Child Labour Use in a Small Developing Country: Is it Luxury, Distributional or Substitution Axiom?

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ABSTRACT

Child labour use in developing countries has been increasing over the years. In general, it's characterized by low wages and long hours of work under dangerous, hazardous, unhealthy and unhygienic conditions, which could lead to poor physical and mental development. It deprives a child of education and natural development. In this paper, we examined the use of child labour in Fiji. The study utilized primary data collected using a structured survey to examine the determinants of child labour. The results from this study demonstrate that the variables such as household size, household income, and the gender of children significantly affect child labour supply. Furthermore, absence of adults from households is also a causal factor contributing towards child labour. Using these results, we make a case for "luxury" and "substitution" axioms for Fiji's Child labour market.

Key words: Child labour, Fiji, Sequential Probit Modeling, Work, Economy

A. Introduction

Child labour use in developing countries continues to be a controversial issue often debated at international forums (Basu and Van, 1998; and Maskus, 1997). While most child laborers reside in developing countries (Ashagrie, 1998), a small proportion can also be found in developed countries (Kruse and Mahony, 1998). In fact, it is not a new phenomenon, but rather one, which was extensively practiced in Europe, particularly in Britain, during late eighteenth and early 19th century. The gravity of this problem has also led to the development and inclusion of labour standards into several bilateral and regional trade agreements. For example, when the US Generalized System of Preferences (GSP) was re-authorized in 1984, some labour standards provisions were added. Similar qualifying conditions apply under the Caribbean Basin Initiative (CBI) (Brown, 2001). The US, Canada and Mexico also adopted the North American Agreement on Labour Cooperation (NAALC), which specifically provides for trade sanctions in the event that the US or Mexico fails to enforce its own laws regulating child labour practices (Brown, 2001). Furthermore, the UN Convention on the "Right of the Child" clearly underscores the need to protect the child from any work that is likely to be hazardous.

Child labour is generally characterized by low wages, long hours of work under dangerous, hazardous, unhealthy and unhygienic conditions, which could lead to poor physical and mental development. Furthermore, child labour deprives a child of education and natural development. These two aspects have led to frequent condemnation of it as odious and immoral. Some researchers, Admassie (2002) and Ravallion and Wodon (1999) have termed it as a dis-investment in human capital formation.

While cross country regressions have provided some of the causes, given that its roots are deeply embodied in cultural, social and economic structures of a society, country specific studies on its causes must be undertaken to help better design policies and to evaluate its welfare implications.

In this paper, we examine the determinants of child labour in Fiji. There have been numerous cases of child labour use and abuse and thus, a number of organizations including the regional ILO office have called for an examination of child labour practices in Fiji and the Pacific. Fiji's unique history, which attributes a significant portion of its pre-independent growth to be based on the acquisition, creation, control and appropriation of labour power, further calls for a detailed enquiry into labour market issues. During the pre-independent times, technology was simple and land was plentiful, but productive labour force was a major constraint. Henceforth,

labour was the factor creating value. Contemporary Fiji has made some significant progress in development; and the future of labour force quality is dependent, to a large extent, on how we treat the current generation of children. Therefore, with evidence of increasing child labour use and exploitation; explicit country specific study on its root causes must be examined. Furthermore, other dimensions of the households need to be examined for effective policy design.

The second section of the paper provides a brief review of the various theories of Child Labour supply while the third section provides a description of the methodological framework for the study followed by a description of the theoretical and empirical model used in this study. The fifth section provides a discussion of the results and the last section provides a summary and conclusion.

B. Theorizing Child Labour Use: A Review

Development literature is not deficient of studies relating to child labour, its causes and consequences. In a recent work, Basu and Van (1998) and Brown, et al., (1996) emphasized that the choice of labour standards depends on a country's stage of development and per capita income. Basu and Van (1998) developed an important model in which they demonstrate that in a fairly productive economy, there exists multiple equilibria, with children working in at least one. They identify two assumptions from their exposition. Firstly, they demonstrate the "luxury axiom". The luxury axiom is one where the family sends its children to the labour market only if its income from sources other then child labour is very low. There are a number of other studies that support this axiom that economic conditions of adult workers are a key determinant of whether a child will join the labour market or not. These studies include Goldin (1979); Horan and Hargis (1991); Bonnet (1993); Basu (1999) and Ray (1999). Basu (2000) attempts to theorize this relationship by providing a schematic model of a labour supply curve along with child labour. The following section draws on material presented in Basu (2000:C52-C54).

