

Schooling, Job prospect and Child labour in a Developing Economy

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Abstract: Incidence of child labour is widespread in the developing countries. The two broad reasons for this are poverty and low return to basic education in the developing world. The theoretical literature is mainly focused on the question of poverty and usually view child labour through the lens of credit market imperfection. We develop a model of child labour vs. education in which uncertainty in job prospect, paternal attitude towards education and the existence of informal sector are crucial dimensions. Our model predicts that a child go through part schooling and then join the informal sector. We examine the effectiveness of standard policies like trade sanctions compulsory schooling or financial incentives in reducing the incidence of child labour.

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1. Introduction

Historically child labour existed in all countries. In today's world the incidence of child labour is widespread in the developing countries. The International Labour Organization (ILO, 1996) estimates that between 100 million and 200 million people under age 15 work worldwide, 95% of them being in developing countries. More importantly, about 110 million school age children worldwide (around 20% of the corresponding age group) receive no primary education. Again a vast majority of these are concentrated in low income countries. It is reasonable to presume that the existence of child labour is intimately linked with poverty.

Empirical studies point to two broad reasons for why children work. First, because of abject poverty, many households find it necessary to send their children to work, and thereby, stop them from receiving education (see Bhalotra, 1999; Ray, 1999). Thus, poverty is the greatest single force, which creates the flow of children into the workplace. Second, there is very strong empirical evidence that the rate of return to basic, primary-level education as provided to poor children in many developing countries is very low, not only because of high rates of time discount but also due to the poor quality of education.¹ In such situations, poor families sending any child to school must be a testimony to the fact that those poor families gain some satisfaction purely from educating their children.² In addition, since decisions on child labour are inherently intertemporal ones, credit markets play a significant role in influencing them. Even if returns to education were significantly high, sending a child to school instead of to work entails a sacrifice of current income in favour of future earnings. If the family has access to credit at 'reasonable' terms, then it may not have to forego present consumption significantly, and the decision to send a child to school may not be a painful one. The working of credit markets should therefore be an important element in the analysis of child labour.

There is a surge in theoretical literature in the recent past, which have dealt with different reasons for the existence and persistence of child labour and usefulness of different policy measures. Apart from the focus on poverty, credit market imperfection and bad quality of education in schools, the literature has also focused on the low returns to schooling as a reason for the parents

¹ Ray (2000) has found a significant negative relationship between the supply of child labour and quality of schooling in Ghana.

² A recent survey conducted in Indian villages found that economic motives are not the only reasons why poor families want their children to go to school (see The Probe team, 1999, Chaps. 2 and 3).

not to send their children to school. However, none of the theoretical studies has explicitly incorporated the second characteristic feature of a developing country apart from poverty. This is unemployment (or underemployment) and also the existence of the large informal sector providing employment to semi-educated or a part of the fully educated labour force. We develop a model for the existence of child labour even though the parents intrinsically value education by introducing the problem of educated underemployment and the informal sector absorbing the pool of labour force, which are partly educated. Given the facts, as outlined above, we develop an intertemporal model of child labour versus child education in which the uncertainty in job prospects after schooling, subjective parental attitudes towards education, and the existence of informal sector all play a role.

Several explanations have been proposed for the use and prevalence of child labor in developing countries. In an interesting paper Basu and Van (1998) generate child labour in a general equilibrium setting in which parents dislike child labour and withdraw their children from the labour force once the adult minimum wage reaches a critical level. This model establishes the possibility of two stable equilibria, a low wage equilibrium characterized by child labour and a high wage equilibrium in which children are all attending school. Genicot (1998) builds a theory of child labor based on efficiency wages. In Baland and Robinson (2000) inefficiently high degree of child labour arises due to the commitment problem between parents and the children in the presence of credit constraints. That the incidence of child labour can be inefficiently high due to credit constraints is also studied by Ranjan (2001). In a dynamic context, a fertility based argument for the persistence of child labour in poorer societies can be found in Chakraborty and Das (2005). Thus, the developing countries may be stuck in a low wage child labour trap (Basu (1999)). Basu (1999) provides a survey of possible other causes, including social norms, social stigma etc.

Basu (2000) emphasizes that the labour market failures can contribute to child labour when it is accompanied by adult unemployment. Our focus is on another aspect of labour market failure. Parents may withdraw their children from school before completion when the prospect of getting a job after school does not look good. In other words, the problem of educated unemployment in the formal sector may force the parents to withdraw their children from school and put them to work in the informal sector. Working in the informal sectors prepare the children, through training and consequent learning by doing, to become an adult worker in the informal sector. The

informal sector in the developing countries accounts for a significant portion of their total national income and employment. It is this sector which escapes all the prohibiting laws on child labour whereas the formal sector can rarely bypass the laws to employ child labour. Thus, we find that a portion of the children drops out of the school before completion as the probability of getting a formal sector job is not high enough. This happens even when the parents intrinsically value education and also the informal wage is a strictly positive function of the time spent in school.³ The level of income of the parents plays a crucial role in the decision for school completion. We do not consider the possibility of credit in our model. However, the existence of credit may not solve the problem of child labour as the job prospect may be so low that it is not worth while to take that credit.⁴

