An Empirical Analysis on the Trade-off between Schooling and Child Labor in the Philippines*

FERNANDO T. ALDABA, LEONARDO A. LANZONA
AND RONALD J. TAMANGAN**

In 1996, an award-winning documentary about child labor in the Philippines was shown on national television. The documentary, entitled *Minsan lang sila bata*, featured movingly how a semblance of childhood could be lost because of child labor.[1] It aimed to present the sad plight of child laborers, grim realities of child labor, and to stir up the sensibilities of the viewing public, who, perhaps, were largely unmindful of this distressing reality.

Economic theory emphasizes the important role of human capital, among others, in furthering and sustaining economic growth or economic development. It is not without basis to say that Philippine economic development will be anchored, in part, on the quality of the economy's current and future human infrastructures. The operational word is quality, which presupposes and necessitates an educated, well-trained or highly skilled human resource. The absence of this quality will definitely have a detrimental impact on future productivity. In light of these positions, therefore, this question then begs to be asked: Does the prevalence of child work or child labor encumber on the country's economic growth and development?

This paper looks into the reality that is child labor and tries to understand its existence in light of education realities and schooling issues in the Philippines. It attempts to answer the aforesaid question through the investigation on the

[1] Literal translation of *Minsan lang sila bata* – "children only once" (you can be a child only once in your lifetime.)

seeming tradeoff between child labor and schooling, and through the exploration of the impacts of this tradeoff in both the short term and long term.

The exploration and discussion of other determinants of child labor is beyond the purview of this paper.

The first section discusses current statistics about the incidence of child labor considering the 1995 and 2001 surveys of children. The second section sets the parameters regarding the operational definition of child labor in the Philippines. The third section reviews the literature on child work, focusing on factors that lead households to choose child work vis-à-vis schooling.

The fourth section discusses the theoretical framework, which is essentially a household model on the determinants and causes of child labor. The fifth section presents methodological framework and the two-stage model employed in the empirical investigation. The sixth section discusses the institutional setting considering schooling issues and the data employed in the empirical inquiry. The seventh section presents the results of the econometric analyses, and the last section, the summary and recommendations.

THE INCIDENCE OF CHILD WORK: 1995 AND 2001

The National Statistics Office conducted two surveys of children, which provided a comprehensive sketch of the plight of child workers in the Philippines. The first one was conducted in 1995 while the second in 2001. A detailed discussion of information presented and gleaned from the two surveys will not be done in this paper. Nevertheless, key trends about the incidence of child work will be looked into.

The incidence of child work in the Philippines has not changed much. The most recent survey in 2001 revealed that four million working children aged 5 to 17 years old constituted 16.17 percent of the total age-group population, while 3.6 million working children represented 15.98 percent of the total age-group population in 1995. The incidence of female child workers had increased by 0.74 percent over the six-year period; males, however, experienced a decrease by 36 percent. Although the incidence of child work in 2001 was marginally higher than that in 1995, the absolute number of child workers grew by about 12 percent during the period, or about 2 percent annually. The most economically active children were found in the 10 to 17 age range for both survey periods. Regarding the distribution by sex, about 6 of 10 working children were males. This proportion was rather consistent during the two periods. Nevertheless, the number of female child workers had been growing at a faster rate of about three percent annually. In addition, child labor continued to be a rural phenomenon as about 7 of 10 working children in the 5 to 17 age group resided in rural areas in 2001. This proportion was marginally higher than in 1995, with around 6 of 10 working children residing in rural areas.

Table 1.   Working children 5-17 years old: by sex, 1995 and 2001

	1995	%	2001	%	% Difference: 2001 and 1995	Average Growth Rate
Philippines	22,381,517	100.00	24,850,943	100.00		1.76
Working	3,577,363	15.98	4,017,886	16.17	0.19	1.95
Nonworking	18,804,153	84.02	20,833,057	83.83		1.72
Male	11,523,148	100.00	12,830,232	100.00		1.81
Working	2,329,556	20.22	2,547,666	19.86	-0.36	1.50
Nonworking	9,193,592	79.78	10,282,566	80.14		1.88
Female	10,858,368	100.00	12,020,711	100.00		1.71
Working	1,247,807	11.49	1,470,220	12.23	0.74	2.77
Nonworking	9,610,561	88.51	10,550,491	87.77		1.57

Source: 1995 and 2001 Survey of Children, National Statistics Office

CHILD LABOR DEFINITION

Not all child work is considered as child labor, and one must be cognizant of the parameters in defining child labor. The operational definition of child labor employed in this paper incorporates both national and international definition regarding child labor, particularly the definition as stipulated in Republic Act No. 7658 (amending Republic Act No. 7610 of 1992), the Department of Labor and Employment (DOLE) Department Order No. 4 Series 1999, and Article 3 of International Labour Organization (ILO) Order No. 4 Series 1999.

Incorporating the domains of both national and international definitions leads one to reduce the parameters to three important considerations: (1) hazards faced by the child; (2) age; and (3) parental supervision (Alonzo and Edillon 2002; Table 2). Operationally, all child workers engaged in occupations characterized as the "worst form," based on Article 3 of ILO Convention 182, are child laborers. The worst forms of child labor are all occupations that undermine the general welfare and the long-term development of a child. Age is a secondary consideration regarding child labor. Child work not categorized as the "worst form" will still be considered as child labor if the child is below 15 years old and not supervised by his or her parents at work. A child works outside parental supervision if he or she works for a private household other than his or her own; works for a private establishment; works for the government or a government corporation; and is self-employed. Thus, aside from the nature of the work and child's age, the type of employment relations (i.e., with or without parental supervision) is also important in the consideration of child labor.

Table 2:   Operationalization of the definition in the Philippines

Child Laborer	Child Worker		
Worst Form	Not in Worst Form		
Regardless of Age	5–14		15–17
	No parental supervision	With parental supervision	

Source: Alonzo and Edillon 2002

DETERMINANTS OF CHILD LABOR

Determinants of child labor in the Philippines can be generally categorized as either economic or sociocultural. Although economic factors can be considered as circumscribing the social factors at play, it is important to note that these factors are interrelated and not entirely mutually exclusive. Another strand in the literature analyzes child labor determinants within the immediate environment of the child or the household level (micro), in the community and even regional level (meso) and in the national and international level (macro). The literature presents a skein of interrelated factors that contribute to the incidence of child labor. Expectedly, the apparent complexity and interrelations of the determinants of child labor have many-sided consequences on the child. This review of the literature does not intend to present a full discussion on the determinants of child labor. Some determinants, however, will be explored and discussed in light of the decision to abandon schooling altogether for work or the relationship between child labor and schooling.

Children are forced or pressured to work, interfering with their education and exposing them to health risks, because of poverty. Case studies cited in del Rosario and Bonga (2000), and more recent studies by Lim (2001), Alonzo and Edillon (2002), Esguerra (2002), Sta. Maria and Chiongson (2002) and Villamil (2002) put poverty to the fore as the foremost determinant of child labor in the Philippines.[2]

Child labor statistics reveal that poverty incidence among families with child laborers was about twice the national incidence rate. Furthermore, 85 percent of children engaged in child labor were found in rural areas, and most of these children were found in Northern Mindanao, with about 22 percent child labor incidence (Alonzo and Edillon 2002). Income from child labor, therefore, is welcome to very low-income households notwithstanding the setting. Child labor

---

[2] There are enough case studies and anecdotes in the documentations of ILO/IPEC regarding child labour and poverty.

is necessary for the survival of the household as resources and economic opportunities are not sufficient to meet the household's minimum basic needs.

Related to poverty is the lack or absence of economic opportunities in the household's localities. Año (2002) studied the situation of child labor in the pyrotechnics industry. He finds that there are no other viable enterprises that can serve as livelihood sources for the community, thus the alternative to engage in a rather dangerous work. Edralin's (2002) indepth studies on the situations of children in the pyrotechnics industry and prostitution maintain that limited economic opportunities impel children to engage in these worst forms of child labor. Brillantes (1996) also mentions that employment of children in domestic service is spurred by their impoverished households, and children who participate in domestic service come from economically depressed regions and provinces in the Philippines, which are characterized by lack of income-earning opportunities. The lack or absence of income-providing economic opportunities pushes the already poor household down to deeper poverty.

