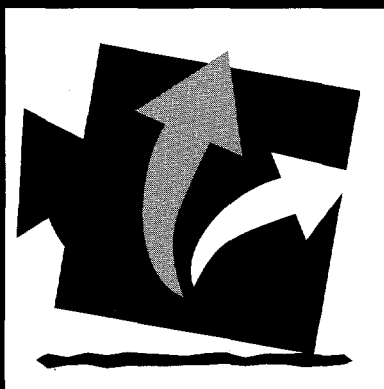


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Child Labor and School Enrollment in Thailand in the 1990s

Zafiris Tzannatos

December 1998

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ABSTRACT

The paper examines the situation of child labor in Thailand in the last decade. It finds that child labor has decreased significantly, for example, the labor force participation rates of those aged 13-14 years has almost halved since 1990. Despite this decline, 1.6 million children below the age of 16 are out of school of whom 1.2 million are between 12 and 14 years. Most of them are from poor families. Many face harsh conditions of employment that adversely affect their physical and mental development and can lock them into poverty in the future thus perpetuating a vicious circle.

Empirical analysis suggests that at younger ages (below 14) direct education costs deter school attendance. As the child gets older, income effects become more important determinants of child labor than the costs of education. The paper then examines what incentives *the household* can be provided with to keep children in school, the role of *public education*, and what can be done in the labor market through *additional measures* for those children who, notwithstanding the previous two interventions, will continue to be at work.

Education subsidies are found to be justified from a social policy point of view: indeed there is a failure in the market for education/child labor. Our cost benefit simulations suggest that private considerations make children withdraw from school and join the labor market earlier than is socially desirable. However, subsidies alone will not reduce child labor/increase education by much: the econometric results suggest that the education/child labor response of such incentives is small, albeit statistically significant. Therefore, *public support* to basic education (though not necessarily in the form of public provision) should continue along with policies that enhance growth and reduce poverty.

These measures are very much *preventive* and unable to *improve* the working conditions of those who will keep working or unlikely to make many children *withdraw* from the labor force. Those children that will remain at work will benefit from a combination of a more rigorous enforcement of regulations against exploitative forms of child labor, targeted schemes (for example, for boys in the construction sector and girls in prostitution), awareness campaigns and greater participation of local organizations, communities, unions and employers in the design and implementation of these programs.

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CHILD LABOR AND SCHOOL ENROLLMENT IN THAILAND IN THE 1990s

Zafiris Tzannatos¹

I. INTRODUCTION AND SUMMARY

Thailand has experienced fast growth, in fact the fastest among the NIC's in the last decade (1985-95), averaging 9 percent. Poverty declined to 13 percent of the population in 1992 from 21 percent in 1988, when growth starting accelerating. These trends have been associated with a sharp reduction in child labor: in the age group 13 to 14 years for which comparable information exists since 1990, the labor force participation rate declined from 37 percent to 21 in 1993. Also, school enrollments have been increasing due to a combination of rising household incomes, as a result of economic growth, and increasing school availability, especially at secondary education level, as a result of the Government's recent policy to achieve universal junior secondary education by 2000. Finally, the 30-year-old family planning policy is paying off: total fertility declined from approximately 6 children in the mid-1960s to 2.1 children in 1993. However, the number of working children is still significant. Approximately half-a-million children aged 13 to 14 years are included in the conventional statistics of the labor force, and many of the 1.6 million below the age of 16 who are out-of-school are likely to be engaged in some form of less visible employment.

Though poverty reduction and education expansion have been fast, it is not always certain that these trends will continue in an uninterrupted way in the future. Even if they do, child labor does not stop permanently once a family just gets out of poverty. Though growth is lifting many households permanently out of poverty, some will fall below the poverty line when an adversity occurs. Sizable changes "in and out of" poverty can still take place in Thailand as many households are near the poverty line. According to the most recent estimate, one-quarter of households have incomes that are only up to 15 percent above the poverty line, and the income gap for those below the poverty line increased from 35 percent in 1988 to 38 percent in 1992 (Krongkaew, 1995). Given that parents themselves are often

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engaged in unstable employment, families face harvest failures, and households have no savings to draw upon or assets to borrow against, child labor can be summoned at any time to reduce the effects arising from household income variability.

The justification for some form of support to poor households will, therefore, continue for some time, especially in hard core cases of poverty or regional underdevelopment where the effects of growth may take some time before they “trickle down.” An additional reason is that the positive effects of growth upon child labor (operating via rising incomes) can be moderated from the negative effects of the reduction in family size in Thailand: the decline in the number of children has reduced the ability of households to diversify their members’ economic activities and insure themselves. Therefore, though growth should reduce the need for child labor, household demand for child work can remain high for significant time after the household moves out of poverty until a threshold level of income security is achieved. In short, to the extent that child labor represents short-term choices made under temporary constraints, the households’ decisions for child work and schooling may divert from those that would benefit the society at large. Policies can, therefore, help reduce and prevent the under-investment in children’s human capital that arises from the poor’s low incomes and inability to borrow against future earnings. Such policies can accentuate the reduction of child labor and increase educational enrollments to a level that current entrants to the labor force are sufficiently equipped with lifetime employability and trainability: the prospects for ill-equipped workers and the economy’s labor productivity will be bleak if the educational composition of the current flow of workers into the labor force, of whom 50 percent are educated at lower than junior secondary education, does not improve.

These observations motivate the current paper that examines the usefulness of micro-interventions, public education and labor regulations in reducing child labor and increasing education attainment in Thailand. More specifically:

First, the paper traces recent trends in children’s activities in terms of work, conditions of employment, and schooling. The available evidence suggests that many children are pulled out of the education system not because of an immediate need for work but because poor households cannot finance the direct costs of education. Thus the paper explores whether a subsidy, for example, in the form of a grant to poor households conditional on a child’s school attendance, can be socially justified. It finds that indeed the social benefits of subsidies by far outweigh their costs. The subsidies can be targeted individually to needy children irrespective of location or more broadly to depressed areas where enrollment and school survival rates are low by regional standards.

Second, the paper argues that, alongside micro-interventions, the expansion of basic education through public funds should continue and become more balanced between rural and urban areas,

especially Bangkok: it is the poor and those in rural areas who are primarily responsible for the low school enrollments and rely almost exclusively on public education. The role of public education remains because the empirical findings suggest that increasing the incentives to households to keep their children in school (for example, through grants) can affect only a few of the 1.6 million children (below 15 years) who are out-of-school: the household response to such an incentive is empirically found to be small, a not surprising finding given that low or no enrollment is particularly prevalent among the hard-core poor. However, public education does not have to incur necessarily through public provision but can be used for financing education irrespective of provider. Public finance can play a complementary role to provision: if students are given subsidies that can be used for attendance in *any* school, then privately provided education can help keep budgetary costs low and provide some relief on the pressure for public funds to support an expansion of other education types and sectors. This policy can increase the competition in the supply of education by public schools and private schools with additional beneficial effects on costs and diversification of education.

Third, correcting the market failure (underinvestment) in education through subsidies or other means will not be sufficient to address problems associated with the remaining large number of child workers. The conditions under which children work are often extremely harsh in terms of long hours, danger or unaccepted forms of employment. In addition to the enforcement of regulations that would ensure compliance with minimum labor standards for child workers, a range of targeted schemes can be introduced in collaboration with local organizations, communities, employers' and worker's representatives, and international donors and technical assistance agencies. These schemes can include projects targeted at boys in heavy work (such as in the construction sector), girls at risk of prostitution, non-formal education programs for those who have already left school and awareness campaigns (through teachers, radio programs, video documentaries). Finally, "child-sensitive" regional and national statistics on employment should be developed that would help monitor the situation and introduce interventions in an effective and timely manner.