Our model predicts that in the childhood, a child would be in school for some time and then drop out from school and join the informal sector for work. Thus, a part schooling and part child labour is an alternative to full schooling. Of course, some schooling helps in increasing the wage rate the candidate faces in the labour market. There are several empirical studies that support this view. Heady (2000) notes that Participation in school increases from the age group 7 - 9 to the age group 10 - 14 and then decreases for aged 15 – 19. A survey for Bangladesh on the slum population of Dhaka city was conducted from 1995 to 1997 as part of the Urban Livelihoods Study (a joint research project of Proshika, the London School of Hygiene and Tropical Medicine, and the University of Bath). This revealed that parents did attach considerable value to education but often found that school fees were too expensive or felt that work experience was more useful to future employment prospects than education. To some

³ In an empirical context, Smith and Welch (1989) document a sharp positive relationship between years of schooling (even for incomplete schooling, like 0-4 years or 5-7 years of schooling) and wage for Black and White American Males during the period 1940 - 1980. The structure of the labour market for Black Americans would be similar to the informal markets in countries like India at the present time. This provides indirect evidence for wage premium for (partial) education in the developing countries at the present time.

⁴ It should be noted here that the issue under discussion here is not the "child labour due to poverty" or a situation of "distress child labour" which along with other related issues has been beautifully researched in the above mentioned papers. Neither are we considering a situation where the employment of very young children is an alarming problem; the younger the child, the more vulnerable he or she is to physical, chemical and other hazards at the workplace and, of course, to the economic exploitation of his or her labour (Rogers and Swinnerton, 2002, Dessey and Pallage, 2003, 2005 and Raju, 2005). Also the issue of school quality is not considered in this paper.

extent, these two factors were combined, with parents saying that education would help their child get a good job if they stayed at school for many years, but they could not afford that. Grootaert and Patrinos (1998) report the patterns of child work and school attendance for Côte d'Ivoire, Colombia, urban Bolivia and Philippines. In urban Bolivia, full-time school attendance is over 90 per cent until the age of 13 years. After that, child work becomes significant, with somewhat more children working full-time than combining work with school. All these studies provide a foundation for our theoretical model.

In section 2 we explain when it would be economically rational to leave school early and thus forego formal employment opportunities in the future. We then look at some standard policy measures in the context of trade sanction or schooling reforms that are typically discussed in the context of child labour in section 3. Finally section 4 concludes.

2. The Model

We consider a family consisting of one parent and one child. Parent is altruistic (cares for child's future income) and takes all the decisions. In each family income of parent is y where $y \in [0, \bar{y}]$. Parent has a preference for the education of her child, which is represented by a parameter λ and $\lambda \in [-1, 1]$. A positive value of λ means parent intrinsically values schooling, a negative value implies dislike.

We consider the schooling choice of a child as a continuous variable s . A child can be in school for a part of its childhood or full. The total time of the childhood is normalized to unity and the extent of education for a child is part of the childhood spent in school. Thus, $s \in [0, 1]$. We assume the parent's valuation of this schooling is: $V(\lambda, s)$, which is increasing concave for $\lambda > 0$ and decreasing convex otherwise.

We now specify the markets for both child and adult labour. There are two sectors in the economy: formal and informal sectors. In the formal sector only adult with full education can work, but the children cannot get formal employment due to the legal restriction on child labour and also may be due to the full school required for formal sector jobs. The wage rate in the formal sector is fixed may be due to 'efficiency' wage reason. However, not every adult worker with full

education can find employment in the formal sector. This is due to the fact that the size of the formal sector is not large enough to employ all the educated adult workers. Only a fraction of them is employed and the remaining adult workers go back to informal sector for employment. Thus, any adult worker with full education has only a probability f of finding a formal sector employment. The informal sector is capable of employing the remaining adult workers and the child workers whoever is willing. It offers a wage which is dependent on the level of education of any worker whether adult or child. The wage rate of a child is a fraction of that of an adult worker with the same level of education. Thus, we have

1. Formal sector : adult wage = w^F . Probability of getting a job here for an adult is $f \in (0,1)$ if $s = 1$ and 0 other wise. Children cannot get formal employment.
2. Informal sector: wage is dependent on the level of education /skill. Thus, informal sector wage for an adult worker with education s is $w(s) = (1 - s)w^U + sw^T$, where w^U , w^T are the wages of an adult worker with education zero or full respectively. We assume that a child with education s receives α fraction of the adult wage $w(s)$ where $0 < \alpha < 1$. Therefore, the total earning of a child who receives education for s fraction of its childhood would be $(1 - s)\alpha w(s)$.

Parent's utility function is $U(c_1, s, y_2; \lambda) = u(c_1) + V(\lambda, s) + \beta u(y_2)$, where c_1 is aggregate current consumption and y_2 is the child's future earning. $\beta \in (0,1)$ is the altruism parameter. $u(c_1)$ is a concave utility function.

The parameters of the system are: (i) wages $w^F > w^T > w^U$, (ii) α , β and f .

The individual specific parameters are: λ and y .

The choice variable is s .

Since there does not exist any credit market opportunities (neither borrowing nor lending is possible), the individual household budget constraints are defined as below. The first period consumption c_1 is the sum of parent's income and the child's income. The second period income of the household depends on the employment opportunity of the adult and the level of education. Thus, we write,

$c_1 = y + (1-s)\alpha w(s) = y + \alpha(1-s)[(1-s)w^U + sw^T]$ and

$$y_2 = \begin{cases} w^F \text{ w.p. } f \\ w^T \text{ w.p. } (1-f) \end{cases} \text{ for } s = 1 \\ (1-s)w^U + sw^T \text{ for } s \in [0,1)$$

Assumption 1: $fw^F = w^T$.