Poverty and the high cost of education for poor families are reasons mentioned in the literature why children of poor households do not attend school. Poor households simply cannot afford to send their children to school even with free primary and secondary education. This is because attendant costs of sending children to school may even be too much for a low-income household. Another reason which Edralin (2002) mentions in her study was the lack of access to schools. Particularly in rural areas, the distant location of schools relative to the child's place of work or dwelling becomes a factor to consider.

It is important to point out the mutual feedback between lack of education and child labor and the vicious cycle of low levels of education and child labor, which resonate to future generations. Heads of poor households are likely to have low levels of education and, often, household poverty can be ascribed to household heads' having low educational attainment. Statistics corroborate the aforesaid as Alonzo and Edillion (2002) report that heads of families of child laborers were males aged 25 to 64 years. About 60 percent of the head of the families went beyond the elementary level and about 10 percent of them finished high school. Interestingly, Lim (2001) points out that the educational levels of the parents, household head or mother of the family have a strong bearing on the poor household's dilemma to send children to school or to allow, or even force, the children to work. Villamil (2002) provides evidence through probit regressions for the Philippines. His analysis of the results suggests that low educational level of the household head contributes strongly to the probability of a child both working and not going to school.

The hand-to-mouth existence (Lim 2002) of poor households implies that without a strong value for education, lowly educated household heads will

definitely prefer child labor to schoolwork because it augments household income. The need to survive on a day-to-day basis far outweighs the long-term benefit of education. In addition, Villamil (2002) finds that, based on the estimated earnings functions of adult workers (operationally defined as those 15 years and above), the differentials in earnings between primary school graduates and secondary school graduates, especially in the rural and agricultural sector, were very small and marginal. Thus, many poor families opt for their children to work rather than proceed to high school because of low returns to education.

Moreover, the values systems of parents may be a factor regarding children's engagement in market work. It is safe to say that values systems are largely shaped and determined by education. Ignorance and lack of information, which may lead to distorted values, result in decisions that are not always in the best interest of children. Distorted values may bring about a higher probability of child labor. Edralin (2002), in her study of children in prostitution, points to the values systems inculcated by the child from the family or even the community as a contributory factor to his or her decision to engage in prostitution. This is because the child is expected to support the family particularly during difficult economic or social situations. Arcilla (2002) adds that prostituted children may hold the belief that young people should be subservient in the family. Other practices make children believe that making money by selling their bodies is not an issue.

Moreover, lack of education may distort the line of reasoning of parents such that children may be regarded as a form of social insurance, particularly in poor households. Jacoby and Skofias (1994) regard child labor as a hedge against risk and uncertainty, an insurance against unforeseen losses in income that may threaten the survival of the household. Child labor therefore is a good recourse, as a child laborer becomes an insurance against fluctuations and losses in adult income.

Regarding children as a form of insurance looks to the "short-term time horizon" of many poor families, who have limited or no savings at all and have no assets which will ultimately allow them to have access to credit (Lim 2002; Villamil 2002). Thus, having more children and allowing and even forcing children to engage in work is a risk-reducing strategy for most poor families and underscores that the daily need for subsistence is more immediate and of paramount concern. In economic jargon, intense poverty shrinks the time horizon of households to the short run. This means that households are willing to forego future income for current consumption; thus, future benefits have very little value to households whose immediate concern is survival. In the review of recent empirical studies, a key solution to child labor is the provision of liquidity to poor households.

High fertility rate or high dependency burden may have indirect effects on child schooling. Lloyd (1994) suggested that a larger household size reduces the

investment of parents in education of children and, therefore, increases the likelihood that children will engage in market work. Thus, high fertility rates among the poor, which in turn leads to high dependency burden among poor families, will likely result in higher incidence of child labor. Villamil (2002) using probit regressions for the Philippines reveal that the probability of going to school and not working is negatively and strongly related to the number of children in the family aged 0 to 4 years and to the number of children aged 5 to 14. In addition, the probability of not going to school and working is positively and significantly related to the number of children aged 0 to 9 years. These findings suggest a social reality in the Philippines that older children of poor households engage in child labor to support their younger siblings.

There is universal agreement in the literature about the negative impact of child labor on the education of a child laborer. Child labor interferes with school attendance and school performance and increases the probability that the child becomes a school dropout. In the medium and long run, this leads to low education and skills and low capacity to earn, thus bringing about the mutual feedback between child labor and education in the medium and long runs. As a case in point, de Vries et al. (2001) reports that children working in the pyrotechnics industry feel exhausted at the end of the day after long hours of work in a squatting or standing position. Children lose their interest in schoolwork because of the psychological benefits of earning their own income. In addition, their overtime work does not make it possible for them to continue their studies.

Alonzo and Edillon (2002) provide evidence to the aforementioned, revealing that school participation decreases with age of the child laborers. "About 53 percent of the surveyed child laborers do not attend school. School participation among child laborers aged 5 to 12 was about 80 percent. This drops to 60 percent by age 13 and to 22 percent by age 17."

Child labor is basically the short-run coping mechanism of poor families during times of crises. The child is considered as insurance during desperate situations because of the lack or weak social protection programs in the community and in the macroeconomy, by and large. In the medium and long run, the practice of child labor provides a coping mechanism of the poor and disadvantaged in a community and society that is wanting in economic development and social protection.

The negative consequences of child labor experienced in the household level, resonates on the aggregate level and in the long run. The costs of foregone education and the lack of skills acquisition and health, emotional and psychological damages will surely have an effect on current and future efficiency and productivity. As it were, work abuses likely result in psycho-emotional problems experienced by the child laborer, which leads to stunted economic growth in the

medium and long run, psychological and emotional problems and incapacity, dysfunctional behavior and sometimes criminality.

It is important to stress that the literature on child labor underscores that on the macroeconomic level, the long-term effect of child labor are the perpetuation of low education and poverty, and the negative externalities of low education, poor health, and poor psycho-emotional development of these children (Lim 2002; Villamil 2002).

Macroeconomic, endogenous growth theory argues that the contribution of quality human capital to economic development results in increasing returns to scale and positive externalities for economic development and sustained growth (Romer 1986; Lucas 1988). Lim (2002) says that Child labor leads to reduction in human capital and reduction in skilled and educated labor, a reduction in healthy and productive labor, and a reduction in the quality of the labor force by reducing socialization and interpersonal skills. High incidence and prevalence of child labor, therefore, leads to massive productivity and efficiency losses in the medium- and long-term. The high incidence of child labor creates a sort of hysteresis—a quicksand, which drags the economy and society down to lower and non-optimal growth paths.

THEORETICAL FRAMEWORK
Determinants of completed family size and household labor allocation operate through a household preference for present and future consumption, children and human capital, and through three constraints. These three constraints are:

✦ the budget constraint that reflects the opportunities and limitations implied by the market prices of goods and services, the wage rate of family members and any nonlabor income, and time at the disposal of household members;

✦ the household technology, which enables it to convert market goods and the time of the family members into basic commodities, including food consumption and human capital; and

✦ the household's budget that is dependent on the children's future production and income and the income of the resources that were bequeathed by the parents. This last constraint pertains to the intergenerational aspect of household decisions.

Figure 1 presents the parent-child dynamics and the general equilibrium model of household decisions. The model assumes that parents make rational choices, which determine the household's welfare and future security and, ultimately, the economy's productivity and growth. The possible choice of sending children to work is part of these decision-dynamics.

