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Child Labor and Schooling in Africa: A Comparative Study

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**Child Labor and Schooling in Africa:
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Abstract

This paper analyzes the determinants of child labor in Africa as inferred from recent empirical studies. The empirical analysis is based upon five country studies undertaken in three different African countries, namely Côte d'Ivoire, Ghana, and Zambia. Some support is found for the popular belief of poverty as a determinant of child labor, however other determinants are of similar importance. Among school costs, transportation costs have the greatest effect on child labor and school attendance, whereas the hypothesis of imperfect capital markets and that of household composition generally find some support.

JEL codes: I21, J13, J24.

Keywords: Africa, poverty, child labor, school attendance.

CHILD LABOR AND SCHOOLING IN AFRICA: A COMPARATIVE STUDY*

Sudharshan Canagarajah & Helena Skyt Nielsen**

I INTRODUCTION

Child labor is widespread in the developing world. ILO estimates for developing countries indicate the total number of working children aged 5–14 years at 250 million. Of these, 120 million work full-time, and 24 million are below the age of 10. In absolute terms child labor is most prominent in Asia, because approximately 150 million working children live in Asia. However, in relative terms child labor is more widespread in Africa. Even though Africa accounts for only one-third of the working children in the developing world, labor force participation rates exceed 30 percent in many areas.¹

Formal surveys and anecdotal data indicate that the agricultural sector has the highest concentration of child labor. Although agriculture is a large consumer of child labor all over the developing world, there are distinct differences between the sector composition of child labor in Africa, Asia, and Latin America. In Africa, child labor is considered primarily a rural phenomenon, while in Asia and Latin America, which are more urbanized, child labor is also considered an urban phenomenon. In Africa, child labor is concentrated in subsistence farming and is often associated with large, rural households. Children primarily tend livestock or assist the adults during the harvest season. In addition to subsistence farming, African child laborers are also employed in commercial farming, which is concentrated in two geographical regions: the countries of coastal West Africa and the East African plateau.

¹ See ILO (1997) and UNICEF (1997).

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For several reasons, the large number of child workers in the developing world is troubling. Child workers are equally susceptible to the dangers faced by adult workers under similar conditions, but they are more seriously affected because of their different anatomical, physiological and psychological characteristics. The working conditions of children are far below that of the adults: they work longer hours for lower wages, under more dangerous conditions. Unlike adults, children do not fight against their oppression through unions.²

In addition to being hazardous and harmful for children's health—in fact, more children are believed to die of exposure to pesticides than from all the most common childhood diseases combined—child labor interferes with education. Either school attendance is foregone in favor of work, or learning is inefficient, either because the children are not allowed to spend time doing their homework or because they are unable to pay proper attention in school because of fatigue. When directly asked, child workers find that school attendance is not the greatest problem of child labor, instead they responded that they needed leisure time to be children.³

As mentioned, the problem of child labor is more pronounced in Africa than elsewhere in the developing world. While statistics in this field are far from reliable, it is assumed that in some regions of Africa, labor force participation rates for children might be as high as 30 percent.⁴ Furthermore, cost benefit analyses show annual GDP losses of 1-2% because of the loss in human capital stock due to the use of child labor.⁵ Hence, there is enough motivation to find out what determines whether children work or attend school. To appropriately respond to the problem, it is necessary to explore characteristics of households, economy, and society that may offer an explanation for the high incidence of child labor in Africa.

² See for example, WHO (1987) and Jeyaratnam (1985).

³ See UNICEF (1997).

⁴ See ILO (1997) and UNICEF (1997) for data.

⁵ See Nielsen (1998) and Canagarajah and Coulombe (1998).

This paper is an attempt to understand causality and influence policy, in order to promote enrollment of at-risk African children. It describes the African child workers, and investigates the socioeconomic characteristics associated with child labor. The conclusion offers policy suggestions to reduce child labor in Africa.

For purposes of this analysis, the concept of “child labor” will be defined as children 7–14 who are involved in economic activities for cash, kind, or non-wage “incentives”. Economic activities can include working in the household enterprise, farming, street vending, or wage work. Attempts to classify home care rarely succeed in distinguishing between household chores and taking care of siblings from idle time. As noted by UNICEF (1997), this results in a gender bias in the statistics because working girl children more often perform full-time housework than working boy children.

Although children are involved in hazardous and harmful tasks, as well as other tasks that are less harmful, this paper considers child labor in the broadest sense. This is because of the difficulty of making these separations between different kinds of child labor from available data and the perception that even “harmless” child labor may interfere with a child’s education, and hence have “harmful” consequences.⁶

The country studies that form the basis for this paper are based on household surveys collected by governments. Although they may not be the best instruments to analyze child labor, these surveys are likely to be unbiased because they are based on representative population samples.

The paper is organized as follows: Section 2 examines contributions, which explain child labor from the stand point of economics literature, and derives five specific hypotheses to be tested in the empirical analysis. Section 3 presents some empirical evidence of the extent and the determinants of child labor and school attendance in Africa. The five hypotheses are tested based on evidence from the three African

⁶ This is consistent with the spirit in Article 32 of the UN Convention on the Rights of the Child, that concerns both hazardous work and work that interferes with education.

countries. Section 4 concludes with a discussion of the policy implications of the analysis, and puts the findings in perspective of the challenge of developing effective policy interventions.

II MAIN HYPOTHESES EXPLAINING CHILD LABOR

This section reviews the economics literature on child labor and derives five main hypotheses. Both supply- and demand-side issues are important when confronting the economics of child labor. Being based on data from household surveys, the empirical part of this paper focuses on supply-side issues. However, some demand-side factors are discussed briefly at the beginning of the section.