Consider an economy with H identical households, where each household has I adults and m children, while the adult labour supply is assumed to be inelastic. Now, if the household income from non-child labour sources rises sufficiently high, the households will withdraw children from the labour force. Assume this critical level of income is "s" such that, below which, children will be sent off to work. Now, further assume that a child's labour and an adult's labour are two factors with child producing a fraction γ (< 1) of an adult's labour. Therefore, whenever both children and adults work, the prevailing adult and child wages must satisfy the following condition:

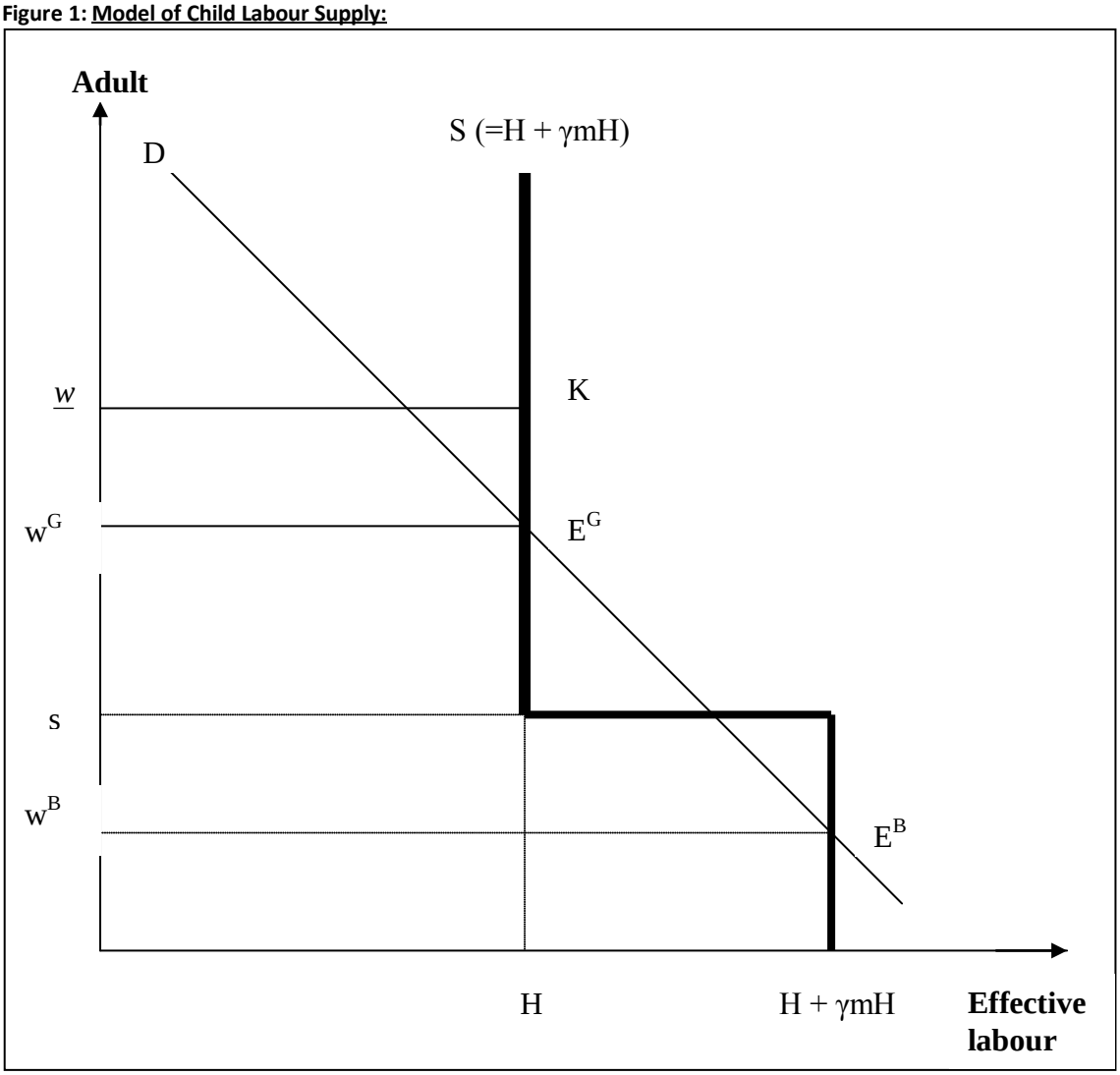
$$w_c = \gamma w \quad (1)$$

Therefore when adult wage is w, child wage is γw. The aggregate demand function for labour in the economy can be algebraically stated as follows:

$$D = d(w) \quad (2)$$

D is the aggregate labour demanded by all firms in the economy. We will assume that $d'(w) < 0$. This demand curve is illustrated in figure 1 below. The aggregate labour supply curve, as a function of adult wage is given by the step-shaped line marked S in Fig 1. Note that if w exceeds, only adults supply their labour. There being H adults in the economy, the labour supply curve is given by H. If w drops below s, the mH children are out searching for work. Since they provide γ units of labour each, the total supply of labour is given by H + γmH.

Figure 1: Model of Child Labour Supply:



Source: Basu, K (2000:C54).

Secondly, Basu and Van (1998) demonstrate that child labour also occurs due to "substitution axiom". This axiom states that from the point of view of firms, child labour is a substitute for adult labour. Swinnerton and Rogers (1999), who follow up on these two micro-level behaviors, propose a third macro-level assumption, which they term as the "distributional axiom". They argue that income or wealth from non-labour sources must be sufficiently concentrated in the hands of few agents. They demonstrate that if non-labour income is distributed with sufficient equality, market equilibrium with child labour cannot exist.

Child labour is also unique in the sense that the decisions to participate in the labour market do not rest with the child, but rather the parents. Markus and Holman (2002) and Nerlove and Raut (1997) argue that parents make decisions concerning children's education or their participation in the labour market. The economic rationality of sending children to school could be based on a number of theories. The New Household Economics (NHE) theory, initially developed by Becker (1981), states that intra-household decisions regarding task allocation are made purely on the basis of utility maximization. Household