Figure 1.   A general model of household decisions
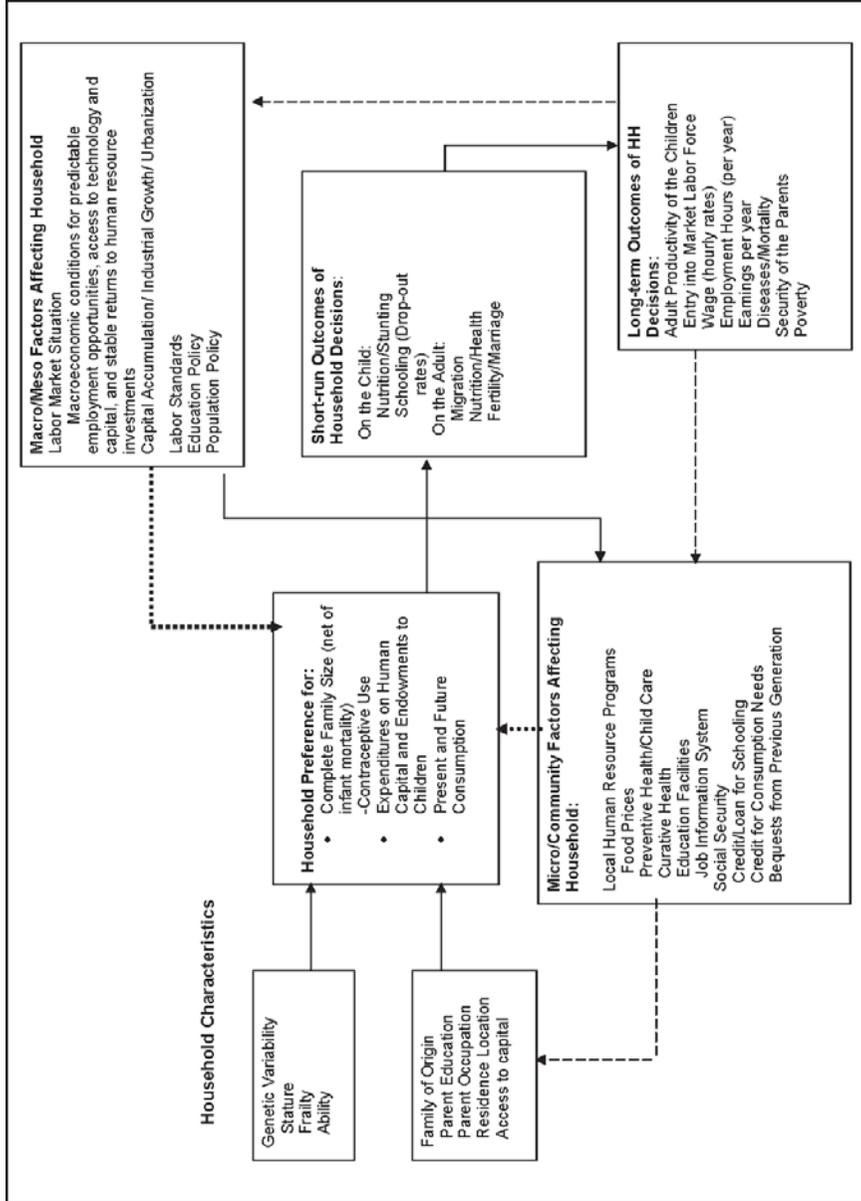
Three different factors represent the aforementioned constraints. These factors are:

- ✦ the invariable genetic structure and background of the family;
- ✦ the relatively short-run macroeconomic environment; and
- ✦ the more long-run local (meso and micro) conditions where the family resides and that ultimately determine the human capital of the household, including education.

Analyses and identification of determinants of child labor are made difficult because of perceived cyclical relationships between outcomes and factors, i.e. outcomes determine the conditions that initially lead to such outcomes. Broken lines in the diagram show heuristically how final outcomes, such as children's productivity or parents' economic security, reinforce and perpetuate adverse conditions at the local and national levels. The new generation's productivity or parents' security in general will be undermined by the parents' decision for child work. Thus, given the feedback process, the households' demand for children increases as long as poverty remains.

The short-run effects of macroeconomic policies are particularly important for two main reasons: their effects on prices affecting the opportunity costs of children and their effects on household's and investment behavior. Moreover, these effects directly influence the parents' preferences and expectations, especially in terms of increasing wage rates. Short-run conditions can also be determined by long-run conditions as macroeconomic stability raises returns from human capital or the expected wage rates of children.

The welfare of parents and children are inextricably linked in the model. While children depend on their parents for upbringing, parents can also rely on their children for their present and future income. Nowadays, with the increase in human expected life span, adult social security becomes an increasingly important issue in light of child labor, among others, as it can exacerbate the dependence of poor families on child labor to augment household incomes. Nevertheless, parents may be induced to substitute quantity for quality, opting for more investments in education to realize greater productivity in the future, given improvements in economic growth and the associated changes in the economic structure. A static local economy, therefore, opens the avenues for the use of child labor, which is self-enforcing or self-equilibrating. The point is the increase in present income from child labor presumably overcomes the current production constraints of households, but in turn may result in lower future labor productivity and lower wages for the children.

Improving access to schooling facilities in local communities has three key transmission mechanisms that reduce child labor in the short-run and result in a

higher level of welfare. Firstly, schooling induces technological innovations that raise the rate of return to human capital. Improved technological conditions ease households' current budget constraints, allowing parents to have more resources at their disposal to invest in their children. It is important to note that the adoption of modern technology depends on the availability of human capital, and returns to child-quality rise given technological improvements that are induced by quality human capital. This aforesaid situation has a positive effect on growth, and it argues against the child-quantity option as a means to augment household incomes.

Secondly, an educated and quality workforce is realized with access to schooling, and an educated workforce is likely to be highly associated with higher productivity. Greater production in the local economy means lesser time to recover costs of human capital investments, which raises returns of other forms of human capital. Note that a low return to education is not a consequence of unprofitable educational outcomes but of the poor access to education.[3] With access to education and its attendant higher future productivity for child workers, poorer households are less likely to allow their children to engage in child work because of high opportunity costs of child work.

Thirdly, improved access to schooling leads to greater access to funds and capital. As the productivity increases, opportunities for both men and women become greater, and the dependence on child labor is ultimately reduced. In the process, the increased productivity of labor leads to an increased productivity of capital. Without the increase in labor productivity, any increase in capital eventually leads to diminishing marginal returns.

The incorporation of household capital, a fixed factor of production, into this basic model serves as a unifying component that is consistent with the overall view of controlling child labor. Since the existing stock of adult labor were unskilled and unproductive, and since capital were scarce, then child labor would be the only other factor left to raise production. Further, capital formation will be limited because capital investment requires a modicum of labor productivity or technological improvements. Moreover, since land is fixed, the increasing use of child labor reduces the land-labor ratio, thereby resulting in lower wage rates. However, with greater use of capital, the decline in the wage rates will be minimized if capital is also used in raising labor productivity. Thus, changes in capital in the short-run serve as the basis for a unified model that completes the transition from an equilibrium with "inefficient" child labor to an equilibrium

---

[3] Lanzona (1998a) shows that the returns to education are lower in communities where the educated individuals have migrated outside. This means that the returns to education will be higher if the decision to migrate is controlled.

without child labor.[4] With more physical capital, the prevalent demand for children as a productive input for both present and future income is minimized.[5] It is important to note that capital accumulation should not be used to substitute for long-term increases in labor productivity. Capital should be seen as complementary to labor inputs since fertility reductions are always grounded on improving the returns to human capital.

More importantly, the model highlights the crucial role that schooling decisions have in determining the causes and consequences of child labor. The family decides to reduce the schooling of their children for a number of reasons. For one, the cost of schooling may be too high. While the primary and secondary schooling are supposed to be free, there are other incidental costs such as allowances, transportation, among others, that may make schooling too expensive. However a more compelling reason is that returns to education may be too low relative to opportunity costs of sending children to school. In other words, future (net) returns of education are viewed to be lower than the wage that is offered in the market.[6]

The problem here is not so much the labor markets but the imperfect capital markets that are unable to evaluate the returns to education. Given more access to credit, the households could have properly allocated their resources to allow their children to go to school. Because of imperfect credit markets, as is the case in most developing countries, child labor arising from lack of access to schooling is seen to be inefficient. In this case, the outright banning of child labor without improving access to schooling is also seen to be inefficient. Households' decision to supply child labor is to some extent a response to the existing constraints and a matter of survival.

In summary, the conceptual framework's main focus is that the household decision to send children to work (the supply of child labor) is influenced by various factors at the macro (national), meso (local and community) and micro (household) levels. For the macro determinants, weak economic policies and

---

[4] This is because child labor is used as a second best response to a market failure, e.g. lack of capital and credit markets.