Employers argue that children are irreplaceable because of their “nimble fingers”. Following this argument, only children with small fingers have the ability to make fine, hand-knotted carpets, only children can pluck the delicate jasmine flowers without breaking branches, and similarly only physically small individuals are able to climb mine tunnels. Although children, in general, have low productivity and are mostly unable to produce high quality products, employers still tend to consider them to be cost-effective labor due to their low salary level.⁷ On the other hand, Levison *et al* (1996) and Anker and Barge (1998) find that children are not necessary for the Indian carpet industry to survive, and only minor changes in the financial arrangements between loom owners, exporters, and importers could reduce the incentive to employ child labor.

If children do not have irreplaceable skills, and if they are only marginally less costly than adults, the question remains as to why industries continue to hire children, especially in the face of growing global resistance to products made using child labor. Levison *et al* (1996) and Anker and Barge (1998) suggest that the answer can be found in the non-pecuniary characteristics of children. They are less aware of their rights, less troublesome, more willing to take orders and to do monotonous work without

⁷ See US Department of Labor (1995).

complaining, more trustworthy, less likely to steal, and less likely to be absent from work.

If the employer is the household of residence, and if the household is poor, child labor may be used as cheap labor that makes it possible to maintain the household budget.⁸ This could be either in the form of help in the household enterprises or in the home, in order to free adult household members for economic activities elsewhere.

A final note on the demand side is increased school enrollment in years of bad harvest. While harvest-related poverty increases and school attendance normally correlate negatively, the demand-side reduction in the agrarian sector in poor harvest years may liberate children's time and allow them to attend school.

The supply side of the market for child labor provides a different set of explanations for the prevalence of child labor. In the field of economics, the supply of child labor is explained in the context of the theories of investment in human capital and allocation of time.⁹ The two primary contenders for children's non-leisure time are school and work. In a standard human capital model (see for example, Ben-Porath, 1967; Siebert, 1990), each individual chooses the level of consumption and the allocation of time which maximize the discounted expected future utility. The standard human capital model is not sufficient to describe child labor in developing countries. The decision-maker is often not the child, but may be the household head, who allocates the time of all household members.¹⁰ Also, maximization is constrained by the fact that households have no access to borrowing, and that consumption should exceed a certain subsistence level. In the developing world, and especially in Africa, a large proportion of households live at a minimum level of expenditure. In this extended human capital model, child labor would be present in either of the following situations:

⁸ See Mehra-Kerpelman (1996).

⁹ Examples are Patrinos and Psacharopoulos (1997), Jensen and Nielsen (1997), and Grootaert and Kanbur (1995).

¹⁰ Alternatively, the household choice might be considered a bargaining model of multiple participants.

- Household consumption is equal to the subsistence level, and the marginal benefits of child labor may or may not exceed the marginal costs of child labor.
- Household consumption exceeds the subsistence level, and the marginal benefits of child labor (earnings and saved costs of schooling) are higher than the marginal costs of child labor in terms of the foregone return to human capital investments.

The first set of conditions is fulfilled for households living at the subsistence level, and sheds light on why child labor may coexist with a good education system and a high demand for skilled labor. This set of conditions explains why poor households make use of child labor, and why child labor may be used even in off-seasons in agricultural areas.

The second set of conditions would be fulfilled if school costs were high, or if the return to schooling was low. The return to schooling is low if, for instance, the quality of schooling is low (for example, Glewwe, 1996), or if the expected future demand for educated labor is low.¹¹ Also, a situation of high demand for unskilled labor, and consequently child labor, would satisfy this condition. An example is the case in

If households are risk-averse, poor parents would receive a high marginal benefit (marginal utility) from child labor income, and they would be more likely than risk-neutral agents to supply child labor. The use of child labor is a way of augmenting income such that the risk of suddenly falling below the subsistence level of consumption is reduced. For instance, for subsistence farmers, child labor is a way of reducing the potential impact of a bad harvest, whereas for urban households, child labor might reduce the potential impact of job loss or rising food prices. For households living close to the subsistence level, the impact of income interruptions such as a bad harvest or job loss are more severe, thus this risk management argument explains why these households may be more inclined to use child labor.

¹¹ Retrenchment of civil servants and the shrinking public sector has reduced educated individuals' prospects of finding lucrative jobs. In the absence of private sector growth, there are probably few good prospects for educated labor in Africa.

To simplify, one may say that three main hypotheses emerge from the human capital framework: A *poverty* hypothesis, a *school costs* hypothesis and a *school quality* hypothesis. In the existing literature on child labor, all three hypotheses find some support. Bonnet (1993) focuses on poverty as an explanation, and this is also found to be important by Cartwright (1998) and Sakellariou and Lall (1998). However, the analysis in the next section of this paper moderates that result, and in her thesis, Hiraoka (1997) asks whether poverty really is the main explanation for child labor. Both Lavy (1996) and Jensen and Nielsen (1997) find that transportation costs of schooling are important. Gertler and Glewwe (1990) refine this conclusion by investigating the willingness to pay for reducing the distance to school. They find that both the rich and the poor are willing to pay the price for reducing the distance to schools to less than one kilometer. Lavy (1996) finds some evidence of an effect of bad school quality on school attendance, although the effects are relatively small in magnitude. Bonnet (1993) argues that failure of the education system is an important explanation for the prevalence of child labor. When parents do not expect children to learn much in school, they decide to give them informal education in terms of work experience.

