Empirics of Child Labour and the inverted U: A Pluralistic approach

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ABSTRACT

The problem of child labour is a multifaceted hydra. It is simply not possible to comprehend the problem using some simple theoretical constructs or causal empirics. Various aspects of this phenomenon are considered here. Specifically we concentrated on the so-called inverted U-hypothesis that posits a rise in child labour as family asset rises while falling eventually. For this, we have considered different types of regressions. Our study reveals the inverted U hypothesis to be valid in those cases where the probability of a child being send to labour market (given the other conditions) is very low. In such cases a rise in family assets, enhance the utilization of child labour.

Keywords: child labour, abusive labour, fragmented labour market, social issues, poverty.

JEL Classification Numbers: J7, J42, I3, D11, D12

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1. Introduction:

Economists are concerned about child labour mostly because of its abusive nature and its negative infringement on the process of human capital forma-

tion. The child labour model is peculiar in that the labouring child does not decide her fate-this is determined by her parents (Basu and Van 1998). However if child leisure is a "luxury" to the parents, not all children will be employed. A bad equilibrium where children work coexists with one where they do not work.

However the empirical literature on child labour seemed to have questioned the luxury axiom. Instead, an "inverted U" relationship was found between the child labour use and the family assets. At a very low level, a rise in family asset may increase the use of child labour (Basu, Das and Dutta 2007, Bhalotra and Heady 2003). However when family assets rise substantially, it may fall. The argument simply flows from the fact that with poor asset base, a family finds it difficult to employ child labour. However, as the family asset level rises, such impediments towards utilizing child labour may be removed thereby enhancing the use of child labour. At a still higher asset level, the family may opt for a gainful use of child through human capital formation. The relationship between child labour use and family asset is thus inverted-U shape.

However, the problem of child labour is a multifaceted hydra. It is simply not possible to comprehend the problem using some simple theoretical constructs or a single set of equations. Multiplicity and plurality is the norm here. In fact, the problem transcends well beyond the narrow boundary of a single discipline.

This paper is however empirical. Here we are concerned with the alternative models of child labour whereby several factors are important in each of these alternative specifications. Without declaring any one of these models as "best fit", what we try here is to chalk out the phenomenon that may transcended the differences in model specifications. The pluralistic flavour in our analysis may have some justification in the statement by Basu and Van (1998) "Finally, it is important to emphasize that the phenomenon of child labor has

important sociological and psychological issues at stake. ..... *There is no choice but to dissect such a large phenomenon into several parts and to analyze these one at a time.*" (italics ours).

In order to comprehend the problem it is first necessary to distinguish between **child labour** and **exploitation of child labour**. It has been accepted that a certain amount of child labour will persist under the family environment, which is non-exploitative. This is not only inevitable but also desirable[1]. At the same time, there are other forms of child work such as in hazardous occupations, factories and other organized establishments, begging and prostitution, which are repressive and should not be allowed to continue. The Indian Government has taken some steps to alleviate this monumental problem. In 1989, India invoked a law that made the employment of children under age 14 illegal, except in family-owned factories. However, this law is rarely followed, and does not apply to the employment of family members. Thus, factories often circumvent the law through claims of hiring distant family. In addition, in rural areas, there are few enforcement mechanisms, and punishment for factories violating the mandate is minimal, if not nonexistent.

Again, there is a definitional problem involving child labour (Mondal 2009). NSSO identified a set of activities as 'economic activity' that includes all productive activities, household or market-oriented, undertaken by a child (6-14 years of age) in a paid or unpaid capacity. However, in this paper we have also included some *uneconomic activities* such as begging, prostitution etc. and the children who are engaged with such activity within the purview of child labour[2]. Further NSSO introduce a new concept-**potential child labour** defined as the children worked as a paid or unpaid labour within or outside the family in the childhood age but did not work due to sickness or other reasons or the children who sought or seeking/available for work (Unemployed). This definition is very important. It identifies those fringe areas where the possibility to enter the labour market remains exceptionally high. Inclusion of such

1 Sociologists argue that such minimal sharing of family chores is a joyful activity and an essential part of the socialization process of the child. However when such jobs hinder the basic development of child and her rights, they turn out to be exploitative. In the standard literature (Basu and Van 1998: Basu, Das and Dutta 2007, Bhalotra and Heady 2003 Carpio 2007), we deal with this second type of child labour.

