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Abstract

In recent years, a growing number of authors have turned their attention to the question of why children work. The purpose of this paper is to review some of the more recent theoretical and empirical research into the topic of child labor, and to illustrate the fact that no one factor on its own can account for the phenomenon of child labor. Therefore, policies aimed at eradicating child labor will need to address the broad range of underlying factors that contribute to the incidence of child labor, such as poverty, market imperfections and access to education.

Key words: child labor, subsistence poverty, market imperfections, policy instruments

JEL Classification: J22; J13; D13; O12.

1 Introduction

Research into the topic of child labor has experienced a significant upswing in the past two decades. Yet despite this increased attention, child labor remains a significant problem in many parts of the world. According to recent estimates by the International Labor Organization, approximately 166 million children between the ages of five and fourteen were working as child laborers in 2004, of which roughly 74 million were participating in hazardous work (International Labor Organization (ILO), 2006). A common perception is that most child laborers work for wages in the formal sector, conjuring images of children working long hours in sweatshops or toiling away in mines. As a result, consumer boycotts and trade sanctions against products using child labor as an input are often discussed as means of reducing the incidence of child labor. In reality, however, such methods may have little impact for several reasons. Firstly, nearly 70 percent of working children are active in the agricultural sector, rather than manufacturing (ILO, 2006). Secondly,

very few children work for wages outside the home; rather, most children are employed by their parents on the family farm or enterprise (Edmonds and Pavcnik, 2005). As a result, the majority of child laborers will not be affected by boycotts and trading sanctions. Further, children working in the affected sectors may simply relocate to an unaffected sector. Similarly, an outright ban on child labor would in most cases be difficult, if not impossible, to enforce and as such would likely to have little effect on the overall incidence of child labor. In the worst case, a ban could end up making some children significantly worse off if these children are compelled to work in order to keep themselves and their families out of extreme poverty. This is not to say that bans are never motivated; clearly a ban on illegal and hazardous activities is desirable. However, additional policy instruments are necessary in order to effectively combat child labor.

The purpose of this paper is to review some of the more recent theoretical and empirical research into the topic of child labor in order to highlight a number of factors that can contribute to the decision to send a child to work. The remainder of the paper is organized as follows. Section two provides some descriptive statistics as to the extent of child labor in various regions of the world as well as the distribution by sector. Section 3 reviews five major strands of research into the causes of child labor: subsistence poverty, income inequality, credit market imperfections, land and labor market imperfections, and parental characteristics. The first three categories focus on constraints faced by the household that may induce them to send their children to work. The fourth category deals with market imperfections that can lead to increased incentive to send children to work, while the last category deals primarily with the issue of agency. Section four discusses the policy implications of the research on child labor, highlighting the fact that effective policies must create viable alternatives to child labor in order to be successful. Section five concludes the paper.

2 Descriptive Statistics

According to ILO estimates, nearly 16 percent of children aged five to fourteen participated in some form of work in 2004. This amounts to 191 million children worldwide. The vast majority of these children, roughly 122 million, are located in Asia and the Pacific, while sub-Saharan Africa, with 49 million working children, has the second largest incidence. Indeed, these two regions alone account for almost 90 percent of all child labor. It is perhaps

unsurprising that Asia and the Pacific has the greatest population of working children given that this is the most populous region of the world in general. However, the Asia-Pacific region also exhibits a higher activity rate than the worldwide average, with 18.8 percent of children participating in work. This activity rate is second only to that of sub-Saharan Africa, where a staggering 26.4 percent of children participate in work (Hagemann et al, 2006).

An encouraging trend is that the number of child workers has decreased significantly in the four year period from 2000 to 2004. The largest proportional decline occurred in Latin America, followed by Asia and the Pacific. Only sub-Saharan Africa has gone against this trend, increasing its total number of child workers by 1.3 million over the period. However, the participation rate in the region has fallen by over 2% in the same four years. Another positive trend is that the number of children participating in hazardous work globally fell by over 33% from 111.3 million in 2000 to 74.4 million in 2004 (Hagemann et al, 2006).