members are allocated with tasks that will maximize returns to the households. Focusing on the relationship between child labour and economic growth, Baland and Robinson (2000) considered the trade off between child labour and the accumulation of human capital; and demonstrated that in the presence of imperfect capital markets, even though the parents are altruistic and child labour is inefficient, child labour may rise because parents fail to fully internalize its negative effects.

There exists numerous empirical studies identifying the determinants of child labour with respect to a particular country. Ranjan (1999) modeled child labour and human capital accumulation and demonstrated how poverty, in combinations with credit constraints, can give rise to child labour in developing countries. Cartwright (1999) and Cartwright and Patrinos (1999) performed a 3 stage sequential probit analysis of the decision to place children in the workforce, the decision to have children work full-time and the choice of type of work, using Columbian and Bolivian data, respectively. They find that poverty played a central role in the likelihood that children work. They also find that higher cost of living significantly increased the probability of child labour in Bolivia only. Cartwright (1999) interprets this opposite result for Bolivia and Columbia as indicating that school cost proxies for school quality, underlining the difficulties in developing measures that adequately distinguish the two concepts. There is also evidence of parental income implication on child labor use, thus, lending support to the "luxury axiom" proposed by Basu and Van (1998). Goldin (1979) and Horrell and Humphires (1995) demonstrated that a parent's wage (a proxy for skills) has strong negative effect on the use of child labour. Another UNICEF sponsored study by Pelto (1997) in Bangladesh identifies low levels of parental skills and income as important determinants of child labour.

There are also studies, which point out to the effects of child labour on the child and child's household. By allowing children to work can also have a positive effect on fertility. Dasgupta (1995) argues that children in poor countries are regarded assets useful for raising household income. Similarly, Weiner (1991) also argues that while families see their children as useful income earning assets, many governments have not shyed away from making education compulsory, thus, curbing child labour. He argues, in such cases, given that these policies will deny family income from child labour, it will discourage them from having higher number of children. Child labour has also been found to be exploitative and thus, have a detrimental effect on child's mental development (Shelburne, 2000).