2 In fact, they may be referred to as "**distress child labour**". **Obviously, they are the worst form of child labour.**

concepts within the purview of child labour helps us to broaden the concept of child labour in a meaningful way.

In this paper, we want to give a pluralistic view about pattern and causes of child labour in an Indian state with the emphasis on verifying the inverted U hypothesis. Our paper is divided as follows. In the next section, we give a brief description of our data and methodology. Section 3 gives a brief data description, in section 4 we describe the results of basic econometric analysis. We conclude the paper in section 5.

2. Data and Methodology

For empirical analysis, we have used the National Sample Survey Organization (NSSO) 62nd (2005-2006) round Unit Level data on Employment and Unemployment Situation in India. It is a detailed all India data covering all the major states and union territories of India. However, for this paper, we have selected only one state, West Bengal for our study. The choice of the state is purposive. There are several reasons for selecting the state. This state shows wide socio-economic, cultural and religious variations. However, in the recent decades, West Bengal has made some progress in agrarian growth and rural development. It is to be seen how far such changes are reflected in the use and allocation of child labour.

Most of the research on this topic (Goldin, 1979; Horan and Hargis, 1991; Bonnet, 1993; Basu, 1999a; Ray, 1999, Basu, Das, Dutta, 2007, Bhalotra and Heady 2003,.Carpio 2007) observed that child labour is mainly caused by economic factors such as income, assets (land, livestock etc.). But in this paper we want to incorporate the influence of family education level and number of children in the family, ratio of consumer to adult worker. Again our data enables us to compare the situations in the rural areas with the urban areas, male headed families with the female headed families etc. Since not all the sample families use child labour, the dependent variable is truncated at zero. Hence, the use of Ordinary Least Squares (OLS) technique is inappropriate for this analysis. Instead, we propose to use the Tobit regression technique that is suitable for such analysis.

3. Data Descriptions

3.1. Basic information

We now consider some basic socio-economic features of the sample state; they are given in Tables 1, 2 and 3. We have found the data on 5479 families, out of these 47.65% are rural families and 52.35% are urban families. Classifying another way we have found that 89.72% families are headed by a male member and 10.28% families are headed by a female member.

Table 1: Demographic profile of the sampled population	
Child sex ratio (0-14) years	942
Child sex ratio, below 6 years	980
Child sex ratio (6-14) years	922
Sex ratio of child labour (6-14 years)	905
Sex ratio of child labour (10-14 years)	890
Sex ratio of potential child labour (6-14 years)	898
Sex ratio of potential child labour (10-14 years)	554
Adult sex ratio	911

 # Source: Authors' estimate from NSSO 62nd (2005-2006) round Unit Level data on Employment and Unemployment Situation in India.

From Table 1 we have seen that adult sex ratio (911) is very bad but child sex ratios are 942 (0-14 years) and 980 (below 6 years) are relatively larger. This is due to continuous neglect of girl child and the difficulties that she has to withstand vis-à-vis her male counterpart unraveling a sad story of *withering* away of girls as their age increases. The same fact is also reflected by sex ratios of child labour as well as potential child labour where it is 905 for 6-14 years and 890 for 10-14 years child labour and 898 for 6-14 years and 554 for 10-14 years potential child labour.

Table 2: Educational attainment by the adults	
Average years of schooling by adult male	7.35
Average years of schooling by adult female	5.38
Average years of schooling by the family head	6.09
Literacy rate	81.29

 # Source: Authors' estimate from NSSO 62nd (2005-2006) round Unit Level data on Employment and Unemployment Situation in India.

