Simultaneous Analysis of Child Labour and Child Schooling: Comparative Evidence from Nepal and Pakistan

by

Ranjan Ray[*]
School of Economics
University of Tasmania
GPO Box 252-85
Hobart Tasmania 7001
AUSTRALIA

Email: Ranjan.Ray@utas.edu.au
Tel: +61 (0)3 6226 2308
Fax: + 61 (0) 6226 7587

October 2001

Abstract

This study investigates the key determinants of child labour hours and child schooling experience paying special attention to the interaction between the two. A significant methodogical feature that distinguishes the present study from previous investigations is that this analysis recognises the joint endogeneity of child labour, child schooling and child poverty. The study is conducted on Nepalese and Pakistani data, and the results are compared. A key empirical finding, with significant policy implications, is the sharp trade off between child labour and child schooling. Another common feature of both countries is the gender bias in favour of boys schooling, though the bias is much larger in case of Pakistan.

[*] I am grateful to Geoffrey Lancaster for his research assistance for this paper. This research was supported by a grant from the Australian Research Council.

1. Introduction

There has been, in recent years, growing interest in the subject of child labour[i] among academics, public officials and the media. There are few topics in the core of the development literature today that enjoy as much importance and evoke as much passion as that of child labour. The subject has moved from the national to the international arena. The prominence accorded to the subject of child labour at the WTO meeting in Seattle a couple of years ago is a reflection of its pivotal importance in the international policy arena. Basu (1999b) provides a lucid exposition of the policy implications of child labour for the setting of international labour standards in an era of rapid globalisation. Fallon and Tzannatos (1998) discuss ways in which the World Bank can assist member nations in reducing child labour.

Notwithstanding almost universal agreement that child labour is undesirable, there is wide disagreement on how to tackle this problem. The formulation of policies that are effective in curbing child labour requires an analysis of its key determinants, namely, identification of variables that have a significant effect on child employment. In view of the close interaction between child labour and child schooling, such an analysis needs to be extended to the latter. Moreover, evidence on the nature of interaction between child labour and child schooling is needed in formulating effective policies designed to improve the welfare of the child. The present study provides South Asian evidence on these issues. There has been, in recent years, a rapidly expanding literature on child labour that provides empirical evidence on its nature and determinants – see Grootaert and Kanbur (1995), Basu (1999a) and Jafarey and Lahiri (2000b) for surveys. While some of these studies [for example, Knight (1980), Horn (1995)] discussed mainly the qualitative features of child labour, the recent literature has focussed attention on the quantitative aspects taking advantage of the increasing availability of good quality data on child employment. Within the empirical literature on child labour, there has been a shift in emphasis

from mere quantification to an econometric analysis of its determinants. The present study is in this latter tradition.

While the majority of the econometric studies on child labour have used Latin American data [see, for example, the volume edited by Grootaert and Patrinos (1998)], the corresponding literature on South Asian child labour is relatively limited. And, yet, as Table 1, reproduced from Basu (1999a) shows, South Asia contains the largest concentration of child labour in the world. Nearly one in three child labourers is from South Asia. However, the child labour participation rate in South Asia lags behind that in Africa. The chief motivation of the present exercise is to extend the literature on estimating the determinants of child labour and child schooling to the South Asian context. The previous literature on South Asian child labour includes the classic monograph by Weiner (1991) on India, Chaudhuri and Wilson (2000), Ray (2000c), Cigno and Rosati (2000) on India, Ravallion and Wodon (2000) on Bangladesh, and Addison, et.al. (1997), Ray (2000a, 2000b) on Pakistan. However, there exists no comparative study of child labour or child schooling between the South Asian countries. That is one of the features of this exercise. The countries chosen for the present exercise are Nepal and Pakistan. The corresponding data sets are fairly comparable. These country surveys provide comparable information not only on the nature and magnitude of child labour and child schooling but, also, on the individual, household and community level attributes that provide their potential determinants.

This study provides empirical evidence on the impact of poverty and inequality on child labour and child schooling. There is no consensus in the literature on the role of poverty in forcing households to put its children into employment. Bhatty (1998), Ahmed (1999) and Lieten (2000), among others, argue that poverty has only a limited role in explaining child labour. Bhatty (1998, p. 1734) cites a variety of studies on Indian child labour in support of the view that 'income and related variables do not seem to have any direct significant effect on children's work input … children are often put to work as a deterrent to idling rather than as an economic

necessity'. Lieten (2000, p. 2038) observes that 'the correlation between regional poverty and child labour indeed is inconclusive' and explains the lack of strong correlation by the fact that poor regions are characterised by high fertility rates and low labour opportunities. Lieten's view is supported by the Pakistani evidence of Addison, et.al. (1997) who observe that 'low incomes do not increase child labour'. Ray (2000a), also, provides evidence that shows that household poverty has an insignificant impact on the child's labour market participation in Peru and Pakistan. Swaminathan (1998) explains the observed weak relation between incidence of child labour and incidence of poverty by suggesting that at 'the micro-level, poverty ensures a supply of child labour ... it is the structure of demand, however, that determines the use of child labour' (p. 1514). In contrast to these empirical findings, income and the poverty variables play a crucial role in the analytical results on child labour derived in Basu and Van (1998).[ii] Also, Ray (2000b) provides Pakistani evidence that suggests that there is a strong positive association between child labour hours (unlike labour force participation rates) and poverty, though this result does not extend to the Peruvian data. Ray (2000c) provides Indian evidence that shows that while household poverty is a significant determinant of wage based child employment, this is not so for more generally defined 'economic activities'. Against this background of a lack of consensus on the link between poverty and child labour, the new evidence on this on Nepalese data, presented here, acquires some importance.