Another strain of the literature focuses on household issues such as the quantity and the quality of children and the age-gender division of domestic and other work. These issues, which are described below, are summarized in a hypothesis of *household composition*.

The household decision to allocate children's time is often seen as a joint decision inter-dependent with the number of children (Becker and Lewis, 1973). Both the number of children (quantity) and well-educated children (quality) represent potentially high household income, and when household welfare is maximized, the household decision-maker faces a trade-off between the two. Patrinos and Psacharopoulos (1997) find some evidence of a positive effect of the number of siblings on the probability to work; however, a simultaneous equation system is needed before concrete conclusions

can be made about this relationship. Rosenzweig and Wolpin (1980) simulate the structural model suggested by Becker and Lewis (1973), and confirm that an exogenous increase in fertility decreases child quality. However, Montgomery, Kouamé, and Oliver (1995) state that the existence of a trade-off between quantity and quality has not yet been established in the case of Sub-Saharan Africa. In addition, it is hard to accept that life-long horizons, family planning, and economic rationality govern fertility and educational decisions in traditional Africa.

As discussed by Rosenzweig (1977), children's roles in household production is of great importance in relation to child labor. This is especially true in the substitutability between the work of girl children and their mothers: when mothers work, girls stay home to take over their duties. Levy (1985) and Rosenzweig (1981) show that a 10 percent increase in women's wage rates would decrease the girl child's labor force participation by as much as 10 percent. Sakellariou and Lall (1998) and Cartwright (1998) reach a similar conclusion. This effect can go far toward explaining the incidence of child labor in subsistence households, although regional and sector differences in the intensity of this effect have also been noted in the literature.

Age and age-distribution of siblings are important variables in understanding the incidence and nature of child labor (see for example, DeGraff and others, 1993). One common finding is that the incidence of child labor is higher for the older children than for the younger children. Another common finding is that having older siblings in the labor market decreases the likelihood of younger siblings being involved in child labor.

Another factor affecting the choice of school versus labor is parents' employment. A central ILO concern has been that the demand for child labor in certain areas is higher than or even reduces the demand for adult labor, and thus forces children into the role of family income providers. Ironically, this is a vicious cycle in which children replace adults in the labor force, and the children of the displaced adults are forced to join the labor force to support the family.

If children are regarded as pure investment goods, textbook economics would tell risk averse parents to diversify the investments in children's education. Therefore, they

invest in formal education by allowing some children to get a continuing education, and invest in informal education (experience) by giving some children a primary education or no education at all. Lloyd (1994) and Patrinos and Psacharopoulos (1997) find some evidence of this sort of diversification.

Continuing to view children as pure investment goods, a *capital market hypothesis* can be formulated. Human, physical, and financial capital can be regarded as competing investment alternatives. In developing countries, the degree of rationing and borrowing constraints on the financial capital market is high, thus this market is not perfectly competitive. To a lesser degree, the human capital market may also be characterized by rationing, since the supply of schools may be limited. The human capital market differs from the two other markets, in that parents do not have absolute control over the outcome of an investment in human capital, because the children may leave the household after they have finished their education (Parsons and Goldin, 1989; Andvig, 1997). Households without access to the financial capital market and without physical assets may be forced to “take loans” on the human capital market if they experience a sudden income drop. Withdrawing children from school and letting them work instead represents a “loan” in this market. Hence the capital market hypothesis might contribute to explaining child labor.

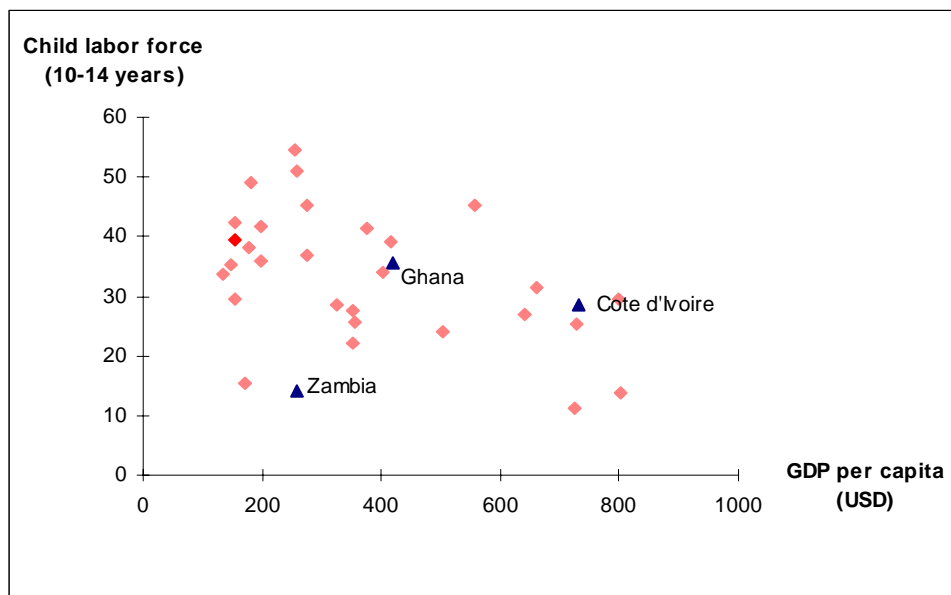
The discussion above gives rise to five different hypotheses explaining child labor: The poverty, school costs, school quality, household composition, and capital market hypotheses. In the following section, evidence for and against the five hypotheses are presented based on the case studies in Africa.

