Child Labor at District Level: A Case Study of Rawalpindi

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Abstract

Child labor is one of the problems that occur as a result of responses to the economic problems faced by vulnerable children. Keeping in view the theoretical background of existence of child labor across the world, the study analyzes the incidence of child labor from Rawalpindi city of Pakistan. It also empirically investigates the household demographics and incidence of child labor. The earning and participation functions were estimated for a sample of 150 children. All the coefficients and overall model was observed to be statistically significant.

Keywords: Child labor, labor supply.

JEL Classification: .....J820, J22.

1. INTRODUCTION

Child labor is a pervasive problem throughout the world. The ILO reported that 246 million children – one in every six children aged 5 to 17 – are involved in child labor in 2002. Roughly, 2.5 million children are economically active in the developed economies, 2.4 million in the transition countries, 127.3 million in Asia and the Pacific, 17.4 million in Latin America and the Caribbean, 48 million in Sub-Saharan Africa and 13.4 million in the Middle East and North Africa [ILO 2002]. Depending upon characterization of work, definition of child, and technique of data collection, child labor estimates may differ. However, whatever estimate we take, this inevitable reality remains the same that child labor is a problem of massive proportion.

Pakistan is one of those countries where the incidence of child labor is very high. A significant number of children participate in economic activities and contribute substantially to household income in Pakistan. The National Child Labor Survey, conducted in 1996 by the FBS, found 3.3 million out of the 40 million children (in the 5-14 years age group) to be economically active on a full-time basis. Out of 3.3 million working children, 1.94 million children between the age of 5-14 were active in the Punjab, 0.3 million in Sindh, 1.06 million in NWFP (North West Frontier Province) and 0.01 million in the Balochistan.

Recently, the issues about child labor have been received increasing attentions in the economic literature and significant contributions are made in this area of research. Fuwa *et al.* (2006_a) explored the determinants of simultaneous decision-making of mother and child labor allocation under credit constraints in rural Andhra Pardesh, India. Nath and Hadi (2000) observed a significant inverse relation between child labor and years of schooling in rural Bangladesh. Fuwa *et al.* (2006_b) investigated individual and household characteristics associated with the incidence of child labor in rural Andhra Pardesh, India. The central motivation of the present study is to focus on the household characteristics contributing toward the incidence of child labor in Rawalpindi city.

The previous literature on Pakistan's child labor analysis includes Khan (1982); Hussain (1985); Ahmed (1991); Khan and Ali (1991) and Weiner and Noman (1995); and recently Addison, *et al.* (1997); Burki and Fasih (1998); Burki and Shahnaz (2001); Ray (2000); Ray (2000a); Ray (2001); Ray and Maitra (2002); Ali and Khan (2003) and Bhalotra (2007). The previous studies, for example Burki and Fasih (1998) used the data from Child Labor Survey 1996 for the age group of 5–14 years. Similarly, Ray (2001) and Bhalotra (2007) obtained the data for children in the age group of 10–17 years from Pakistan Integrated Household Survey 1991. The present study makes a distinction from its predecessors as it focuses upon primary data collected by the researcher from working children of 11-17 years from Rawalpindi City. The empirical analysis of all the demographic characteristics influencing child labor has been carried out in this paper.

The determinants of child labor supply have been recently analyzed in the literature (see Basu (1999), Rosati and Tzannatos (2000), Cingo and Rosati (2001) and the literature therein cited for the discussion of theoretical model and empirical results. The concentration of literature has been mainly focused on the participation decision of children. Almost no attention has been given to hours supplied. Using a simple OLS model, the study explores the determinants of work hours supplied by children. Using Mincerian-earning function, another OLS regression model aims at investigating the factors influencing child labor.

Most of the studies on child labor have used macro data, illustrating the same conclusion for a city such as Islamabad to a city in remote areas of Balochistan or for a city in NWFP where data for social indicators is either non-existent or very poor. This paper has

been planned to examine household factors, which are considered the major determinants of child labor, using primary data on working children in Rawalpindi city.