As mentioned above, a common perception is that child labor takes place in an industrial setting, such as a factory or mine. The reality, however, is that 69 percent of working children are active in the agricultural sector and 22 percent are active in the services sector. This means that only 9 percent of working children are active in the industry sector (Hagemann et al, 2006). Further, very few working children work outside of the home; according to statistics from 2000, less than 3 percent of children worked for wages outside of the home, while just over 5 percent performed unpaid work outside of the home (Edmonds and Pavcnik, 2005). The majority of working children are instead employed by their parents to work on the family farm or enterprise. Therefore, an understanding of the decision-making process at the level of the household is important when attempting to explain child labor.

3 Theory and evidence

There is empirical evidence of a link between rising national income and a decrease in the incidence of child labor (Basu, 1999; Fallon and Tzannatos, 1998). However, once a certain level of national affluence is attained, the relationship between national income and child labor weakens substantially. This may be due to distributional considerations, i.e. income inequality may offset many of the gains from a higher overall GDP. Further, it is not straightforward that an increase in national income in and of itself is responsible for the decline in child labor force participation; other factors correlated with eco-

nomic development may play a determining role. Increased access and higher returns to education, changes in social norms, a shift in production from predominately agricultural to manufacturing, and developments in political and legal institutions may all contribute to a reduction in child labor. Therefore, an analysis of the relationship between poverty and child labor is likely to yield more relevant results when undertaken at the household level, where it is possible to distinguish between household characteristics and broader, macroeconomic phenomena. In this section, four specific factors that have been shown to affect child labor will be reviewed: subsistence poverty, income inequality, credit market imperfections, land and labor market imperfections, and parental characteristics.

3.1 Subsistence poverty

Basu and Van (1998) are the authors of the seminal paper on the topic of subsistence poverty and child labor[1]. Their model builds on two fundamental assumptions, which they refer to as the Luxury Axiom and the Substitution Axiom. The Luxury Axiom states that a household will send its children into the labor market only if the adult wage falls to the point where the household subsistence requirements cannot be met without the income generated by the children. The Substitution Axiom states that adult labor and child labor are seen as substitutes from the point of view of the firm. More specifically, child labor can be substituted by adult labor. In addition, adults always work, regardless of the wage (i.e. there is no reservation wage). A further assumption, which is not stated explicitly, is that the labor market functions perfectly (as the results rely upon labor market equilibria and competitive wage setting).

In the general model, each household consists of one adult and one or more children. If the market wage is high enough that household subsistence needs are met by adult labor alone, then only adults will work. However, if the market wage falls below the point where the household can survive on adult labor alone, then children must also work. As a result, there are two possible equilibriums: one where wages are high and only adults work, and one where wages are low and children must work.

There are two interesting results that arise from this model, especially from a policy standpoint. The first is the relationship between child labor

[1] "Subsistence poverty" refers to the case where the household is unable to meet subsistence consumption needs with adult labor income alone, and as such depends on the additional income generated by child labor for survival.

and the number of children per household, m. The subsistence requirements of the households rise as m increases, and hence the adult wage necessary to ensure no child labor also rises. If m rises sufficiently, the equilibrium with no child labor disappears. Even in the case where an increase in m leaves the good equilibrium unchanged, the bad equilibrium becomes worse, shifting to a point where both adult and child wages have fallen. Further, an increase in m could push an economy from a good equilibrium to a bad equilibrium if the increase causes a bad equilibrium to come into existence. All of these scenarios demonstrate how high fertility can bring about an increase in child labor.

The second interesting result is that an economy can be at a bad equilibrium while at the same time a good equilibrium can also exist. Basu and Van discuss the possibility of benign intervention in this case, in the form of a ban on child labor. The logic is that employers will attempt to fill vacancies once filled by child labor with adult labor, and as a result the adult wage will rise to the level of the good equilibrium. At this point, households will no longer be willing to supply child labor (due to the Luxury Axiom) and the ban will no longer be necessary. If the good equilibrium does not exist, however, then the households will be made worse off if child labor is banned. A new equilibrium with a higher adult wage will be reached, but the wage will be below the critical level necessary to meet subsistence needs. Therefore, it is critical that policy-makers are certain that a good equilibrium exists in order for a ban on child labor to have the desired results.

