Girls	-.0346[c] (.0082)	Female Life Expectancy	.0684[c] (.0081)
Household Class (1 = backward, 0 = otherwise)	.5776[c] (.0181)	Infant Mortality	.0116[c] (.0013)
Household Head (1 = female headed, 0 = otherwise)	.3250[c] (.0838)	Proportion of Children Completing Primary Education	.0304[c] (.0024)
Region of Residence (1 = rural, 0 = urban)	.4279[c] (.0793)	Per Capita Supply of Foodgrains through Public Distribution	-.0405[c] (.0020)
Age of Household Head	.0000 (.0007)	Proportion of Households Receiving Subsidised Foodgrains	.0119[c] (.0010)
General Education Level of the Most Educated Male	-.1480[c] (.0033)	Availability of Electricity	-.0131[c] (.0011)
General Education Level of the Most Educated Female	-.1473[c] (.0043)	Gini Index of Inequality	-85.56[c] (6.32)
(Headship)*(Male Education)	-.0016 (.0152)	(Gini Index of Inequality)^2	131.25[c] (10.71)
(Headship)* (Female Education)	.0033 (.0158)	Total Number of Observations	88302
		Log Likelihood for Logistic	-6638865363

[a] Standard errors in brackets.
[b] Significant at 5% level.
[c] Significant at 1% level.

Table 10: Logit Estimates[a] of Child Participation[b] in an Economic Activity[c] on Selected Personal, Household and State Characteristics

Variable	Coefficient Estimate	Variable	Coefficient Estimate
Constant	2.75 (1.76)	(Poverty Status)* (Male Education)	0.0473[e] (.0112)
Child Characteristics		(Poverty Status)* (Female Education)	0.0182 (.0175)
Age of Child	0.9494[e] (.0540)	Household Class (1 = backward, 0 = otherwise)	0.2428[e] (.0287)
$(\text{Age of Child})^2$	-.0192[e] (.0023)		
Gender of Child (1 = boy, 2 = girl)	-0.2972[e] (.0296)		
Household Characteristics Poverty Status (1 if below poverty line, 0 otherwise)	-0.0163 (.0492)	**State Level Characteristics** Price Level of Subsistence Items	-3.1748[e] (.1717)
Region of Residence (1 = rural, 0 = urban)	0.1295 (.0794)	Per Capita State Domestic Product at 1991/92 Prices	.00004[e] (.00001)
No. of Boys	-0.0196 (.0124)	Infant Mortality	-0.0118[e] (.0011)
No. of Girls	0.0643[e] (.0117)	Proportion of Children Completing Primary Education	-0.0221[e] (.0031)
No. of Adults	.0608[e] (.0102)	Gini Index of Inequality	-58.77[e] (11.49)
Household Head (1 = female headed, 0 = otherwise)	-.1208[d] (.0484)	$(\text{Gini Index of Inequality})^2$	120.07[e] (19.42)
Age of Household Head	.0012 (.0014)	Total Number of Observations	127897
General Education Level of Most Educated Male	-0.1645[e] (.0057)	Log Likelihood for Logistic	-3884301888
General Education Level of Most Educated Female	-0.1567[e] (.0073)		

[a] Standard errors in brackets.
[b] 1 if the child participates, 0 otherwise.
[c] See footnote 11 for definition of an 'economic activity'.
[d] Significant at 5% level.
[e] Significant at 1% level.

Table 11: Logit Estimates[a] of Child Participation[b] in Wage Labour Activity on Selected Personal, Household and State Characteristics

Variable	Coefficient Estimate	Variable	Coefficient Estimate
Constant	18.70[d] (2.32)		
Child Characteristics			
Age of Child	1.19[d] (.09)	(Poverty Status)* (Male Education)	.0520[d] (.0147)
(Age of Child)^2	-.0284[d] (.0037)	(Poverty Status)* (Female Education)	-.0624[c] (.0244)
Gender of Child (1 = boy, 2 = girl)	-.3252[d] (.0397)	Household Class (1 = backward, 0 = otherwise)	.3967[d] (.0376)
Household Characteristics		**State Level Characteristics**	
Poverty Status (1 if below poverty line, 0 otherwise)	.4667[d] (.0625)	Price Level of Subsistence Items	-5.02[d] (.22)
Region of Residence (1 = rural, 0 = urban)	-.8132[d] (.0923)	Per Capita State Domestic Product at 1991/92 Prices	.00011[d] (.00001)
No. of Boys	-.0558[d] (.0175)	Infant Mortality	-.0235[d] (.0016)
No. of Girls	.0695[d] (.0161)	Proportion of Children Completing Primary Education	.0037 (.0042)
No. of Adults	.0334[c] (.0147)	Gini Index of Inequality	-159.73[d] (14.80)
Household Head (1 = female headed, 0 = otherwise)	.1316[c] (.0558)	(Gini Index of Inequality)^2	279.10[d] (24.91)
Age of Household Head	.0003 (.0019)	Total Number of Observations	127897
General Education Level of Most Educated Male	-.1737[d] (.0083)	Log Likelihood for Logistic	-1942232409
General Education Level of Most Educated Female	-.1571[d] (.0107)		

[a] Standard errors in brackets.
[b] 1 if the child participates, 0 otherwise.
[c] Significant at 5% level.
[d] Significant at 1% level.