II. BROAD TRENDS

Child labor has been on the decline since the revival of growth in the late 1980s. Though it is difficult to define and statistically record work performed by the very young, the number of working children aged 13 and 14 years declined from 920,000 in 1990 to 530,000 in 1993, and their labor force

participation rate from 37 percent to just over 20 percent (Table 1).² Preliminary results from the Labor Force Survey 1995 (round 1) suggest that the labor force participation rate have now declined to 16 percent.

Table 1
Labor Force Participation Rates of Children aged 13-14,
Transition Rates from Primary to Junior Secondary Education,
Enrollment Rates in Junior Secondary, and
Public Expenditure on Education (% of GDP)
1988-1993

Year	LFPR	Transition	Enrollment	Public Exp
1988	na	46.5	32.6	3.0
1989	na	50.4	34.2	2.7
1990	37.0	57.1	37.3	3.0
1991	35.1	65.4	41.9	3.1
1992	28.9	73.4	na	3.3
1993	21.1	85.7	53.4	3.6

Sources: LFPR and enrollment rates from Labor Force Surveys (Round 3); Transition rates from Vichai (1994); Public expenditure from Educational Statistics in Brief 1995.

The decline in child labor has been accompanied by an increase in the transition rate from primary (Grade 6) to junior secondary education (Grade 7) as well as an increase in the overall enrollment rate in junior secondary education. The increase in educational enrollment has come more from girls than boys (Table 2), and from children in households headed by own account workers, primarily farmers who account for almost half of the population (Table 3).

Table 2
Female/Male School Enrollment (%) by Age

Age	1985	1992
12	98%	100%
13	95%	97%
14	90%	95%
15	89%	91%

Source: Own calculations from LFS tapes

² In 1989 the cutoff point for including workers in the labor force was increased from 11 to 13 years. The Reports of the Labor Force Surveys prior to that date provided combined information on the labor force participation of children in the age group 11 to 14 years.

Table 3
Households with workers aged 11 - 15

Work Status of HH Head	No. of HH	HH with children	HH with workers	% of HH's with working children
(1)	(2)	(3)	(4)	(4/3)
1988				
Private employees	2403483	735974	164986	22.4
Public/parastatal	1027319	338642	23442	6.9
Employers	312897	115110	28432	24.7
Own account	5934394	2400628	846250	35.3
Family workers	55701	25317	6411	25.3
Others	1472450	395231	83767	21.2
Total	11206245	4010904	1153287	28.8
1992				
Private employees	3393736	955694	215696	22.5
Public/parastatal	1209880	338950	22469	6.6
Employers	558595	181580	44659	24.6
Own account	6001410	2101333	580569	27.6
Family workers	74749	24337	5974	24.5
Others	1892920	458810	73716	16.1
Total	13131289	4060703	943083	23.2

Source: Own calculations from LFS tapes, round 1

The increase in the enrollment rate of junior secondary can only partly be attributed to developmental factors, such as, rising household incomes due to growth that reduce the pressure for child work and increase demand for education. Another factor has been the decision of the Government in 1990 to raise the education achievement of population and achieve universal junior secondary enrollment by year 2000 (compared to 37 percent in 1990). To this effect, the budgetary allocations to education have increased significantly. The ratio of public expenditures on education to GDP increased by 35 percent between 1989 and 1993, from 2.7 percent to 3.6 percent. Given that the economy also grew fast during this period, at an annual rate of 9 percent, the public resources allocated to education increased substantially: capital expenditures increased in real terms by 3 times, and current expenditures doubled between 1987 and 1993.³

An additional factor that contributed to the increase in school enrollments was the successful family planning policies in the last three decades and the decline in fertility. As a result, total enrollment in primary education declined by 700,000 since 1989 to 6.3 million in 1995. This has enabled the use of some classrooms in primary schools for junior secondary education. In addition, under the initiative to

³ Education Statistics in Brief, 1995.

achieve universal junior secondary enrollment, there has been an increase in the number of secondary schools from 1,759 in 1991 to 2,140 in 1994. Junior secondary school enrollment increased from 1.3 million in 1989 to 2.2 million in 1995 (Table 4).

Table 4
Total (public and private) enrollment in primary and junior secondary education
and out-of-school children by grade/age

Grade	1989	1991	1993	1995	Age
Total primary	6987240	6906336	6576886	6289408	
Out of school (1-6)			701914	407392	6-11
% not in school			10%	6%	
Total junior sec	1282118	1569929	1990808	2236070	
Out of school (7-9)			173192	1209130	12-14
% not in school			47%	35%	
All grades	8269358	8476265	8567694	8525478	6-14
Out of school (1-9)			2440106	1616522	
			22%	16%	

Source: Appendix Table A-1

III. CONDITIONS OF CHILD LABOR

Despite these significant changes, still 1.6 million children below the age of 15 are out of school of whom 1.2 million are between 12 and 14 years. Many of them work, even though they may escape the official statistics. Often they face harsh conditions that jeopardize their the physical and mental development in addition to the fact that they will miss the future benefits of schooling. Tables 5 to 7 highlight children's working conditions from a series of child surveys though part of the reported differences between them can be due to comparability problems.

Table 5
Weekly Working Hours of Children (11-15)
by Occupation

	Boys		Girls	
	Average Hours	Frequency	Average Hours	Frequency
Professional	49.5	8	44.0	26
Administrator	56.0	1	na	0
Clerk	57.2	11	48.7	15
Commerce	47.1	594	51.1	961
Farmer	48.8	4376	47.6	3932
Mining	44.5	2	na	0
Transport	57.7	99	50.5	11
Other	52.5	1215	50.2	1166
Services	53.9	117	65.6	1023
Total	49.6	6426	51.1	7134

Source: Averages from 1985-1992 (Own calculations from LFS tapes; see data appendix)

Table 6
Conditions of Child Work (%)

	1986	1995
Daily hours 8<	84.9	91.5
Weekly days 7	8.0	30.3
Night work (10-6 am)	8.6	11.6 (1991)
Break (< 1 hour)	70.1	
Monthly income (Baht)	400	
Note: In 1986 the average daily child wage in Bangkok was 22 Baht compared to a minimum wage of 70 Baht.		
Sources: Calculated from Banpasiric (1995) based on National Youth Bureau, Foundation for Children's Development and Department of Health		

Table 7
Working Conditions of Children

Working conditions	% of children affected
Light work/no risk	68
Work with machines/tools with low risk	29
Heavy tasks/lifting with high risk	3
All	100
Exposure to loud noise, chemical vapors, dust	67
Intelligence below average	79
Night Work	9
% of Working Children in Bangkok coming from North East	65
Note: Night work for children is illegal	
Source: See sources to Table 6	

Children work long hours and the trend is to work even longer. Table 5 presents the distribution of children's average hours of work by occupation. There is little variation in the hours worked between occupations and sexes though girls seem to work 10 hours more than boys in the services sector and 15 hours more compared to girls in other occupations. Also, 30 percent of children have a daily break that lasts less than one hour (Table 6). Another 32 percent were engaged in activities that involved some risk in 1986 and in 3 percent of cases a severe one (Table 7). More than two-thirds of children work in conditions exposed to dust, loud noise, chemicals and vapor. Though there are no comparable figures for adults, it can be assumed that children's participation in such activities is greater than average given their low skills and perhaps parental selection to remove the less able children from school, if the fact that 79 percent of working children exhibit intelligence below average is taken at face value (and is not the result of early and harsh work). In fact, children working long hours (and presumably in harder tasks) have also been found to have below normal height and weight.