The model presented by Basu and Van (1998) rests critically on the assumption that children participate in wage labor in competitive markets, given that the results are based on market equilibriums. As mentioned above, however, this is often not the case. Therefore, the policy implication of a ban on child labor is not likely to be practical. Still, Basu and Van have been instrumental in highlighting poverty constraints as an important factor in the decision to send children to work, and spurred a renewed interest in the problem of child labor in the economic literature.

Basu (2000) analyses the net effects of an alternative policy instrument to a total ban on child labor, namely the imposition of an adult minimum wage. Using the basic framework of the general model presented in Basu and Van (1998), he demonstrates that the effect of an adult minimum wage on child labor is not straightforward but rather depends on whether or not the implementation of such a policy would result in adult unemployment or not

and, if so, on what scale. One important factor in determining whether an adult minimum wage will reduce child labor is whether or not child labor on its own can satisfy the demand for labor of the entire economy. This in turn depends on the difference in productivity between adults and children and the total number of children in the economy. Therefore, in countries characterized by high fertility rates and low adult productivity, it is more likely that child labor on its own will satisfy the economy's demand for labor.

The second important factor in determining the efficacy of an adult minimum wage policy is the level at which the minimum wage is set. Basu finds that the only case where adult minimum wage legislature would unequivocally result in the economy moving to the good equilibrium is the case where the minimum wage is set between the subsistence level wage and the good equilibrium wage and child labor alone cannot satisfy the demand for labor of the entire economy. Based on these results, Basu concludes that a ban on child labor is a more prudent means of moving an economy to the good equilibrium than legislating an adult minimum wage.

Bhalotra (2007), building on the paper by Basu and Van (1998), devises a model to test whether household poverty compels families to send their children to work. She argues that previous empirical results showing a negative relationship between household income and child labor do not in fact test the hypothesis that poverty compels child labor, but rather test the less contentious hypothesis that child leisure is a normal good[2]. In order to determine whether or not child labor is a necessary response to poverty, a more precise test is needed. If the poverty hypothesis were true, then children would only work if total household income was less than sufficient to meet the subsistence consumption level. In this case, children would work toward a target income, i.e. an income that would cover the shortfall between subsistence consumption and non-child household income.

In Bhalotra's model of child labor supply, each household is assumed to consist of one parent and one child. The parent always works and must decide if and how much their child works. The model predicts a negative wage elasticity of child hours if and only if poverty compels the child to work. Therefore, the empirical test of the poverty explanation of child labor is whether or not child labor exhibits a negative wage elasticity of hours[3].

[2]Bhalotra further argues that when the choice is between child labor and schooling, a negative income effect shows a credit constraint, rather than poverty compulsion.

[3]The estimated model is hours worked conditional on participation. This condition is necessary as the participation wage elasticity is expected to be positive, while the hours

Using data from rural Pakistan, Bhalotra finds a significantly negative wage elasticity of hours for boys, while the corresponding elasticity for girls is not significantly different from zero. Hence, the econometric analysis provides strong support for the hypothesis that poverty compels boys to work. In the case of girls, on the other hand, the data does not strongly support the compelling poverty hypothesis. There are a number of potential reasons for this. It could be the case that parents act altruistically with respect to boys, but not to girls. Another possibility is that the returns to schooling are lower for girls than boys, making work a more attractive alternative. Whatever the reasons, these results highlight the fact that important gender differences exist when analyzing the causes of child labor.

3.2 Income Inequality

In a comment on Basu and Van (1998), Swinnerton and Rogers (1999) bring up the importance of distributional considerations when discussing poverty and child labor. They extend Basu and Van's basic model to include the possibility that a proportion of the households own shares in (or receive dividends from) the firms in the economy. They show that if a good equilibrium exists, the economy is so productive that total profits are large enough to ensure that households receiving dividends will meet their subsistence consumption needs and will not need to send their children to work. In this case, the bad equilibrium disappears, and a new equilibrium appears where only households not receiving dividends send their children to work. It follows that if all households receive dividends then no children will work. These results, however, are based on the assumption that all of the profits are distributed to the households.