[5] The usual view is to consider children as labor input. What differentiates child labor from adult labor is the need to invest in children's development to make them productive inputs. Parents will initially have to endow children with resources, a condition, which is unnecessary in hiring additional adult labor.

[6] Lanzona (1998b) notes that, in Bicol, the greater the value the family places in irrigated land, the greater is the investment in the schooling of sons, holding constant for the parent's education and community school infrastructure. One hypothesis for this pattern is that the major irrigation projects in the Bicol Region in 1970s facilitated the adoption of profitable high yielding varieties. Where these new agricultural inputs and education held the most immediate promise, families invested more to educate their sons, preparing them to evaluate and profitably adopt the newly induced production possibilities. The education received by the daughters on the other hand prepared them for employment in nonagricultural activities.

programs result in low employment levels and incomes (and high underemployment) resulting in extreme poverty situations. Aggravating this is weak social service delivery and safety nets, which, if adequate, could have cushioned certain sectors of the population from economic risks and vulnerabilities. In addition, the failure to formulate effective population policies and programs has increased dependency burdens of households, which in turn raise the probability of child work. The inadequacies of the educational system and the lack of credit markets also affect the decision to send children to work. Most of these macro factors also operate at the local and community levels and affect the supply of child labor. The consequences of the household decision to send children to work are divided into the short-term and long-term effects. Included in the former are schooling and health effects plus psychological trauma and lowering of self-esteem. Long-run effects include lower productivity of these children leading to the perpetuation of poverty and "income insecurity" of parents and other negative externalities resulting from poor education and health.

EMPIRICAL FRAMEWORK

The empirical model considers a household utility maximization problem over arguments that are of interest. Hence, child schooling is not assumed as an investment good (in the standard Beckerian approach), but instead as an argument of the utility function. Nonetheless, the interpretation of this assumption should be broader in the sense that education is expected to generate income in the long-run, that is, one can regard this demand for schooling as a demand for quality children.[7]

The household's decision to send children to school depends on its wage and the amount of subsidies given by the government. To simplify the model on child work, one assumes that children do not work when they are in school. Suppose that the child can have at the maximum 14 years of schooling, and that he or she can devote 14 years of schooling if he or she receives the subsidies coming from the state. Assuming that schooling starts at age seven, the present value of the amount of money the child needs if he or she takes this option is thus

$$PV_7 = B_7 + \frac{B_8}{(1+r)} + \frac{B_9}{(1+r)^2} + \ldots + \frac{B_{20}}{(1+r)^{13}}$$

where B_i refers to the amount of benefits received at age i, and r is the discounting factor. In other words, if the child begins schooling at age seven and decides to take 14 years of schooling, the family may be able to purchase PV_7 pesos

---

[7] Nevertheless, the idea of schooling as a consumption good is not contradicted by ethnographic evidence. There is a large amount of anecdotal evidence showing that for some households schooling is at least partly a consumption good.

worth of consumption goods. In lieu of subsidies, the household can also be given access to some form of assets (including credit) which in turn provide incomes and in effect internally "subsidize" the child's schooling.

As an alternative, the child can choose to never study and participate in the labor market for 14 years. The present value of the child's income stream, starting from age seven, is equal to the discounted sum of labor earnings or the opportunity costs of schooling:

$$PV_{20} = W_7 + \frac{W_8}{(1+r)} + \frac{W_9}{(1+r)^2} + \ldots + \frac{W_{20}}{(1+r)^{13}}$$

where W_i gives the child's labor earnings at age i. If the child never goes to school, he or she can purchase PV_{20} pesos worth of consumption goods.

Suppose that $PV_{20} > PV_7$, i.e., incomes are greater when the child is working than when the child is in school.[8] The worker can then choose to study at any age between 7 and 20. He or she would receive labor earnings while employed and schooling subsidies when he or she is in school. By calculating the present value of the incomes associated with each age, one can derive the child worker's "budget line." This budget line indicates that if the worker wants to achieve more schooling, he or she will have to give up some goods. Given this tradeoff, one can determine the child's optimal number of schooling by introducing his or her utility between schooling and consumption. The worker maximizes utility by choosing level of schooling, and this then indicates whether he or she will participate in the labor market or not.

A central factor in this model for schooling is the availability of subsidies and accessibility to assets that will induce greater incomes and reduce opportunity costs of not schooling. As an income effect, the increase in these factors expands the child's opportunity set, increasing the demand for schooling. As a substitution effect, increases in these factors reduce the price of schooling as the difference between the earning received from schooling and not schooling is decreased. This discourages the child from working. Thus, an increase in the accessibility to schooling, through subsidies or household assets, leads to a longer schooling period. The absence of such subsidies will force households to look for some other form of earnings to spend for their consumption.

Empirically, this model suggests the following two-stage model where the families first decide the amount of schooling, and recursively chooses the level of

---

[8] This assumption is reasonable assumption since the child worker's salary is typically greater than the schooling subsidies.

child work, given the schooling decision.[9] The decision for child labor depends mainly on the labor market conditions. Children decide whether to participate in the labor market or not depending on how their reservation wages compare with the given market wage rates net of the costs of transacting in the labor market. Their reservation wages in turn are determined by individual and household characteristics, including the assets that the parents have already invested earlier in their schooling.

Based on the above framework, the following equations will be used in the estimation:

(1) $S_i = f(\textit{Child Characteristics, Community Variables, Household Assets, } \varepsilon_i)$

(2) $L_i = g(\textit{Child, Household and Community Variables, Predicted Schooling,} \mu_i)$

where S_i and L_i refer to some index of the child's schooling and labor decisions, respectively. The terms   and μ_i are error terms for the two equations.

The objective is to measure how the probability of schooling structurally affects the decision to work. Hence, the empirical challenge of this paper is the identification of variables that are distinct between schooling and labor.[10] The estimates of the above equations are only possible if there is at least one independent variable in the schooling equation but not in the labor equation. Based on the theoretical model, factors that affect the household's ability to "subsidize" their children to school make the schooling decisions distinct. The child characteristics determine to some extent how parents may be distributing the assets to their children, e.g., girls may be given more assets than the boys. Community variables refer to some measures of accessibility to schooling. Finally, household assets account for the resources or subsidies that households may invest in their children's schooling. In the theoretical model found in the previous section, the first equation explains the process that will lead to the formation of human capital stocks within the household.

On the other hand, the decision to participate in the labor market in turn is determined by factors that affect the market wages and the reservation wages of the children. In addition to child, household and community variables, predicted schooling (based on the estimates of the schooling equation) captures the inability of the household to gain access to some assets that support their schooling expenditures. Thus, it accounts for the assets that will potentially raise the reser-

ε_i

---

[9] This suggests that child labor decisions are separable from the overall consumption-schooling decisions and are considered ancillary or an outcome of this process. Previous empirical models have not considered this possibility, and have not identified the schooling from the labor decisions (see Lanzona 2005 for a review of the empirical analyses on child labor in the Philippines).

[10] A two-stage empirical model is required since the error terms, ε_i and μ_i, are correlated. The inclusion of a predicted schooling index purges from the child-work equation.

vation wages of keeping children in school, and out of the labor market. The presence of such variables raises the opportunity cost of working.

INSTITUTIONAL SETTING AND DATA

In general, the Philippines has achieved significant gains in terms of access to education. Enrolment in the elementary and the high school system has expanded by 2.5 and 3 percent per annum, respectively, from 1985 to 1998. This means that the growth of enrolment in basic education is greater than the population growth, a significant feat considering that the country has one of the highest population growth rates in the world. In effect, the country registered a participation rate of 95 percent at the elementary level, while in the secondary level a participation rate of 64 percent in school year (SY) 1997–98, from 85 percent and 55 percent, respectively, in SY 1990–91.

Reyes et al. (1999) however shows lower enrolment rates and higher drop out rates as the primary effects of the Asian financial crisis in 1998. This is specially so in the depressed communities such as the urban poor, sustenance farming, and upland and fishing communities. Among the reasons cited were the financial difficulties, inability to cope with higher tuition rates and school expenses, higher out-of-pocket expenses (e.g., transportation and school projects), and the need to give priority to more essential items such as food.