Next we consider the educational attainment of the sample families. Literacy rate of the sampled families is (81.29%) not bad but average years of schooling by adult male (7.35) as well as adult female (5.38) both are low. Average years of schooling by adult female is much lower than average years of schooling by adult male that imply prevalence of high gender deprivation.

Table 3: Poverty and access to public distribution of the sample	
Percentage of APL families	63.7
Percentage of BPL families	18.89
Percentage of Antyodaya families	1.79
Percentage of families which have others type ration card	4.5
Percentage of families which have no ration card	11.12
Total	100

 # Source: Authors' estimate from NSSO 62nd (2005-2006) round Unit Level data on Employment and Unemployment Situation in India.

Our next important issue is the incidence of poverty. Basu and Van (1998) epitomized the issue in their famous luxury axiom. It is argued that families that can barely sustain their subsistence needs opt for child labour. The official estimate of poverty -percentage of Below Poverty Line (BPL) families is low (about 19%) while that of the very poor (Antyodaya families) is insignificant (about 2%). However, sizeable portions of the families (11.12%) have no

ration card. It might be a reflection of illegal transnational migration (possibly from the neighboring countries) and poor administration. In that case, the conditions of these families are very precarious.

3.2. Incidence of child labour

Incidence of child labour for different category is shown in table 4, 5 and 6. By incidence we mean the percentage of children, (6-14) years, working as child labour.

Table 4: Sex wise incidence of child labour (% of total child)

Name of the variables	Male	Female
Incidence of child labour, (6-14) years	31.18	30.61
Incidence of child labour, (10-14) years	19.20	18.54
Incidence of potential child labour, (6-14) years	7.37	7.18
Incidence of potential child labour, (10-14) years	4.66	4.08

 # Source: Authors' estimate from NSSO 62nd (2005-2006) round Unit Level data on Employment and Unemployment Situation in India.

Table 4 shows the sex wise incidence of child labour. From this table we have seen that incidence of child labour for both the types and both the age groups is higher for male than female.

Table 5: Region wise incidence of child labour (% of total child)

Name of the variables	Rural	Urban
Incidence of child labour (6-14) years	30.60	31.35
Incidence of child labour (10-14) years	18.18	19.89
Incidence of potential child labour (6-14) years	6.96	7.73
Incidence of potential child labour (10-14) years	4.17	4.69

 # Source: Authors' estimate from NSSO 62nd (2005-2006) round Unit Level data on Employment and Unemployment Situation in India.

An important dimension is the rural-urban divide. This factor did not get proper attention in the mainstream literature of child labour. The incidence of child labour might be lower in the rural areas due to the strength of traditional

ties providing some cushion to the families in stress. However, in the urban areas such sources are missing. Table 5 shows a brief comparison about the incidence of child labour in rural and urban regions. This table shows that incidence of child labour, for both types and age groups, is relatively high in urban area than in rural area.

Table 6: Incidence of child labour according to sex of the house head (% of total child)

Name of the variables	Male headed families	Female headed families
Incidence of child labour (6-14) years	31.15	27.93
Incidence of child labour (10-14) years	18.85	19.31
Incidence of potential child labour (6-14) years	7.11	9.31
Incidence of potential child labour (10-14) years	4.32	5.17

 # Source: Authors' estimate from NSSO 62nd (2005-2006) round Unit Level data on Employment and Unemployment Situation in India.

Table 6 helps to compare the incidence of child labour between the households, which are headed by a male member, and the households, which are headed by a female member. From this table we have seen that incidence of child labour, aged 6-14 years, is relatively high for the families headed by a male member compared to the families headed by a female member. But we have found exactly opposite picture for the child labour aged 10-14 years. That implies children of the female-headed families come to labour force at a relatively higher age. However, incidence of potential child labour is relatively larger for the female-headed families compare to male-headed families. This implies that the conversion of child labour from potentiality to reality is much lower for the female-headed families.