Basu and Van (1999) reply with a further extension of the model where households can receive a proportion $\alpha \in [0, 1]$ of the profits ($\alpha = 0$ gives Basu and Van's original results, $\alpha = 1$ gives Swinnerton and Rogers' results). They further assume that households are indifferent between sending their children to work or withdrawing them from the labor force when the household's income from sources other than child labor exactly meet subsistence needs. Basu and Van demonstrate that even when all households receive dividends, the type of equilibrium that arises depends on the value of α. If α is sufficiently low, then the bad equilibrium continues to exist. If α is sufficiently large but less than one, then the good equilibrium will exist, but so too will

wage elasticity may be negative if there is compelling poverty.

an equilibrium where some children work and others do not (Basu and Van refer to this as a hybrid equilibrium). It is only when α =1 that both the bad equilibrium and the hybrid equilibrium disappear, leaving only the good equilibrium.

The abovementioned extensions to Basu and Van's basic model highlight the importance of income distribution when analyzing child labor. Further, the potential for a hybrid equilibrium has the advantage of better reflecting reality, where it is often the case that some households send their children work while others do not. However, neither Swinnerton and Rogers nor Basu and Van model the effects of moving from one distribution of firm ownership to another.

In a subsequent paper, Rogers and Swinnerton (2001) reconstruct their previous model to take into account the role productivity plays in determining the effects of a reduction of income inequality on child labor. They achieve this by assuming that each adult has an endowment of capital λ. If one interprets the capital endowment narrowly as human capital, then λ is interpreted as a measure of adult labor productivity. As with the previous models, households will only send their children to work if household consumption falls below the subsistence level S. Therefore, households where $\lambda > S$ will not send their children to work. It follows that an economy wide increase in adult productivity has the effect of reducing child labor for a given income distribution. Conversely, an increase in the number of children in the economy will have the effect of raising the level of consumption necessary to meet subsistence needs. The result is that an increase in fertility will result in both a greater number of children working and a higher child labor force participation rate for a given income distribution.

In order to analyze the effects of a reduction in income inequality, Rogers and Swinnerton include a redistributive tax system in the model. Hence households' endowments are taxed at the rate θ while each household receives $\theta\bar{\lambda}$ in tax revenue, where $\bar{\lambda}$ is the average level of adult productivity in the economy. The most significant result of this model is that the effect of lowering income inequality on child labor is ambiguous; the results depend on average adult productivity. If the mean capital endowment in the economy is below the subsistence level, then a redistribution that lowers income inequality will have the effect of increasing child labor. The logic behind this that in an economy where mean adult productivity is lower than the subsistence level, the number of households pushed below the total endowment level necessary

to meet subsistence needs is greater than the number of households that receive a sufficient increase in their endowments to meet subsistence needs and hence withdraw their children from the workforce. Therefore, the economy must have a sufficiently large average capital endowment in order for a reduction in income inequality to serve as an effective policy tool in reducing child labor. Rogers and Swinnerton test their model empirically using aggregate cross-country data and find that the analysis broadly confirms their predictions.

3.3 Credit market imperfections

Subsistence poverty alone does not necessarily imply that a child will be forced to work. If there are perfectly functioning credit markets, it should be theoretically possible for parents to borrow against their child's future earnings. Ranjan (1999) develops a two period model where households decide whether to send their children to work or to school in the first period. There are two types of adult wages, the skilled wage and the unskilled wage, and one child wage, which is less than the unskilled adult wage. Further, there is no subsistence constraint. A child that works in the first period earns the child wage in the first period and the unskilled adult wage in the second period. A child that goes to school in the first period earns nothing in the first period, but earns the adult skilled wage in the second period.