The percentage of children working more than eight hours a day has increased from 85 percent in 1985 to 92 percent in 1995 (Table 6). The share of children working 7 days a week has also increased

from 8 percent to 30 percent. In some cases child workers are not rewarded according to the long hours they work and, though they can at times get assistance, the reality remains harsh for them. According to the records of the Foundation for Children's Development, nearly 900 children from 273 enterprises were assisted during the period 1982-1993. No payment was a problem in 12 percent of cases. The most prevalent problem was hard work/substandard conditions (37 percent), followed by violation of basic rights (such as capture and harm; 17 percent). Accidents accounted for 5 percent of recorded cases. "Trickled in job arrangements" affected 8 percent of children. Another 10 percent children had lost contact with their families. In fact, 65 percent of working children in Bangkok originate from the poorest region, the North East.

Though the labor force participation rates of children are declining, and in 1993 in every 100 workers there were 1.6 working children (compared to 3 percent in 1990), those who do work seem to be subjected to hard conditions of employment. This may explain in part some of the deterioration in children's working conditions. Children from families that face milder conditions of poverty probably no longer enter the labor force, and they may have previously had more options and entered more acceptable forms of employment. If this assumption is correct, the children that are now at work must be disproportionately (compared to children, say, one decade ago) among the less fortunate ones, and this may be one partial reason for the decline in employment conditions of children over time.

Table 8
Inspected Establishments and Children Working in Them, 1993

	Inspected	Children		Ratio
	Establishments	Inspected	"Illegal"*	%
	(1)	(2)	(3)	(3)/(2)
Northeast	5354	3078	2900	94
North	3374	1731	1516	88
Bangkok	16069	5221	3516	67
Central	5899	5109	2539	50
South	3355	4675	1264	27
Around Bangkok	1685	9738	2005	21
Total	35738	29552	13740	46
Note: "Illegal" refer to cases where the employment of a child breached some aspect of legislation				

Most (60 percent) children *employees* are in manufacturing and more than 35 percent in hotels, restaurants, trade and services (Appendix Table A-2). Even among them, who are working in the most visible part of the labor market, half are employed under conditions of some form of mistreatment, as shown in Table 8. Though the table does not suggest any clear pattern between regional prosperity and employment conditions, the two poorest regions, the North East and the North, seem to have the greatest probability of child mistreatment. Bangkok and the Central regions follow but the area around Bangkok is last in the regional ranking after the South region. It is likely that these regional figures are affected by different structures of production and technologies and perhaps the intensity of labor inspections but there is no more information on this.

IV. WHY ARE CHILDREN OUT OF SCHOOL?

Children's allocation of time depends heavily on household characteristics combined with economic factors. An econometric analysis of the Labor Force Surveys between 1985 and 1992 suggests that work and schooling decisions are significantly related to the education of the head of household. There is a strong inter-generational transfer of human capital from parents to children in the sense that households with more educated parents are more likely to keep their children in school and less likely to have child workers (Table 9).

Table 9
Predicted probabilities (%) by head's of household education

	LF participation		School enrollment	
	Boys	Girls	Boys	Girls
No/less than lower primary	24.2	24.4	65.3	60.2
Lower primary	21.5	22.1	67.9	65.7
Elementary	9.7	11.9	85.3	81.1
Lower secondary	4.4	8.0	89.8	85.3
Upper secondary	3.9	15.5	90.8	75.9
University/Teacher training	1.3	13.5	95.7	83.9
Source; Calculated from Appendix Table A-3a and A3-b.				

The prime reason for not attending school at a young age (12 to 14 years) appears to be the direct cost of education rather than the need for additional income from child work (Table 10). In this age group, financial considerations are the main cause for not attending school (63 percent) and 20 percent of children are out of school because of work. Distance to school (a "supply" constraint) is not an important reason for non-attendance. This suggests that demand constraints on the household's ability to finance education are significant. At an older age (15 to 19 years), the need for work accounts for one-quarter of out-of-school children. Other factors become also more important at that age such as "no interest" in

studying (this can relate to household preferences) and “could not be admitted” (an indication of ability). Still among those aged 15 to 19 years, 40 percent cite lack of financial support as the reason for non-attendance. Thus, financing the costs of education can be a prime constraint to the increase in education enrollment.

Table 10
Reasons for Not-in-school by Age Group
(% of all not-in-school children)

Reason	12-14	15-19
Medical	1.2	1.5
No financial support	63.3	40.4
Distance	3.4	1.8
Had to earn livelihood	19.7	26.5
No interest	9.5	15.2
Could not be admitted	0.7	7.5
Misconduct	0.2	1.3
Others	1.9	5.7
Unknown	0.0	0.0
Total	100.0	100.0

Source: Report on Children and Youth Survey (NSO, 1992)

The costs of education, rather than immediate need for child work, is also indicated by an examination of the time allocation of children since they left school (Table 11). At younger ages (9 to 11 years) most out-of-school children are engaged in housework, an activity that could be more easily accommodated with education and does not immediately suggest great need for the more rewarding unpaid or paid work. Paid or unpaid work, conventionally defined, occupies more children at successively higher ages: 95 percent of boys and 90 percent of girls between ages 15 and 19.

Table 11
Time allocation since leaving school by age
(as % of children out-of-school with known activity)

	Boys			Girls		
	9-11	12-14	15-19	9-11	12-14	15-19
Work (paid)	0.0	35.8	47.6	0.0	40.5	45.5
Unpaid work	5.4	53.6	47.0	22.2	37.0	43.5
Housework	94.6	9.7	3.7	77.8	21.2	10.2
Training/study	0.0	0.3	1.3	0.0	0.7	0.6
Looking for work	0.0	0.3	1.3	0.0	0.7	0.6
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: Calculations based on children with a known activity from the Report on Children and Youth Survey 1992

These figures, and the econometric analysis (Appendix Tables A-3a and A-3b), suggest that child labor and school non-attendance are primarily a phenomenon among poor households that arises more from the inability to finance education and to a lesser degree by a pressing need for paid or unpaid work. This raises, therefore the possibility, of some form of public policy that would reduce the direct costs of education in addition to keeping supply constraints low (such as increasing the number of classrooms at junior secondary education level and keeping distances to schools within reach of households).

Direct subsidies for school attendance can help children to stay on in schools.⁴ Such subsidies can be designed to be paid to poor households. They should decrease the incidence of child labor and also increase the prospects of children from poor families throughout their lifetime: providing these children with additional education will make them more employable and will also increase the rewards to their labor in the form of higher productivity in self-employment or higher wages in paid employment. In fact, the less educated are already faring worse in the fast transforming Thai economy than the more educated: the share of those with less than secondary education declined from 87 percent in 1985 to 81 percent in 1992 (Table 12). However, their share in unemployment increased from 71 percent to 84 percent as did their unemployment rate from 3.2 percent to 4.6 percent. These workers now have the highest unemployment rate and are the only group that experienced an increase in unemployment despite the rapid economic growth since the late 1980s. Policies that would accelerate the increase in junior secondary education will, therefore, benefit the poor.