In examining the impact of poverty on child labour and child schooling, we depart from previous studies in distinguishing between 'household poverty' and 'cluster poverty'. While the former is a household attribute and is based on the household's income shortfall from the poverty line[iii,] used in the Foster, Greer and Thorbecke (1984) measure of poverty, the latter, which is a community level variable, uses the head count poverty rate to measure the economic affluence, or the lack of it, of the cluster of residence of the household. The income shortfall is measured by

$P = \left(\frac{z - x}{z} \right)^{\alpha}$, where z is the cluster specific poverty line, x is the per capita expenditure of the household, and α is the 'poverty aversion' parameter. α was set at 2.0 in the present exercise. Note that this extends the treatment of the poverty variable in Ray (2000a, 2000b) which set α = 0 and, consequently, ignored the income variation between the poor households. The distinction between household poverty and cluster poverty, that we draw here, is quite significant for it allows the possibility that the household is not 'poor' but resides in an economically depressed cluster with considerable poverty, or vice versa. The transmission mechanism from household poverty to child labour, if present, can be classified as a 'supply side' phenomenon, namely, economic necessities pushing a child from a poor household into employment. In contrast, cluster level poverty would control for poverty related variables from the 'demand side' since, as suggested by Addison, et.al. (1997) and Lieten (2000), among others, households living in poor clusters have only limited opportunities for employment. As our results show, the estimated coefficients do not always agree, thus, underlining the need to make this distinction.

This study, also, provides Nepalese and Pakistani evidence on the impact of inequality[iv] and credit constraints on child labour and child schooling. There has been much discussion recently on these variables in the context of child labour [Jafarey and Lahiri (2000a), Ranjan (2001)] but, relatively, little empirical evidence exists on their impact on child employment. Ahmed (1999) provides Indian evidence that suggests that it is inequality rather than poverty that explains the high incidence of child labour. Ray (2000c) reports on Indian NSS data a U shaped relationship between child labour force participation rate and inequality. Swinnerton and Rogers (1999) demonstrate analytically the importance of inequality in explaining child labour and provide support to the view of Grootaert and Kanbur (1995, p. 198) that 'general economic development, equally distributed, is the best and most sustainable way of reducing child labour'. Ranjan (2001) derives analytically a positive relationship between inequality in the distribution

of income and the incidence of child labour. Inequality of income leads to severe credit constraints. Ranjan (2001), Jafarey and Lahiri (2000a) highlight the pivotal role that increased credit availability can play in switching children from labour market to schooling. If, as some argue, households look to income from child labour to compensate for income shocks and lift them out of poverty, then improved credit provision can play a significant role in keeping children in schooling and out of employment. As Ranjan (2001) and Jafarey and Lahiri (2000a) both argue, the link between credit markets and child labour may result in trade sanctions, currently touted as a way of reducing child labour, making matters worse by driving the children from credit starved households onto the labour market. This calls for much needed empirical evidence, that this study provides, on the impact of credit availability on child labour and child schooling. Similar to the distinction made earlier in the context of poverty, we distinguish between cluster level credit, measured by credit received per household in the cluster, and household level credit recorded by the amount of net credit inflow into the household. Analogous to the poverty case, we allow for a credit starved household to live in a credit rich cluster and vice versa.

Another key distinguishing feature of this study is that the child labour, child schooling and the poverty variables are jointly estimated using a 3SLS estimation procedure that takes note of the simultaneity of these variables. This exercise, therefore, extends Ray (2001) which assumed that the poverty variable is exogenously determined in the estimation. In this study, we pay particular attention to the interaction between a child's labour hours, her/his schooling experience and the economic circumstances of the child, as measured by the poverty status of the household that the child resides in. As the results reported later show, the endogeneity of poverty and its joint estimation with child labour and child schooling provides some interesting empirical insights into the nature of interaction between these three crucial ingredients of child welfare. Moreover, there are some significant differences between the 3SLS estimates for boys and girls.

As the present results confirm, there is a strong gender dimension in the results on child labour and child schooling that should be recognised in policy analysis.

The rest of this paper is organised as follows. Section 2 discusses the methodology, describes the data sets and focuses on some of its summary features. The empirical results are presented and discussed in Section 3. We end on the concluding note of Section 4 which spells out the policy implications of the results of our study.

2. Methodology and Data

The empirical exercise is based on the simultaneous equations estimation, using three stage least squares (3SLS), of a set of three equations, namely, the annual labour hours of the child, the years of schooling experience of that child and the poverty status (1 = poor, 0 = non poor) of the household that the child belongs to. The 3SLS estimation procedure not only takes note of the joint endogeneity of these three variables but, also, recognises the mutual interaction between the equations through allowing a non diagonal covariance matrix of the errors of the estimated system. A key feature of this exercise is that we examine the impact of a child's current school attendance on her/his labour hours. This last aspect of our empirical exercise is of considerable policy significance since many have argued that compulsory schooling or, alternatively, encouraging schooling via an enrolment subsidy is a useful vehicle for reducing child labour.[v]

The Nepalese data on child labour comes from the Nepal Living Standards Survey (NLSS) conducted in June, 1995 by the Household Survey Unit of the Central Bureau of Statistics (CBS). The main objective of the NLSS is to collect data from Nepalese households and provide information to the government to monitor progress in national living standards and to evaluate the impact of various policies and programs on the living conditions of the population. The sample size for the NLSS is 2288 households. The Pakistani child labour data

came from the Pakistan Integrated Household Survey (PIHS) carried out in 1991 when PIHS teams visited 4800 households residing in 300 urban and rural communities between January and December, 1991.