3.3 Pattern of Child labour

Let us now consider the pattern of child labour- what are the type of jobs our children are doing. Tables 7 and 8 show the pattern of child labour for our

sample. NSSO divides total child labour into eight classes. These eight classes may be grouped into four broad categories: (i) child labour in household enterprises (ii) child labour as regular/casual wage labour (iii) child labour in domestic services (iv) destitute child labour.

It is clear form Table 7 that household enterprises dominate for both the age group; it is near 41% for both the age groups.

The incidence of domestic child labour takes the second best position; it is more than 28% for both the age groups.

Wage employment of child labour is also sizeable in our sample; it is 26.9% for the age group 6-14 years and 27.49% for the age group 10-14 years. Unlike the other three categories, this category shows a different trend. For this category incidence increases as age increases, that means children come to wage work at a higher age.

Again, the last category is worst from welfare point of view. It represents the distress child labour because in this category children's activities are begging, prostitution, etc. representing the worst form of child exploitation. It is disgraceful fact that this category constitutes near 4% for both the age groups.

Table 7: Pattern of child labour (% of child labour)

Categories	6-14 years	10-14 years
Household enterprises (including unpaid family workers)	41.01	40.74
Wage labour	26.9	27.49
Domestic servants	28.29	28.04
Destitutes	3.8	3.73

 # Source: Authors' estimate from NSSO 62nd (2005-2006) round Unit Level data on Employment and Unemployment Situation in India.

Table 8: Pattern of potential child labour (% of potential child labour)

Categories	6-14 years	10-14 years
Worked but did not work due to sickness	33.69	32.75
Worked but did not work due to other reasons	26.52	27.97
Unemployed	38.71	39.28
Did not seek but was available for work	1.08	0

 # Source: Authors' estimate from NSSO 62nd (2005-2006) round Unit Level data on Employment and Unemployment Situation in India.

Table 8 shows the pattern of potential child labour. NSSO divides potential child into six classes, these six classes may be grouped into four broad categories to facilitate our analysis: (i) Worked but did not work due to sickness (ii) Worked but did not work due to other reasons (iii) Unemployed (iv) Did not seek but was available for work. From table 8 we have seen that nearly 39% of total potential child labours are unemployed. This implies high supply pressure of child labour in the child labour market that reduces child wage as well as adult wage rate (if we assume that child labour and adult labour are substitute). Percentage of child unemployment increases as age increases that mean as age increases more and more children come to child labour market. Nearly 33% potential labour worked but did not work due to sickness. This implies a poor health condition of the children.

4. Results of Basic Econometric Analysis

The above analysis was descriptive. To get a proper picture some further analytical study on the determinants of child labour is necessary. However since the incidence of child labour is probabilistic, there may be a large number of families without any child labour. Consequently, Ordinary Least Squares technique is inapplicable here. Instead, one should use some truncated variable technique for this purpose. In our analysis, we have used the Tobit regression technique. Our aim here is to testify the inverted U hypothesis from a pluralistic viewpoint. Since the problem of child labour is multifac-

eted, we have tried different types of regression models to ascertain the relationship. For this we have considered four sets of alternative specifications of child labour: (a) Age of child labour and its determinants (b) rural-urban incidence of child labour and its determinants (c) Gender of the family head and child labour determinants (d) gender aspect of child labour and its determinants. We could have considered these various aspects within a single set but then the pluralistic nature is lost and it is difficult to disentangle the relevant factors.