Assumption 1 implies that the expected earning from the formal sector employment is the same as the wage rate in the informal sector when an adult has complete schooling in her childhood. Thus in the second period every fully educated adult worker would try their luck for the formal sector employment, those who fail would receive the wage rate w^T in the informal sector for sure. Therefore, the expected utility for the household choosing full schooling for a child would be

$$EU(c_1, 1, y_2; \lambda) = u(y) + V(\lambda, 1) + \beta[fu(w^F) + (1-f)u(w^T)] \quad (1)$$

This is fixed given λ and y .

On the other hand, the households choosing partial schooling for their children would receive the utility (for $s \in [0,1)$),

$$\begin{aligned} U(c_1, s, y; \lambda) &= u(c_1) + \beta u(y_2) + V(\lambda, s) \\ &= u(y + \alpha(1-s)[(1-s)w^U + sw^T]) + \beta u((1-s)w^U + sw^T) + V(\lambda, s) \end{aligned} \quad (2)$$

Let $Z(s; y, \lambda) = \frac{\partial U}{\partial s} = u'(\cdot)[\alpha(1-2s)w^T - 2\alpha(1-s)w^U] + \beta u'(\cdot)(w^T - w^U) + \frac{\partial V}{\partial s}$ for any

$s \in [0,1)$. Then the FOC for an optimum s , say s^* , is given by

$$Z(s^*; y, \lambda) = 0. \quad (3)$$

2.1 Individuals who like schooling

We first consider the case when the parents intrinsically value some education for their children. This is the case for the households with $\lambda > 0$.

Note that, at the optimal choice s^* , the term $c^* = (1-2s^*)w^T - 2(1-s^*)w^U$ must be negative for the FOC to be satisfied (since all other terms are positive).

Let us consider the corner points first. We suppress the arguments y and λ of $Z(\cdot)$, when they are kept fixed, for convenience. The following two assumptions are the sufficient conditions for the existence of an interior choice of s .

$$\text{At } s = 0, Z(0) = u'(y + \alpha w^U) \alpha (w^T - 2w^U) + \beta u'(w^U) (w^T - w^U) + \left. \frac{\partial V}{\partial s} \right|_{s=0}. \quad (4)$$

Note that $u'(\cdot) > 0$ and $w^T > w^U$ and also $\left. \frac{\partial V}{\partial s} \right|_{s=0} > 0$ by assumption.

Assumption 2: $w^T - w^U > w^U$.

Thus, Assumption 2 implies that $Z(0) > 0$, which in turn implies that the equilibrium schooling choice $s^* > 0$.

$$\text{At } s = 1, Z(1) = u'(y) \alpha (-w^U) + \beta u'(w^U) (w^T - w^U) + \left. \frac{\partial V}{\partial s} \right|_{s=1} \quad (5)$$

Assumption 3: $w^T - w^U < \alpha w^T$

Then we have $Z(1) < 0$, $\Rightarrow s^* < 1$. Then, an interior solution to (3) is ensured due to continuity of $Z(s)$. It is also easy to see from (3) that $(1 - 2s^*)w^T - 2(1 - s^*)w^U < 0$ for equilibrium.

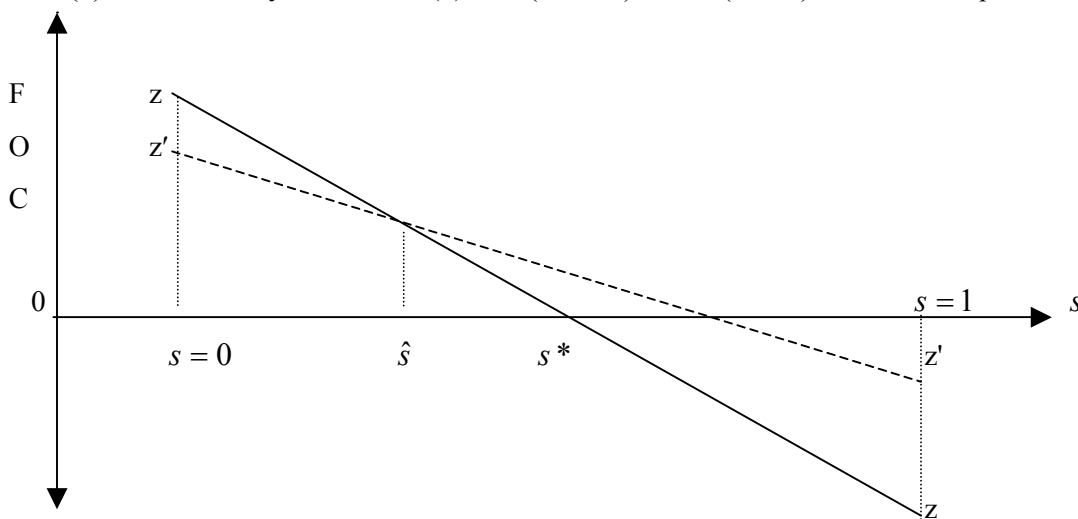


Figure 1

The graph of $Z(s)$ for different values of s is given by the curve zz in fig. 1. s^* is the point where it crosses the s -axis. Here the parent is altruistic ($\beta > 0$), he/she values education

intrinsically ($V(\lambda, s)$ increases in s for $\lambda > 0$) and the formal sector employment opportunity (w^F w.p. f and w^T w.p. $1-f$) strictly dominates the best opportunity in the informal sector (w^T). In spite of these features we could have a situation like the one depicted in fig. 1 for certain parametric configurations. This is because we have allowed for skill premium in wage in the informal market, which adds to the attraction of the extra income available as a child labour (after some amount of schooling). Of course, if β is too high then such a choice would not be observed but that is only natural. So, for the rest of the analysis we will assume that the parent is not too altruistic in order to highlight the implications of this model.