In the first best case, households have access to the international capital market and can lend and borrow freely at a given interest rate, r. Ranjan's model demonstrates that in this case households will always prefer to send their children to school as long as the rate of return on education, i, exceeds the market rate of interest (i.e. $i > r$), regardless of the initial level of household income. In the case with no credit markets, Ranjan demonstrates that there is a threshold level of household income above which all families will send their children to school, whereas below this level all households will be forced to send their children to work. This is because at low income levels, the loss in marginal utility associated with forgoing the child wage is very high, and more than offsets the future gain in utility from the higher skilled wage.

These results reveal that poverty will not prevent households from sending their children to school if they are able to borrow and if educational attainment is profitable. Psacharopoulos (1997) provides macroeconomic evidence that shows that the returns to education are higher than the returns to phys-

ical capital in all parts of the world, indicating that education should be profitable in many cases[4].

Baland and Robinson (2000) analyze whether or not child labor is inefficient when households face a credit constraint. They develop a two period model where parents supply labor inelastically in both periods and decide how their child allocates its time between work and school attendance. The more time a child allocates to schooling, the higher its second period income will be. Parents also decide the level of savings in the first period and the level of bequests to the child in the second period.

In the first case, children cannot make credible promises to compensate their parents in the second period for forgone income in the first period and parents cannot borrow. Baland and Robinson show that under these conditions, child labor will only be efficient if both savings and bequests are positive. If either, or both, of these are zero, however, the equilibrium level of child labor will be inefficiently high. When bequests are zero but savings are positive, child labor serves as a means of transferring income from the child to its parents. Given that the child will not be compensated by its parents in the second period for the lower income received in the second period, the child would like to work less in the first period, and child labor in the first period will be inefficiently high. If bequests were positive, then parents could compensate themselves for the loss in first period consumption by reducing bequests in the second period. When bequests are zero, parents cannot compensate themselves and neither can their child, resulting in an inefficient allocation of the child's time to labor.

When savings are zero and bequests are positive, child labor is a means of transferring income from the future to the present. This is because even though the parents fully internalize the negative effects of child labor on the child's second period income, they value first period consumption higher than second period consumption. Thus, the model illustrates how child labor can arise from both credit market imperfections and commitment failures.

Baland and Robinson proceed to analyze the case where children may now choose to make a transfer to their parents in the second period. This transfer will only be positive if bequests are zero, meaning the transfer can be thought of as a negative bequest. Although one might expect that the addition of filial altruism would solve the commitment problem and prevent an inefficiently

[4] Of course, variations will occur at the microeconomic level that may result in the returns to education being lower than the market interest rate, such as poor quality schools or labor market discrimination against members of certain groups.

high incidence of child labor, Baland and Robinson demonstrate that this is only the case when the credit market works perfectly. When the credit market is imperfect and savings are zero, the equilibrium level of child labor will still be inefficient. Again, the model demonstrates that credit constraints can result in an inefficiently high level of child labor.

Empirical investigations into the effect of credit market imperfections on child labor have been hampered by the difficulty in measuring access to credit. Nonetheless, there is some empirical evidence to suggest that credit market imperfections and child labor are related. Using cross-country aggregate data, Dehejia and Gatti (2002) find a negative relationship between child labor and access to credit, where access to credit is proxied by the extent of financial development, while Beegle et al (2003) find microeconomic evidence that restricted access to credit increases child labor, where access to credit is proxied by collateralizable assets.

3.4 Labor and land market imperfections

Microeconomic data from various developing countries reveal that labor force participation is higher and school attendance is lower, on average, among children from land-rich households than children from land poor households. Bhalotra and Heady (2003) refer to this as the wealth paradox, and highlight the fact that this observed paradox challenges the assumption that subsistence poverty compels child labor, as land is the most significant store of wealth for rural households in developing countries.