C. Methodology and Theoretical Framework

Methodology

This study requires survey of heads of household to ascertain their views on child labour and to collect household specific data. Given that there exists numerous definitions of child labour, this study will take into account all children who are out of school before the age of 18. The age of 18 is used because it is the age that a student finishes high school education. A child will be classified to engage in "Child labor" if the work done by children harm or exploit them in some way (physically, mentally, morally, or by blocking). Furthermore, it takes into account children who work on a regular basis, for which they are paid, or whose work results in output destined for the market (Basu, 1999).

The survey will involve households on Fiji's two major islands; Viti Levu and Vanua Levu. Furthermore, given that most child labour are within the proximity of the two cities and major towns, this study will survey households in Suva and Lautoka, the two cities and major towns like Sigatoka, Nadi, Lautoka, Ba, Tavua, RakiRaki, Seaqaqa and Savusavu. For Suva, Lautoka, Nadi and Nasinu, the urban areas/streets will be listed and randomly picked. For other Towns, the rural villages will also be covered. A list of these villages will be made and appropriate number of villages will be randomly picked. From these villages, every third household will be selected for interview until the target number is achieved (see below for target household number). For each village and street in the sample, an approximate number of households will be obtained in advance from the municipal councils and rural local authorities. This figure will be used as a guide to ascertain the number of households to be targeted in each of these areas.

The survey will use structured questionnaire (see appendix 1 for a draft questionnaire). The survey will be undertaken from September, 2007 to January, 2008. The long time period is chosen to allow the researcher to undertake the survey during semester breaks and weekends. Furthermore, the survey will also be carried out with the support of Undergraduate University students under the direct supervision of the principal researcher. The actual number of targeted households is 1100. This figure was arrived at by targeting 1% of the population in each of the target districts (see Table 1 for details).

Table 1: Determination of Sample Size, 1996:

City/Town	Population	Approx. No of Households	Proportion	*Sample*
Suva	90,609	22,652	0.01	227
Lautoka	77,310	19,328	0.01	193
Ba	44,547	11,137	0.01	111
Nadi	44,517	11,129	0.01	111
Tavua	20,836	5,209	0.01	52
Nausori	30,171	7,543	0.01	75
Nasinu	84,000	21,000	0.01	210
Sigatoka	12,332	3,083	0.01	31
RakiRaki	14,635	3,659	0.01	37
Labasa	24,095	6,023	0.01	60
Savusavu	10,104	2,526	0.01	25
Seaqaqa	11,036	2,759	0.01	28
Total	440,097	110,024		1160

Source: Nasinu data was obtained from Nasinu Town Council. All other data are from the 1996 Household Income and Expenditure Survey. The Nasinu figure is for year 2005.

Table 2: Some Basic Characteristics of Respondents:

Variable	Observation
Mean Age of Head (years)	45 *(Min:20 ; Max:85)*
Mean Formal Education (years)	8 *(Min:1 ; Max:18)*
Ethnicity (%): Ethnic Fijian	21.1
Indo Fijian	78.9
Mean Household Size	5 *(Min: 3; Max:11)*
Gender of Child working (%): Male	40.8
Female	59.2
Mean Household Income	11596.58 (Min: 1500 ; Max: 5500)
Mean Total Assets	27203.00 (Min: 2000; Max: 300000)
Child Labour Status (%): No CL	70.7
Part-Time CL	19.1
Full Time CL	10.2
Sample size (n)	366

D. Theoretical and Empirical Model

To ascertain the determinants of a household's decision to engage their child in labor requires modelling the child and households specific characteristics defined in the theory section simultaneously. Such quantitative relationship modelling would allow researchers to rigorously test and determine the significance of each factor. Furthermore, quantitative modelling would allow decision-makers to measure the impact of individual policy response on the direction and magnitude of change on the independent variable. To do so, the following theoretical model is specified:

$Y_i = \alpha + \beta X_i + \varepsilon_i$

Where Y_i = 1 if option is chosen, 0 if option is not chosen;

X_i = vector of explanatory variables; and

ε_i = random error term.