Table 12
Unemployment and employment shares
and unemployment rates by education level (percent)

Education level	Rates				Unemployment	
	Unemployment		Employment		Rates	
	1985	1992	1985	1992	1985	1992
Less/pre-primary	71	84	87	81	3.2	4.6
Sec general	14	10	7	10	7.3	4.5
Sec vocational	5	3	2	3	9.2	4.1
Higher education	7	3	2	4	11.0	4.1
Teacher training	3	1	2	2	5.2	2.7
Total	100	100	100	100	3.8	4.5

Source: Vichai (1994)

⁴ Another, albeit rather theoretical, alternative is to impose taxes on children's income and use the money to subsidize school attendance. Such a policy may have stronger effects and be cheaper but this is even harder to implement and monitor; it can end up as another way to raise taxes and the black market possibilities for child labor are endless. Moreover, the policy may encourage some inactivity while the objective of policy should be to encourage school attendance.

V. PROVIDING A SUBSIDY FOR SCHOOL ATTENDANCE

The desirability of subsidies for inducing more children to attend school than those determined by household decisions in a market environment requires an examination of the welfare effects of such a policy. Though such analysis cannot be done on the information provided by the Labor Force Surveys (there are no data on household income), it can be assumed that child work and schooling decisions are made by the parents, with the child's wage being the relevant price. From this assumption, econometric analysis can examine how a price effect operating via a subsidy conditional on school attendance can affect school enrollment rates.⁵

The calculations for estimating the fiscal implications of the subsidy and the economic effects of an expansion of junior secondary education are based, first, on the assumption that a child is given a subsidy equal to 10 percent of his/her wage and, second, on the econometrically estimated elasticity of school enrollments to wages of 10 percent. As most working children in the Labor Force Survey reported to be engaged in unpaid work, there is little reliable information on what a child's labor is worth to them and their families. However, since the majority of working children are in rural areas and engaged in farming (Tables 3 and 5), child labor can be assumed to be worth 30 percent of the average agriculture wages that were about Baht 2,000/month in 1993.

Even this average wage in agriculture may be too high as a benchmark for the present calculations: the average monthly wages of *all* employees aged 15 to 30 years with completed primary education are approximately Baht 2200 (in 1992). For those with only some primary education the monthly earnings were Baht 1900 and for the illiterates only Baht 1500. Also, the implied wage of unpaid family workers (household labor income from own-account work and self-employment divided by all non-wage workers) is only Baht 1300. Finally, a special survey on child work showed that the average child wage in Bangkok was only Baht 400 in 1986.⁶ If children's wages have kept up with inflation, they should have increased by 37 percent in 1993 to approximately Baht 550. Thus the assumption that a child's work is worth on average around Baht 660 seems reasonable.⁷

⁵ In some sense the compensation should be less than the labor earnings of children if parents derive some utility from their children going to school. However, as the data do not have information on household income, this welfare measure cannot be computed keeping a constant standard of living.

⁶ Minimum wages were Baht 70/day in Bangkok in 1985 or, for a 26-day month, Baht 1860 monthly. Thus, the average wages of working children in Bangkok were only one-fifth of the minimum wage (Source: Chantana Banpasiric, 1995).

⁷ An ILO/Friends of the Children survey of child workers in the garment industries in Chaing Mai in 1994 found that children working 4 to 6 hours a day overtime earn Baht 1,000/month without any additional welfare.

Budgetary implications

In 1993 there were two million students in junior secondary education. According to the econometric results (calculated from Appendix Table A-3b), a 10 percent decline in wages would increase school enrollment by 1 percent. Conceptually, this decline can come about by paying a grant for attendance to the children out-of-school equal to 10 percent of their wages. Assume that indeed such a grant is paid. This should increase school enrollment by 20,000 and would require an increase to the public budget on education between Baht 108 million and Baht 180 million (depending on the level of children's wages).

The increase in junior secondary enrollment by 20,000 would require an increase in the public expenditure on education by 0.9 percent to 1.6 percent for the subsidy alone. It will also require an additional 1 percent increase in the budget simply because the student population will increase by 1 percent. The two figures combined suggest a required budgetary increase of 1.9 percent to 2.6 percent. In short, the cost of educating each of the additional 20,000 children will be equal to two to two-and-one-half times the public cost of a child who is already attending school. This raises the issue whether this relatively high cost is justified from a social cost/benefit point of view.

Efficiency considerations

The efficiency effect of public funds that would support completion of the junior education cycle depends on the direct costs of education (public and private expenditures on junior secondary education), the indirect costs of education (loss of children's output), and the benefits from this additional education (lifetime productivity gains of the beneficiary child from his/her work within and outside the labor market).

There are no precise estimates for the annual unit costs of junior secondary education alone. The total budget for secondary education is Baht 23 billion (1993) and, given that senior/junior unit costs are 2:1, the annual unit cost for junior secondary comes to approximately Baht 5,700.⁸ Annual private direct costs of supporting a child in public junior secondary education are Baht 1,300 (NSO, 1992: p. 29). Finally, foregone wages of the child can be used to approximate the loss of output: they can come to Baht 6,600 to Baht 11,000 depending on whether they are assumed to be from 30 percent or 50 percent of wages in agriculture. These costs add up from Baht 41,000 to Baht 54,000 for the complete junior secondary cycle (three years).

⁸ This figure is based on total junior enrolment of two million compared to an overall secondary enrolment of one million. It is most likely an overestimate as half of enrolment at senior secondary level is in more expensive vocational education.

On the benefit side, the wage increase that children who complete junior secondary would enjoy compared to those who drop out at the end of primary education provides the minimum social gain. From earnings functions the standardized wage differential between graduates from junior secondary and from primary education is 20 percent. In monetary terms, this percentage translates into lifetime gains between Baht 141,000 and Baht 56,000 for work till the age of 55 years depending on the rate of discount (from 1 percent to 6 percent). Throughout this range of values for a social discount rate lifetime benefits would exceed costs though only by a small amount (Baht 1,600) if both child wages and the discount rate are assumed to be unrealistically high (last row in Table 14).

However, the impact on wages is only part of the social gains from additional education. The effect of education upon productivity is only partially measured by wages as some of its increase can accrue to employers in the form of additional profits. Also education, especially at basic level, has often sizable externalities in the form of increased lifetime employability and trainability in the market place and better health and nutrition outcomes within the household, especially from women's education. Finally, additional benefits include more effective family planning and reduction in fertility as well as stronger transmission linkages between parents' and children's human capital (Table 9).

Rather than assuming that the productivity impact of education will be only that suggested by the junior secondary to primary wage differential (20 percent), which constitutes very much a private return (to the child and his/her family), we assume that the social rate of return is 10 percent. In this case, the present value of the societal gain over a 40 year productive lifetime (till the age of 55 years) exceeds costs by a factor from two to four depending on which levels of discount rate and child wage are used.

The next issue is to decide what the social rate of time preference is. The societal rate can be quite low as societies "live for ever" and face low uncertainty compared to individuals who have limited lifetimes, face significant unexpected risks that cannot be easily pooled and often come across severe liquidity constraints.⁹ Given that even after relatively heavy discounting (6 percent), the ratio of benefits to costs is more than two, the results suggest that unless child wages are high, administration costs significant and targeting considerably imperfect, a subsidy can be justified on the grounds of social benefit/cost considerations.

The case for subsidies is strengthened when the benefits/costs of additional education are recalculated from a purely private perspective. The results suggest that there is likely to be some market failure among poorer households who have typically higher rates of time preference than the society at large. The lifetime private benefits for the poor cannot reasonably be discounted by a low rate, such as 3

⁹ The historical real return to the relatively risk-free US Treasury bills is 1 percent.

percent or 6 percent as assumed earlier. Their rate of time preference can easily be 15 percent or even higher during adverse seasonal conditions and can approach to 100 percent during an emergency situation.