Table 9: Tobit regression results (dependent variable: total child labour)

Dependent variable	Total child labour 6-14 years	Total child labour 10-14 years
Independent variables	Coefficient(t statistic)	coefficient(t statistic)
Per capita land	1.7791(2.2468) **	1.1619(1.2968)
Per capita land square	-2.7579(-1.8130)*	-1.3256(-0.93470)
No. of child in the family	0.55251(16.614) ***	0.47878(11.555) ***
Average years of schooling by adult male	-0.10063(-4.8876) ***	-0.16324E-01(-1.4024)
Average years of schooling by adult female	0.23209E-01(1.0851)	0.25211E-01(1.9728) **
Ratio of consumer to male worker	0.10019 (3.4771) ***	0.13329(4.0335) ***
Ratio of consumer to female worker	0.12836(4.5888) ***	0.15700(4.7635) ***
Dummy for sex of the house head	0.17598(1.5226)	0.18770E-01(0.13004)
Sector dummy	-0.12375(-1.6775)*	-0.81150E-02(-0.87137E-01)
Constant	-2.8024(-17.324) ***	-3.7142(-19.553) ***
Log-Likelihood	-2979.8134	-2295.6381
No. of observations	5479	5479

*(*Significance at 10% level, **Significance at 5% level, ***Significance at % level,) # (Source: Authors' estimate from NSSO 62nd (2005-2006) round Unit Level data on Employment and Unemployment Situation in India.)*

Table 9 shows the Tobit regression results for the first model set. In both the cases dependent variable is total child labour; first case is for the age group 6-14 years, second case is for the age group 10-14 years, and in both the cases, we regress our dependent variable on the same set of explanatory variables. They are per capita land, per capita land square, number of children in the family, average years of schooling by adult male, average years of schooling by adult female, ratio of consumer to male worker, ratio of consumer to female worker, dummy for sex of the house head and sector dummy. We use land as a proxy of family asset. According to the inverted U hypothesis, increase in family wealth may boost up child labour up to a certain point beyond which it starts to decline. The initial upsurge in child labour may be a reflection of need to use family resources more intensively at a cheaper rate. However as income rises, the family may now have enough space for sending their child to school thereby leading to a fall in the use of child labour (Basu, Das and Dutta 2007, Carpio 2007). Given that a sizeable portion of the child labour are in the household sector (that includes unpaid family labour) this effect may be very important. From the regression result, we have seen that in the first case, per capita land is significant at 5% level and sign of the coefficient is positive. This may imply that child labour increase with per capita land holding and vice-versa. If we consider per capita land square then we have seen that it is significant at 10% level. Coefficients of first two factors reflect that child labour increase with per capita land holding but increasing rate of child labour decreases with per capita land holding. Therefore, inverted "U" hypothesis is observed in the first case. If we consider the second regression then we have seen that per capita land is very weakly significant and sign of it is positive and per capita land square is not significant. This may be because adult members of the family think that it is quite natural to send their child to work as they tend to mature and the inverted "U" hypothesis breaks down.

Our third factor is number of children in the family. For our data, the relevant coefficient is highly significant for both the regression. That means child labour increases with the number of children in the family. When number of children increases amount of consumption increases but income remains same so to survive the family adults send their child to work.

Our fourth and fifth factors reflect the education level of the family. From the regression, result we have seen that average years of schooling by adult male is highly significant in the first case and sign of the coefficient is negative. That means schooling of the adult male have a significantly negative impact on child labour. However, average years of schooling by adult female are not significant reflects the fact that family decision about the child depends on only adult male not on adult female. However, in the second regression average years of schooling by the adult male is weakly significant and its sign is also negative but average years of schooling by adult female has a significantly positive impact on child labour. This may be because as adult females are more educated then they cannot give much time to do the domestic works so they divert some of their duties to their older child.

Our sixth and seventh factors measure the family sustainability. On the background of income, a family will be more sustainable if the ratio of consumer to worker is low. From the regression result, we have seen that ratio of consumer to male worker and ratio of consumer to female worker are highly significant for the regression equations. This reflect the fact that as ratio of consumer to male worker and ratio of consumer to female worker falls family gets away from poverty trap and they have no necessity to send their children to work.