In order to explain the wealth paradox, Bhalotra and Heady turn to labor and land market imperfections. Land, along with other productive assets, exhibits both wealth and substitution effects with respect to child labor. The wealth effect is the result of a productive asset's ability to generate income and tends to have a negative effect on child labor: households with larger holdings of productive assets will tend to have higher incomes, making it easier for these households to forgo the income generated by child labor. Further, if capital markets are imperfect then households with large holdings of land will be more likely to gain access to credit at lower interest rates, as land can serve as collateral. This in turn reinforces the wealth effect of land. When land and labor markets are imperfect, however, land can have a substitution effect that tends to increase child labor. This is because a landowner who cannot hire a sufficient number of farm laborers, due to labor shortages or moral hazard, will have an incentive to either rent or sell their excess land, or to employ their

children as farm laborers. When land markets are imperfect the opportunities to rent or sell land is limited, leaving child labor as an appealing option to meet farm labor demand. As farm size increases, the marginal product of labor increases, and hence the incentive to employ child labor increases with farm size. Further, farm size has a positive influence on the returns to work experience when land markets are imperfect, especially in the case where the child is expected to inherit the farm. Taken together, the effect of farm size on child labor is expected to be ambiguous, and depends on whether the wealth effect or substitution effect dominates.

In the empirical model, Bhalotra and Heady control for the income effect of land by including household income as a dependent variable. Therefore, the coefficient on land should only reflect the effects of market imperfections. If the coefficient on land is negative then the credit market can be inferred to be imperfect. If the coefficient is positive then both the markets for land and labor can be inferred to be imperfect. Finally, if the coefficient on land is zero then all markets are perfect, or their imperfections offset each other exactly. Using data from rural Pakistan and Ghana, the results show that land is positively related to girls' participation in family labor but has no effect on boys' participation in family labor. Bhalotra and Heady conclude that land and labor markets are imperfect, and that these imperfections significantly contribute to child labor. Similar results are found for rural India in Congdon Fors (2007) and for Burkina Faso in Dumas (2007).

3.5 Parental characteristics

A common assumption is that one parent makes decisions regarding allocation of household resources. Therefore, parental preferences play an important role in the decision to send children to work. It is often assumed that parents act altruistically towards their children (most notably in the Luxury Axiom in Basu and Van (1998)). However, if parents are non-altruistic, or simply exhibit low levels of altruism, then child labor will be more prevalent. However, as Baland and Robinson (2000) demonstrated, even altruistic parents may send their children to work if they face credit constraints.

Rogers and Swinnerton (2004) modify the model in Baland and show that when both parents and children are altruistic, the relationship between parental income and child labor may exhibit an inverted-U shape. This is because at low levels of parental income, parents may be dependent on transfers from their adult children. In order to ensure they will receive these transfers,

the parents must act in accordance with their children's preferences, meaning that they attempt to minimize the number of hours the children work. However, in their model the level of parental income at which the child will stop making transfers to its parents is lower than the level at which parents begin making bequests. As a result, there is a parental income range where neither transfers nor bequests are made, and the parents and children do not agree on how resources should be distributed inter-temporally within the family. Therefore, parents may increase the hours that children work and decrease the hours they attend school when their income rises to the level where they no longer expect to receive transfers from their children. It is only when parental income is high enough to make bequests that child labor begins to decline with parental income. Rogers and Swinnerton argue that their results are well in line with empirical results on intergenerational income transfers. They also note that the non-monotonic nature of the relationship between parental income and child labor could explain the fact that many empirical studies of child labor do not find a significant relationship between household income and child labor.

There is no clear consensus in the empirical literature as to whether parents are altruistic or not. For example, Parsons and Goldin (1989) find evidence that parents do not act altruistically using data from the United States from the late nineteenth century, while Bhalotra (2004) finds evidence that parents do act altruistically using data from Pakistan[5]. As such, the question as to whether or not parents are altruistic remains an open one.

Another issue is whether parents have the same preferences and, if not, to what extent their relative bargaining power affects the incidence of child labor. Basu and Ray (2002) argue that when both parents dislike sending children to work, but have different preferences in terms of consumption goods, then child labor will be minimized in households where the parents have equal power. The reasoning behind this is that the parents both suffer equally much from sending their child to work, but only control half of the benefit of the increased income the child generates. When one parent has disproportionately high bargaining power in the family, however, they are able to spend most or all of the increase in income on their preferred consumption goods, and therefore have a greater incentive to send their child to work. Basu and Ray find support for their hypothesis using data from Nepal, where relative parental

[5]Her results are somewhat weaker, however, in the case of households that consume tobacco.

education acts as a proxy for bargaining power. Child labor is minimized when both parents have the same amount of education, while the incidence of child labor increases in households where one parent has considerably higher education than the other.