This paper is organized as follows. Section 2 discusses the brief description of early studies conducted on the issue of child labor at local level. Description of survey results is presented in Section 3. Section 4 contains discussion of some econometric results, while Section 5 summarizes and concludes the results.

2. SURVEY OF LITERATURE

Khan (2003) analyzes the determinants of child labor supply and using primary data set of two thousands households from two districts[2] of Pakistan. The decision of child labor is analyzed as a sequential decision making process, using sequential probit model. School only, schooling and work, work only and neither schooling-nor work were estimated for each child. Results suggest that birth order of a child is negative for school only and work only decisions and positive for neither schooling-nor work decisions, and younger children are more likely to combine schooling with work. Male children are more likely to go to work than female children are. Age of the child is positively associated with work decisions. The current number of years of education of children decreases the probability for work.

Proportion of children active in labor force is rapidly increasing in Bangladesh. Keeping in view the conflict between the use of children in the labor market and children's access to education, Nath and Hadi (2000) tested the hypothesis that the education of children and parents discourage child labor. Using data from two rural districts of Bangladesh, multivariate logistic regression analysis was considered with the whole set of explanatory variables to assess the relative influence of socioeconomic and educational variables on child labor. Significant inverse relation was observed between labor force participation and education. Findings from rural Bangladesh clearly show that as years of schooling of children and their parents' increases, the tendency of the children to participate in the labor force decreases.

[2] Pakpattan and Faisalabad

Chaudary and Khan (2002) discuss mainly the qualitative features of child labor. They identify key economic and social determinants of child labor, by taking a sample of 125 working children of Dera Ismail Khan. Their analysis illustrates that poverty is the main cause of child labor in the city but there are other factors contributing to it such as family size, schooling system and illiteracy of parents. They showed an inverse relationship between the income level of the family and the incidence of child labor, and positive relationship between adult literacy and child schooling.

Since child labor and school enrollment result from decision-making within households, so analysis of intrahousehold resource allocation is critically important in this context. Fuwa *et al.* (2006) conducted household surveys in rural Andhra Pardesh, India to collect information on intrahousehold resource allocation and empirically analyzed the determinants of child labor and school enrollment, through estimating a village fixed effect logit model for each child. Results exhibit that parents' education is associated with less child labor and more school enrollment. Richer households are more likely to send their children to school and children in female-headed households are disadvantaged. The effect of the child's mother is similar on boys and girls while that of the child's father is more favorable on boys.

Khan (2001) discusses socio-economic background of child labor and the employers by observing the higher incidence of child labor in auto-workshops. He find total duration of training is six years as average years of child's experience estimated in the study is two years. While according to the employer, it needs approximately four more years on average to complete the training. None of the children is enrolled in formal education. Average completed number of years of schooling by working children indicates that the majority of the children have not completed the primary level of education. He finds that the children are paid less than adults are, even when they perform the same task

To observe conditions of child labor in mining sector, Wazir (2002) conducted a field visit of Jodhpur district. Children ranges in the age bracket of 10 or 12 years are found to be involved in work. Many of these children work because of the economic situations of the family. Hence, poverty is a common factor in the lives of all mineworkers. Almost all children miss out on the opportunity to attend school, their healthy development and life chances are jeopardized. The study paid a great attention to the most evident problems

faced by working children and their parents that are mainly responsible for child participation in the labor force. Wazir (2002) studies the role and strategies of non-governmental organizations (NGOs) in eliminating child labor. He reviewed a number of inter-linked dimensions that are largely outside the direct control of NGOs but circumscribe and constrain their activities.

Vijayabaskar (2002) examines the nature of use of child labor in the knitwear industry in Tiruppur. It is found that the knitwear sector in Tiruppur competes in the global market primarily based on price and hence reduction of wage costs through employment of children is seen as essential to the industry's sustainability. Consequently, the use of child labor is implicated in a competitive strategy based on cost cutting.