Application of Ordinary Least Squares (OLS) techniques to estimate the above model will result in inefficient estimates since the error term is heteroscedastic. Moreover, the parameter estimates will be inefficient (Goldberger, 1964; Pindyck and Rubinfeld, 1983). In addition, due to a non-normal error structure, classical hypothesis tests such as the t-test are no longer appropriate (Shakya and Flinn, 1985). Given this problem, a common used approach in econometrics literature is to transform the original model using a cumulative probability function in such a way that the predictions (P) will lie in the (0,1) interval for all X. A large number of studies exist in the literature, which have utilised this model to explain the probability of adoption or acceptance by decision makers (see Reddy, *et. al*, 1999, Masuo and Reddy, 1997 and Yanagida and Reddy, 1997). This type of behavioural model accounts for a dichotomous dependent variable such as adopting or not adopting a modern crop variety, decision to open or not to open a bank account, or determining whether an individual is in poverty or not. This study utilizes this concept and adopts the Probit probability model (which utilizes the cumulative normal probability function) for estimation. The Probit model can be shown as follows:

$$Pi = F(Zi) = F(\alpha + \beta Xi) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{\alpha+\beta Xi} e^{-x^2/2} ds$$

Where P_i = probability that the event occurs;
e = base of natural logarithm;
s_i = random variable with mean zero and unit variance.

Given that we will have to model the determinants of two dependents variables, namely, whether the child works or not, and if the child works, whether he/she works fulltime or part-time; we will have to adopt a sequential probit model.

Based on the above theoretical exposition, we can now model child labour supply within the household utility maximizing framework. The household utility function can be stated as follows:

$U(Z) = W(C_Z)$ (3)

where U = refers to household utility;
Z = refers to typical basket of consumer goods;
C_Z = refers to consumption function.

$C_Z = f(Y_{L,OA})$ (4)

where $Y_{L,OA}$ = income from labour and other activities such as business.

$Y_L = f(A_{LS}, C_{LS})$ (5)

where Y_L = labour income;
A_{LS} = adult labour hours supplied; and,
C_{LS} = child labour hours supplied.

Therefore, based on a priori knowledge and literature review, the child labour supply function can be specified as follows:

$C_{LS} = \beta_0 + \beta_1 ALY + \beta_2 CA + \beta_3 CG + \beta_4 CE + \beta_5 HE + \beta_8 HS + \beta_9 AH$

Where CLS = child works or not and if the child works, whether he/she works fulltime or part-time.
ALY= adult labour income;
CA= child age;
CE= child ethnicity (0= ethnic Fijian and 1= Indo-Fijian);
CG= child gender (0= female and 1= male);
HE= education of head of the household (in years of formal schooling)
HS= household size;
AH= Age of head

The signs of the variables are expected to be $\beta_{ALY} < 0$, $\beta_{CA} > 0$, $\beta_{CG} >< 0$??, $\beta_{CE} > 0$, $\beta_{HS} >< 0$, $\beta_{HW} < 0$ and $\beta_{GH} < 0$. The signs for ethnicity and household size cannot be assigned now due to lack of a theory and priori studies on this area. Note that the dependent variable could take a discrete form such as whether the child works or not; or if the child works, does he/she works part time or full time.

E. Results and Discussion

Qualitative analysis of the responses to a question on the reasons for engaging in child labour is presented in the Table 3 below. The top most reason is low household income. 62.5% of the respondents state this as the single most important reason. Other important reasons include child earning income for him/her self, high cost of education and no adult in the family to work.