To establish this point, we provide the following numerical illustration where one can have a situation where (2) may be inverted U shaped in s . Now the maximum utility obtained from partial schooling is greater than the utility obtained from full schooling, then we have a choice of schooling $0 < s^* < 1$.

Example 1: Consider $w^U = 1$, $w^T = 2.2$, $w^F = 11$, $f = 0.2$, $\alpha = 0.6$, $\beta = 0.4$, $y = 1$. Take $u(x) = \log(x)$, $V(\lambda, s) = \sqrt{s}$ (with $\lambda = 1$). Then routine calculation shows that for $s^* = 0.8$, $U(c_1, 0.8, 1; 1) > U(1, 1, 1; 1)$.

This illustrates that even for a parent with highest valuation for education, it may be rational to choose $s^* < 1$ if he/she is not too altruistic and the probability of getting a formal sector employment is low.

Routine comparative static exercises show that if we now vary y then with an increase in y , $u'(\cdot)$ in the first term of $Z(s^*)$ decreases, and hence the value of $Z(s^*)$ increases (as $u'(\cdot)$ has a negative coefficient, see (3)). Thus to restore the equality $Z(s^*) = 0$, the value of s^* must rise. However, at the same time $Z(0)$ decreases (again due to a decrease in $u'(\cdot)$ but now it has a positive coefficient, see (4)) and $Z(1)$ increases (similar argument for (5)). Thus, overall the curve zz becomes flatter (say becomes $z'z'$) when y increases and it crosses the s -axis at progressively higher values of s^* .

Also note that at $s = \frac{w^T - 2w^U}{2(w^T - w^U)} = \hat{s}$ (say, $< 1/2$), $Z(s)$ is independent of y , as the first term in (3), which involves y , vanishes. Thus \hat{s} acts as a fixed point for $Z(s)$ as we vary y . This implies that as y increases $Z(s)$ becomes flatter, pivoting around the value $Z(\hat{s})$ at \hat{s} .

Similar routine calculations show that with an increase in λ , $Z(s)$ increases, zz curve moves to the right and hence s^* increases in λ .

We summarise the above discussions in the following proposition.

Proposition 1: *Given assumptions 1 - 3, the FOC and comparative static exercises show*

- (a) *From the FOC, s^* can be < 1 even for $\lambda > 0$ individuals.*
- (b) *s^* increases in λ for all values of $\lambda > 0$.*
- (c) *For $\lambda > 0$, s^* increases in y .*
- (d) *For $\lambda > 0$, $s^* \geq \hat{s}$ for all y .*

Corollary 1: (a) *At low y , $s^* = 0$ possible if assumption 2 is violated. (b) At high y , $s^* = 1$ is likely.*

2.2 Individuals who do not like schooling

We now consider the case $\lambda < 0$. Note that, now we can have the coefficient of $u'(\cdot)$ in the first term of $Z(s^*)$ (condition (3)) to be positive as now the second and third terms are of opposite signs ($\frac{\partial V}{\partial s} < 0$). So we consider three cases.

Consider the situation when for some y , at s^* the first term in (3) is exactly 0 (i.e., at $s^* = \hat{s}$). Also suppose $Z(\hat{s}, \lambda, y) = 0$. Then $Z(\hat{s}, \lambda, y) = 0$ for any other value of y as the second and third terms are independent of y . Thus, the optimal choice \hat{s} in this case would be invariant with y . Curve (ii) in fig. 2 depicts this case in (s, y) space. Alternatively, consider the lowest possible income $y = w^U$. If $s^* > \hat{s}$ in this case, then the first term is negative at s^* and hence the

optimal choice s^* with respect to change in y in this case will behave in the same way as for $\lambda > 0$ (see curve (i) in fig. 2). Similar argument shows that if $s^* < \hat{s}$ for $y = w^U$, then s^* will be decreasing in y (curve (iii) in fig. 2).

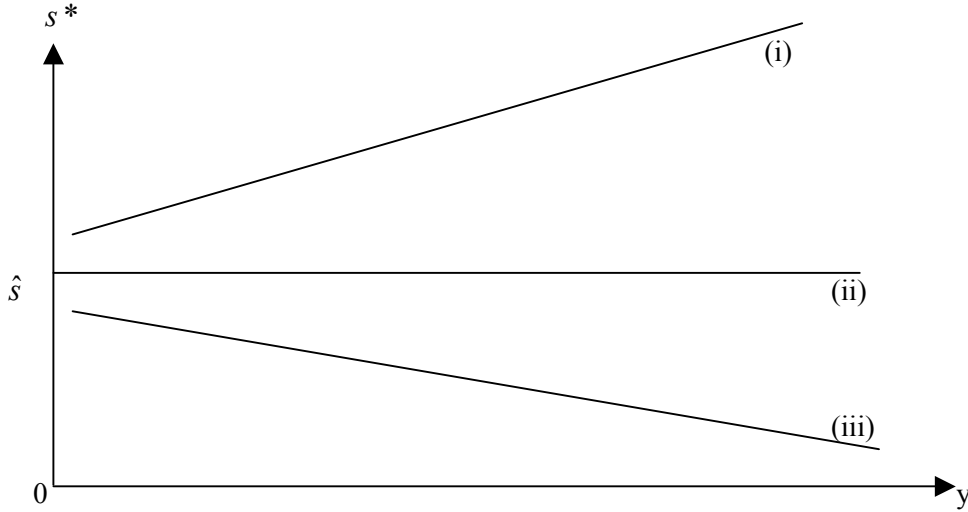


Figure 2

Also note that as λ increases s^* increases for any of the above situations.