Table 12: Logit Estimates[a] of Child Participation[b] in Schooling on Selected Personal, Household and State Characteristics

Variable	Coefficient Estimate	Variable	Coefficient Estimate
Constant	-2.98[d] (.84)		
Child Characteristics			
Age of Child	1.26[d] (.02)	(Poverty Status)* (Male Education)	-.0057 (.0054)
$(\text{Age of Child})^2$	-.0652[d] (.0008)	(Poverty Status)* (Female Education)	-.0025 (.0088)
Gender of Child (1 = boy, 2 = girl)	-.8711[d] (.0168)	Household Class (1 = backward, 0 = otherwise)	-.2698[d] (.0158)
Household Characteristics		**State Level Characteristics**	
Poverty Status (1 if below poverty line, 0 otherwise)	-.4494[d] (.0276)	Price Level of Subsistence Items	.7043[d] (.0889)
Region of Residence (1 = rural, 0 = urban)	.0261 (.0421)	Per Capita State Domestic Product at 1991/92 Prices	.00007[d] (.00001)
No. of Boys	-.0972[d] (.0067)	Infant Mortality	.0033[d] (.0006)
No. of Girls	-.0507[d] (.0064)	Proportion of Children Completing Primary Education	.0381[d] (.0019)
No. of Adults	-.0802[d] (.0055)	Gini Index of Inequality	-30.63[d] (5.54)
Household Head (1 = female headed, 0 = otherwise)	.2919[d] (.0282)	$(\text{Gini Index of Inequality})^2$	55.04[d] (9.40)
Age of Household Head	-.0038[d] (.0007)	Total Number of Observations	127897
General Education Level of Most Educated Male	.1852[d] (.0031)	Log Likelihood for Logistic	-9735958330
General Education Level of Most Educated Female	.1960[d] (.0039)		

[a] Standard errors in brackets.
[b] 1 if the child participates, 0 otherwise.
[c] Significant at 5% level.
[d] Significant at 1% level.

Table 13: Logit Estimates[a] of Boys and Girls Participation[b] in Schooling on Selected Personal, Household and State Characteristics

Variable	Coefficient Estimate		Variable	Coefficient Estimate	
	Boys	Girls		Boys	Girls
Constant	-8.44[d] (1.15)	.1144 (1.2289)			
Child Characteristics			(Poverty Status)* (Male Education)	-.0108 (.0081)	-.0032 (.0088)
Age of Child	1.40[d] (.02)	1.17[d] (.03)	(Poverty Status)* (Female Education)	.0021 (.0122)	-.0037 (.0127)
(Age of Child)^2	-.0699[d] (.0011)	-.0639[d] (.0013)	Household Class (1 = backward, 0 = otherwise)	-.2360[d] (.0214)	-.3174[d] (.0236)
Household Characteristics			**State Level Characteristics**		
Poverty Status (1 if below poverty line, 0 otherwise)	-.4430[d] (.0363)	-.4716[d] (.0427)	Price Level of Subsistence Items	.9799[d] (.1223)	.3312[c] (.1302)
Region of Residence (1 = rural, 0 = urban)	.4032[d] (.0565)	-.4070[d] (.0631)	Per Capita State Domestic Product at 1991/92 Prices	.00006[d] (.00001)	.00009[d] (.00001)
No. of Boys	-.1067[d] (.0091)	-.0734[d] (.0102)	Infant Mortality	.0029[d] (.0008)	.0037[d] (.0008)
No. of Girls	-.0128 (.0092)	-.0962[d] (.0092)	Proportion of Children Completing Primary Education	.0177[d] (.0026)	.0604[d] (.0027)
No. of Adults	-.0835[d] (.0076)	-.0809[d] (.0081)	Gini Index of Inequality	-7.15 (7.56)	-55.86[d] (8.10)
Household Head (1 = female headed, 0 = otherwise)	.1739[d] (.0391)	.4264[d] (.0406)	(Gini Index of Inequality)^2	21.33 (12.84)	90.81[d] (13.73)
Age of Household Head	-.0040[d] (.0010)	-.0036[d] (.0011)	Total Number of Observations	68239	59658
General Education Level of Most Educated Male	.1933[d] (.0044)	.1852[d] (.0045)	Log Likelihood for Logistic	-5007961817	-4623777292
General Education Level of Most Educated Female	.1617[d] (.0055)	.2288[d] (.0055)			

[a] Standard errors in brackets.
[b] 1 if the child participates, 0 otherwise.
[c] Significant at 5% level.
[d] Significant at 1% level.

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Appendix: Table A1
Logit Estimates[a] of a Household's Poverty Status Variable, P,
on Selected Household Characteristics

Variable	Coefficient Estimate
Constant	-.1262[c]
	(.0386)
Household Characteristics	
No. of Adults	-.0032
	(.0068)
No. of Boys	-.0447[c]
	(.0080)
No. of Girls	-.0315[c]
	(.0079)
Household Class	.5238[c]
(1 = backward, 0 = otherwise)	(.0173)
Household Head	.3005
(1 = female headed, 0 = otherwise)	(.0798)
Region of Residence	-.1181[c]
(1 = rural, 0 = urban)	(.0221)
Age of Household Head	-.0003
	(.0007)
General Education Level of the Most Educated Male	-.1362[c]
	(.0032)
General Education Level of the Most Educated Female	-.1241[c]
	(.0040)
(Headship)* (Male Education)	-.0059
	(.0146)
(Headship)* (Female Education)	.0183
	(.0153)
Total Number of Observations	88302
Log Likelihood for Logistic	-7026913064

[a] Standard errors in brackets.
[b] Significant at 5% level.
[c] Significant at 1% level.