Households generally coped with the crisis by prioritizing expenditures to essential items such as food since medical/health, education, transportation and housing expenditures were beginning to cover a higher proportion of their incomes. To meet their financial needs, majority of the households surveyed resorted to borrowing, or availing of credit, mostly from the informal sectors or from relatives and friends. Some households had no choice but to raise cash by selling assets when credit was no longer available.

In trying to keep up with these expenses at a limited budget, education became the first casualty. In this case, education was the first asset that households were willing to give up. The increase in drop out incidence was more prevalent in public secondary schools compared to elementary and private secondary schools. Based on the government's administrative reports, there was a slight growth in enrolment rates in public elementary schools between SY 1997–98 to 1998–99, but a considerable decline for the secondary level. There was, however, a decline in enrolment in Grade 1, and a slowdown in the first year high school level (Reyes et al. 1999). This implies that households have postponed the enrolment of new entrants both to elementary and secondary levels. Furthermore, enrolment in private schools showed significant decreases, perhaps due to household decisions to transfer their children from private to public schooling.

These changes in education during the financial crisis can also be attributed to the significant movements in the labor market. Lamberte and Yap (1999) noted that many manufacturing companies resorted to cutting down work hours or days to minimize losses while some implemented cost-cutting measures like freezing of salary increases, imposing forced vacation, and enforcing compressed work week. A few firms also implemented salary cuts. Because of this situation, many households who lost their jobs sought some part-time work, mainly in retail and doing odd jobs. There was an observed increase in the number of women looking for jobs or undertaking self-employment mechanisms such as direct selling or retail. In some households, children were made to work either as laborers (for the boys) or as domestic helpers (for the girls).

These observations clearly show the plausibility of our assumptions and conclusions. The effects of the income shocks on household welfare, particularly in education, food consumption, work decisions and savings, are clearly evident from the observations. It may also be asserted that much of these results are due to the inadequacy of social protection, particularly the subsidies on schooling that would have lowered the opportunity cost of the education. Hence, given the importance of education in the distribution of income and the ability to obtain higher wages, the presence of social protection that are tied to schooling will contribute significantly in reducing poverty.

The key issue in the study is the possible tradeoff between schooling and child labor. One of the main arguments against child labor is its potential to substitute for schooling as one of the children's daily activities. The results of the National Statistics Office (NSO) survey (shown in Table 3) indicate that only 28.8 percent of those who reported "worked" were not studying within the last 12 months at the time of the survey. However, the same table also reveals that 40 percent of the children in the survey were still taking their elementary schooling. The next highest proportion of students consisted of those who were still in high school (at 32 percent). This suggests that a substantial number of those working were still studying to complete their elementary or secondary schooling. At the same time, the proportion of those children who had dropped out was higher than those who already completed these levels: 42 percent for elementary and 51 percent for high school. The above data indicate that those who finished either elementary or secondary schooling, but were unable to move to a higher level of schooling, were more prone to engage in child labor. This may seem to indicate the absence of opportunities for children to embark on a higher level of schooling.

One difficulty with Table 3 is setting up control factors for the demand for labor. The table may only be capturing the supply of child work. As they completed either elementary or high schooling, the wages offered may have offset the opportunity cost of work, and schooling may have stopped. Employers may

particularly favor those who completed their degrees, and offer higher wage rates. Hence, while a number of students may have wanted to stop their schooling (due to foreseen lack of opportunities for even higher education), the wages offered may not be commensurate to the opportunity cost of not going to school.

Table 3.   Household survey: number of children, highest grade completed, worked and studied, 2001

Highest Grade Completed / Studied	Number of Working Children	Percentage
Total	4,017,886	100.00
- Studied	2,857,383	71.12
- Did not study	1,160,503	28.88
No grade	115,741	2.88
- Studied	62,478	53.98
- Did not study	53,263	46.02
Elementary level	1,608,268	40.03
- Studied	1,186,937	73.80
- Did not study	421,331	26.20
Elementary graduate	712,850	17.74
- Studied	413,243	57.97
- Did not study	299,607	42.03
HS level	1,291,346	32.14
- Studied	1,044,260	80.87
- Did not study	247,086	19.13
HS graduate	258,827	6.44
- Studied	125,854	48.62
- Did not study	132,973	51.38
College Undergraduate	30,855	0.77
- Studied	24,611	79.76
- Did not study	6,244	20.24

Source: NSO 2001 Survey of Children

To get a better sense of the demand for child labor, one can examine working children who left their parental home. These data involve cases where the demand for child labor already exists, and the children in some period or another have responded to this demand. Table 4 shows that roughly 79 percent of these children who reported work at the time of the survey were not studying. Moreover, it seems that the higher the level of schooling completed, the lower the probability of dropping school. The percentage of children disclosing work decreases substantially as they reach 10 years of schooling (or as they reach and graduate high school). Thus, in cases where the demand for child labor is present, the employers of child labor seem to prefer those with lower years of schooling. Again, this seems to point out that increasing access to higher education is correlated with lesser child labor.

Table 4.   Child living away from home: number of children, highest grade completed,
            studied and worked, 2001

Highest Grade Completed / Studied	Number of Working Children	%
Total	170,533	100
- Studied	36,372	21.33
- Did not study	134,162	78.67
No grade	2,448	1.44
- Studied	-	-
- Did not study	2,448	100
Elementary level	48,856	28.65
- Studied	9,882	20.23
- Did not study	38,974	79.77
Elementary graduate	38,233	22.42
- Studied	3,857	10.09
- Did not study	34,377	89.91
HS level	54,752	32.11
- Studied	16,572	30.27
- Did not study	38,179	69.73
HS graduate	25,988	15.24
- Studied	5,804	22.33
- Did not study	20,184	77.67
College Undergraduate	257	0.15
- Studied	257	100
- Did not study	-	-

Source: National Statistics Office, 2001 Survey of Children

Table 5 provides some indication of child workers who has dropped out or stopped schooling altogether. A number of observations are important. First, two in every five working children 5 to 17 years old stopped/dropped out of school. Second, the ratio of male working children to female working children in terms of dropouts was 2 to 1. Third, the highest dropout rates are found for those who completed their primary and secondary schooling. The above findings in Table 5 seem to correspond with Table 4. These observations provide some evidence of the tradeoff between schooling and child work, as indicated in the empirical model.

Table 5.   Household survey: number of children ever stopped or dropped out of school,
            sex and highest grade completed

Sex / Highest Grade Completed	Total No. of Children Surveyed	Dropped Schooling	Did Not Drop Schooling
Both Sexes			
Total	*3,906,268*	*1,467,318*	*2,438,950*
- No grade	107,675	26,603	81,072
- Elementary level	1,581,151	629,210	951,942

Table 5 continued

Sex / Highest Grade Completed	Total No. of Children Surveyed	Dropped Schooling	Did Not Drop Schooling
- Elementary graduate	681,204	331,208	349,996
- HS level	1,254,296	364,147	890,149
- HS graduate	251,975	110,634	141,341
- College Undergraduate	29,966	5,516	24,450
Male			
Total	*2,480,628*	*1,038,402*	*1,442,226*
- No grade	72,862	21,673	51,190
- Elementary level	1,087,776	479,809	607,967
- Elementary graduate	432,868	235,585	197,283
- HS level	742,449	237,962	504,486
- HS graduate	129,296	60,426	68,869
- College Undergraduate	15,378	2,946	12,432
Female			
Total	*1,425,639*	*428,916*	*996,723*
- No grade	34,813	4,930	29,883
- Elementary level	493,375	149,400	343,975
- Elementary graduate	248,336	95,623	152,713
- HS level	511,848	126,185	385,663
- HS graduate	122,679	50,208	72,471
- College Undergraduate	14,589	2,570	12,018

Source: National Statistics Office, 2001 Survey of Children

RESULTS OF THE ECONOMETRIC TESTS

Table 6 features the list of variables used in the regression analysis. Based on the model, the model consists of household, community and individual variables. Means and standard deviations are based on the 2001 Survey on Children. One particular weakness of the model is its inability to measure poverty accurately using the data on the levels of household income. An alternative is to measure extreme poverty using the threshold of PhP 5,000 per month irrespective of the number of household members.[11]

Table 7 presents the regression coefficients and t-values of the logit estimates for the probability of dropping school. A probit estimate is used since the dependent variable is limited between zero and one. Using maximum likelihood, the method considers the occurrence and nonoccurrence of the event through a

---

[11] Using the number of household members as an independent variable is not considered in the empirical model because this is assumed to be endogenous. Including this variable in the estimates will not explain anything since the number of household members is itself a choice variable.

chance mechanism determined by a probability.[12] The coefficients show the effect of the regressors on the probability of dropping school at some time in the children's lives. Individual characteristics such as age, highest grade attained, and health conditions are all significant factors in the decision to continue or discontinue schooling.