III EMPIRICAL EVIDENCE FOR AFRICA

This section presents empirical evidence on the extent and determinants of child labor in Africa. Figure 1 illustrates the amount of child labor in Côte d’Ivoire, Ghana, and Zambia together with that of other low-income African countries. Both Côte d’Ivoire and Ghana seem to be representative for their income group with regard to the level of

child labor. However, Zambia has a much lower level of child labor than the other countries with a similar GDP per capita. Actually, the extent of child labor in Zambia is at about the same level as in Egypt and Swaziland where the GDP per capita is much higher.

**Figure 1:
Child Labor in Low-income African Countries.**



Note: Child labor is defined as the share of the children in the 10-14 age group that is active in the labor force.

Source: World Bank (1997). Numbers from 1995 or the most recent available figure is used. For Côte d'Ivoire, Ghana, and Zambia, the numbers are calculated from GLSS 1991/92, CILSS 1988, and PSII 1993, respectively.

In the following section, a number of empirical studies of child labor in Côte d'Ivoire, Ghana, and Zambia, are surveyed. The country choice is constrained by the availability of data and the existence of relevant empirical studies, and these countries may not be representative for Africa as a whole. After a brief description of the studies that are used for the survey, each of the five hypotheses is tested in turn.

1.1 Description of the five studies

Table 1 briefly presents the five studies that form the basis for the survey of child labor in Côte d'Ivoire, Ghana, and Zambia. The main difference between the studies emanates from the choice of econometric methods.

**Table 1:
Overview of the Five Studies.**

| | | | | | |
|-----------|---|------------------|---------------------------------|---------------------------|------------------|
| Author | Grootaert (1998) | Coulombe (1998) | Canagarajah and Coulombe (1998) | Bhalotra and Heady (1998) | Nielsen (1998) |
| Country | Côte d'Ivoire | Côte d'Ivoire | Ghana | Rural Ghana | Zambia |
| Data | CILSS 1988 | CILSS 1988 | GLSS 1991/92 | GLSS 1991/92 | PSII-1993 |
| Age group | 7-17 years | 7-14 years | 7-14 years | 7-14 years | 7-14 years |
| Method | Sequential probit and multinomial logit | Bivariate probit | Bivariate probit | Tobit | Bivariate probit |

Table 2 presents summary statistics describing the reported child activities in the samples that form the basis for the five studies. Some characteristics are similar in all the studies. First, there is more child labor and non-school attendance in rural areas compared with urban areas. Second, if children work in urban areas, they are more likely to combine work with school attendance than to work only. Third, the proportion that are neither attending school nor working seems to be about 20 percent. Grootaert (1998) argues that these children are doing home care activities, since “[i]n the context of Côte d'Ivoire, it would be most unusual for children in the age group 7-17 to not attend school and to make no contribution at all to the household.”

The numbers confirm the statement from the earlier sections that child labor in Africa is mainly a rural phenomenon. A lower bound on the estimate of child labor in rural areas is 21 percent, which is the case in Zambia; the other studies report estimates greater than 30 percent.

For Côte d'Ivoire, the figures in the two studies are quite different. This is due to the different age groups, and different definitions of child labor. Coulombe defines child labor as the proportion of children who worked during the last week before the survey, whereas Grootaert uses proportion of children who worked during the last year.

Bhalotra and Heady (1998) restrict their sample to children who reside in households that cultivate land, and they analyze hours of farm work. Therefore, they use only about half of the rural sample, which explains the difference in the numbers in the two Ghanaian studies.

**Table 2:
Reported Activities in the Five Studies.**

| | School only | School and work | Work only | Neither | All |
|--|-------------|-----------------|-----------|---------|-----|
| Côte d'Ivoire^a | | | | | |
| Grootaert (1998) | | | | | |
| Rural | 18.8 | 25.8 | 34.4 | 20.9 | 100 |
| Urban | 34.3 | 36.4 | 6.5 | 22.8 | 100 |
| All | 25.3 | 30.2 | 22.8 | 21.7 | 100 |
| Coulombe (1988) | | | | | |
| Rural ^b | 37.8 | 0.4 | 33.9 | 27.9 | 100 |
| Urban ^b | 69.3 | 0.4 | 5.1 | 25.2 | 100 |
| All | 52.2 | 0.4 | 20.8 | 26.6 | 100 |
| Ghana | | | | | |
| Canagarajah and Coulombe (1998) | | | | | |
| Rural ^c | 42.2 | 25.4 | 12.1 | 20.2 | 100 |
| Urban ^c | 77.9 | 4.9 | 3.4 | 13.7 | 100 |
| All | 53.9 | 18.8 | 9.3 | 18.1 | 100 |
| Bhalotra and Heady (1998) | | | | | |
| Rural ^d | 37.4 | 31.3 | 13.1 | 18.2 | 100 |
| Zambia | | | | | |
| Nielsen (1998) | | | | | |
| Rural | 59.9 | 7.0 | 13.6 | 19.4 | 100 |
| Urban | 85.8 | 1.1 | 0.7 | 12.4 | 100 |
| All | 70.4 | 4.6 | 8.4 | 16.6 | 100 |

Notes:

a. Grootaert defines child labor as the proportion of children who worked during the last twelve months, whereas Coulombe uses the proportion of children who worked during the last week before the survey.

b. Calculated from Table 4 and 8 in Coulombe (1998).

c. Calculated from Table 3 and Annex 2 in Canagarajah and Coulombe (1998).

d. Work is farm work, and the numbers are computed from Table 3 in Bhalotra and Heady (1998).