Next, we will see the impact of sex of the house head on child labour and for that; we take a dummy for sex of the house head. Our regression results show that this dummy is significant at 10% level for the child labour aged 6-14 years and sign of the coefficient is positive implies that incidence of child labour will be larger for the male headed families than the female headed families. However, this dummy is not significant for the child labour aged 10-14 years. That means as child become older decision about the child send to work does not depend on sex of the family head.

Lastly, we will see the impact of region on child labour. Our regression results show that the dummy variable for region has a significantly (10% level) negative impact on child labour aged 6-14 years but it is not significant for the second regression implies incidence of child labour is higher in urban areas than rural areas at least at the lower age of the children.

Table 10: Tobit regression result (dependent variable: total child labour 6-14 years)

Dependent variable	Rural child labour	Urban child labour
Independent variables	Coefficient(t statistic)	coefficient(t statistic)
Per capita land	0.41819(0.12762)	2.0860(2.4154) **
Per capita land square	-8.9017(-0.57979)	-2.9937(-1.8501)*
No. of child in the family	0.50166(10.854) ***	0.60676(12.776) ***
Average years of schooling by adult male	-0.65464E-01(-2.4752) **	-0.12836(-3.7235) ***
Average years of schooling by adult female	0.32047E-01(1.2434)	0.14141E-01(0.34102)
Ratio of consumer to male worker	0.19766(4.7486) ***	0.22478E-01(0.55742)
Ratio of consumer to female worker	0.19052(4.6736) ***	0.79359E-01(2.0480) **
Dummy for sex of the house head	0.40410E-01(0.26938)	0.31698(1.7774) *
Constant Log-Likelihood	-3.1969(-13.956) *** -1266.2921	-2.6733(-12.119) *** -1702.2764
No. of observations	2803	2676

*(*Significance at 10% level, **Significance at 5% level, ***Significance at % level,) # (Source: Authors' estimate from NSSO 62nd (2005-2006) round Unit Level data on Employment and Unemployment Situation in India.)*

Table 10 shows two regression results for the second set. In both the regressions, our dependent variable, total child labour aged 6-14 years, is regressed on same set of explanatory variables as earlier except sector dummy.

Our regression result show that first two variables per capita land and per capita land square are significant (per capita land square is significant at 10%

level) and have usual sign in urban areas but they are not significant for rural areas. That means inverted "U" hypothesis is hold good in urban areas but not in rural areas. The relative insignificance of inverted U hypothesis in the rural areas is not very surprising. Due to rapid progress of technical expertise, the importance of land in agriculture has declined. This has been substituted by other factors (such as capital assets, supply of irrigation etc.). However, in the urban area land is still important due to its scarcity and locational value. The urban family possessing a large amount of land easily gets credit to start an informal business. Here land may be considered as a proxy of credit collateral. The inverted U may be just a reflection of it.

Our third factor i.e. number of child in the family has a significantly positive impact on child labour is again established in both the area.

Our fourth factor i.e. average years of education by adult male has a significantly negative impact on child labour in both rural and urban areas as earlier. But, fifth factor, average years of education by adult female is not significant in both rural as well as urban areas. That implies decision about the children is solely depends on education of the adult male.

Our sixth factor i.e. ratio of consumer to male worker is highly significant for rural areas and the sign of the coefficient is positive implies that as this ratio increases incidence of child labour rises. However, this variable is not significant for urban areas. If we consider the ratio of consumer to female worker then we have seen that it is highly significant in both the areas. Explanation is not necessary, as given earlier.

Our last concern is on to dummy for sex of the house head which has a significantly (at 10% level) positive impact on child labour for urban areas but it is not significant for rural areas. That implies rural children are at indifferent position whether their family head male or female.