Gayathri (2002) assess the magnitude of child labor in the state of Karnataka. Since certain districts have been found to have a greater concentration of child labor, district-specific studies need to be conducted to ascertain the demand and supply side factors that contribute to child labor. The state needs to prioritize child labor as a social issue impeding overall development and therefore has to initiate various public awareness mechanisms using diverse media.

3. RESULTS FROM SURVEY

A sample size of 150 male children from Rawalpindi city was selected purposively[3]. Data was obtained using an interview-based questionnaire. The questionnaire contains thirty-eight questions, which are all related to the children, their personal information, their household's information, and information related to their work. Working children filled questionnaires. The details regarding questionnaire structure are available in Kulsoom (2007).

Analysis is broadly categorized in descriptive and inferential statistics. Descriptive analysis includes general demographic information about respondents, while multivariate analysis is used in inferential exercises.

[3] Purposive sampling starts with a purpose in mind and the sample is thus selected to include people of interest and exclude those who do not suit the purpose.

Table 1 contains description of the variables used in this study, and obtained from our survey. The survey contains information about variables like age, monthly income and education (of child, parents and siblings,) present and permanent address, parents profession, and characteristics for other family members[4], House and asset ownership, family debt, number of family members and earners in the household, total monthly income of household, number of working days and holidays in a week, daily working hours, time to start and leaving work, rest during work time, experience of work on the same place, if worked on another place (then total working experience), hobbies, personal expenditure from own earning, receiver of remaining earnings, future plans, and family problems[5], and willingness to work.

The average statistics of the child laborers are presented in Table 2. An average year of child's experience estimated in the present study is two years. Average child's age work around an age of 13 years, while their average monthly earnings comes to around Rs 1000.

Table 3 lists the characteristics of the working children and shows the percentages of all the variables in sample. It helps the reader to understand that how the values are classified for the purpose of descriptive analysis.

Data was collected for children between the age groups of 11 to 17 years. So these values are recoded into two categories for the simplification of the results. Table 3 shows that mostly the children who are engaged in work are above 13 years of age (58.7%).

Years of schooling was used as a variable for taking the information about children's current education level. Results reveal that larger numbers of children are illiterate[6] (59.3%). The average completed number of years of schooling by working children indicates that the majority of the children have not completed the primary level of education.

Another variable was monthly income of the child, which was used to find out whether children are well paid, or not. The figure shows that children earning less than one

[4] Except for siblings and parents
[5] Family problems include health problems, marriage expenditures and other problems as well.
[6] Illiterate: who never attended school

thousands rupees are more (57.3%) than the children earning more than one thousand rupees[7] (42.7%).

The number of hours that children work is critically important. Fatigue is a major cause of accidents and can impair intellectual development. A large proportion of children (68.7%) work forty-eight hours during a week. A substantial proportion of children (22%) even work beyond forty-eight hours.

Out of 150 children, 94% do not have work experience on another place[8]. Children having total work experience of less than two years account for 52.7% of total children. Among total working children, 83.3% are not spending any amount from their pay on themselves.

The question regarding willingness to work was very important, as it explores desires of working children, whether children wish to work or not, 96% of working children expressed enjoyment in their work.

Table 4 provides general information regarding parents of child laborers. Parent's education is considered a major factor in determining their decisions to educate their children. Questionnaire also investigates the information relating to the education of parents to observe the literacy level of the families. It is observed that mostly the mothers are illiterate, (149 out of 150 are illiterate). In case of father's years of schooling, 88% have not attended school. Therefore, it has shown that the families to which these working children belong are highly uneducated. Father's employment status is also an important variable concerning the decision for going into child labor.

Table 5 presents several family characteristics contributing towards the prevalence of child labor. Family income is an important variable for collecting information about incidence of child labor. This variable was used to evaluate that how much is the incidence of child labor among different income groups. The variable contains huge variations, as minimum value for family income is Rs 1680 while maximum is Rs 24000. These values are recoded into three categories for the simplification of the results in the

[7] Survey conducted in the year 2007
[8] Other than the place in which they are currently working.

given Table 5. Results indicate that incidence of child labor is same (36%) among lower and higher income group in the sample.