The descriptive statistics in table 2 represent the dependent variables in the analysis. To explain the variation in the dependent variables, the authors use different sets of explanatory variables, most of which come under the heading of one of the following hypotheses: the poverty, school costs, school quality, household composition, and capital market hypothesis. Starting with the poverty hypothesis, which is traditionally viewed as the most important, each of the five hypotheses is tested in turn.

1.2 Poverty hypothesis

In the surveyed papers, it is difficult to find clear evidence for the supposed dominating importance of poverty as an explanation for child labor. To test for the importance of poverty, Canagarajah and Coulombe (1998), Coulombe (1998), and Nielsen (1998) base their income measures on total household expenditure and correct for potential endogeneity. The remaining two studies correct for potential endogeneity in the definition of the income measure rather than in the estimation procedure. Grootaert (1998) uses an indicator variable to determine if the household income (excluding the income from child labor) is in the lowest quintile, whereas Bhalotra and Heady (1998) use household food expenditure per capita to approximate household income per capita.

When estimating a sequential probit model for rural areas, Grootaert (1998) finds that poverty is not important for the first stage decision that concerns whether or not the individual attends school only. However, it is important in the second stage decision which is between attending school and working at the same time, as opposed to working only or taking part only in home care activities. Belonging to the lowest income quintile decreases the probability of combining work with school attendance by 27 percentage points for the average person. Estimating the multinomial logit model confirms this finding. The effect seems considerable, although it is difficult to assess because of the broad reference group and the relative definition of poverty. For urban areas, poverty is found to exert a significant effect in both the first stage decision (attending school only) and the second stage decision (combining work with school attendance) in the sequential probit model. However, the magnitude of the effect is somewhat smaller (9 and 13 percentage points, respectively).

In their tobit estimation for hours of work for rural Ghana, Bhalotra and Heady (1998) find a bell-shaped effect of income for girls and no effect for boys. This is in conflict with the negative effect of poverty that is often taken for granted. However, they argue that alternative characterizations must be sought before they are confident of their result.

Studies which estimate a bivariate probit model generally indicate that the effect of the income measure on school attendance is always significantly positive, whereas the effect on child labor is less clear-cut. Canagarajah and Coulombe (1998) and Coulombe (1998) both use a welfare indicator defined as the logarithm of household expenditure per capita to account for poverty. In Côte d'Ivoire, the elasticity of the probability of working is about 0.3, although the effect is not always significant.¹² In Ghana, the effect of welfare on child labor follows an inverted U-shape curve with the maximum just below the median expenditure. Therefore, the expected negative effect of income only prevails in the upper end of the income distribution. This characteristic is observed to be very strong in rural areas. In the case of Zambia, the effect of household income on child labor has the expected sign, although it is only significant for rural areas, and the elasticity is less than one. This means that huge income subsidies or many decades of widespread economic growth are needed to reduce child labor considerably.

Canagarajah and Coulombe (1998), Coulombe (1998), and Nielsen (1998) reject exogeneity of income in most estimations. Hence, correcting for endogeneity might be crucial for obtaining reliable results with respect to the effect of poverty. Nielsen (1998) mentions that the effect of income on child labor has increased significantly after correcting for endogeneity.

As an explanation for the weak support for the popular belief that the poor use child labor more often than others, Bhalotra and Heady (1998) and Canagarajah and Coulombe (1998) suggest some conflicting evidence. The poor households may be more likely to live in regions with a sluggish economy, which results in a generally low demand for labor (including child labor). Furthermore, the poor and their children are more likely to be affected by slack seasonal labor demand patterns and constraints in terms of other inputs and availability of credit. However, some of the reported studies (see, for example, Nielsen, 1998; Bhalotra and Heady, 1998) have already controlled for region effects, land-ownership, and credit availability.

¹² An elasticity of -0.3 means that a 1% income increase reduces child labor by 0.3%.

To recapitulate, the empirical studies cast doubt about the traditional, simplistic view that poverty is the main factor which pushes African children into the labor market. In many cases a significant effect of poverty on child labor is found, but usually the magnitude of the effect is moderate. Similar conclusions may be drawn about the effect on school attendance; although the effect is always significant, the order of magnitude is moderate.

1.3 Costs hypothesis

All studies but Bhalotra and Heady (1998) use the cluster mean of education expenses including fees, teaching material, uniforms, and other expenditure as a measure of school costs. Grootaert (1998) finds a very weak effect when estimating a multinomial logit, but he finds no effect at all when estimating a sequential probit. Coulombe (1998) finds the opposite signs of what would be expected, whereas Canagarajah and Coulombe (1998) find that both the probability of working and the probability of attending school in rural areas increase with escalating education expenses. This odd result may reflect the fact that quality and costs are correlated, and quality has not been accounted for. For instance, it is a well-known fact that in Ghana the private schools are better and more expensive than the relatively cheap, low-quality, public schools. Nielsen (1998) finds that decreasing school expenses by about US\$3 increases school attendance by a small margin, corresponding to an elasticity below 0.1, which is a relatively moderate effect.