The data on child labour force participation and on the child's labour hours were obtained by combining information from a number of sources. The information on wages, especially child wages, was often not readily available or, simply, not available at all. In the latter case, we used imputed wages based on the mean wage rates of the cluster of residence of the household. This introduced a high degree of arbitrariness in the constructed wage data which suggests that the wage coefficients should be interpreted with considerable care.

Tables 2, 3 present the age specific participation rates of children in the two countries in the labour market and in schooling, respectively. The following remarks apply. First, generally, in both countries, the child participation rate in the labour market increases with child age. Second, the sharp gender disparity in the child's labour market participation rate in Pakistan contrasts sharply with a more even gender balance in case of Nepal. Third, the current school enrolment rate peeks around 11 years and declines thereafter in both countries. Fourth, both countries exhibit sharp disparity in favour of boys schooling. Fifth, the sharply lower labour force participation rates and schooling enrolment rates of Pakistani girls than their Nepalese counterparts in the higher age groups, suggests that older girls in Pakistan are withdrawn form both schooling and employment in much larger numbers than in Nepal to help out with domestic duties.

It is possible to compare other key characteristics of the two data sets by looking at sample means (Table 4). A typical Pakistani household contains more children than a typical Nepalese household. A much larger percentage of children live below the poverty line in Pakistan than in Nepal. There is a marked gender disparity in the educational experience of adults in Pakistan. While, on average, the most educated woman in a Pakistani household has

only 39 percent of the schooling of the most educated man, this figure is much higher at 53.7 percent in Nepal. The educational deprivation of women in Pakistan is further reflected by the fact that, unlike in Nepal, women receive much less schooling than their children. The percentage of children who participate in the labour market is higher in Nepal (36.49%) than in Pakistan (27.92%). This is, also, true of the percentage of children who are currently attending schooling – the figures being 62.74% in Nepal, 55.25% in Pakistan. An inspection of Tables 2, 3 shows that this is largely due to the lower participation rates of Pakistani girls than their Nepalese counterpart in both employment and schooling, especially in the older age categories, as noted earlier. In contrast, the corresponding participation rates for boys, both in the labour market and in schooling, are not dissimilar between the two countries. On average, a child works similar hours in the two countries, with the figure (372.12 annual hours) being somewhat higher in Nepal than in Pakistan (305.46 hours). While the ratio of the child's to the man's labour hours is quite similar between Nepal and Pakistan, the corresponding ratio of the child's to the woman's labour hours is sharply lower in Nepal than in Pakistan. The latter result is due to the relative lack of labour market activity by Pakistani women. It is, also, worth noting that in both countries a high proportion of children have never received any schooling (31.92% in Pakistan, 31.12% in Nepal) The evidence on India provided in Ray (2000c) suggests that this picture is true of the entire South Asian region. These percentages provide cause for considerable alarm, especially if one recalls that the comparable figure is only 2.00% in case of Peru [Ray (2000b, Table 3)].

3. Results

The 3SLS estimates of the child labour hours, schooling experience and the child's poverty status equations are presented in Table 5 (Nepal) and Table 6 (Pakistan). These tables report, for each country, the estimates obtained by pooling the observations for all children with

the child gender dummy capturing the heterogeneity between boys and girls. The gender disaggregated estimates are presented later. While the numbers in these tables are worth examining individually and provide considerable empirical insights into child labour and child schooling in each country, a comparison between them helps to keep these results in perspective by establishing the robustness, or otherwise, between countries of the principal qualitative results.

The following features are worth noting form these tables.

i) In both countries, the current school attendance by a child significantly and sharply reduces her/his labour hours – by 390 labour hours annually in Nepal, 506 hours in Pakistan. Again, in both countries, a ceteris paribus increase in the child's labour market activity has a significantly adverse impact on her schooling experience. The trade off between child employment and child schooling is clearly established from these tables. The policy implication is clear – compulsory schooling or measures such as free school meals that encourage enrolment provide effective means of reducing child labour hours.

ii) In both countries, boys work significantly longer hours in market activities than girls, though the gender disparity is much more in Pakistan (225 annual labour hours) than in Nepal (60 hours). Similarly, girls experience significantly less schooling than boys in both countries. However, the impact of household size and composition on child labour and child schooling varies considerably between the two countries. For example, a ceteris paribus increase in the number of children in the household significantly reduces both the labour hours and the schooling experience of the child in Nepal but has little impact in Pakistan. The household credit variables have little impact on child labour or child schooling in either country, contrary to the claims made in the analytical literature.

iii) An interesting result, with considerable policy significance, that seems to hold for both countries is that, while rising levels of adult education significantly and positively impact on child schooling, its anticipated negative impact on child labour is considerably weaker in absolute magnitude to the point of statistical insignificance in several cases. This result, which was also observed in Ray (2001), stems from the joint endogeneity of child employment and child schooling. It suggests that the previously observed negative impact of rising adult education on child labour [Ray (2000a, 2000b)] worked through the positive impact of adult education on child schooling and the subsequent trade off between child schooling and child labour. Once the latter has been incorporated in the estimation, as in this study, the residual impact of adult education on the child's labour market activity is quite limited. This points, once again, to the enhancement of child schooling as the core strategy for making a dent on the problem of child labour.