Table 6.   Definition, mean and standard deviation of variables

Variable	Definition	Mean	Standard Deviation
Dependent Variables			
- Worked	Reported work: 1=Yes, 0=No	0.15	0.35
- Dropped-out	Reported dropping out of school: 1=Yes, 0=No	0.05	0.21
Individual Characteristics			
- Age	Age in years	10.83	3.66
- Sex	Gender: 1=Female, 0=Male	1.49	0.5
- Highest Education Obtained	Levels of Schooling: 0=No grade completed, 1=Elementary Undergraduate, 2=Elementary Graduate, 3=High School Undergraduate, 4=High School, 5=College Undergraduate	1.45	1.21
- Poor Health	Personal assessment of Health Condition: 1=Poor, 0=Not Poor	0.01	0.1
Family Characteristics			
- Poverty	Income Poverty: 1=If household income is less than P5,000 per month, 0=otherwise	0.46	0.5
- Father's age	Father's age in years	45.24	10.05
- Mother's age	Mother's age in years	42.16	9.67
- Father's education	Father's Education in years	4.08	9.43
- Mother's education	Mother's Education in years	3.51	8.04
Household Assets			
- Monthly expenditure	Family's monthly expenditure: 1=Less than P2,000, 2=P2,000-P2,999,3=P3,000-P4,999,4=P5,000-P4,999,5=P5,000-9,999,6=P10,000-P14,999,6=P15,000 and over	3.51	1.29
- Monthly rental income	Monthly income from rent in pesos	110.75	1568.08
- Agricultural land	Ownership of agricultural land: 1=Yes, 0=No	0.32	0.47
- Other land	Ownership of other land: 1=Yes, 0=No	0.02	0.14
- Other assets	Ownership of other assets aside from land: 1=Yes, 0=No	0.12	0.32
Community Variables			
- Region	Region in the Philippines	8.71	4.91
- Rural	Rural: 1=Rural, 0=Urban	0.38	0.49

Source: Authors' computations

---

[12] The estimates are also corrected for sampling design. When any sampling method other than simple random sampling is used, survey data analysis needs to be performed to take into account the differences between the design that was used and simple random sampling. The sampling design can possibly affects the calculation of the standard errors of the estimates. If the sampling design is ignored, e.g., if simple random sampling is assumed when another type of sampling design was used, the standard errors will likely be underestimated, possibly leading to results that seem to be statistically significant, when in fact, they are not.

　　　　Children seem to have an increasing propensity to drop out of school as they become older perhaps due to increasing labor market opportunities. With higher education, however, the probability of dropping school is decreased since the family may be more willing to invest in children who have already reached a high level of schooling. In the same manner, boys also have a greater tendency to drop schooling since girls are perhaps given more assets to complete their schooling. Parents in effect may prefer to invest more in the schooling of girls than with boys. This means that greater schooling incentives should be offered to children, particularly to boys, while they are still young, and as more income opportunities are offered to them as they get older, they will then have attained a higher level of schooling. By this time, opportunity costs of dropping out of school are fairly high.

Table 7.　Probit model estimates for dropping school

Dependent Variable: Reporting Dropping Out of School	Coefficient
Age	0.5490**
	(2.87)
Age squared	-0.0078
	(0.97)
Girls	-0.4342**
	(5.15)
Highest Grade Obtained	-0.4191**
	(5.61)
Poor health	1.1330**
	(7.30)
Mother's Age	-0.0029
	(0.30)
Father's Age	-0.0111
	(1.04)
Mother's education	-0.0546
	(1.28)
Father's education	-0.0287*
	(1.75)
Other Assets	-0.1369*
	(1.65)
Rental Income	0.00001
	(1.51)
Agricultural Land	0.1465
	(1.06)
Other Land Assets	-0.3031*
	(1.67)
Constant	5.1635**
	(4.63)
Number of observations = 65,219	F-test=38.80

Note: 1) Figures in parentheses are absolute values of asymptotic t-values.
　　　2) **,* refer to 5 percent and 1 percent levels of degree of confidence, respectively.

The variable poor health is used in the absence of any data on health facilities.[13] Estimates show that poor health implies a lower likelihood of dropping school. This can mean that accessibility to health facilities or investments in health is a key factor in the decision whether children stay in school or not. These findings on education and health seem to confirm the hypothesis that greater availability of human facilities will cause households to invest more in further building their human capital. Complementarities between schooling and health investments can thus be found.

Other variables are used to assess the importance of household assets in the decision to continue schooling. Children born to more educated fathers show a greater tendency to drop schooling, and those living in households with greater assets and nonagricultural land tend to stay longer in schools. These findings support the hypothesis that access to assets lead to greater schooling. The accessibility to funds or credit for schooling may thus be more available with more durable assets and greater incomes.

Table 8 presents three specifications of the probit estimates for child work. The first specification considers simply the child, household and community variables that affect both the reservation wages of and offered wages to the child. The first four variables are often used in the Mincer equation to estimate wages. Wages are expected to increase with age (though nonlinearly) and with education, as the older and educated children are expected to have higher reservation wages. Results show the expected signs for age. With greater experience, wages are expected to rise to some extent until some diminishing productivity with age sets in. Consequently, as shown by the results, the probability of work increases initially and then decreases with rising ages.

The result for highest education obtained is rather surprising. With higher education, wages are expected to be higher, causing a substitution effect away from leisure and other activities toward work activities. However, the coefficient seems to indicate that education also has an asset or income effect that reduces the child's propensity to engage in child work.

The results also indicate that boys are offered higher wages than the girls, thereby inducing them to engage more in the labor market. At the same time, there may also be some asset factor effects incorporated in these coefficients since as observed in the previous estimates on schooling, parents seem to invest more in

---

[13] The model assumes the exogeneity of health when in reality it is endogenous. Nonetheless, the decision to include health in the specification can be justified empirically since the coefficients and standard deviations of variables are the same when the variable was excluded as when these are included. Admittedly, further work will be needed to clearly identify this variable in the same way that the probability of dropping out was estimated in the model.

Table 8. Probit model estimates for working

Dependent Variable: Reporting for work	Specification 1 Coefficients	Specification 2 Coefficients	Specification 3 Coefficients
Age	0.4291**	0.4968**	0.4372**
	(3.71)	(3.91)	(3.74)
Age squared	-0.0079	-0.0183**	-0.0081
	(1.61)	(3.13)	(1.63)
Sex	-0.3970**	-0.1950**	-0.4035
	(5.07)	(1.99)	(4.84)
Highest education obtained	-0.1886**	0.1321**	-0.1995**
	(4.94)	(2.08)	(5.39)
Poverty	0.2861*	0.2689	0.2372
	(1.74)	(1.61)	(1.42)
Region	-0.0037	-0.0036	-0.0037
	(0.43)	(0.43)	(0.42)
Rural	0.3507**	0.3282**	0.3339**
	(4.22)	(3.96)	(3.91)
Monthly expenditures	0.1377**	0.1348**	0.1176*
	(2.08)	(2.00)	(1.75)
Father's age	-0.0108	-0.0043	-0.0108
	(1.40)	(0.61)	(1.35)
Mother's age	-0.0031	-0.004	-0.0034
	(0.33)	(0.42)	(0.36)
Father's education	-0.0119**	-0.0066*	-0.0117**
	(3.07)	(1.86)	(2.84)
Mother's education	-0.0372*	-0.0223	-0.0354
	(1.67)	(1.49)	(1.59)
Predicted rate of dropping out		4.0725**	
		(6.73)	
Poor Health			11.7208**
			(48.68)
Other assets			0.0555
			(0.55)
Rental income			0.000001
			(0.12)
Other land			-0.0198
			(0.15)
Agricultural land			0.2112**
			(2.31)
Constant	4.3982**	4.9904**	4.4224**
	(5.22)	(5.23)	(5.19)
No. of observations	65,219	65,219	65,219
F-test	36.63	35.45	953.78

Note: 1) Figures in parentheses are absolute values of asymptotic t-values.