We summarize the above discussion in the following proposition.

Proposition 2: *Given assumptions 1 - 3, the FOC and comparative static exercises show that for $\lambda < 0$, at $y = w^U$ if $s^* \begin{matrix} \geq \\ < \end{matrix} \hat{s}$ then s^* is respectively increasing or constant or decreasing in y .*

As λ increases s^ increases for any of the above situations.*

Note that for the optimal education choice \hat{s} acts as the change point for $\lambda < 0$ individuals. If for any value of income y , the optimal choice $s^* > \hat{s}$ then for additional income of the parent education is attractive as the increase in wage (even in the informal sector) becomes more important than increasing the time in the child labour market. This happens when the education choice is $s^* (> \hat{s})$ already high and hence the time spent as a child labour is already low and this bolsters the schooling choice. Child's current period income becomes less important for wealthy parents. The case $s^* < \hat{s}$ is very interesting. Here exactly the reverse happens and s^* and y are negatively related. In the margin the parent becomes indifferent at $s^* = \hat{s}$ as the FOC becomes

independent of income of the parent and the optimal choice of schooling depends on the altruistic parameter, wage premium and parents attitude towards education, and none of them depends on the income of the parent. Hence the education choice becomes independent of income of the parent.

As corollary to the above proposition, we have the following.

Corollary 2: For $\lambda < 0$, $V(\lambda, s)$ being decreasing and convex in s ,

- (a) $s^* < 1$ is possible even for high y .
- (b) $s^* > 0$ for high $y \Rightarrow s^* > 0$ for all y .
- (c) $s^* < 1$ for high $y \Rightarrow s^* < 1$ for all y .

When assumption 2 is violated then we have $\hat{s} < 0$. Then, it is straightforward to conclude the following.

Corollary 3: For $\lambda < 0$, s^* may be 0 even for high y . If so, then $s^* = 0$ for all y .

As mentioned before, in the first part of the model (Section 2.1) we have stacked our cards in favour of education. We have also not allowed for a situation of distress child labour. In our one period (discrete time) model of childhood a question of survival while child is attending school is not relevant. Thus, it is all the more noteworthy that even such parent may rationally choose not to allow her child to complete schooling. This is amply illustrated in proposition 1. For those who do not value education ($\lambda < 0$) this is not so unexpected, but even for them a reduction in s^* with an increase in y comes as somewhat of a surprise. Anecdotal evidence exists in favour of such a situation: small businessmen (*Bania*) class versus urban salaried middle class.

3. Policy analysis

We now focus on the efficiency implications of different anti-child labour policies in terms of our model. We divide this discussion into two parts. The first part talks about the international regulations, mostly related to trade sanctions. The national policies, in terms of schooling subsidy or formal market reforms, are taken up in the second part.

3.1 International Legislation

3.1.1 Trade Sanction

Given the widespread existence of child labour in the developing countries, the international organizations and economics researchers often prescribe trade sanctions against the countries producing goods using child labour. This policy issue holds a significant place in the current era of globalization, when the countries are more integrated in terms of trade and investment than ever before. Most of the exported commodities from a developing country are either made in the informal sector or uses intermediate inputs from the informal sector. Thus, in order to reduce the extent of child labour in these countries, the importing countries may impose a trade sanction, thereby reducing total value of imports and hence adversely affecting the wages in these informal sectors. Theoretical literature on child labour, however, does not support trade sanction as an effective mechanism to contain child labour in the developing countries. Ranjan (2001) argued that trade sanctions may not always reduce incidence of child labour. Similarly the impact of trade sanctions is also ambiguous in Jafarey and Lahiri (2002). In both papers the overall effect largely depends on how the credit constraints are relaxed due to trade sanction. Trade sanction may also increase the incidence of child labour (Gupta, 2002).

We will now discuss the implication of such a sanction in terms of our model. With trade sanction, the demand for labour in the informal sector will go down and this will reduce wages in this sector. As w^T is pegged at $f w^F$, in our model this will mean a reduction in w^U . Now differentiating $Z(s^*)$ with respect to w^U we get

$$\frac{\partial Z}{\partial w^U} = u'(\cdot)(-2\alpha(1-s^*)) + u''(\cdot)\alpha s^*(1-s^*) - \beta u'(\cdot) + \beta(w^T - w^U)u''(\cdot)(1-s^*) \quad (6)$$

As all the terms in (6) are negative, we have the following result.

Proposition 3: s^* increases with a reduction in w^U .⁵

⁵ An alternative impact of trade sanction could be that w^U , w^T and w^F are all reduced by a factor say θ where $0 < \theta < 1$. Again it is easy to see that the education choice for the children would go up in this case.