Transportation costs are measured by an indicator for presence of a school in the community, distance to school, availability of a passable road, and availability of public transport. For rural areas in Côte d'Ivoire, Grootaert (1998) and Coulombe (1998) find some effect of the distance to schools. Grootaert finds that the distance to schools only matter in the second stage decision of whether or not to combine work with school attendance. The absence of a school in the local community decreases the probability to combine work with school attendance by 18 percentage points. Coulombe finds a child labor elasticity of 0.2 with respect to distance, and he finds no effect on school attendance itself. Canagarajah and Coulombe (1998) find that decreasing the travel time to school by 10 minutes decreases school attendance by about 1 percentage point, and

labor force participation by half a percentage point. The latter may be explained by the fact that children who have to travel far to school do not have much time left to work. For rural areas, Nielsen (1998) finds large effects of the presence of a primary school in the community and the availability of a passable road, and smaller effects of the other variables approximating transportation costs. The presence of a primary school increases school attendance by 10 percentage points in some cases, whereas the availability of a passable road decreases child labor by more than 10 percentage points and also increases school attendance significantly. Bhalotra and Heady (1998) find the expected signs on the variables to approximate transportation costs of schooling, although none are significant.

The study by Bhalotra and Heady is exceptional in that the authors use information on wages from child labor, and they find a significant effect of the daily wage for a child harvesting on the hours of work. Such measures are usually not available. Another example of a study that applies such a measure is the study by Khandker and Mason (1997) on Tanzania. They find a strong effect of opportunity costs on the probability to be enrolled in school.

1.4 Quality hypothesis

Only the study of Zambia includes indicators for the quality of schooling as reported by the community leaders. The condition of roofing is found to be a significant determinant of the probability of working, whereas both the conditions of roofing and furniture are important determinants for school attendance. In some cases, a poor condition of the school roof increases the probability of working by 15 percentage points.

Earlier studies on related topics support the finding for Zambia that the physical conditions of schools are important. Glewwe and Jacoby (1994) analyze middle school education in Ghana. They find that school quality is more important for grade attainment than for school enrollment. Furthermore, they find that the relative effectiveness of repairing classrooms in schools with no usable classrooms when it rains is higher than that of providing instructional materials. Using an output based

quality measure Hanushek and Lavy (1994) find that students attending higher quality schools will tend to stay longer in school and complete higher grades.

1.5 Household composition hypothesis

All five studies carefully take into account the household composition as an explanation for child labor and school attendance. One of the most important variables is the education of the parents or the household head. All but Bhalotra and Heady (1998) find a strong effect of this variable. Bhalotra and Heady find that only girls with mothers who have completed secondary education work less than other girls. In the other studies, the education of the parents or the household head decreases the probability of working and increases the probability of school attendance significantly. Generally, the order of magnitude of this effect is 1 to 2 percentage points per year of education. However, Grootaert (1998) finds a larger effect of the education of the parents in his second stage decision to combine work with school attendance. In rural areas, an extra year of education for the father increases the probability to combine work with schooling by 7 percentage points, whereas an extra year of education for the mother increases the probability by 3 percentage points.

The child's relationship to the household head might also have an effect. If the child is a son or daughter of the household head, the probability of working might be lower and the probability of attending school might be higher. Both Coulombe (1998) and Nielsen (1998) find that the effect is present for girls, although Nielsen only finds an effect in the school attendance equation and only for urban areas. The former finds that the effect is less than 10 percentage points, whereas the latter finds an effect of about 10 percentage points. For Ghana, Canagarajah and Coulombe (1998) find no effect, and the other authors do not include variables to account for this effect.

The gender composition of the household is found to be important by Bhalotra and Heady (1998). They find that boys work fewer hours if the females-to-males ratio is high. Coulombe (1998) finds that more female siblings in the 7-14 age group decrease the probability of working and increase the probability of attending school. Also, more

females in the 15-59 age group decrease child labor and increase school attendance indicating substitutability between child labor and the female labor supply.

Grootaert (1998) finds some importance of the presence of siblings, but not large effects. Nielsen (1998) finds that the higher the number of older siblings, the lower is the probability of working and the higher the probability of attending school. The presence of children aged 0-6 years, only increases the probability of working, if housekeeping is included as a work activity. (See Canagarajah and Coulombe (1998), and Coulombe (1998)). Canagarajah and Coulombe (1998) find that the presence of household members beyond the age of 60 increases the probability of working and decreases the probability of attending school in Ghana, the effect varies from 1 to 4 percentage points. Coulombe (1998) finds no support for this effect in Côte d'Ivoire.

The results regarding the effect of the gender of the household head differ. For rural areas in Côte d'Ivoire (Grootaert, 1998; Coulombe, 1998) and for girls from rural parts of Ghana (Bhalotra and Heady, 1998) it is found that the use of child labor is higher and the rate of school attendance is smaller in female-headed households. Canagarajah and Coulombe (1998) find the opposite in all cases except for girls from rural areas.

Either of the two results makes sense. Female household heads might care more about the children and therefore use less child labor. Or, female heads might be forced to make use of child labor more often because they are under economic pressure because the husband is dead, or he has left either permanently or temporarily.

Some authors (Grootaert, 1998; Nielsen, 1998) find that the higher the age of the household head the lower the probability of working and the higher the probability of attending school; the latter effect is the stronger of the two. This means that children who are born at a later stage in the life cycle are less likely to work and more likely to attend school.

Owning a farm increases the probability of working and decreases the probability of school attendance; the latter effect is not always significant (Coulombe, 1998; Grootaert, 1998; Canagarajah and Coulombe, 1998). On the contrary, Nielsen (1998) finds that the fact that a household is involved in agriculture increases school attendance rather than decreases it.

Different results are found regarding the effect of owning a non-farm business; Canagarajah and Coulombe (1998) find that it decreases child labor and increases school attendance, hence it can be viewed as an asset. Grootaert (1998) finds that if the household owns a non-agricultural business, the children are more likely to participate in home care activities than any other activity. This implies that they probably substitute for the work of adults who participate in the business activities. Coulombe (1998) finds no effect of this variable.