iv) Household poverty, though a significant determinant of child labour and child schooling, does not always impact on these dependent variables in the manner expected. However, it does explain longer child hours in case of Nepal and less child schooling in case of Pakistan. In contrast, cluster poverty, ie., the economic environment that the child lives in, does not have any impact on her/his employment or schooling. In both countries, the

presence of one or more employed adults in the household adds to the schooling experience of its children.

v) Of particular interest in these estimates is the impact of cluster inequality on the labour hours and schooling of children residing in the cluster. Inequality has a strong U shaped impact on child labour hours and child schooling in Pakistan, but the effect is considerably weakened to the point of statistical insignificance in case of Nepal. In other words, Ahmed (1999)'s observation that high inequality is a cause of child labour is confirmed by the evidence for Pakistan, but the supporting evidence is not so strong in case of Nepal. However, as we report below, the gender disaggregated estimates for Nepal show much stronger support for the U shaped impact of inequality on labour hours in case of Nepalese girls.

vi) A distinctive feature of this study is the endogenising of the poverty variable and its joint estimation with the child labour, child schooling equations. The coefficient estimates of the poverty equation are, therefore, of special interest. In both countries, a child who has, ceteris paribus, more schooling experience comes from a more affluent household than one with less schooling. In contrast, neither a change in the annual child labour hours nor the child wage rate significantly alters the economic background of the child. Both countries, also, agree that a child living in a household containing a large number of children is more likely to be living in poverty than a child residing in a household with fewer children. Ceteris paribus, while the rural child in Pakistan is poorer than the urban child the reverse is the case in Nepal. In both countries, especially in Nepal, cluster inequality has an inverted U shaped impact on the child's poverty status. In other words, as cluster inequality increases, the child's poverty status initially worsens but improves sharply thereafter as the negative quadratic coefficient dominates the positive linear coefficient. The strong significance of the positive cluster poverty coefficient estimate confirms that, in both countries, a child from a poorer cluster is much more likely to be living in poverty than a child from a more affluent cluster. In both countries, especially in Nepal, rising levels of adult male education play a strong role in ameliorating the poverty of the child.

The above discussion overlooks possible child gender differences in the estimates. To examine such differences, Tables 7, 8 present the gender disaggregated 3SLS estimates of child labour hours and child schooling years in Nepal and Pakistan respectively. We have, for space reasons, omitted the corresponding gender disaggregated estimates of the child's poverty status equation, though these are available on request.

The trade off between child labour hours and the child's school attendance, reported and discussed earlier, holds strongly for both boys and girls in each country. It is interesting to observe, however, that in both countries the current school attendance of a child reduces that

child's labour hours by a much smaller amount for girls than for boys. This is particularly striking in Pakistan where the reduction in annual labour hours on account of school attendance is 834 hours for boys but only 210 hours for girls. This gender disparity is explained by the fact that school attendance comes at the expense of mainly non market (mostly domestic) hours for girls, but market hours for boys. Household poverty has a significantly positive impact on labour hours of girls in Nepal, but not for boys in that country. Cluster poverty impacts quite strongly on the labour hours of boys and girls in Nepal but in exactly opposite directions. The U shaped impact of cluster inequality on child labour hours holds more for girls than for boys in both countries. The result, noted earlier, that rising adult education levels have a much weaker impact on the child's labour hours than on her schooling experience holds for both boys and girls in each country. The credit variables, at both household and cluster levels, register very little impact on child labour hours and schooling experience, irrespective of the gender of the child.

4. Conclusions

While there is universal agreement about the harmful effects of child labour, there is not much consensus on effective ways of dealing this phenomenon. Proposed action plans range from legislative measures that ban child labour to concerted international trade sanctions by the developed countries against the import of products made by under aged children in developing countries. The linkage of child labour, under the guise of 'labour standards', with trade has led to the hijacking of this issue by the WTO from child welfare agencies such as the UNICEF and the ILO. The recent international outcry over child labour has provoked talk of measures designed to satisfy several lobby groups, not all of whom are directly interested in the welfare of the working children in Third World countries. There has not been much attempt, until recently, to examine systematically the causes of child labour with a view to identifying factors that could lead to its reduction and eventual elimination. That is now changing with a proliferation of empirical studies on child labour. These have either taken the form of case studies of a particular region inside a country with high incidence of child labour or they involve econometric

investigations based on sample survey data containing information on child labour and child schooling. The present study, which belongs to the latter tradition, compares the results of two countries (Nepal, Pakistan) from one of the poorest regions (South Asia) which accounts for a significant proportion of child labour in the world.

This study has some special features which distinguish it from previous investigations. First, we distinguish between household level and cluster level poverty in examining the importance of poverty as a determinant of child labour. The significance of this distinction is evident from the fact that the two poverty variables do not always agree on the nature of their impact on child labour or child schooling. Second, this study provides evidence on the impact of inequality on child labour and child schooling, and examines the relative importance of inequality vis-à-vis poverty as a determinant. Third, the study examines the impact of borrowings, both at household and cluster levels, on child labour and child schooling. While there has been much analytical work and related discussion of the inequality and credit variables in the context of child labour, there has not been much empirical evidence to guide policy action in this regard. Finally, and quite crucially, we report the results of simultaneous estimation of child labour hours, years of child schooling and the child's poverty status using a framework that recognises their joint endogeneity. The endogeneity of child poverty marks a significant point of departure form previous studies.