Table 11: Tobit regression results (dependent variable: total child labour 6-14 years)

Dependent Variable	For male headed families	For female headed families
Independent variables	Coefficient(t statistic)	Coefficient(t statistic)
Per capita land	1.7458(2.1491) **	1.8254(0.43033)
Per capita land square	-2.7511(-1.7259)*	-3.5559(-0.50549)
No. of child in the family	0.54927(15.917) ***	0.70479(5.1614) ***
Average years of schooling by adult male	-0.12564(-5.3426)***	-0.88138E-01(-1.1160)
Average years of schooling by adult female	0.65094E-01(2.5510) **	-0.10292(-1.5846)
Ratio of consumer to male worker	0.70041E-01(2.2293) **	0.17631(1.9026)*
Ratio of consumer to female worker	0.14023(4.8093) ***	0.12072(0.94599)
Dummy for sector	-0.86990E-01(-1.1317)	-0.51211(-1.8320)*
Constant	-2.5747(-16.963) ***	-3.0064(-6.9624) ***
Log-Likelihood	-2753.1062	-218.4858
No. of observations	4916	563

*(*Significance at 10% level, **Significance at 5% level, ***Significance at % level,) # (Source: Authors' estimate from NSSO 62nd (2005-2006) round Unit Level data on Employment and Unemployment Situation in India.)*

Table 11 shows two regression results for the third set. In both the cases, our dependent variable is total child labour. From Table 11 we have seen that inverted "U" hypothesis (per capita land square is significant at 10% level) is observed for the families which are headed by a male member but there is no such evidence for the families which are headed by a female member.

One interesting result is that average years of schooling by adult male is not significant for the families which are headed by a female member though it is highly significant for the male headed families and sign of the coefficient

is negative as earlier. However, average years of schooling by adult female is significant for the male headed families and sign of the coefficient is positive implies incidence of child labour rises as average years of schooling by adult female rises. This variable is significant (at about 12% level) for the female headed families and sign of the coefficient is negative implies that incidence of child labour decreases as average years of schooling by adult female rises. Thus female heads are more averse to child labour compared to the males.

Next we come to the factor i.e. ratio of consumer to male worker which is significant for both male as well as female headed (at 10% level) families with proper sign as earlier. Again the ratio of consumer to female worker is highly significant, with proper sign, for the male headed families and it is not significant for female headed families.

Lastly, dummy for sector is not significant for the male-headed families but it is significant at 10% level for female-headed families. That means incidence of child labour is higher at urban areas within the female-headed families.

Table 12: Tobit regression results, dependent variables: total male and total female child labour (6-14 years)

Dependent variable	Male child labour	Female child labour
Independent variables	Coefficient(t statistic)	Coefficient(t statistic)
Per capita land	0.36638(0.40359)	3.9083(2.9628) ***
Per capita land square	-0.70052(-0.52453)	-7.1819(-2.2161) **
No. of child in the family	0.45104(10.297) ***	0.56464(12.951) ***
Average years of schooling by adult male	-0.12354(-4.4053) ***	-0.77742E-01(-2.6322) ***
Average years of schooling by adult female	0.11672E-01(0.40096)	0.36912E-01(1.2002)
Ratio of consumer to male worker	0.85137E-01(2.2167) **	0.93754E-01(2.4109) **
Ratio of consumer to female worker	0.83719E-01(2.2571) **	0.14773(3.9144) ***

Dummy for sex of the house head	0.29923(1.8819) *	0.19274E-01(0.11891)
Dummy for sector	-0.16159E-01(-0.16426)	-0.21454(-2.0397) **
Constant	-3.4020(-15.635) ***	-3.8398(-16.726) ***
Dependent variable	(26.91) ***	(25.482) ***
Log-Likelihood	-2098.9261	-1820.1591
No. of observations	5479	5479

*(*Significance at 10% level, **Significance at 5% level, ***Significance at % level,) # (Source: Authors' estimate from NSSO 62nd (2005-2006) round Unit Level data on Employment and Unemployment Situation in India.)*

Table 12 shows two regression results relevant for our fourth model. In the first regression our dependent variable is male child labour aged 6-14 years and in the second regression our dependent variable is female child labour aged 6-14 years. From Table 12 we have seen that inverted "U" hypothesis holds well for the female child labour but not for the male child labour.