Table 13
Costs and Benefits of a 10 Percent Age-related Subsidy for Attending Junior Secondary Education

Social				
1. Elasticity of school enrollment to an age-related wage			10%	
2. Enrollment in junior secondary education in 1993			2 million	
3. So, 10% subsidy will increase enrollment by			20000	
4. Ratio of total cost of subsidy to public expenditures on junior secondary education, if child wages are equal to:				
	30%		0.9%	
	40%		1.3%	
	50%		1.6%	
5. Social costs and lifetime discounted social benefits for a child who receives the grant and completes junior secondary:				
			Social benefits based on :	
	Costs	Discount Rate	10% Productivity Gains	20% Wage Increase
30% of agr wages	40883	1%	254158	140772
40%	47483	3%	169117	93670
50%	54083	6%	100557	55696
Source: see text				

The values of private benefits under different discount rates and private costs (that is, excluding the public subsidy to education) are shown in Table 13. Benefits are calculated in the same basis as before, that is, they are the present value of wage gains due to additional education discounted over a 40 year period. The private costs are total costs as in Table 14 but exclude the public expenditure (subsidy) component (Baht 17,000). Thus, private costs can be between Baht 23,700 to Baht 36,900 compared to benefits of only between Baht 18,700 and 8,300 (depending on which discount rate is used).

Table 14
Private costs and benefits from completing junior secondary education

Costs		Benefits	
30% of agr wages	23,700	15% discount rate	18,700
40%	30,300	20%	12,000
50%	36,900	25%	8,300
Source: see text			

There is, therefore, a substantial difference between social and private benefits and costs that arises primarily from the benefit side. Private benefits are only a fraction of social benefits (one-fifth or less). In fact, the discrepancy between social and private benefits is likely to be understated. The benefits have been adjusted assuming that households discount future benefits practically over the lifetime of a child (40 years). It is likely that the time horizon of households, especially the poorer ones, is much shorter than this, and the discounted gain in wages is smaller. Also, parents may place a low weight to their children's earnings after the latter form their own families and leave the parental home, especially under conditions of migration that are significant in Thailand.

In conclusion, the divergence between the social and private indicators used in the above analysis suggest that a significant market failure may exist with respect to the education of young children from the poorest parts of the population.

VI. POLICY ISSUES

The synergy of successful family planning policy in the past, recent economic growth and continuing commitment by the Government to expand education has resulted in significant rates of change across a wide range of economic and social indicators (per capita income, family size, educational enrollment, child work, poverty and so on). Particularly impressive is the fast expansion of school enrollments and the significant reduction in child labor neither of which would have been easy to achieve without broad-based macro and social policies. In particular, the decline in child work has come from a combination of fewer children per family size and a reduction in child labor primarily in households of lower socio-economic status (Table 3). Overall, the share of households with children aged 11 to 15 years declined by 14 percent between 1988 and 1992 (from 33 percent to 28 percent). This reduction came largely from households headed by own account workers, primarily farmers, who constitute nearly half of all workers.

Still, despite these apparently sizeable "trickle down" effects, there are remaining areas of concern for which broad based policies may take significant time to reach. There are 400,000 primary school aged children out of school; for secondary school aged children, 1.2 million. Many of them are working often under harsh conditions. Even if the "trickle down" effects of broad-based policies are completed in only one generation, this can still leave a significant part of 30 cohorts ill-prepared for the future who will drag the overall productivity of the economy for decades ahead.

While broad-based policies are increasingly affecting the less poor and should continue, some may have to be redesigned to support some regions more than others. For example, households in rural areas rely almost exclusively on public schools for the education of their children compared to urban

areas. In Bangkok as many as 48 percent of enrollment at all education levels are in private schools compared to 1 percent and 6 percent respectively of enrollment in primary and junior secondary education in other regions (Table 15). Thus, in areas other than Bangkok the choice is between “public education or no education,” and this should be more so in rural areas in the poorer regions, such as the North East. Thus the expansion of junior secondary education (providing schools, teachers, materials) can focus on areas outside Bangkok and the main urban areas that are relatively better catered for by the (expanding) private education sector.

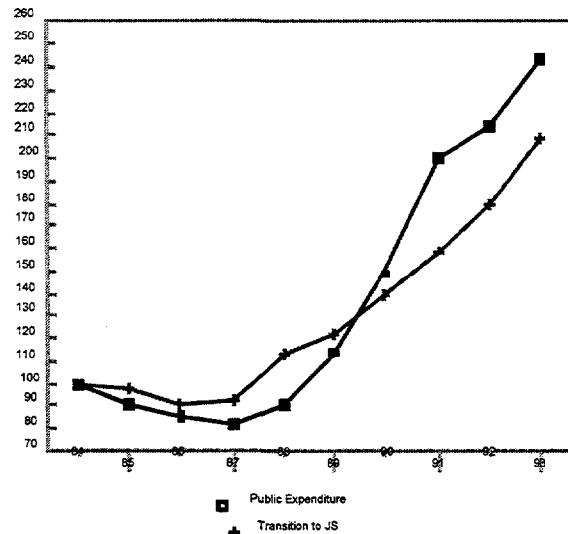
Table 15
Public Share in Total Enrollments
Enrollment Rates by Level of Education
and Share of Bangkok in Total Enrollment
by Education Level in 1993

Level	Public Share in Enrollments		Enrollment Rates	Share of Bangkok
	Bangkok	Others	Whole Country	
Primary	53	99	90	8
Lower sec	80	94	53	13
Upper sec	50	80	28	22
Higher	78	87	22	55
Total	62	93		

Source: Calculated from Education Statistics in Brief 1993

Public support of education, especially at primary and junior secondary levels, can help reduce supply constraints that the poorer face in educating their children. Building schools and providing better transport infrastructure that will decrease the distance from home to school can reduce the time and opportunity cost of education. The decline in capital expenditures on education in the 1980s coincided with a stagnation or decline in school enrollment rates: between 1985 and 1988 the net enrollment rates of boys 11 to 16 years old declined from 75 percent to 72 percent. Then they increased to 79 percent. For girls the corresponding rates were 70 percent, 68 percent and 74 percent. The fiscal crunch of the late 1980s and the reduction in public expenditures also coincided with a decline in the transition rates from primary to junior secondary. However, the subsequent increase in real capital expenditures was associated with a significant increase in the transition rate (Figure 1).

Figure 1
Public Real Capital Expenditure on Education and
Transition Rates From Primary to Secondary Education
(1984=100)



In addition to continuing broad-based policies, more targeted measures could be introduced to reach those who would be increasingly coming from hard core poverty conditions. These smaller groups can be marginalized households in Bangkok and other urban areas or be concentrated in rural pockets where even significant effort in farming activities yields low returns, and child work and education can be traded-off only under uneven conditions.

Three specific policies considered below are, first, direct subsidies for school attendance; second, enforcement of child labor legislation with respect to conditions and type of employment; and, third, a range of *ad hoc* interventions in certain areas of child work. The argument is as follows: education subsidies will not only increase the human capital of those who would have been left outside the education system from an early age but can also reduce the amount of child work. Then, labor legislation can cater for the employment conditions of those children who would still be working. Finally, specific projects at community level can focus and go deeper in areas of persisting problems.