An important finding of this paper, arising out of the joint estimation of the child labour hours and child schooling experience equations, is the significant role that a child's current school attendance plays in sharply diminishing her labour hours. Alternatively, long hours spent in work by the child have a detrimental effect on her schooling. Notwithstanding the rhetoric in public statements, the record on primary schooling in the South Asian countries is quite disappointing, leaving the children prone to long labour hours. Rising education levels of the adult members in the household and increased public awareness have a highly significant, positive impact on child schooling and, consequently, can play an important part in reducing the child's long labour hours. Improvements in the schooling infrastructure, by making them more relevant to the child's needs as viewed by the parent, and locating them near places of child employment will be conducive to shorter working hours and encourage combination of child labour

with child schooling to a greater extent than has happened in countries such as Pakistan in relation to Latin American countries such as Peru [see Ray (2000a)]. A common feature of the Nepalese and Pakistani results is the sharp gender bias in favour of boys schooling in both countries. However, the extent of the bias is much larger in Pakistan. Government assisted programs such as the District Primary Education Projects and the Integrated Children Development Schemes (ICDS) in India [see Fallon and Tzannatos (1998, p.15)] can play a useful role in promoting schooling. The role of household credit, that is tied to its use in keeping the child in school and to compensate the household from its consequent loss of child earnings, can also be very useful in this regard. The results, obtained in this study, warn that untied lending to the household may be misused and can make matters worse by increasing child labour.

Table 1: Child Labour: Aggregate and Distribution[a]

	Number of Children (below 15 years) Working (in thousands)		
	1980	**1985**	**1990**
World	87,867 (19.91)	80.611 (n.a.)	78,516 (11.32)
Africa	14.950 (30.97)	14.536 (n.a.)	16.763 (24.92)
Latin America & Caribbean	4,122 (12.64)	4,536 (n.a.)	4,723 (8.21)
Asia:	68,324 (23.42)	61,210 (n.a.)	56,784 (10.18)
East Asia	39,725 (n.a.)	33,463 (n.a.)	22,448 (n.a.)
Southeast Asia	6,518 (n.a.)	6,079 (n.a.)	5,587 (n.a.)
South Asia	20,192 (n.a.)	19,834 (n.a.)	27,639 (n.a.)

[a] Figures in bracket denotes the child labour participation rate.
Source: Basu (1999a, Table 1).

Table 2: Participation Rates (in percentages) of Children in Employment

	Nepal		Pakistan	
Age	**Boys**	**Girls**	**Boys**	**Girls**
10	17.60	27.80	14.90	18.70
11	22.33	28.40	16.10	19.60
12	33.30	42.20	25.40	22.80
13	36.40	42.70	30.30	21.30
14	41.30	45.40	36.30	28.30
15	48.70	55.60	39.80	29.80
16	53.50	55.40	51.20	26.70
17	52.60	53.30	48.40	25.80

Table 3: Participation Rates (in percentages) of Children in Current School Attendance

	Nepal		Pakistan	
Age	**Boys**	**Girls**	**Boys**	**Girls**
10	78.16	57.37	77.30	51.10
11	79.46	65.16	82.20	54.80
12	75.18	50.60	73.50	49.00
13	77.30	57.71	72.10	45.30
14	67.69	48.09	66.80	39.00
15	61.10	43.03	56.90	33.40
16	44.60	40.50	50.70	28.10
17	46.90	38.00	48.80	28.20

Table 4: Household Characteristics of Nepal and Pakistan (Sample Means)

Characteristic	Nepal	Pakistan
Number of children in the household	3.69	5.61
Ratio of girls to boys	0.47	0.48
Percentage of children living in households below the poverty line[a]		
Boys	18.23	27.11
Girls	18.15	25.57
Ratio of the most educated woman's educational experience to that of the most educated man in the household[b]	0.54	0.39
Ratio of the child's to the man's educational experience[b]	0.59	0.68
Ratio of child's to the woman's educational experience	0.85	1.75
Average age of child	12.43	13.16
Percentage of household that are female headed	11.24	1.87
Percentage of children living in households with electricity	24.58	76.45
Percentage of children living in urban areas	80.41	53.67
Ratio of child's labour hours to man's labour hours	0.16	0.13
Ratio of child's labour hours to woman's labour hours	0.23	0.60
Percentage of children involved in child labour	36.49	27.92
Percentage of children who have never received any schooling	31.12	31.92
Atkinson Index ($\varepsilon = 2.0$) of Cluster Inequality	0.281	0.277
Percentage of households where at least one adult works	97.94	88.00
Percentage of children who are currently attending school	62.74	55.25
Annual labour hours worked by a child	372.12	305.46
Years of schooling received by a child	3.28	3.97

[a] The poverty line is set at 50 percent of the median non child household income per adult equivalent in the sample.
[b] Measured in years of schooling.
Source: *1995 Nepal Living Standards Survey* (NLSS) *and 1991 Pakistan Integrated Household Survey*.

Table 5: 3SLS Estimates[a] of Child Labour Hours, Child Schooling Years and Child Poverty Status[b] in Nepal