A third parental characteristic that influences the decision to send children to work is education. There is increasing evidence that parents with higher education are more likely to send their children to school and keep them out of the labor force (see Strauss and Thomas (1995) for example). This may be a result of educated parents exhibiting a greater preference for education, or it may the case that the children of the highly educated receive higher returns to education due to the intergenerational transmission of human capital. There is no consensus, however, as to whether it is the education of the mother or the father that has the greatest impact on reducing child labor. Emerson and Souza (2007) find that it is the father's education that has the greatest impact using data from Brazil, while Kurosaki et al (2006) find that it is the mother's education that has the greatest effect using data from rural India. Therefore, the effect of parental education may be influenced by other factors not captured by education levels alone. Interestingly, both Emerson and Souza (2007) and Kurosaki et al (2006) find that the father's education has a larger effect on the labor force participation of sons than of daughters, indicating a gender aspect to the decision to send children to school or to work.

4 Policy Implications

One clear policy implication of the theoretical literature is that a ban on child labor alone is not likely to be effective. Such a ban would be difficult to enforce, especially in the case of rural child labor. Similarly, a ban by trading partners on goods that use child labor as one of the inputs of production may simply drive child labor out of the export sector and into other sectors of the economy. Further, as Basu and Van (1998) illustrated, even a perfectly enforced ban may have negative consequences if adult wages do not rise sufficiently enough to meet subsistence needs after the ban is in place. Similarly, Basu and Zarghamee (2005) illustrate that if a consumer boycott of products using child labor as an input results in the price of these products being lower than products produced without child labor, then the incidence of child labor may actually rise rather than fall. They argue that this result illustrates that consumer boycotts should be used with caution. Doepke and Zilibotti

(2008) examine theoretically the effect of trade policies on child labor in the exporting country. These trade policies, such as boycotts or the imposition of labor standards, are assumed to only affect the export sector, while child labor remains legal in the domestic sector. Their model demonstrates that such policies may actually thwart efforts to ban child labor, as they have the potential to lower domestic support for a ban on child labor. These results indicate that bans, boycotts and trade policies will not necessarily reduce child labor and, in the worst case, may even exacerbate the problem. This is not to say that child labor should not be outlawed; clearly, certain forms of child labor can never be acceptable, such as illegal activities and hazardous labor. However, merely banning these activities will not be sufficient to ensure the children's welfare if the household does not have the opportunity to meet its subsistence needs without the income generated by the child.

The elimination of child labor requires policy instruments that target its causes. Households facing subsistence poverty will require higher incomes in order to be able to withdraw their children from the labor force and, ideally, to send them to school. Income redistribution is one potential means of achieving this goal, but will only be successful if the mean income level in the economy is sufficiently high. Unfortunately, this may not be the case in many of the countries with the highest incidences of child labor. Therefore, direct financial aid may be necessary in the short-run. Conditional cash transfers are one such policy instrument. These programs provide cash transfers directly to households who are expected to fulfil a program requirement in return, such as sending children to school. Edmonds (2007) lists a number of conditional cash transfer programs in developing countries, and argues that the existing empirical literature on the Progresa program in Mexico provides encouraging evidence that such conditional cash transfers are indeed associated with significant declines in child labor.

Empirical investigations into the effectiveness of different policy instruments in combating child labor is unfortunately rather scarce (Edmonds, 2007). Therefore, the remainder if this section is based on conclusions drawn primarily from the theoretical models described above. Strategies aimed at improving the functioning of land and labor markets will help to reduce child labor in countries where these imperfections are significant. Further, an improvement in these markets may contribute to economic growth by increasing the productivity of agriculture. However, if these market imperfections remain unaddressed, the use of land redistribution policies as a means of improving

household wealth could potentially increase the incidence of child labor.