Number of earners in the household was used to find out that how many persons other than the child himself could support the family. Figures suggest that 59.3% of working children have greater than three earners in their household. Family size can also attribute to existence of child labor, but it turns out that 54.8% of total working children have less than eight family members.

The variable 'Permanent resident' tried to explore the fact that whether the respondents are permanently settled in Rawalpindi or not. The survey shows that out of 150 children, only 16 are not permanently settled in Rawalpindi. Incidence of child labor is high among children of employed father (76.7%) as compared to others. Working children living in rented accommodation are 34.7%. Variable of asset holding was included to access the financial position and possible source of non-labor income of working children. Results reveal that 92% of families were without any asset holdings.

Family debt was considered to address any impact of financial pressure, 20% of families are under debt. Those who are under debt, their liability exceed Rs 1000 on average, while their monthly incomes barely reach Rs 10,000. Health and marriage expenditures are not much among working children as only 20.7% working children have spending on health and 20% have marriage expenses.

Using a standard Mincerian earnings function, restricting the right-hand side variables to personal characteristics, the results illustrate the relationship between child's income and different explanatory variables in case of Rawalpindi. It is observed that these variables are having significant relationship with the child's income.

4. SOME ECONOMETRIC FINDINGS

$$ci_i = f(twe_i + d_i + ca_i + wh_i + pci_i + \mu_i) \text{----------} 1$$

$$wh_i = f(ca_i + ca2_i + poexp_i + asset_i + fa_i + ma_i + ne_i + \mu_i \text{----------} 2$$

$$i = 1, 2, 3, \text{----------} 150$$

Where

ci: *child's monthly income in rupees,* ***twe:*** *total work experience,* ***d:*** *a dummy variable equal tone if child has work experience on another place, 0 otherwise.,* ***ca:*** *child's age,* $\boldsymbol{ca^2}$***:*** *child's age squared,* ***wh:*** *weekly working hours by the child,* ***pci:*** *families per capita income,* ***poexp:*** *personal expenditures of the child from his own income,* ***fa:*** *age of the child's father,* ***ma:*** *age of the child's mother,* ***ne:*** *number of earners in the household,* ***u:*** *stochastic error term*

The results of our Maximum Likelihood estimates for earning and participation equation are reported in table 6 and 7, respectively. The set of regressors used in the earning equation include the following variables: age, , total work experience, a dummy variable of child's work experience on another place, taking value of 1 if child has worked on another place, 0 otherwise (if not worked), weekly working hours, per capita income of families. While the explanatory variables used in participation equation are age, age squared, dummy for personal expenditures, father's age, mothers' age, number of earners in the household, and asset holdings.

In earning equation, child's income is positively related to total work experience, child's age, weekly working hours and per capita income of the family and negatively related to work on another place. All the variables are individually statistically significant.

The age of child is an important parameter for the decision of child labor. The focus of the study is activities of the children in the labor market in the age group of 11-17 years. Co-efficient of age of the child is found to be statistically significant in the OLS results and demonstrates that child income is positively related to the age of child, that is, child's income increases with age. As the child grows older, the potential of earnings increases. Durrant (1998) and Ray (2001) also find that child participation in wage increases with child age.

The variable of work on another place is statistically significant and suggests that holding all other variables constant, on average, children who have worked on other places prior to their current workplace, earn less per month than their counterparts who are attached to the same workplace. Sign of the variable is according to expectations as children who have also worked on another place; they cannot have so much experience on the place

they are currently working on. The children who are attached to the same workplace, they can experience a gradual increase in their incomes according to the time period they are spending in the same workplace.

Similarly, the coefficient of work experience is significant and demonstrates a positive relationship between work experience and child's income. It implies that on average, children with work experience earn more than the children who are inexperienced. The children with experience can do better job than inexperienced, so they have more income as compared to their counterparts who recently entered into the labor market.