Labour Hours		**Schooling Years**		**Poverty Status[b]**
Variable	**Coefficient Estimate**	**Variable**	**Coefficient Estimate**	**Variable**
Child Characteristics		*Child Characteristics*		*Child Characteristics*
Currently Attending School	-389.66[d]	Annual Child Labour Hours	-0.01[d]	Annual Child Labour
(0 = no, 1 = yes)	(25.75)		(0.00)	
Age of Child	5.31 (94.41)	Age of Child	0.52 (0.81)	Years of Schooling Experience
(Age of Child)^2	0.63 (3.78)	(Age of Child)^2	0.01 (0.03)	Child Gender (0 = boy, 1 = girl)
Child Gender (0 = boy, 1 = girl)	-60.84[d] (21.21)	Child Gender (0 = boy, 1 = girl)	-0.93[d] (0.18)	Child Wage
Child Wage	13.43[d] (.46)	Child Wage	0.11[d] (0.01)	
Family Characteristics		*Family Characteristics*		*Family Characteristic*
Household Poverty	705.60[d] (207.46)	Household Poverty	4.09[c] (1.78)	
Region of Residence (1 = urban, 2 = rural)	21.77 (64.32)	Region of Residence (1 = urban, 2 = rural)	-0.15 (0.55)	Region of Residence (1 = urban, 2 = rural)
No. of Children	-15.75[d] (5.49)	No. of Children	-0.16[d] (0.05)	No. of Children
No. of Adults	9.34 (6.04)	No. of Adults	-0.01 (0.05)	No. of Adults
Gender of Household Head (0 = male, 1 = female)	-54.49 (36.84)	Gender of Household Head (0 = male, 1 = female)	-0.30 (0.32)	Gender of Household (0 = male, 1 = female)
Age of Household Head	-1.33 (0.87)	Age of Household Head	-0.01 (0.01)	Age of Household Hea

Table 5: Continued

Labour Hours		**Schooling Years**		**Poverty Status**[b]
Variable	**Coefficient Estimate**	**Variable**	**Coefficient Estimate**	**Variable**
Years of Education of Most Educated Male Member	-3.38 (3.20)	Years of Education of Most Educated Male Member	0.12[d] (0.03)	Years of Education of Educated Male Memb
Years of Education of Most Educated Female Member	-5.28 (3.50)	Years of Education of Most Educated Female Member	0.11[d] (0.03)	Years of Education of Educated Female Mer
At least one adult works (0 = no, 1 = yes)	154.60 (85.14)	At least one adult works (0 = no, 1 = yes)	2.01[d] (0.74)	At least one adult wor (0 = no, 1 = yes)
Maximum wage earned by the Male Members	-0.24 (0.46)	Maximum wage earned by the Male Members	-0.00 (0.00)	Maximum wage earne the Male Members
(Maximum wage earned by the Male Members)^2	0.00 (0.00)	(Maximum wage earned by the Male Members)^2	0.00 (0.00)	(Maximum wage earn the Male Members)^2
Maximum Wage earned by the Female Members	-0.68[c] (0.31)	Maximum Wage earned by the Female Members	-0.00 (0.00)	Maximum Wage earn the Female Members
Credit Received by the Household	-0.00 (0.00)	Credit Received by the Household	-0.00 (0.00)	Credit Received by th Household
Cluster/Community Characteristics		*Cluster/Community Characteristics*		*Cluster/Community C*
Atkinson Inequality	-602.52 (1061.24)	Atkinson Inequality	1.90 (9.13)	Atkinson Inequality
(Atkinson Inequality)^2	946.75 (1730.57)	(Atkinson Inequality)^2	-4.18 (14.88)	(Atkinson Inequality)^2
Cluster Poverty	34.70 (129.35)	Cluster Poverty	0.78 (1.11)	Cluster Poverty
Cluster Credit Availability	0.00 (0.00)	Cluster Credit Availability	0.00 (0.00)	Cluster Credit Availab
Water Supply (1 = yes, 0 = no)	6.01 (24.91)	Water Supply (1 = yes, 0 = no)	0.04 (0.21)	Water Supply (1 = yes, 0 = no)
Electricity Supply (1 = yes, 0 = no)	-48.74 (34.59)	Electricity Supply (1 = yes, 0 = no)	-0.39 (.030)	Electricity Supply (1 = yes, 0 = no)

[a] Standard Errors in brackets.
[b] Poverty Status = 1 if the child comes from a 'poor' household, 0, otherwise.
[c] Significant at 5% level, [d] Significant at 1% level.

Table 6: 3SLS Estimates[a] of Child Labour Hours, Child Schooling Years and Child Poverty Status[b] in Pakistan

Labour Hours		**Schooling Years**		**Poverty Status[b]**
Variable	**Coefficient Estimate**	**Variable**	**Coefficient Estimate**	**Variable**
Child Characteristics		*Child Characteristics*		*Child Characteristics*
Currently Attending School (0 = no, 1 = yes)	-506.53[d] (26.50)	Annual Child Labour Hours	-.01[d] (0.00)	Annual Child Labour
Age of Child	-89.91 (108.54)	Age of Child	.02 (.96)	Years of Schooling Experience
(Age of Child)^2	5.05 (4.36)	(Age of Child)^2	.04 (.04)	
Child Gender (0 = boy, 1 = girl)	-225.73[d] (23.51)	Child Gender (0 = boy, 1 = girl)	-2.26[d] (.20)	Child Gender (0 = boy, 1 = girl)
Child Wage	22.39[d] (2.33)	Child Wage	0.18[d] (.02)	Child Wage
Family Characteristics		*Family Characteristics*		*Family Characteristic*
Household Poverty	-477.11[c] (206.56)	Household Poverty	-5.92[d] (1.82)	Region of Residence (1 = urban, 2 = rural)
Region of Residence (1 = urban, 2 = rural)	52.50 (27.06)	Region of Residence (1 = urban, 2 = rural)	.59[c] (.24)	No. of Children
No. of Children	-0.55 (4.41)	No. of Children	-.00 (.04)	No. of Adults
No. of Adults	-19.65[d] (6.23)	No. of Adults	-.25[d] (.06)	
Gender of Household Head (0 = male, 1 = female)	86.22 (84.06)	Gender of Household Head (0 = male, 1 = female)	.90 (.74)	Gender of Household (0 = male, 1 = female)
Age of Household Head	2.19[c] (1.01)	Age of Household Head	.02 (.01)	Age of Household Hea