Education Subsidy

Providing direct financial support in the form of a grant as highlighted earlier (Table 13) can in no way be considered as the solution to the problem of non-enrollment at large: the private response to a subsidy equal to 10 percent of the child's wage will increase in enrollment only by 20,000 (compared to 1.2

million out-of-junior-secondary education). However, it can be designed to reach the poorest households, in which case the welfare gains indicated by the earlier analysis can be sufficient to justify the policy.

Children in households headed by the less educated, and typically poorer parents, are significantly more likely to be out of school and in the labor force between the ages of 11 and 16 years. Table 9 showed that approximately one quarter of children living in households headed by those who have less than primary education are in the labor force and only two-thirds in school. In households with heads that have completed primary education, there is a significant improvement with little difference between boys and girls: only 10 percent of children work and more than 80 percent are in school.¹⁰ The response of households to education incentives is greater in households headed by the less educated: the increase in school enrollment in households with less educated heads from the 10 percent subsidy used in the present calculations could be twice that in households headed by university graduates (Table 16).

Table 16
Percentage Increase in School Enrollment
due to a 10 percent Age-related Grant
by Education of Head of Household

	Boys	Girls
No education	1.2%	1.2%
Some/Completed Primary	1.1%	1.1%
Secondary	0.5%	0.8%
Tertiary	0.3%	0.8%

Source: Calculated from Appendix Table A-3.

The design of this subsidy also is important. These grants should be means tested in areas where school enrollment is relatively high or be more liberally provided by being targeted to schools in areas where attendance is low and child work prevalent. The former, a means tested scheme, is likely to create disincentives elsewhere in the system and may be difficult to implement in terms of administrative capacity. Given the regional nature of the Thai economy, targeting areas, rather than households, may be relatively easy and less distortionary at the micro level -- for example, it is unlikely that parents would migrate from a wealthier to a poorer area because of an education grant targeted to some children in a particular school.

The grant should not be paid when the child misses school. Some children, particularly in agricultural areas, might skip school days to engage in some form of farm work. Such activity should be discouraged by a corresponding reduction of the subsidy. The grant should, therefore, be paid on a daily or weekly basis and not be a monthly or annual subsidy de-linked from actual attendance. Obviously, there are

¹⁰ There is some reversal in the pattern for girls as the education of the head of household increases but we have no explanation for this.

some problems with unexpected or unavoidable incidents, such as sickness or family emergencies. However, these can be generally monitored by most schools in the locality in which they operate. The main issue here is to avoid consistent patterns of work and non-attendance that systematically destruct children from attending school on a regular basis and have permanent effects upon their educational achievement. The grant should be age related as older children have higher opportunity cost (wages) than younger ones. To improve effectiveness of the incentive, current participation in the program can be linked to earlier minimum amount of school attendance or minimum levels of achievement. In this way, current attendance would offer a return to the parents in the form of a future return. Another issue is how much to subsidize. Our simulations were based on a 10 percent subsidy but this can be raised if, after a more detailed analysis than the present one, this proved to be justified.

Finally, it can make a difference if it is the father or the mother or a fund for the child into which the grant will be paid. Usually, women tend to spend more on children and men more on adult members of households but it is not clear whether the reverse relation holds, that is, whether a decision to keep a child in school will be more favorably affected by “paying” the mother or the father. This will relate to which parent the benefits from child work accrue. More analysis on intra-household division of labor and migration patterns would be required to establish whether a child’s work relieves the work undertaken by the mother or father and for whichever parent the incentives are stronger.

Child labor legislation

Direct attempts to reduce child labor, for example through banning it altogether, are usually ineffective. A ban on child labor would imply that child labor “legally does not exist” and child workers will become unprotected (Rodgers and Standing, 1981). In any case, first, there are many forms of child work that are both acceptable and useful to their families and the children themselves. And, second, legislation is more effective when child labor is subjected to hazardous conditions in a factory. However, these three elements can be masked. For example, child employment during the academic year can be disguised and become more detectable only during school holidays. In Khon Kaen, some factories disguise child labor under the pretext of training programs or use putting-out arrangements for parts of production. Then the parents become sub-contractors and employers of children. This practice may or may not eliminate the exploitation of children though surely makes it less visible. The objective of a policy cannot be confined to the visibility of a problem: it should try to solve the problem which in this case is harsh conditions of employment and the under investment in children’s human capital.

Enforcement of regulations, existing or new ones, that improve conditions of work can be desirable on both efficiency and equity grounds. The enforcement of regulation dealing with type and conditions of

employment can reduce, if not prevent, the engagement of children in activities that are detrimental to child's physical and mental development. Child prostitution is one such area. Another is excessive hours of work requiring undue physical effort. Also, exposure to environmental hazards (dust, chemicals, noise) and hazardous work for minors can be monitored and reduced to safe levels. Finally, there can be no tolerance for forced and slave labor.¹¹

The Government is increasingly involved in these areas. In 1992 it declared the intention to bring an end to abusive child labor. The Seventh Social and Economic Plan (1992-96) pays attention to the importance of human resources development for the country's development reiterating the recognition of child labor that first appeared in the Third Plan (1972-1976). The current Plan identifies child labor and children in prostitution as two of the most critical issues, and the current objective is to increase the minimum working age from 13 to 15 and to extend compulsory education to nine years by the year 2000. Two additional programs aiming to reduce child labor migration from the rural areas and to provide protection to children in the workplace were approved by the Cabinet in November 1994 with the support of Baht 300 million (US\$ 12 million) for a five year period.

The success in combating undesirable aspects of child labor and reducing it to levels that would not prevent the acquisition of education below its socially desirable level will depend not only on the actual implementation of these policies but also on the rate of effective enforcement of labor regulation and also the appropriateness of legislation itself. For example, a notification issued by the MoLSW in 1993 prohibiting employment of children below the age of 16 in deep sea fishing operations is yet to be implemented. Though there exists safety legislation, it does not differentiate between child and adult workers. There are no specific break-time provisions during working hours for children though they are naturally disadvantaged for working long uninterrupted hours.¹² Another case is minimum wages whose recent increases and more rigorous enforcement may account for some of the decline in child employment

¹¹ ILO Forced Labour Convention 1930 (No. 29), the Abolition of Forced Labour Convention 1957 (No. 105), and Minimum Age Convention 1973 (No. 138) provide a framework for child labor. Other conventions (especially those relating to freedom of association, protection of the right to organize and collective bargaining) are also relevant. See Bequele (1995).

¹² Though employment of children aged 13 to 15 years requires official permission, this is waived in the case of work involving carrying weights less than 10 kilograms and for light work in most commercial and service activities. Child work is not permitted (till the age of 18 years) in metal melting and molding operations, and work with excessive heat, cold, noise, light, vibration, chemicals, inflammable substances except in gas stations and similar, toxic materials and so on. Child work is prohibited in slaughter houses, casino and adult entertainment, prostitution houses, massage parlors, places serving alcohol and the similar establishment (Banpasirichot, 1995).

over time.¹³ Finally, child workers are excluded from legislation when they are engaged in self-employment, sub-contracted work, farming and fishing or if they are aliens.

In effect, legislation covers only children with employee status who are a minority of child workers. This indicates the limits of legislation in addressing child labor. Legislation should therefore be accompanied by additional interventions discussed below.