Variable of weekly working hours is also statistically significant. Socio cultural and economic differences between children affect the propensity among children to devote their time in labor market. One unit increases in Weekly working hours results increase in child's income, implying a positive relationship between dependent and independent variables. Holleran (1997) also observed positive relationship between the weekly working hours and income. The children who worked for more hours might have signaled to employer that they had a greater attachment to labor market activities and they deserve more wages.

Per capita income of the household is an important explanatory variable from the point of view of policy option to eliminate child labor. Income effect on child labor differs across various studies. Increase in families' per capita income leads to enhance child's income. As with an increase in family income, it can be possible for the child not to work with low wages. Mahendra Dev (2000) has argued that there is no clear linear relationship between higher levels of income and lower incidence of child labor across Indian states. Coefficient of per capita income implies a positive relationship with the explanatory variable, suggesting an increase in child's wage with increase in families' per capita income.

In participation equation, weekly working hours by the child are expected to be positively related to personal expenditures, child's age, mother's age, and negatively related to child's age square, number of earners in the household, asset holdings and father's age. All the variables are individually statistically significant. The value of adjusted R^2 shows strong goodness of fit and there is no auto-correlation in the regression model.

According to the general perceiving, age of the child has a positive impact on participation decisions: The older the child, the more probable he is to go to work. One unit change in age brings 23.15 units change in child's working hours if all other variables remained constant. The results support the existing findings of Nath and Hadi (2000) for Bangladesh. Khan (2001) also observed that participation increases with child's age. Ray (2003) also found child labor participation rate increasing with child's age. Findings are also true of the weekly child labor hours as older children generally work longer hours than younger children. The negative relationship between child age squared and participation is also consistent with Sonia (2007).

Personal expenditures of child is statistically significant and suggests a positive relationship between the dependent and explanatory variable which depicts that economic independence provide incentive to children to participate in the labor market.

The ownership of assets, like a household enterprise, house, land, agricultural machinery and instruments, shop, etc., is an obvious measure of household's wealth. Moreover, ownership of assets makes the household stable against the fluctuations in income through credit procurement or sale of the assets. The households with holdings may easily afford to draw their children out of work or participate less in work. The ownership of asset has shown a negative impact on participation decisions. One unit increase in asset ownership brings reduction in working hours by 4.51 units. The possible explanation may be that the presence of assets in a household increases the financial status of the household, and decreases the fluctuations in the income of the household. So, a household owning assets does not just rely on child labor. Nath and Hadi (2000) also find a negative association of household asset ownership on child labor in case of Bangladesh. Fuwa *et al.* (2006) also observed negative asset co-efficient on child labor for rural India. Deb and Rosati (2002) find that in India, children of landless households are more likely to work.

A significantly negative relationship was observed between participation and number of earners within the household. Increase in the number of earners in the household leads to children reduces hours in work.

A strong association between parental age and participation in work has been explicitly brought out in the economic literature Positive impact of mother's age was observed in participation decisions. It was observed that father's age decreases participation hours in work. The possible explanation is economics in nature. By increase in age, the skill and experience of the father expands. Therefore, his increased earning capacity makes the household economically more viable, and the father therefore decides to reduce his children's participation in work.

5. SUMMARY AND CONCLUSIONS

The present study assessed several demographic characteristics contribution towards the incidence of child labor in Rawalpindi city. The major determinant of child labor is poverty. Even though children are paid less than adults, whatever income they earn is of benefit to poor families. Some parents feel that formal education is not beneficial for their children, so they send them to work in order to acquire work skills. Children work under poor conditions, work beyond normal working hours and get very less in return. Most of the children have never been to school. However, the issues of child labor need to be dealt with great care, as alternative to child labor may worsen the situation of working children belonging to poor families. The study proposes that several income support measures should be provided to poor households as an instrument for reducing child labor. Easy access to school should also be made available. This would be an important step in addressing child labor issue. Along with formal education, informal and skill oriented programmes should be initiated.