Table 6: Continued

Labour Hours		**Schooling Years**		**Poverty Status**[b]
Variable	**Coefficient Estimate**	**Variable**	**Coefficient Estimate**	**Variable**
Years of Education of Most Educated Male Member	-1.04 (2.67)	Years of Education of Most Educated Male Member	.07[d] (.02)	Years of Education of Educated Male Memb
Years of Education of Most Educated Female Member	8.71[c] (3.44)	Years of Education of Most Educated Female Member	.16[d] (.03)	Years of Education of Educated Female Mer
At least one adult works (0 = no, 1 = yes)	170.68[d] (39.30)	At least one adult works (0 = no, 1 = yes)	1.44[d] (.36)	At least one adult wor (0 = no, 1 = yes)
Maximum wage earned by the Male Members	-3.88 (2.24)	Maximum wage earned by the Male Members	-.03 (.02)	Maximum wage earne the Male Members
(Maximum wage earned by the Male Members)^2	.03 (0.03)	(Maximum wage earned by the Male Members)^2	.00 (.00)	(Maximum wage earn the Male Members)^2
Maximum Wage earned by the Female Members	-5.78[d] (1.59)	Maximum Wage earned by the Female Members	-.05[d] (.01)	Maximum Wage earn the Female Members
Credit Received by the Household	-.001 (.001)	Credit Received by the Household	.00 (.00)	Credit Received by th Household
Cluster/Community Characteristics		*Cluster/Community Characteristics*		*Cluster/Community C*
Atkinson Inequality	-786.91[d] (258.11)	Atkinson Inequality	-6.48[d] (2.31)	Atkinson Inequality
(Atkinson Inequality)^2	1027.71[d] (319.87)	(Atkinson Inequality)^2	8.63[d] (2.86)	(Atkinson Inequality)^2
Cluster Poverty	145.11 (90.03)	Cluster Poverty	1.56 (.80)	Cluster Poverty
Cluster Credit Availability	-0.00 (0.00)	Cluster Credit Availability	.00 (.00)	Cluster Credit Availab
Water Supply (1 = yes, 0 = no)	-5.55 (6.52)	Water Supply (1 = yes, 0 = no)	-.07 (.06)	Water Supply (1 = yes, 0 = no)
Electricity Supply (1 = yes, 0 = no)	15.77 (54.58)	Electricity Supply (1 = yes, 0 = no)	.55 (.48)	Electricity Supply (1 = yes, 0 = no)

[a] Standard Errors in brackets.
[b] Poverty Status = 1 if the child comes from a 'poor' household, 0, otherwise.
[c] Significant at 5% level, [d] Significant at 1% level.

Table 7: Gender Disaggregated 3SLS Estimates[a] of Child Labour Hours and Child Schooling Years[b] in Nepal

Variable	Labour Hours		Schooling Years	
	Boys	**Girls**	**Boys**	**Girls**
Child Characteristics				
Currently Attending School (0 = no, 1 = yes)	-455.68[d] (32.45)	-302.77[d] (44.92)	-	-
Annual Child Labour Hours	-	-	-.01[d] (.00)	-.01[d] (.00)
Age of Child	-46.47 (117.70)	93.45 (138.71)	.43 (.89)	1.23 (1.02)
(Age of Child)^2	2.49 (4.71)	-3.10 (5.56)	.01 (.04)	-.03 (.04)
Child Wage	15.15[d] (.65)	13.15[d] (.69)	0.11[d] (.01)	0.10[d] (0.02)
Family Characteristics				
Household Poverty	-198.10 (264.71)	2661.16[d] (297.53)	-2.82 (1.99)	18.90[d] (2.21)
Region of Residence (1 = urban, 2 = rural)	-72.04 (78.22)	136.12 (105.25)	-.93 (.59)	1.13 (.78)
No. of Children	-9.57 (7.18)	-24.50[d] (8.26)	-.09 (.05)	-.23[d] (.06)
No. of Adults	4.75 (7.89)	10.34 (9.07)	-.08 (.06)	.01 (.07)
Gender of Household Head (0 = male, 1 = female)	-129.65[d] (45.27)	7.48 (60.11)	-.76[c] (.35)	.04 (.44)
Age of Household Head	-1.46 (1.09)	-1.31 (1.37)	-0.01 (.01)	-0.02 (.01)
Years of Education of Most Educated Male Member	2.81 (4.56)	-3.32 (4.59)	0.31[d] (.03)	-0.01 (.03)
Years of Education of Most Educated Female Member	-5.34 (4.01)	-9.74 (6.88)	-.00 (.03)	.33[d] (.06)
At least one adult works (0 = no, 1 = yes)	198.48[c] (98.21)	86.04 (149.10)	1.69[c] (.76)	2.11 (1.10)
Maximum Wage Earned by the Male Members	-1.55[d] (.60)	.94 (.69)	-.01[d] (.00)	.00 (.00)
(Maximum Wage Earned by the Male Members)^2	.00[c] (.00)	-.00 (.00)	.00[c] (.00)	.00 (.00)
Maximum Wage Earned by the Female Members	-.43 (.38)	-.59 (.50)	.00 (.00)	-.01 (.00)