3.1.2 Certification

Another common international policy is for the importing country to demand a certification from the exporting countries that no child labour has been used in manufacturing the product. The consequence of such a policy would be to reduce child labour employment in the exporting country, thereby reducing the child wage. In terms of our model, we can study the implication of such a policy by considering a reduction in α . Again differentiating $Z(s^*)$ with respect to α we get

$$\begin{aligned} \frac{\partial Z}{\partial \alpha} &= u'(\cdot)[(1-2s^*)w^T - 2(1-s^*)w^U] + \alpha[(1-2s^*)w^T \\ &\quad - 2(1-s^*)w^U]u''(\cdot)(1-s^*)[(1-s^*)w^U + s^*w^T] \\ &= [(1-2s^*)w^T - 2(1-s^*)w^U][u'(\cdot) + u''(\cdot)\alpha(1-s^*)\{(1-s^*)w^U + s^*w^T\}]. \end{aligned} \tag{7}$$

The sign of this is in general ambiguous. To get more insight into it, we note that the second [...] bracketed term in the RHS of the above expression is of the form

$u'(y+\tau) + u''(y+\tau)\tau$, where $\tau = \alpha(1-s^*)\{(1-s^*)w^U + s^*w^T\}$. Using Taylor series, we may say that this is $\cong u'(y+2\tau) > 0$ (due to the usual assumption on the utility function). In that case, the net effect, or $\frac{\partial Z}{\partial \alpha}$ will be < 0 . Thus we have the following.

Proposition 4: *The net effect of a reduction in α on the FOC is certainly weaker than the effect of a reduction in w^U and possibly ambiguous. So, it is not certain (though possible) that s^* increases with a reduction in α .*

3.2 National Legislation

3.2.1 Compulsory Schooling

Often the domestic government tries to ensure a minimum length of schooling by setting a lower limit on the time of school leaving. In this case, in terms of our model, the range of choices for s

becomes restricted. Suppose the earliest time one can leave school is set at $\underline{s} > 0$. Then we can infer the following; the proof of which is immediate given our analysis in section 2.

Proposition 5: (a) If $\underline{s} < \hat{s}$,

(i) There will be no effect on individuals with $\lambda > 0$.

(ii) If for $\lambda < 0$ and $y = w^U$, $s^* \geq \hat{s} > \underline{s}$, then there will be no effect on individuals with $\lambda < 0$ also.

(iii) If for $\lambda < 0$ and $y = w^U$, $s^* < \hat{s}$, then choice of s , say s^{**} will be $\text{Max}\{s^*, \underline{s}\}$.

(b) If $\underline{s} > \hat{s}$ then all segments of the population are affected. Choice of s will be $\text{Max}\{s^*, \underline{s}\}$ for all. But this will imply a high rate of dropout at \underline{s} (for everybody for whom $s^* < \underline{s}$).

So average enrollment will improve for those $\lambda < 0$ individuals for whom s^* decreases in y (curve (iii) in fig. 2).

3.2.2 Cost Subsidy for Schooling

An alternative way of improving school attendance is to make schooling less costly. This can be done in two ways. One in which, through reduction in fixed costs like tuition, books etc., $V(\lambda, s)$ is increased for each λ and y . The effect will be asymmetric depending on the initial choice of s^* prior to the policy of cost subsidy for schooling.

Some individuals who were operating at $s^* < 1$ will move to $s^* = 1$ as incentive for choosing $s^* = 1$ improves. But if there is no change in the variable cost (disutility from continuing in school), i.e. $\frac{\partial V}{\partial s}$ is unchanged, then those who remain at an interior solution will continue

choosing the same s^* as without the subsidy. This will result in an education gap among those who switched to $s^* = 1$ and those who remain at their pre-subsidy choices. Thus this policy choice would lead to a polarization of population in education choice.

The second method in which a cost subsidy may be effected is through a reduction in the variable cost by providing mid-day meals etc. This will have the same effect on $V(\lambda, s)$ as an increase in λ and the effects will be the same as discussed in Proposition 1(b).

Overall, in both cases, school attendance will improve.

3.2.3 Cash Grant for School Attending Families

If a cash grant is made available to the family when the child attends school, i.e. the income in the first period is augmented from y to $y + \delta$, then the effect will be the same as an increase in y as outlined in propositions 1 and 2. So school attendance will improve for all whose $s^* > \hat{s}$ and deteriorate for all ($\lambda < 0$ individuals) whose $s^* < \hat{s}$ initially. It is often observed in actual situations that a cash grant is not effective in this respect. This may be due to the fact that the target population had a high proportion of $\lambda < 0$ individuals for whom the initial schooling choice was $s^* < \hat{s}$.

3.2.4 Increasing Productivity of Education

So far, in the last few subsections, we have been discussing the implication of *restrictive* policies on school attendance and child labour. We now discuss a different kind of policy that is *constructive* in nature. In particular, we consider a government policy that makes education more effective in that it improves the chance of formal sector employment. This can be achieved through an improvement in the quality of schooling, by introducing training on job oriented skills in school or better tutoring. The effect in terms of our model would be an increase in the probability f and hence in an increase in $w^T (= fw^F)$. Let us now explore the consequences of such a change.

To start with, more individuals will now prefer the formal employment option and hence choose $s^* = 1$. To look at the effect on those who still choose to remain in the interior (choose $s^* < 1$), differentiate $Z(s^*)$ with respect to w^T we get

$$\frac{\partial Z}{\partial w^T} = u'(\cdot)\alpha(1-2s^*) + \alpha^2(1-s^*)s^*u''(\cdot)[(1-2s^*)w^T - 2(1-s^*)w^U] + \beta u'(\cdot) + \beta s^*(w^T - w^U)u''(\cdot). \quad (8)$$

The second and third terms on the RHS of (8) are positive and the fourth term is negative. Sign of the first term depends on whether s^* is $>$ or $<$ $1/2$. So if $s^* < (>) 1/2$, the first term becomes positive (negative) and the RHS of (8) is more likely to be positive (negative). We summarise this in the following.