2) **,* refer to 5 percent and 1 percent levels of degree of confidence, respectively.

their daughters in terms of education. In which case, the reservation wages of the girls are higher.

Income poverty is also another factor that captures the reservation wages of the children. Those living in the lower income bracket (less than P5,000 monthly) are considered extremely poor. In this case, their reservation wages are lower, and children belonging to these households have a greater propensity to engage in

the labor market. The results thus show that those who reside in poor households have a greater likelihood of working.

The next set of variables included is meant to capture the community variables that will reduce the transaction or information costs of engaging in the labor market and increase the opportunities of work. Results show that residing in the rural areas increase the likelihood of engaging in the labor market. Casual agricultural labor arrangements—as opposed to contractual arrangements—are more predominant in rural areas, and these are perhaps the types of activities child workers engaged in.

The last set of variables is aimed to capture the set of available assets that influence the reservation wages of households. In the absence of an overall index for good household assets and nonwage income, the level of monthly expenditure is used as a proxy variable for the household's fixed assets. The results indicate that the families with more fixed assets tend to have more children working. This is consistent with results in other studies showing that the households operating small-scale enterprises have a greater incidence of child labor (e.g., Esguerra 2002; Villamil 2002).

Another type of asset is the parents' education. The estimates indicate that children with more educated parents are less likely to work. Greater education for the parents ultimately leads to more resources which draws children away from working.

The second specification incorporates the predicted dropout rates using the estimates found in Table 7. A number of notable changes can be observed. First, the effects of age factors are increased. This can be due to the observed fact that parents intend to invest less on older children. This factor then pulls down the overall coefficients of age and age squared found in the first specification. Second, the effect of sex is significantly lower in absolute value. As shown in the previous results, parents prefer to invest less in their sons for their education. Hence, the greater difference found between boys and girls in the first specification can be attributed to this preference for asset formation. Third, education, measured by the highest grade obtained, is observed to have a complete shift in the sign in the second specification. The asset or income effects of education, i.e., the preference of parents to provide more assets to their already educated children, are now controlled with incorporation of the predicted dropout rate.[14]

---

[14] The high correlation between the predicted dropout rate and highest schooling level obtained can also be seen simply because higher dropout rates ultimately lead to lower schooling. However, in this estimate, the correlation is really between greater schooling obtained and the greater assets for schooling which the predicted dropout rate essentially captures. Hence, the interpretation of asset effects is considered in the above analysis.

The coefficient in the second specification only reflects the expected substitution effect arising from higher education or higher wages, drawing children towards more work. Fourth, the effect of income poverty is smaller and now statistically insignificant. Income poverty for this particular sample is correlated with the household asset formation on education. This means that addressing the household's basic needs for education will influence both poverty and child work simultaneously.[15] Fifth, the effect of parent's education is now lower and less significant. This can be attributed to the high negative association between parents' education and the probability of dropping out of school.

The effect of the probability of dropping out of school on child work is seen to have the most substantial effect. The assets invested for the schooling of the child results in an increase in the reservation wages of the child. Thus, a one percent decrease in the likelihood of dropping is thus expected to lead to a four percent reduction in the propensity of children to work. The key factor then that will help to mitigate child labor will be the creation of assets that will be used specifically to the formation of education.

The third specification is an attempt merely to determine whether the asset formation (including those affecting schooling) is simultaneously decided with child labor decisions, as is assumed by the recent empirical work. If this assumption were true, the incorporation of key variables that influenced asset formation should cause significant shifts or changes in the estimated coefficients found in the first specification. Interpretation should look at how these factors will affect both decisions, causing changes in the statistical tests as more variables are included.

Otherwise, asset formation (as well as predicted dropout rates) and child work decisions are separable, as is assumed by this paper where decisions in the former recursively influence the latter, but not vice versa. Note that, except for poverty and monthly expenditures (which is used as a proxy for fixed assets), all the coefficients in the first specification are largely left untouched. Poverty is not significant for the simple reason that these are correlated with the other incorporated variables. Monthly expenditures are also expected to have a less significant effect because of their high association with fixed assets. Other than these points, no new information is added from the first specification.

Two points are also interesting. First, the ownership of agricultural land, which is significant in this third specification, has no influence on the other variables (aside from being perhaps negatively correlated with income poverty). Second, poor health surprisingly leads to more work. This, nonetheless, can be

---

[15] This result should, however, be qualified since variable for income poverty can still be improved.

interpreted more accurately in terms of the availability of health facilities as is assumed in the paper. Poor health facilities lead to fewer investments in schooling and, thus, more child work.

SUMMARY AND MAIN RECOMMENDATIONS

The econometric analysis using a two-stage process reveal that the following are the determinants of the probability of child work: Child's Age (positive), Child's Age squared (negative), Being Male (positive), Highest Grade Completed (positive), Predicted Dropout rates (positive). Other community variables like the presence of a recruiter (positive) and whether the work is within the community (positive) also determine the probability of child work. Note that the effect of the probability of dropping out of school on child work is seen to have the most substantial effect. An important finding is that poverty is a necessary but not sufficient determinant of child work.[16] In this light, the key factor that will help eliminate or mitigate child labor, to say the least, will be the creation of assets that will be used specifically in the formation of education and schooling. Thus, the overall condition of the educational system can be a powerful factor on the supply of child labor. This also means that addressing the household's basic needs for education influence poverty and child work simultaneously.

Poverty reduction programs that are fairly inexpensive need to be prioritized. When an element of any poverty reduction alleviation leads to the reduction of child labor, the program would likely incorporate various forms of assistance given to families that provide children better options for the use of their time, including schooling. Integrating all of these elements into an overall poverty reduction program allows for a better utilization of the government budget.

The results of the empirical analysis indicate that the reduction of child labor (and simultaneously poverty) cannot be dissociated with household asset formation or their limited access to financial markets. Child labor is a result of two main functions: the imperfection of capital markets (as shown in the theoretical framework) in translating future earning-potential into present spending; and the inability of parents to provide the necessary assets to their children. If the parents are able to bequeath debts to their children, they can in effect borrow against their children's future earnings in order to pay the present expenses.

In which case, the use of short-term credit to induce schooling and to eliminate child labor might be hard to implement. The ideal policy then is for children themselves to borrow against their future and to pay these debts later

---

[16] Deb and Rosati (2002) even show that poorer households have a higher propensity to send their children to school and not work. In addition, they emphasize that there are other unobservables affecting household decision to send a child to work or school.

with future education-enhanced earnings. Since the private sector is not expected to foresee such long-term gains, the state or multinational agencies can establish these forms of capital markets and attract funds from individuals, institutions and other governments. Children, or more likely parents on their behalf, can sign promissory notes to repay educational stipends during their working lives. Also, poor families affected by substantial migration, can require assurances that the beneficiaries of such loans would use their state-funded skills at home rather than moving abroad, or that they would send back remittances to the government to pay for their debts.

REFERENCES

Abrera-Mangahas, A. 1999. Action against child labor in the Philippines. Working Paper Series on Child Labor. Manila: International Labour Organization (ILO).

Alba, M. 2001. Household vulnerability to employment shocks, 1997–1998. *The Philippine Review of Economics* 38 (1): 53–91.

Alonzo, R. and R. Edillon. 2002. Eliminating child labor in the Philippines. Paper submitted to the International Labour Organization as part of an ILO/International Programme on the Elimination of Child Labour (IPEC) study.

Anker, R. 2000. The economics of child labor: a framework for measurement. *International Labor Review* 139 (3): 257–280.