Table 7: Continued

Variable	Labour Hours		Schooling Years	
	Boys	**Girls**	**Boys**	**Girls**
Family Characteristics				
Credit Received by the Household	-0.00 (.00)	-0.00 (.00)	.00 (.00)	.00 (.00)
Cluster/Community Characteristics				
Atkinson Inequality	1706.16 (1343.98)	-3314.50[c] (1664.36)	21.32[c] (10.11)	-24.74[c] (12.54)
(Atkinson Inequality)^2	-2497.94 (2210.83)	5150.88 (2695.11)	-32.88[c] (16.63)	37.97 (20.26)
Cluster Poverty	537.22[d] (160.17)	-630.81[d] (207.79)	3.77[d] (1.25)	-4.14[d] (1.56)
Cluster Credit Availability	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)
Water Supply (1 = yes, 0 = no)	-64.99[c] (30.66)	65.04 (37.40)	-.44 (.24)	.49 (.28)
Electricity Supply (1 = yes, 0 = no)	-51.56 (43.76)	-42.26 (54.08)	-.42 (.33)	-.33 (.40)

[a] Standard Errors in brackets.
[b] The estimates of the poverty status equation are available on request.
[c] Significant at 5% level.
[d] Significant at 1% level.

Table 8: Gender Disaggregated 3SLS Estimates[a] of Child Labour Hours and Child Schooling Years[b] in Pakistan

Variable	Labour Hours		Schooling Years	
	Boys	Girls	Boys	Girls
Child Characteristics				
Currently Attending School (0 = no, 1 = yes)	-833.56[d] (31.26)	-210.34[d] (43.12)	-	-
Annual Child Labour Hours	-	-	-.00[d] (.00)	-.02[d] (.00)
Age of Child	-35.34 (125.71)	-110.09 (174.35)	1.03 (.74)	-1.82 (3.51)
(Age of Child)^2	3.41 (5.04)	5.26 (7.00)	-0.00 (.03)	.11 (.14)
Child Wage	22.53[d] (2.34)	16.21[d] (4.97)	0.11[d] (.02)	.32[d] (.12)
Family Characteristics				
Household Poverty	-47.53 (223.75)	-310.61 (362.79)	-1.10 (1.32)	-7.31 (7.25)
Region of Residence (1 = urban, 2 = rural)	-19.74 (31.24)	82.31 (43.75)	-.12 (.18)	1.93[c] (.90)
No. of Children	4.90 (5.13)	-7.95 (7.07)	.03 (.03)	-.16 (.14)
No. of Adults	-23.60[d] (7.42)	-14.16 (9.73)	-.20[d] (.04)	-.37 (.20)
Gender of Household Head (0 = male, 1 = female)	44.84 (92.34)	118.38 (143.79)	.41 (.55)	2.56 (2.88)
Age of Household Head	-.55 (1.17)	5.49[d] (1.63)	.00 (.00)	.11[d] (.04)
Years of Education of Most Educated Male Member	5.90 (3.09)	-5.60 (4.27)	.12[d] (.02)	-.04 (.09)
Years of Education of Most Educated Female Member	5.66 (3.97)	3.99 (5.59)	.10[d] (.02)	.19 (.11)
At least one adult works (0 = no, 1 = yes)	182.10[d] (46.53)	147.24[c] (61.79)	1.07[d] (.28)	2.78[c] (1.41)
Maximum Wage Earned by the Male Members	-6.11[c] (2.62)	-3.12 (3.57)	-.03 (.02)	-.05 (.07)
(Maximum Wage Earned by the Male Members)^2	.03 (.03)	.05 (.05)	.00 (.00)	.00 (.00)

Table 8: Continued

Variable	Labour Hours		Schooling Years	
	Boys	**Girls**	**Boys**	**Girls**
Family Characteristics				
Maximum Wage Earned by the Female Members	-7.38[d] (1.72)	-.71 (2.96)	-.03[d] (.01)	-.03 (.06)
Credit Received by the Household	-.00 (.00)	-.00 (.00)	.00 (.00)	.00 (.00)
Cluster/Community Characteristics				
Atkinson Inequality	-194.74 (297.30)	-1400.89[d] (416.21)	-.23 (1.76)	-27.92[d] (10.01)
(Atkinson Inequality)^2	339.64 (369.05)	1652.54[d] (515.18)	.72 (2.18)	33.32[d] (12.13)
Cluster Poverty	-151.77 (102.40)	429.91[d] (147.23)	-.41 (.60)	8.48[c] (3.52)
Cluster Credit Availability	-.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)
Water Supply (1 = yes, 0 = no)	1.68 (7.53)	-7.44 (10.48)	-.01 (.04)	-.18 (.21)
Electricity Supply (1 = yes, 0 = no)	-66.89 (62.59)	106.04 (88.30)	.32 (.37)	2.24 (1.80)

[a] Standard Errors in brackets.
[b] The estimates of the poverty status equation are available on request.
[c] Significant at 5% level.
[d] Significant at 1% level.

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Endnotes:

[i] According to the World Bank [*World Development Report*, (1995, p. 72)], 'perhaps 100 million or more children in the world below the age of fifteen participate in substantial economic activity at some point during the year'.

[ii] The World Bank lists poverty as one of the main causes of child labour [World Development Report (1995, p. 72)].

[iii] Following conventional practice based on the 'relative' view of poverty, the poverty line was defined as half the sample median of the per capita household expenditure distribution in the cluster.

[iv] The inequality variable used in the regressions is based on the Atkinson inequality measure with the 'inequality aversion' parameter set at 2.0.

[v] See Ravallion and Wodon (2000) for evidence on Bangladesh. The results of their study show, however, that an increase in school enrolment does not lead to a large reduction in child labour.