Restricted access to credit markets is an important issue in developing countries, especially in rural areas. For example, banks may not have branches in rural areas, making access impossible for the poorest families. Where bank branches are available, they may be reluctant to lend out even small amounts of money to borrowers who lack collateral or cannot guarantee their ability to repay. Without access to credit, some families may have to put their children to work rather than sending them to school. Even if children are not put to work, they may be kept out of school if credit is not available to cover the direct costs of schooling. Lack of credit may also prevent some families from buying income-generating assets or pursuing certain income-generating activities. In some cases, informal lenders may be the only option facing a household; an option that tends to carry high costs in the form of high interest rates[6]. If a family does take a loan from an informal lender at a high interest rate, there is a risk that the child may be bonded into labor in order to repay the debt. As a result, informal credit markets may increase the incidence of child labor in families who are in desperate need of a loan (U.S. Department of Labor, 2000). Therefore, policies that aim to provide credit to the poor at reasonable interest rates may help to reduce child labor.

Many of the theoretical models above highlight the connection between fertility and child labor. While high fertility and child labor may be a rational response by the household given the behavior of other families in the community, the group behavior in this equilibrium may be considered irrational. One question that has been raised is whether fertility and the choice to send children to work is made jointly, i.e. is fertility endogenous? Data from developing countries shows that the costs of raising children are quite high, around 30-40% of household income (Deaton and Muellbauer, 1986). Estimates of the contribution of child labor to household income, while significant, tend to be much lower (Psacharopoulos, 1997). Therefore, while child labor can offset some of the costs of raising a child, it is unlikely that it could compensate the total cost, let alone be profitable. As a result, policies aimed at lowering aggregate fertility may help to reduce the incidence of child labor.

Mandatory school attendance, coupled with policies aimed at improving access to and the quality of schools, is one important intervention that would primarily affect children who are not facing subsistence poverty. As mentioned above, empirical evidence has shown that educated parents are more

[6] See for example Table III on p.30, U.S.Department of Labor (2000).

likely to send their children to school. Indeed, education appears to have a dynastic effect, where educational attainment leads to a virtuous circle, while the lack of education could lead to a poverty trap (Emerson and Souza, 2003). Policies aimed at improving the quality of schooling will help to increase the returns to education, making education a relatively more attractive alternative to child labor. Traditional economic growth models extended to include human capital demonstrate the important role of education in economic growth (Romer,1990; Aghion and Howitt, 1992), and the empirical evidence indicates that human capital explains a great deal of the differences in output between nations (see Mankiw et al (1992), for example). Therefore, increasing school attendance should have positive long-run effects on reducing child labor intergenerational education effects and by stimulating economic growth. Conversely, countries where child labor is prevalent and school attendance is low may suffer from poor growth. This in turn can lead to a negative spiral that is difficult to break.

5 Conclusion

The purpose of this paper has been to illustrate the fact that there is no single underlying factor responsible for the phenomenon of child labor. Rather, subsistence poverty, market imperfections and parental preferences may all contribute to the decision to send a child to work. As a result, no one policy instrument on its own can be expected to eradicate child labor.

This is especially true in the case of a ban on child labor or a boycott of products produced by child labor, which are aimed at the symptoms rather than the root causes of child labor. These policies on their own are not likely to significantly reduce child labor and in the worst case scenario can have the opposite effect, making children and their families worse off. What is clear is that such bans and boycotts will not produce the desired results if the children and their families do not have alternative opportunities. A striking example of this is orphaned children, who in many cases must work to provide for themselves and perhaps even younger siblings. Preventing them from working without providing alternative opportunities will no doubt have devastating consequences for these children. According to the UN, there are currently more than 34 million orphans in sub-Saharan Africa alone, indicating that this category of potential child laborers is far from inconsequential (United Nations, 2006).

In order to successfully eliminate child labor policies must aim to address

the causes of child labor and to provide viable alternatives. This is by no means an easy task, but can be achieved by ensuring access to quality schooling, addressing market imperfections, and giving economic support to those who face subsistence poverty, as well as by pursuing long-run economic growth strategies.

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