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Table 1. Description of Variables

Variables	Description
ca	Age of the child
ca2	Age of the child squared
ci	Monthly income of the child
ce	Education of child (measured as years of schooling)
twe	Total work experience of the child
d	=1 if child have worked on another place, 0 otherwise
wh	Weekly hours of work by the child
pci	Per capita income of families (other than child's income)
poexp	Personal expenditures of the child
ne	Number of earners in the household
asset	=1 if household hold assets, 0 otherwise
fa	Age of the child's father
ma	Age of the child's mother
wanpl	Work on another place

Table-2: Average Statistics of the Children

Age	13.90 Years
Income	Rs. 1014.77 Per Month
Weekly Working Hours	50.48 Hours
Years of Education	2.12 years
Working Experience of Children	2.5821
Families' Income Per Capita	Rs. 9371.81 Per Month
Number of Earners	3.63
Father's Age	43.86Years
Mother's Age	40.06 Years

Table-3: Child's Characteristics

Variables		Percentages
Age:		
	Less than equal to 13	41.33%
	Greater than 13	58.67%
	Total	100.00%
Education:		
	Illiterate	59.33%
	Literate	40.67%
	Total	100.00%
Income:(rupees)		
	Less than 1000	57.33%
	Greater than equal to 1000	42.67%
	Total	100.00%
Weekly Working Hours:		
	Less than 48	9.33%
	Equal to 48	68.67%
	Greater than 48	22.00%
	Total	100.00%
Work on another Place:		
	No	94.00%
	Yes	6.00%
	Total	100.00%
Total Work Experience:		
	Less than Equal to 2 Years	52.67%
	Greater than 2 Years	47.33%
	Total	100.00%
Personal Expenditures:		
	No	83.33%
	Yes	16.67%
	Total	100.00%
Willingness to Work:		
	No	4.00%
	Yes	96.00%
	Total	100.00%

Table-4: Parents' Characteristics

Variables		Percentages
Father's Employment Status:		
	Unemployed	23.33%
	Employed	76.67%
	Total	100.00%
Father's Education:		
	Illiterate	88.00%
	Literate	12.00%
	Total	100.00%
Mother's Education:		
	Illiterate	99.33%
	Literate	0.67%
	Total	100.00%

Table-5: Family Characteristics

Variables		Percentages
Family Income: (rupees)		
	Less than equal to 7000	36.00%
	Between 7000-10000	28.00%
	Greater than 10000	36.00%
	Total	100.00%
Number of Earners:		
	Less than equal to 3	40.67%
	Greater than 3	59.33%
	Total	100.00%
Total Family Members:		
	Less than equal to 8	54.67%
	Greater than 8	45.33%
	Total	100.00%
Permanent resident:		
	Yes	10.67%
	No	89.33%
	Total	100.00%
Rented Home:		
	Yes	34.67%
	No	65.33%
	Total	100.00%
Other Assets:		
	Yes	8.00%
	No	92.00%
	Total	100.00%
Family Debt:		
	Yes	20.00%
	No	80.00%
	Total	100.00%
Health Expenditures:		
	No	79.33%
	Yes	20.67%
	Total	100.00%
Marriage Expenditures:		
	No	80.00%
	Yes	20.00%
	Total	100.00%

Table 6: Determinants of Child's Income from Rawalpindi

Variables	Coefficient	t-statistics
Constant	3.092749***	8.112514
Total Work Experience	0.126121***	6.028677
Work on another Place	-0.432737***	-3.611115
Child's Age	0.196850***	7.224420
Weekly Work Hours	0.007387**	2.404417
Families' Per Capita Income	0.218093**	4.687018
Adjusted R^2 0.655		Prob 0.000000