Targeted interventions, partnership and information systems

In addition to education subsidies and regulation for children's working conditions, targeted interventions at community level can have rewarding effects. Two programs currently undertaken by ILO in the context of the International Program on the Elimination of Child Labor (IPEC) provide insights to such interventions.¹⁴

A mobile training and sensitization program for children working/living in the construction sector aims to introduce children in Bangkok to skills development and provide vocational training opportunities as an alternative to working in the construction sector. Children are provided with scholarships so that they can quit work in the sector. So far the project has assisted 250 children at a cost of US\$ 22,000. Cooperation with employers and related government agencies are currently being sought. The effectiveness and expansion of the project is under consideration with action research undertaken by Thammasat University to develop an appropriate educational model for children of construction workers.

Another project targets young girls in North Thailand from being lured into forced labor. In collaboration with NGO's the project provides alternative to young girls that face the risk of becoming prostitutes. Over the last five years the project provided access to basic education for 150 girls as well as leadership training for young women who can serve as examples to girls. A vocational training program caters for the needs of the very young (below the age of 15) - a reminder of the missed opportunities from low enrollments in junior secondary education. After participation in the program, girls are offered job-placement assistance. Additional links are sought with the Ministry of Education and a feasibility study is underway to develop an appropriate curriculum for the girls at risk. Along similar lines, another project in the Ministry of Education operating in Chiang Rai, Payao and Lampang removes girls at risk from

¹³ Children can be substitutes to adults in the labor market especially when the latter is dominated by unskilled labor and technology is relatively simple. When minimum wages are enforced, adult workers would be preferred by employers assuming that they are more productive than children.

¹⁴ ILO (1995).

vulnerable social circumstances and places them at boarding schools that provide skills in agriculture and home economics.

These two programs, though not formally evaluated so far, are indicative of the type of interventions that can take place at community level and the role of donors, local organizations and the Government. In addition, partnership with employers is important. Lack of active involvement by employers can limit the effectiveness of programs related to child work. The Employers Confederation of Thailand (ECOT) is increasingly participating in IPEC and consultation meetings have already been undertaken. The involvement of local governments and trade unions would also prove beneficial for improving working conditions including a reduction in the long hours children often work.¹⁵

The welfare of child workers can also be affected by supplementary activities. These can include opportunities for non-formal education and availability of health care services including greater cooperation with medical institutions in reporting suspected cases of child workers' abuse and torture. Public information campaigns can help strengthen the responsibility of employers and communities on child labor. Additional awareness campaigns aimed at teachers who can then coach their pupils and parents can be another avenue. Radio programs can enhance the capability of mass media to bring to the attention of the public child labor issues, as can also do video documentaries. The availability of hot-line centers and temporary (shelter) services can provide assistance while women's groups can also be instrumental in helping problems specific to the employment of girls.¹⁶

Finally, the development of regional and national statistics on child labor that would include additional indicators to those included in the Labor Force Surveys can help monitor the situation and introduce timely interventions. The collection of the statistics can be delinked from the Ministry of Labor and Social Welfare (MoLSW) which has the formal responsibility of labor inspections so that attempts by respondents to underreport non-compliance with specific regulations do not distort information. Then, this information can be provided to MoLSW and other Ministries so that interventions can be effectively designed and coordinated.

¹⁵ There are such proposals for the case of child workers in the leather industry in Samutprakarn. However, the supporting role of trade unions cannot be assumed to be automatic: the objectives of decent wages, employment protection and regulation of working conditions makes unions natural enemies of child labor. Increased awareness on this issue among union members is often required. To this end, ILO in association with the Institute of Labor Studies and Management at Chulalongom University are developing a training package to sensitize trade union leaders who are affiliated with the Labor Congress of Thailand and the Thai Trade Union Congress.

¹⁶ Such activities are included or planned under IPEC as well as mobile drama performed by child workers and shown in schools.

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DATA APPENDIX

The econometric estimation (see Costas Meghir (1996) "Children's Labor Force Participation and School Attendance in Thailand," University College, London, preliminary draft) is based on Labor Force Survey tapes for round 1 (January to March) in 1985, 1988, 1991 and 1992. To them round 3 (July to September) results for years 1988 and 1992 were added. The data were pooled to create two samples consisting of 24169 boys and 24250 girls with all the required variables present. Wage data were adjusted by regional consumer price deflators using 1985 as base.

The data were pooled because there are not many useful observations in each rounds to create a sufficient large sample that would be appropriate for a country like Thailand, which is characterized by significant regional variation. Still, the pooled sample has only around 7,000 working children while the wage equations are based in no more than 1,500 observations as most child workers in the sample do not report earnings. Therefore, it would have been unwise to run regressions on individual survey rounds.

Labor force participation and school enrollment equations are estimated usingprobit models. In each case the dependent variable is one whenever the child is exclusively engaged in the relevant activity (work or school). Consequently the participation and schooling probabilities do not add up to one: their compliment is the inactivity rate. The effect of wages on schooling and labor market choices was derived by estimating wage equations for those children that reported positive earnings and then imputing wages to all children.

The following variables were included in the labor force participation, school enrollment and wage equations:

Lw	Log real wage rate
Lwhat	Predicted log real wage rate
Noper	Number of persons in the household
Oldsib	Number of older siblings
Nsib	Total number of siblings
edh#	Head's education group
edsp#	Spouse's education group (# 1 to 13; see below)
rnd#reg#	LFS round (1 or 3) interacted with region (1 to 5)
rg#yr#	Region interacted with year
Agehead	Head's of household age in years
agehead2	Head's of household age squared divided by 100

The specific codes (#) for each variable are as follows:

Year

1	1985 (omitted)
2	1988
3	1991
4	1992

Education

1	No Education (omitted)
2	Less than Pratom 4
3	Lower Elementary
4	Elementary
5	Lower Secondary
6	Upper Secondary
8	Upper and Higher Vocational
9	University Academic
10	University Vocational
11	Teacher Training
12	Short Course Vocational
13	Others

Region

1	North (omitted)
2	North East
3	South
4	Central
5	Bangkok

The first category out of a set of dummy variables was dropped. So results are reported with reference to 1985 round 1 for illiterates aged 11 in the North Region.

Appendix Table A-1
Total (public and private) enrollment (,000)
in primary and junior secondary education
and out-of school children by grade/age

	1989	1991	1993	1995	Age
Grade					
1	1257803	1235403	1137856	1075652	6
2	1186375	1127870	1089420	1017957	7
3	1164667	1146040	1064720	1045489	8
4	1147430	1143548	1083817	1032395	9
5	1126469	1144997	1114540	1056378	10
6	1104486	1108378	1086533	1061537	11
Total Primary	6987240	6906336	6576886	6289408	
Out of school			701914	407392	6-11
% not in school			10%	6%	
7	476096	608736	759675	843603	12
8	419790	519139	661989	744816	13
9	386232	442054	569144	647651	14
Total junior sec	1282118	1569929	1990808	2236070	
Out of school			1738192	1209130	12-14
% not in school			47%	35%	
All grades (1-9)	8269358	8476265	8567694	8525478	6-14
Out of school			2440106	1616522	
% not in school			22%	16%	

Source: Ministry of Education

Appendix Table A2
Percentage of Child Workers in Establishments with Employees
1994

Industry/Age	Below 13	13-14	15-17	Row total	Column	% Girls/Boys
	1	2	3	4(1+2+3)		
Mining, Quarrying	0.00	0.00	0.68	0.68	0.14	18.50
Manufacturing	0.01	0.16	3.35	3.52	61.66	70.80
Electricity, Gas	0.00	0.01	0.17	0.18	0.21	17.00
Construction	0.00	0.06	0.95	1.01	0.89	27.30
Trade, Rest/Hotels	0.03	0.40	3.61	4.05	27.95	62.80
Transport/Communication	0.00	0.01	0.41	0.42	0.95	50.40
Finance and relate	0.00	0.01	0.18	0.19	0.50	45.80
Commuminty/Social/P	0.07	0.38	3.00	3.44	7.69	26.30
Total	0.02	0.20	2.76	2.98	100.00	63.90