Table 3: Reasons for Households Sending Child for Child Labour

Reasons	1st Reason	2nd Reason	3rd Reason
Family income too low	62.5	41.5	25.5
No adult to work	3.2	7.2	3.6
Child doesn't want to go to school because he was influenced by peers not to go	1.3	5.9	4.4
Need more money to pay off debts	1.9	3.3	8.0
Child is able to earn for his pocket expenses and for his educational needs, as well as saves for future	11.7	12.5	19.0
Child is happy and willing to work	1.3	1.3	5.1
Child is influenced by money	0.0	1.3	0.7
Utilizes his time wisely during holiday by earning some money and gaining experience	1.9	7.2	7.3
No government support towards the family since we are poor i.e. in terms of scholarship	0.0	2.6	0.7
Help other brothers and sisters in their expenses and educational needs	0.6	3.9	2.2
Financial problem in relation to educational requirements	3.2	9.2	8.0
School not taking because child was not performing well.	4.5	3.9	4.4
Cost of living is high	0.6	1.3	3.6
Helps family share the farm work load and helps in farming activities as result saves in labour cost	4.5	7.2	5.1
Can't afford to meet extra school requirements such as fundraising, tickets and so on	0.0	0.0	0.7
Child didn't wanted to join the new school	0.0	0.0	0.7
No guidance towards Childs education and as well as for family	0.6	1.3	0.0
Single parenting (widower)	1.3	0.0	0.7

Some of the above findings are further reinforced by quantitative modeling. The results from the Sequential Probit model are presented in Table 4. The results demonstrate that the variables household size, household income and gender of child significantly affect child labour supply. The positive significant household size variable indicates that with an increase in household size by a unit, the probability of child labour supply increases by 23%. The negative adult income variable indicates that with a dollar increase in adult income; the probability of child labour supply decreases by 0.02%. Positive gender variable indicates that being a male increases the probability of being in child labour by 149%. The rest of the variables, age of head, ethnicity, education of head and age of child are insignificant as far as child labour supply is concerned.

Table 4: Sequential Probit Model of Child Labour Use in Fiji

Variable	Coefficient	Standard Error	P-Value
Age of Head	0.006	0.008	0.468
Ethnicity	-0.358	0.198	0.069
Education of Head	-0.0227	0.024	0.358
Household Size	0.234*	0.051	0.000
Adult Labour Income	-0.0002*	0.0003	0.000
Child Age	0.015	0.029	0.618
Gender of Child	1.494*	0.192	0.000

Note: An "*" indicates significance of the corresponding variable at 5% level.

F. Summary and Policy Implications.

Child labour use in developing countries continue to be a controversial issue, which is often debated at international forums. In fact, it is not a new phenomenon, but rather one, which was practiced extensively in Europe, particularly in Britain, during late eighteenth and early 19th century. Child labour in general is characterized by low wages, long hours of work under dangerous, hazardous, unhealthy and unhygienic conditions, which could lead to poor physical and mental development. Furthermore, child labour deprives a child of education and natural development. It is these two aspects that have led to frequent condemnation of it as odious and immoral. While cross country regressions have provided with some the causes, given that its roots are deeply embodied in cultural, social and economic structures of a society; country specific studies on its causes must be undertaken to help better design policies and to evaluate its welfare implications.

In this paper, we examined the use of child labour in Fiji. The study utilized primary data collected using a structured survey to examine the determinants of child labour. The results from this study demonstrate that the variables household size, household income and gender of children significantly affect child labour supply. A large household size has a greater likelihood of supplying child labour. The larger household may find difficulty in meeting the household requirements and hence, resorts to shifting some children to formal labour market. The income variable also has an impact on child labour supply. Lower income households are more likely to send their children to labour market. This finding supports "luxury" axiom, which states that a household will send a child to engage in the labour market if other sources of household income is not sufficient. Furthermore, Fiji society is found to be gender biased. That is, being a male child is associated with a greater likelihood of being part of the labour market. The results from qualitative analysis also support the "substitution axiom" that child labor arises as a result of absence of adult labour in the household. Absent labour arises either out of separation, death of either parents or single parenting. With regard to the third axiom, "distributional axiom", it may not be a cause in this case, as labour income is the only source of income for all respondents under study.

The issue of household size and income has an important bearing on policy making. With regards to household size, family planning programs can play an important role in ensuring that households have smaller and manageable household size and thus, are able to cater for the children without resorting to sending children to employment during their childhood. A more sustainable solution would be to ensure that incomes rise on a sustained manner. Rising incomes and employment opportunities will avoid households to pull children out of the school system. While this recommendation may seem to be quite simple, however, what needs to be examined is the causes of the low and slow growth, so that appropriate policy recommendations are drawn up to promote sustained economic growth.

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