1.6 Capital market hypothesis

The most obvious variables to account for the capital market effect would be indicators for credit availability. Bhalotra and Heady (1998) find a strong negative effect of an indicator for whether there is a commercial bank in the community on the hours worked. However, Nielsen (1998) includes an indicator for whether some sort of credit is available in the community but it does not show significant relationship for Zambia. However, an indicator for whether or not the household owns an asset has a significant effect on both the probability of working and the probability of attending school. The magnitude of the effect is as high as a 10 percentage point change in the probabilities in some cases. Households that own assets are not constrained in the capital market, whereas households with no assets may have only the possibility of withdrawing children from school if they experience a sudden shortfall in income due to a poor harvest or unemployment.

In Zambia, owning land has a similar effect in urban areas, since children from households with land are more likely to attend school. However, in rural areas of Côte d'Ivoire, Coulombe (1998) finds that the probability of working increases and school attendance decreases proportionally to the number of acres of land owned by the

household. The two counteracting results reflect that land is an asset, but land also needs labor.

As mentioned above, owning a non-farm business seems to account for the wealth effect in Ghana. When the household owns a business, it has assets in the business to sell instead of withdrawing children from school if it is economically stressed. This variable is also included in the Ivoirian studies, and the results are different, reflecting a similar tendency as was seen for land: a business is an asset, but it also increases the demand for labor within the household.

The capital market hypothesis is closely related to the poverty hypothesis; poverty is a problem because the poor have no access to borrowing on the financial and physical capital markets, and hence they have no possibility of income smoothing. Therefore, Grootaert (1998) interprets his poverty variable as an indicator for lack of access to credit and insurance.

1.7 Other explanations

The five hypotheses represent an important set of explanations, although they are not fully exhaustive. Following research done in the fields of sociology and anthropology, traditions and attitudes toward child labor and education are also expected to be important. Traditions and attitudes are highly correlated with the religion and the ethnic group to which the individual belongs, and indicators for these are included in some of the surveyed studies. Bhalotra and Heady (1998) find that children from some ethnic groups work more hours than others, and the results differ across gender. Canagarajah and Coulombe (1998) find that in Ghana, children from Protestant households are much more likely to attend school than those who practice traditional religion; in between are Catholics, other Christians, and Muslims. In rural areas, Protestants have a 22 percentage points higher probability of attending school than those who practice a traditional religion, whereas in urban areas the similar number is 9 percentage points. In rural areas, Protestants seem to be most likely to use child labor, whereas in urban areas those who practice traditional religion are most likely to use child labor, although the differences are only a couple of percentage points and they are not always significant.

Coulombe (1998) finds for Côte d'Ivoire that Christians are more likely to attend school, and in rural areas they are also less likely to work than Muslims and those who practice traditional religion.

Traditions and attitudes are likely to be constant within a local community. Nielsen (1998) includes normally distributed community effects, and they are likely to account for the effect of traditions and attitudes among other things. The community effects are found to be very important for the decision to use child labor. For instance, a 13-year-old who resides in a community which is one standard deviation below the average, has a probability of working which is 30 percentage points higher than a similar individual residing in an average community.

Of course, location effects reflect more than just traditions and attitudes. They also reflect measurement errors in included variables, and other omitted variables describing, for instance, the educational system, infrastructure, demand for skilled and unskilled labor in the area, and credit constraints. All of the studies found some regions in which children are more exposed to child labor.

IV CONCLUDING REMARKS

Until now, the main argument on worldwide child labor has been rooted in an opposition to the violation of the human rights of children rather than a consideration of adverse economic incentives. Through *The Convention on the Rights of the Child*, and *The Minimum Age Convention*, the UN advocates legislative action, which bans harmful child labor and introduces policy measures to abolish child labor below the age of (preferably) 15. The World Bank has only recently begun to recognize the importance of addressing child labor. The World Bank is required to make its decisions on economic grounds and it must respect the territorial jurisdiction of each sovereign

nation. Therefore, it cannot enforce laws or morality, which have no bearing on specific operations.¹³

If politicians were to consider child labor as the result of a rational economic decision rather than just a violation of human rights, they would be cautious about abolishing child labor through prohibition or compulsory schooling laws. Such laws would force households to choose sub-optimal behavior. For instance, if laws forced a poor household, which is living close to the subsistence level, to send their children to school instead of work, an exogenous shock (for example, poor harvest) would have an unnecessarily harsh impact on their welfare. If they were allowed to use child labor, they could take a child out of school if the harvest failed, or they could decide to let one child work permanently, and use the income to smooth consumption. Another example in which the above-mentioned policy could lead to sub-optimal behavior is the case of low-quality formal schooling. If this is the case, it may be more profitable to invest in informal education, such as learning-by-doing, at a farm. From an economist's point of view, policies that do not distort economic incentives, such as subsidies, taxes, or even a consumer boycott, would be preferred over legislation.

One way to guide households towards choosing school attendance and not child labor is to give an income subsidy and thereby reducing poverty. However, no matter whether poverty is the most important reason for child labor, it is difficult to reduce child labor through poverty elimination alone, because that would require substantial subsidies to a large proportion of the school-aged children. However, reducing child labor might be a beneficial side-effect of poverty alleviation. Another problem is that targeting the poor might be difficult, since information on household income is not readily available. A practical and viable policy would be to target characteristics that are closely related to poverty, such as geographical regions.