Source: Banpasiric (1995)

**Appendix Table A-3a
Labour Force Participation and Wages**

	Boys 13-16		Girls 13-16	
	Coeff	S. Err	Coeff	S. Err
log wage	0.522	0.176	0.101	0.162
number of persons	0.035	0.009	0.038	0.009
number of siblings	0.041	0.014	0.026	0.013
no of older sibs	0.025	0.030	0.067	0.027
edh2	-0.061	0.082	0.064	0.074
edh3	-0.237	0.058	-0.115	0.052
edh4	-0.638	0.078	-0.557	0.073
edh5	-1.190	0.080	-0.849	0.080
edh6	-1.436	0.171	-0.485	0.113
edh8	-1.407	0.153	-0.598	0.105
edh9	-1.833	0.220	-0.116	0.107
edh10	-1.922	0.333	-0.285	0.157
edh11	-1.723	0.155	-1.073	0.126
edh12	0.416	0.512	-0.539	0.205
edh13	-0.814	0.237	-0.025	0.120
rg2yr85	0.295	0.111	0.087	0.090
rg3yr85	-0.812	0.166	0.278	0.064
rg4yr85	-0.191	0.129	0.227	0.101
rg5yr85	-0.966	0.199	0.129	0.082
rg1yr88	0.007	0.111	0.031	0.113
rg2yr88	0.668	0.087	-0.147	0.102
rg3yr88	-0.644	0.158	0.150	0.081
rg4yr88	-0.088	0.099	0.089	0.104
rg5yr88	-0.900	0.137	0.024	0.103
rg1yr91	-0.171	0.120	-0.354	0.089
rg2yr91	0.404	0.111	0.054	0.082
rg3yr91	-0.720	0.187	-0.155	0.100
rg4yr91	-0.361	0.172	-0.070	0.116
rg5yr91	-0.780	0.205	0.132	0.098
rg1yr92	-0.400	0.131	0.706	0.235
rg2yr92	0.284	0.119	1.312	0.245
rg3yr92	-0.740	0.146	1.651	0.245
rg4yr92	-0.451	0.156	1.789	0.258
rg5yr92	-0.933	0.203	-0.068	0.007
age 13	0.274	0.226	0.057	0.007
age 14	0.705	0.226	-0.228	0.087
age 15	0.965	0.232	-0.458	0.102
age 16	1.173	0.235	-0.372	0.090
agehead	-0.063	0.009	-0.578	0.127
agehead	20.051	0.008	0.087	0.073
rnd1reg2	-0.390	0.048	0.140	0.097
rnd1reg3	0.245	0.085	-0.448	0.131
rnd1reg4	-0.095	0.062	-0.366	0.108
rnd1reg5	-0.134	0.107	-0.710	0.152
rnd3reg	10.232	0.074		
Number of obs		15165		15603
Log Likelihood		-7463.5484		-8409.13

**Appendix Table A-3b
School Participation and Wages**

	Boys 13-16		Girls 13-16	
	Coeff	S.Err	Coeff	S.Err
log wage	-0.824	0.156	-0.759	0.154
number of persons	-0.026	0.009	-0.038	0.009
number of siblings	-0.082	0.013	-0.057	0.013
no of older sibs	0.027	0.028	0.024	0.026
edh2	0.099	0.077	0.077	0.072
edh3	0.270	0.055	0.332	0.051
edh4	0.685	0.073	0.727	0.069
edh5	1.234	0.072	0.904	0.074
edh6	1.500	0.145	0.518	0.106
edh8	1.367	0.124	0.718	0.100
edh9	1.602	0.150	0.264	0.103
edh10	1.547	0.203	0.220	0.151
edh11	1.680	0.123	1.241	0.118
edh12	0.311	0.517	0.613	0.180
edh13	0.969	0.213	0.260	0.113
rg2yr85	-0.224	0.106	-0.135	0.090
rg3yr85	0.755	0.150	-0.211	0.064
rg4yr85	0.468	0.121	-0.239	0.095
rg5yr85	1.289	0.176	0.023	0.077
rg1yr88	0.182	0.105	-0.291	0.107
rg2yr88	-0.565	0.084	0.367	0.101
rg3yr88	0.763	0.143	0.239	0.079
rg4yr88	0.295	0.094	-0.040	0.097
rg5yr88	1.038	0.122	0.223	0.097
rg1yr91	0.290	0.112	0.424	0.088
rg2yr91	-0.282	0.107	0.372	0.080
rg3yr91	0.873	0.170	0.195	0.092
rg4yr91	0.711	0.157	0.535	0.110
rg5yr91	1.128	0.182	-0.037	0.093
rg1yr92	0.589	0.121	-1.324	0.231
rg2yr92	-0.136	0.110	-1.800	0.240
rg3yr92	0.809	0.131	-2.128	0.240
rg4yr92	0.817	0.142	-2.176	0.252
rg5yr92	1.308	0.181	0.093	0.007
age 13	-0.579	0.218	-0.080	0.007
age 14	-0.937	0.219	-0.268	0.087
age 15	-1.111	0.224	0.416	0.098
age 16	-1.315	0.227	0.400	0.088
agehead	0.067	0.008	1.012	0.123
agehead2	-0.054	0.008	0.149	0.071
mdlreg2	0.239	0.048	-0.405	0.097
mdlreg3	-0.146	0.077	0.464	0.125
mdlreg4	-0.021	0.058	0.434	0.105
mdlreg5	0.032	0.092	1.142	0.146
md3reg1	-0.146	0.071		
Number of obs =		15165		15603
Log Likelihood =		-8248.7116		-9047.17

**Appendix Table A-4
Annual Expenditure per Student (Baht)
and Public/Private Enrollment by Education Level**

	Average	Public	Private	Priv/Total Enrollment
Child development Center	838	525	1336	38.6%
Kindergarten	1283	579	2192	43.6%
Elementary	787	564	2067	14.8%
Lower secondary	1425	1287	2376	12.7%
Upper secondary	1948	1786	3546	9.2%
Upper sec - vocational	3274	2505	4082	48.8%
University	4228	3584	5845	28.5%
Others	2536	1287	6082	26.0%
Unknown	2097	2585	1804	62.5%
Average	1354	1016	2730	19.7%

Source: NSO Report on Children and Youth Survey 1992, p 29

**Appendix Table A-5
Sources of Educational Finance
(% of students 3-24 years old in each category)**

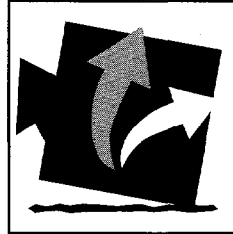
HH members	97.7
Relatives, non HH	1.2
Self-work	0.4

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Summary Findings

The paper examines the situation of child labor in Thailand in the last decade. It finds that child labor has decreased significantly, for example, the labor force participation rates of those aged 13–14 years has almost halved since 1990. Despite this decline, 1.6 million children below the age of 16 are out of school of whom 1.2 million are between 12 and 14 years. Most of them are from poor families. Many face harsh conditions of employment that adversely affect their physical and mental development and can lock them into poverty in the future thus perpetuating a vicious circle.

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