Proposition 6: *For those individual who continues to choose an intermediate $s^* < 1$ we have, (a) If s^* is initially low ($< 1/2$), then with an increase in w^T , s^* increases but if s^* is initially high ($> 1/2$), then we may see a reverse relationship between w^T and s^* . (b) We will observe a clustering of s^* choices around $1/2$ as the people with low s^* s increase their schooling choice and the people with high s^* s decrease their schooling choice towards $1/2$. This will also create an education gap.*

4. Conclusion

This paper explains the existence of child labour when there is a problem of educated unemployment after full schooling of the child. Thus, even the altruistic parents might withdraw their children from school and put them to work in the informal sector. This happens even when the parents intrinsically value education and also the informal wage is a strictly increasing function of the time spent in school.

On the policy front, we have examined the effectiveness of the standard policies in terms of our model. It is found that trade sanctions may be effective in reducing the incidence of child labour but the certification may have an ambiguous effect. Compulsory schooling would ensure more children to go to school in early ages, but there might be substantial drop out at the limit of the compulsory schooling period. Cash grant may not have any desirable effect when the society has very low level of education and parents do not like education. Increasing the productivity of education may lead to clustering of education choice and as a result drop out after some schooling may be significantly large.

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Childhood is a period of life that should be devoted not to work but to education and training; that because of its nature or the conditions in which it takes place, the work done by children often jeopardizes their chances of becoming productive adults who will be useful to society. In many places child labour outside the family is on the increase. This reflects a shift in attitude towards child labour itself. Initially seen mainly as a tool enabling the child to become socialized and acquire skills that will be useful to him or her in the future, it is now increasingly often seen by families as a means of supplementing their income.

Poverty is the greatest single force, which creates the flow of children into the workplace. It forces many children to work full time for their own and their families' survival. Furthermore, because of poverty, the acute need of many households to keep many family members working to ensure income security makes it nearly impossible for them to invest in their children's education. There is cause for concern first of all because many children are put to work at a very early age, in particular in rural areas where they often begin to work as soon as they are 5 or 6 years old. Although the great majority of economically active children belong to the 10 to 14 year age group, the proportion of child workers under the age of 10 in the total is far from negligible; it may be up to 20 per cent in some countries.

Smith and Welch (1989) document a sharp positive relationship between years of schooling (even for incomplete schooling, like 0-4 years or 5-7 years of schooling) and wage for Black and White American Males during the period 1940 - 1980. The structure of the labour market for Black Americans would be similar to the informal markets in our country at the present time. This is sort of indirect evidence for wage premium for (partial) education.

However, the issue under discussion here is not the "child labour due to poverty" or a situation of "distress child labour" which along with other related issues has been beautifully researched in **Basu and Van (1998)**, **Basu (1999)** and **Basu (2000)**. Neither are we considering a situation where the employment of very young children is an alarming problem; the younger the child, the

more vulnerable he or she is to physical, chemical and other hazards at the workplace and, of course, to the economic exploitation of his or her labour (**Rogers and Swinnerton, 2002, Dessey and Pallage, 2003, 2005** and **Raju, 2005**).

We rather think of a situation where, in addition to the family's inability to pay for school, many children live in communities that do not have adequate school facilities, so they work. However, even when schools are available, the comparatively high cost to poor families of investment in the education of their children means that the return on such investment must also be high. In fact, many schools serving the poor are of such abysmal quality, or chances of improved upward mobility for graduates are so slim, that the expected return is not equal to the sacrifice made. The literature is replete with testimony of families that would like to educate their children, but either cannot do so, or do not feel that the inferior schools available to them merit the costs. While it is true that many children drop out of school because they have to work, it is equally true that many become so discouraged by school that they prefer to work. These problems mean that only 68 per cent of the world's children complete primary education (until age 11).

There are several empirical studies that support this view. **Heady (2000)** notes that Participation in school increases from the age group 7 - 9 to the age group 10 - 14 and then decreases for aged 15 - 19

Table 1: Ghana: Participation in School & Work (per cent)

Age in years:	7-9		10-14		15-19	
Sex:	Girls	Boys	Girls	Boys	Girls	Boys
School attendance	62.4	78.0	74.4	81.4	39.9	55.1

Reading and Mathematics test results conducted among attending and non-attending students show that attending students perform significantly better in some age groups but the difference is insignificant in most cases. Also, this is not controlled for other factors.

Table 2: Pakistan: Participation in School & Work (per cent)

Age in years:	5-9		10-14		15-19	
Sex:	Girls	Boys	Girls	Boys	Girls	Boys
School attendance						

School attendance	31.0	53.3	30.6	72.9	11.5	41.5
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Bangladesh

In contrast to the nationally representative sample surveys for Ghana and Pakistan, with a resultant emphasis on rural child work, the quantitative survey for Bangladesh was focused on the slum population of Dhaka city. It covered over 700 households and was conducted from 1995 to 1997 as part of the Urban Livelihoods Study, a joint research project of Proshika, the London School of Hygiene and Tropical Medicine, and the University of Bath. The qualitative analysis was based on detailed interviews, conducted with 14 of the households that had taken part in the quantitative survey. The analysis uses the ILO definition of work and, in this urban setting, this typically involved working for people outside the household.