*** Significant at one percent
** Significant at five percent
* Significant at ten percent

Table 7: Determinants of Child Participation from Rawalpindi

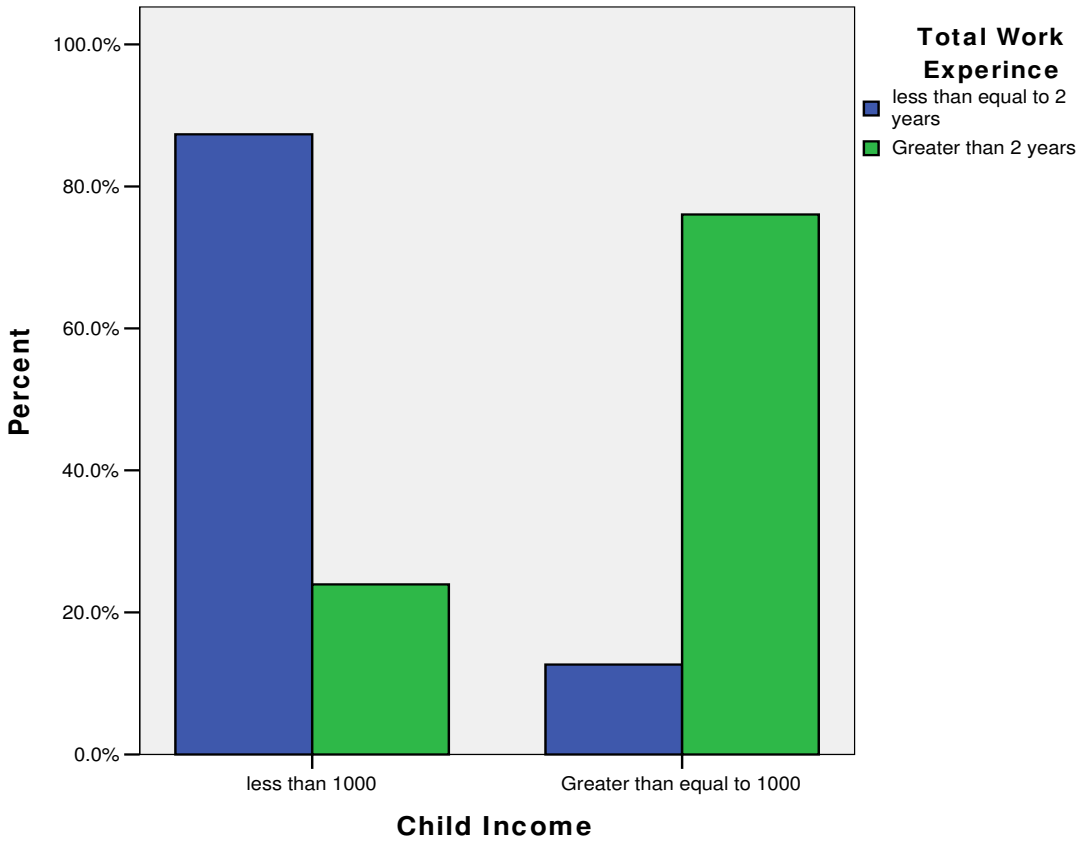
Variables	Coefficient	t-statistics
Constant	-96.84131	-1.461491
Child's Age	23.15175**	2.400019
Child's Age Squared	-0.847283**	-2.419819
Asset	-4.511658*	-1.689067
Father's Age	-0.203610**	-2.009798
Adjusted R^2 0.056791		Prob 0.014668