Next factor-the average year of schooling by adult male is highly significant for both male and female child labour. However, the average year of schooling by adult female is not significant for both the cases.

If we consider the factors i.e. ratio of consumer to male worker and ratio of consumer to female worker then we have seen that both the factors are significant for both the regression with proper sign as earlier.

Dummy variable for sex of the house head is significant at 10% level with proper sign as earlier for male child labour but not significant for female child labour. That implies incidence of male child labour will be higher if sex of the family head is male.

Dummy variable for sector has a significant impact on female child labour implies that incidence of child labour will be high in the urban areas than the rural areas. But sector dummy is not significant for male child labour.

Now we summarize the results of basic econometric analysis on the light of inverted U hypothesis (table 13).

Table 13: Summary results about inverted U hypothesis

Results	Inverted U confirmed	Inverted U not confirmed
Table 9	6-14 years child labour	10-14 years child labour
Table 10	Urban child labour	Rural child labour
Table 11	Child labour for male headed families	Child labour for female headed families
Table 12	Female child labour	Male child labour

From Table 13 we have seen that if other conditions remain same then in each of the cases, where inverted U hypothesis is confirmed, probability of a child entering the labour market is relatively lower than the cases where inverted U hypothesis is not confirmed. In other words, inverted U hypothesis is more appropriate where the opportunity cost of child labour is relatively high.

There are some children in the age group 6-14 years who are at relatively lower age compare to the age group 10-14 years. However, they have relatively low physical productivity and skill. Probability of such a child being child labour is obviously low, if other conditions remain same. Similarly, probability of an urban child becoming child labour is relatively lower than a rural child, due to demonstration effect. Children of the male-headed families are at a better position than the children of female-headed families. Therefore, chance of a child becoming labour is relatively lower for the male-headed families. Lastly, a female child has relatively lower physical productivity and limited opportunity to work compared to a male child. Therefore, chance of a female child becoming a labour is relatively lower than the male child is.

Thus from Table 13 we have seen that if other conditions remain same then each of the cases, where inverted U hypothesis is confirmed, probability of a child being a child labour is relatively lower than the cases where inverted U hypothesis is not confirmed. In other words, inverted U hypothesis is found well where extreme poverty prevails.

5. Conclusion

Our analysis shows that the incidence of child labour is till now high enough in India. Among the child labour a significant proportion is wage labour. The worst form of child labour i.e. distress child labour though not significant is prevalent. Girl child is continuously neglected here. Children come to labour force at a higher age for the families headed by a female member. Incidence of child labour is higher in urban areas than the rural areas. The verification of the inverted "U" hypothesis of child labour rests on a number of socio-economic factors that determine the probability of child employment with ceteris paribus assumption.

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BOOK REVIEW

Bedprakas Syam Roy, ... towards Convergence – A Ready Reckoner for Actions, Knowledge Bank Publishers & Distributors, Kolkata, 2011, pp. 143, Rs. 275.

The discrepancy between the targets and actual achievements in the sphere of development programmes has been an area for universal concern. Such a discrepancy occurs notwithstanding adequate financial allocations made by the Government and other funding agencies to attain higher economic development and bring about improvement in economic conditions of the people, particularly the poorer sections. To overcome this problem, several attempts such as performance audit and outcome-based budget initiatives were made in the past. The 11th Five Year Plan in India fixed some 'monitorable targets' to attain better success towards fulfilling plan objectives. However, the achievements so far with regard to delivery of services to improve socio-economic conditions of the masses do not appear to be satisfactory. In this backdrop, the concept of convergence emerges as an alternative methodology for optimal use of public resources and more effective delivery of services.