¹³ See Fallon and Tzannatos (1998) and Shihata (1996) for a discussion on the role of the World Bank in combatting child labor.

The support for poverty as the dominant explanation why children are working instead of attending school was limited in the surveyed studies. Some studies found no significant effect, others found a significant but moderate effect, and one found an effect, which might be called substantial. As mentioned above, even if the results are not interpreted as supporting the poverty hypothesis, the policy implication of that conclusion is debatable.

The capital market explanation, which is related to the poverty hypothesis, was confirmed in the studies. Households owning some sort of assets, either land, business, or physical assets were found to use less child labor than others do. The reason may be that they can sell the assets instead of withdrawing children from work if they experience a sudden drop in income. This result implies that one way to reduce child labor and increase incentives to keep the children in the educational system is to improve the access to credit.

Another way of changing incentives for households to choose school attendance rather than child labor is to adjust school costs. The cost hypothesis found some support; many of the studies agreed that transportation costs were important. Some studies also found support for the importance of general education expenses, although the effect was small. The one study that accounted for the potential income from child labor found education expenses very important. The results would lead to a recommendation to decrease transportation costs, and possibly supply education subsidies. One way to do this would be to give income subsidies conditional on school attendance. In practice the subsidies could be implemented in terms of daily or weekly subsidies, food-for-school programs, or stipends for completing a grade.

Improving school quality would increase the returns to education, and improve the incentives for education. Only the study for Zambia included measures to account for this hypothesis, and the results showed that it might be an effective tool for improving roofing and furniture.

Although the household composition hypothesis seems to be powerful, it is not directly useful when specifying a policy. However, it may be used to choose targets for policy. It was found that the education of parents and household heads was an important explanatory factor behind child labor and school attendance. Although this was expected, it is still an open question why this result is so strong. It may be because the education of the head of the household and the parents approximates the household income potential or accounts for the effect of social heritage. No matter what the explanation is, the education of the head of the household might be a useful targeting device in confronting child labor.

One household characteristic that has a direct policy implication is whether or not the household owns a farm and whether or not it is involved in agricultural production. These factors make a difference for the use of child labor and school attendance. An obvious conclusion is that policy makers should accept this relationship and aim for facilitating the combination of school and farm work instead of eliminating child labor. One way to do this is to make school calendars flexible, and adjust them to the slack and peak seasons in agriculture.

A similar consequence is drawn by Grootaert (1998) who found that most significant effects were found in the second stage choice between combining work with schooling versus working only or performing home care activities only. He advocates a gradual policy approach towards child labor whereby the initial goal is to make the combination between working and school attendance possible instead of eliminating child labor immediately. He states that having no children work is not a viable policy for the poor households in the short term.

The above-mentioned policy recommendations rely on the support for the five hypotheses, which are derived from economic theory. In addition to these economic explanations, sociological and anthropological explanations might be as important. In these fields, traditions and attitudes are emphasized, and confirmation of these explanations would imply that changing incentives might be completely ineffective.

Instead of legislative action, such as enforced compulsory schooling or a ban on child labor, sensitization with the purpose of changing attitudes or traditions would be more effective.

It was found that traditions and attitudes might be important because certain religious groups differed in their use of child labor and the probability of educating children. This would indicate that economic rationality, although desirable at the macro level, does not necessarily guide decisions at the micro level. Other types of rationality, which are rooted in religious or sociological circumstances, might be as important in guiding decisions at the micro level. Therefore, it is suggested to sensitize those groups about the value of education with the aim that they change their attitudes and gradually change their traditions. The fact that the Zambian study found community effects to be important might also be interpreted as a support for this conclusion.

The first general finding, that poverty might not be the main reason for child labor in Africa is also found in the literature on India, although it differs from the general expectations (e.g. ILO, 1996; Fallon and Tzannatos, 1998; Bonnet, 1993; Grootaert and Kanbur, 1995). In her thesis on child labor in India, Hiraoka (1997) concludes that the causal link between poverty and child labor is not as self-evident as believed. Sinha (1996) and M.V. Foundation (1996) reach a similar conclusion for India. The latter states that “ ... the Foundation has realized that poverty as a factor behind non-enrollment and child labor comes third in importance. The tradition of the family and access to school are the first and second most important factors, respectively”.

The other general finding, that direct costs other than transport costs do not greatly affect child labor, is widely confirmed in other empirical literature. King (1995) finds a significant effect of fees on the probability of enrolling in primary school. However, the magnitude of the effect is negligible, since a reform that removes all fees would only increase enrollment from 72.5 percent to 73.0 percent. The result is also consistent with the conclusion of Gertler and Glewwe (1990) that parents are willing to pay for a reduction in the distance to schools. However, measurement error in the education

expenses or omitted school quality variables might drive the effect toward zero. As in some of the African countries, King (1995) finds a case for reducing the indirect costs of schooling. She finds that a noticeable effect would be obtained by partially compensating for the opportunity costs of schooling. She also finds an elasticity of 0.27 for the poor. Tzannatos (1997) finds a substantial effect in the case of Thailand, an elasticity of 0.1.

Unless and until we better understand the factors which lead to the incidence of child labor and schooling we will not be able to develop strategies which can effectively address this problem. This paper has synthesized findings from empirical work on child labor in Africa in the context of schooling. It shows that some of the generalizations which are popular in the child labor literature differ in terms of their relative importance in explaining child labor in Africa. A careful inquiry into the determinants of child labor in different regions is necessary to enlighten the policy makers and development partners in the fight against child labor.

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