*** Significant at one percent
** Significant at five percent
* Significant at ten percent

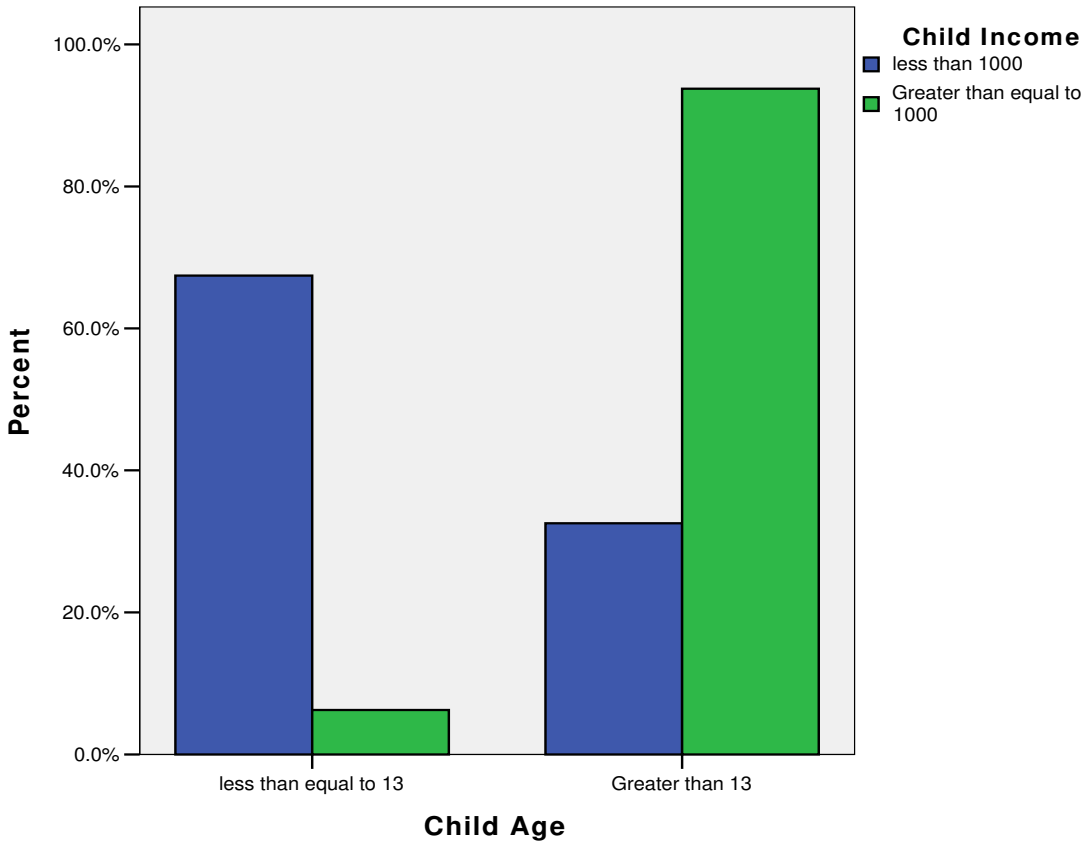
Matrix of Literature Review

Name of Study	Sample/ Region	Model	Dependent Variable
Khan (2003)	2000 from Pakpattan and Faisalabad	Sequential Probit Model	School only, combined school & employment, work only, neither school nor work
Ray (2000)	PLSS 94 & PIHS 91 from Peru and Pakistan	Logistic Model	Participation equation
Ray (2003)	GSLS 89 from Ghana	Heckman 2SLS , 3SLS, IV and OLS	Labor supply equation, labor hours equation
Ray and Maitra (2002)	PLSS 94, GLSS 89, and PIHS 91 from Pakistan, Peru and Ghana	Multinomial logistic model, ordered probit model	School only, combined school & employment, work only, neither school nor work
Bhalotra (2007)	PIHS 91 from Pakistan	2SLS and GMM	Hours in wage work conditional on participation,
Nath and Hadi (2000)	3809, two rural districts of Bangladesh	Logistic model	Participation equation
Buchmann (2000)	600 from Kenya	Logistic regression, 2SLS,	Child labor & school enrollment
Fuwa (2006)	400 from Andhra Pardesh	Logistic model	Child labor & school enrollment
Burki and Fasih (1998)	Punjab form child labor survey 96	Multinomial logit model	Time allocation in different activities
Rosati (2006)	Surveys for 93 and 98 by Vietnamese govt	Multinomial logit model	School only, combined school & employment, work only,

Relationship between Child's Income and Work Experience



Relationship between Child's Age and Child's Income



Relationship between Child's Age and Weekly Work Hours