Año, D. 2002. A cursory assessment study on the situation of child labor in the pyrotechnics industry. A manuscript submitted to the International Labour Organization as part of an ILO/International Programme on the Elimination of Child Labour (IPEC) study.

_____. 2002. A cursory assessment study on the situation of child labor in the quarrying industry. A manuscript submitted to the International Labour Organization as part of an ILO/International Programme on the Elimination of Child Labour (IPEC) study.

Arcilla, N. 2002. The Filipino children in prostitution: a worst form of child labor. A manuscript submitted to the International Labour Organization as part of an ILO/International Programme on the Elimination of Child Labour (IPEC) study.

Baland J.M. and J.A. Robinson. 2000. Is child labor inefficient? *Journal of Political Economy* (August): 663–679.

Balisacan, A. 2001. Poverty in the Philippines: an update and reexamination. *The Philippine Review of Economics* 38 (1): 15–52.

Basu, K. 1999. Child labor: cause, consequence, and cure with remarks on international labor standards. *Journal of Economic Literature* 37 (September): 1083–1119.

Basu, K. and P. Van.1998. The Economics of Child Labor. *American Economic Review* 88 (3): 412–427.

Bhalotra, S. 2000. Is child work necessary? Development Economics Discussion Paper Series (DEDPS) No. 26. London, UK: Suntory and Toyota International Centres for Economics and Related Disciplines (STICERD).

Boltron, F. 2001. The ASEAN financial crisis: a case study on its impact on child work in the key cities of Cebu. UK: Save the Children.

Brillantes,, R. 1996. Developing strategic services for child domestic workers: using survey data on their working and living conditions in Metro Manila.

Manila: Bureau of Women and Young Workers (BWYW), Department of Labor and Employment.

Cabaero, M. and L. Imperial. 1996. Effects of globalization on child work in selected Philippine industries. Monograph Series No. 5. Manila: Institute for Labor Studies.

Cacabelos, K.M. 2000. Child labor in the Philippines: its prevalence and characteristics. An undergraduate thesis, University of the Philippines School of Economics, Diliman, Quezon City.

Camacho, A., C. Oebanda, V. Montano, R. Pacis and R. Robidillo. 1997. The phenomenon of child domestic work in asia: issues, responses and research findings: background paper for regional consultation on child domestic workers in Asia. Mandaluyong City: Visayan Forum Foundation.

Canagarajah, S. and H. Coulombe.1997. Child labor and schooling in Ghana. Undertaken as part of the World Bank Economic and Sector Work (ESW) on Ghana: Labor Markets and Poverty. Washington D.C.

De Dios, E. 2001. The boom-bust cycle (will it ever end?). In D. Canlas and S. Fujisaki (eds.) *The Philippine economy: alternatives for the 21st century*. Quezon City: University of the Philippines Press.

_____. 1999. *The economic crisis and its impact on labor*. Quezon City: Philippine Center for Policy Studies.

De Vries, S.T., M.C. Agbuya, D. Rubia and J. Fojas. 2001. The local trafficking of Filipino girls for employment: the case of girl-children trafficked for entertainment work, domestic services and factory work. Manila: Institute for Labor Studies and United Nations Children's Fund (UNICEF).

Deb, P. and F. Rosati, 2002. Determinants of child labor and school attendance: the role of household unobservables. Interantional Labour Organization (ILO), World Bank and United Nations Children's Fund (UNICEF).

Dehejia, R. and R. Gatti. 2002. Child labor: the role of income variability and access to credit across countries. World Bank Working Paper. Washington D.C.

Del Rosario, R. and M. Bonga. 2000. *Child Labor in the Philippines*. Manila: University of the Philippines Diliman and the United Nations Children's Fund.

Edralin, D. 2002. Indepth study on the situation of child labor in the pyrotechnics industry. Paper submitted to the International Labour Organization as part of an ILO/International Programme on the Elimination of Child Labour (IPEC) study.

_____. 2002. Indepth study on the situation of children in prostitution. Paper submitted to the International Labour Organization as part of an ILO/International Programme on the Elimination of Child Labour (IPEC) study.

Esguerra, E. 2002. An analysis of the causes and consequences of child labor in the Philippines. Paper submitted to the International Labour Organization as part of an ILO/International Programme on the Elimination of Child Labour (IPEC) study.

Grootaert, C. and R. Kanbur. 1994. Child labor: a review. World Bank background paper for the 1995 World Development Report.

_____. 1995. Child labor: an economic perspective. *International Labor Review* 134 (2): 187–203.

Guiam, R. 2002. Philippines: child soldiers in Central and Western Mindanao: A Rapid Assessment. International Labour Organization (ILO) and the US Department of Labor.

Illo, J. and S. Bagadion-Engracia. 1998. *For children who toil: a report on sustainable action against child labor in the Philippines*. Quezon City: Institute of Philippine Culture, Ateneo de Manila University and International Labour Organization - International Programme on the Elimination of Child Labour (ILO/IPEC).

Institute of Labor Studies. 1995. Economic globalization: effects on child work in selected industries and areas in the Philippines. Manuscript. Manila: Department of Labor and Employment.

_____. 1994. Comprehensive report on child labor in the Philippines. Monograph Series. Manila: Department of Labor and Employment.

International Labour Organization. 2002. Report of the Director-General: a future without child labor. Global report under the Follow-up to the International Labour Organization (ILO) declaration on fundamental principles and the rights at work, International Labor Conference, 90th Session.

_____. 2001. Good practices in action against child labor: a synthesis report of seven country studies, 1997-1998 (a study by independent researchers).

Jacoby, G. and E. Skoufias. 1997. Risk, financial markets, and human capital in a developing country. *Review of Economic Studies* 64: 311-335.

_____. 2003. Poverty, schooling and child labor. Manuscript.

_____. 1998a. Migration, self-selection, and earnings in the Philippine rural communities. *Journal of Development Economics* 56: 27–50.

_____. 1998b. Intergenerational educational mobility in rural Philippines: test of liquidity constraints and gender differences. In *History of the People Volume 5: Proceedings of the 1998 Centennial Regional Seminar–Workshop Series on Oral and Local History*. Manila: National Historical Institute and Philippine National Historical Society.

Lamberte, M. and J. Yap. 1999. Scenarios for economic recovery: the Philippines. PIDS Discussion Paper Series 1999-05. Makati City: Philippine Institute for Development Studies.

Lim, J. A. 2002. Strengthening the role of international labor standards in selected DMCs. Integrative paper for child labor component of the International Labour Organization /Asian Development bank (ILO/ADB) project. ILO and ADB.

National Program Against Child Labor, Bureau of Women and Young Workers. Undated. *Resource mapping of institutions and structures of child labor*. International Labour Organization - International Programme on the Elimination of Child Labour (ILO/IPEC) Philippine Time Bound Program and the Department of Labor and Employment (DOLE).

National Statistics Office (NSO). 1995. Survey Statistics of Children. Makati City.

_____. 2001. Survey Statistics of Children. Makati City.

Pacis, R. 2002. Towards a time-bound national action on child domestic workers in the Philippines. Paper submitted to the International Labour Organization as part of an ILO/International Programme on the Elimination of Child Labour (IPEC) study.

Porio, E., L. Fernan and C. Crisol. 2002. An assessment of education and the worst forms of child labor: how do education policies and programs work (or do not work) for children: abridged summary. Paper submitted to the International Labour Organization as part of an ILO/International Programme on the Elimination of Child Labour (IPEC) study.

Remedio, E. 2002. Children in *Pa-aling* and *Kubkub* expeditions: an assessment report for the deep-sea and fishing sector studies. A manuscript submitted to the International Labour Organization as part of an ILO/International Programme on the Elimination of Child Labour (IPEC) study.

Rollolazo, M. and L. Logan. 2002. An indepth study on the situation of child labor in agriculture. Preliminary findings submitted to the International Labour Organization as part of an ILO/International Programme on the Elimination of Child Labour (IPEC) study.

United Nations Development Programme. 1997, 2000 and 2002. *Philippine human development report*. Makati City.

Villamil, W. 2002. Improving labor standards in the Philippines: The Case of Child Labor. A manuscript submitted to the International Labour Organization as part of an ILO/International Programme on the Elimination of Child Labour (IPEC) study.