Table 3 presents the pattern of school attendance and work from the quantitative survey. In the younger age group, 8-11, school attendance for boys and girls is very similar at just over 60 per cent with boys being more likely to combine school with work. Girls and boys are also similar in the proportion that neither work nor go to school. However, boys are more likely to work than girls. Turning to the older age group, 12-16 years of age, both boys and girls are much less likely to attend school, but the reduction for girls is greater. This reduction in schooling is accompanied by an increase in work, with boys again more likely to work. The number of girls doing neither is the same as in the younger age group, but the proportion of idle boys is substantially lower.

Table 3: *Work and School for Slum Children in Bangladesh*

Age in years:	8-11		12-16	
Sex:	Girls	Boys	Girls	Boys
Only work	13.4%	16.2%	55.3%	56.3%
Work and school	1.8%	6.6%	1.4%	6.4%
Only school	61.2%	54.8%	20.0%	24.7%
Neither	23.6%	22.4%	23.3%	12.6%

There are interesting comparisons with Ghana and Pakistan, although the fact that the age groups do not correspond makes precise comparisons difficult. The school attendance is substantially lower than in Ghana but not generally lower than in Pakistan. However, the difference between boys’ and girls’ school attendance is much smaller than in Pakistan. The work participation rates

are not markedly different from either Ghana or Pakistan, but there is a major difference in the ability of children to combine work and schooling: it is even less common to see schooling combined with work than it is in Pakistan. A large part of this difference is probably due to the fact that the children work outside the household.

Families were asked why their children were not attending school. The most common explanation was that the children were too busy working. However, it is worth noting that other commonly expressed reasons were “no suitable school facilities” (mostly meaning that available schools are too expensive), “busy with housework” (almost entirely applied to girls) and “child does not want to go” (mainly applied to boys). The effect of housework on girls is consistent with the higher proportion of girls neither working nor attending school, and reflects the same strong views on gender roles that are evident from the Pakistan data and, to a smaller extent, the Ghana data. These reasons for not attending school were followed up in more detail in the qualitative analysis. This revealed that parents did attach considerable value to education but often found that school fees were too expensive or felt that work experience was more useful to future employment prospects than education. To some extent, these two factors were combined, with parents saying that education would help their child get a good job if they stayed at school for many years, but they could not afford that. Thus, it was not a case of work reducing schooling, but poor schooling encouraging work. Although the data show that the situation of children in urban slums in Bangladesh is different from both Ghana and Pakistan, there is still a clear policy implication that improvements in schooling and reductions in fees may be a better way of encouraging school attendance than trying to curb child labour directly.

Grootaert and Patrinos (1998) report the patterns of child work and school attendance for Côte d’Ivoire, Colombia, urban Bolivia and Philippines. Children in urban areas are more likely to concentrate on schooling, and slightly more likely to combine work and schooling, with the consequence that many fewer concentrate on work. In urban Bolivia, full-time school attendance is over 90 per cent until the age of 13 years. After that, child work becomes significant, with somewhat more children working full-time than combining work with school. Only about 3 per cent neither work nor attend school, and this is more common for girls. There is little difference between girls and boys in their labour force participation.

Our model thinks of part schooling and part child labour as an alternative to full schooling because of the above mentioned reasons. Of course, some schooling helps in increasing the wage

rate the candidate faces in the labour market. In section 2 we explain when it would be economically rational to leave school early and thus forego formal employment opportunities in the future.

We then look at alternative policy measures that may help in reducing school dropout and study their efficiency in terms of our model. Three fundamental types of action against child labour can be provided only by the central *government*: (i) child labour legislation and appropriate enforcement mechanisms; (ii) a national child labour policy that sets public priorities and reaches out to engage all the important social actors; and (iii) a publicly funded system of basic education that ensures quality schooling that is physically and economically accessible to children of even the very poorest families. The last is the most important of all since, without it, whatever initiatives against child labour are undertaken will achieve very limited success. Other levels of government, especially municipal government, can play a crucial role in mobilizing and focusing local human and material resources on specific child labour problems.

Improving child labour legislation and enforcement measures. Most countries have child labour legislation that establishes a minimum age for admission to employment or work and regulates working conditions for young persons. Another problem relates to the discrepancies which exist in many countries between the minimum age required by the law to work and that at which it is permitted to leave the school system. In several cases, the minimum age for admission to work is lower than the school leaving age, giving children access to employment before they have completed the minimum number of years of compulsory schooling.

Extending and improving schooling for the poor. The single most effective way to stem the flow of school-age children into abusive forms of employment or work is to extend and improve schooling so that it will attract and retain them. It has been widely demonstrated that families are prepared to make major sacrifices for the education of their children when it is economically and physically accessible and truly productive in terms of future employment prospects. For example, IPEC has found that schools become more attractive to poor families when they include practical training in skills that make the children more employable or employable at higher wage rates. Getting working children back into school is often less difficult than expected. For example, in areas where most children have usually worked full time instead of attending school, parental demand for return to school has been stimulated after the first parents were enticed to break with the tradition of child labour. In cases where the income from child work is, in fact, indispensable

to the family, it has been possible to convince parents to lighten the children's workload so that school attendance could be accommodated while the child still worked.

The types of economic incentives usually found include the payment of cash grants to children or their families, the provision of free school lunches, other in-kind payments for school (e.g. stationary or clothing) and the waiver of school fees. They may also comprise income-generating schemes for poor families in communities with a high concentration of working children and apprenticeship or other school-work programmes for children that provide education or training with income as an alternative to child labour (**ILO - IPEC, 1996**). This analysis is done in section 3. Finally section 4 concludes our discussion.