

## Chapter 6 Globalisation and Child Labour \*

Alessandro Cigno, Furio C. Rosati and Lorenzo Guarcello

**Summary.** There is no empirical evidence that globalisation increases child labour. If anything, globalisation reduces child labour. In a country that starts out with a largely uneducated workforce, globalisation raises the wage rate of uneducated, relative to educated workers. Unless the government takes steps to counter the reduction in the incentive to educate children, the net effect of globalisation is likely to be an increase in child labour. By contrast, in developing countries that have spent sufficiently for education to have a relative large number of workers with at least a basic education, globalisation raises the wage rate of educated, relative to uneducated workers. In these countries, public intervention is needed not to raise the incentive for parents to educate their children, but to loosen liquidity constraints. Developing countries can turn globalisation into an opportunity to reduce child labour by spending more on education and public health. Developed countries can help them by financing these policies, compensating them for short-term adverse effects, and stopping agricultural protectionism.

*JEL:*D13, F12, I20, J13, J24, O15

**\* This study presents the views of its author and not the official UNICEF position in this field.**

## 1. Introduction

Economists have long been aware that international trade is beneficial on efficiency grounds, but has strong re-distributive implications. The “Corn Laws”, that depopulated the countryside in 18<sup>th</sup> Century England, and created the pre-conditions for the industrial revolution, are a prime example of what can happen when barriers to trade come down. A prime example of what can happen if barriers stay up is provided by the European Common Market’s agricultural policy (CAP), part of the political deal that permitted the West European integration to be set motion after the end of World War II. By keeping internal farm prices systematically above world levels, and dumping excess production on to the world markets, the CAP, and similar policies carried out by North American countries, contributed to the transformation of subsistence farmers in industrial workers (and shanty town dwellers) throughout the developing world (Boserup 1981, Chapter 15).

The question here is, given that there may be gainers and losers from globalisation, are children likely to be among the former, or among the latter? More specifically, is further trade liberalisation and industrial integration on a world scale likely to raise the number of children engaged in work activities? If the answer is yes, and given that globalisation is unlikely to stop (because many gain from it), what can be done to remove such a consequence? Section 2 examines the available evidence. Sections 3 and 4 interpret it in the light of household economics and trade theory. Section 5 discusses the policy implications.

## 2. Does globalisation increase child labour?

Globalisation is the process by which an increasing share of world production is traded internationally, and the productive systems of different countries become increasingly interdependent (on this see also chapter 1 of this compilation). It started soon after the end of the second world conflict, but gathered momentum in the 1980s, as rapid progress in information technology compounded the effects of falling transport costs and trade liberalisation (Krugman, 1995). It thus seems reasonable, in trying to understand the consequences of globalisation, to look at what has happened over the last couple of decades. Most of the existing analyses are concerned with the effects of globalisation on wages and employment in the developed world. Since our concern is child labour, and child labour is concentrated mainly in the developing world,<sup>1</sup> we focus on the experience of developing countries.

A useful source of information are the World Bank’s *Development Indicators*. Using these, and subsidiary information provided by Sachs and Warner (1995), we constructed a World Panel, consisting of the data available on each developing country for the years 1980, 1990, 1995 and 1998. Since economic structure and

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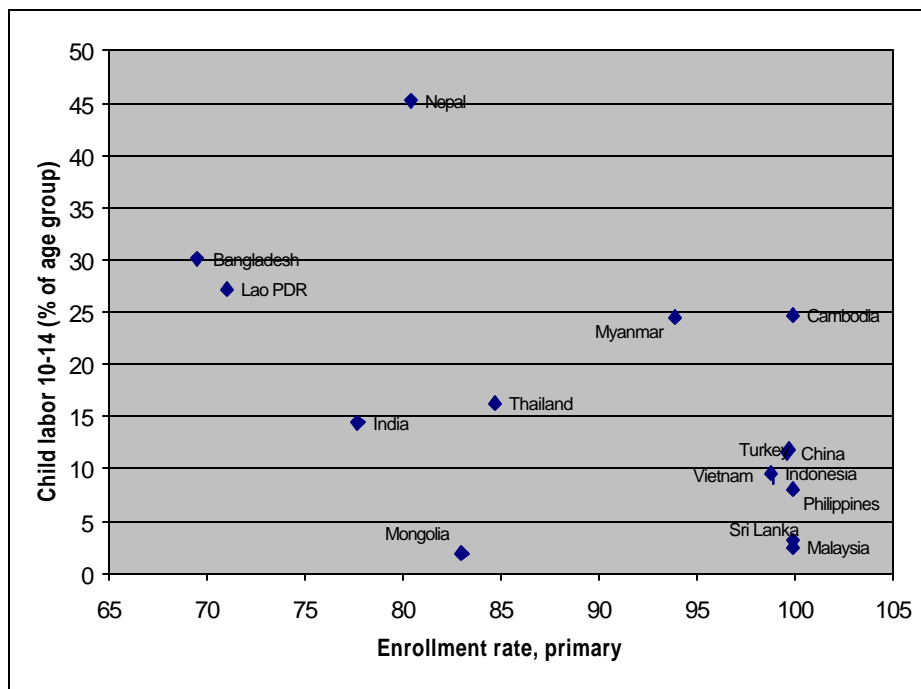
<sup>1</sup> Though not on a comparable scale, child labour is becoming a problem also in developed countries. There, however, it is largely connected with clandestine immigration (an example is the illegal importation of Chinese children to work in the Italian leather industry and rag trade). One way or another, the main source of child workers is thus the developing world.

economic policies differ substantially between Africa, Asia and Latin America, we shall look at each continental area separately, as well as at the developing world as a whole.

The measure of child labour that figures in the *Development Indicators* is the participation rate of individuals aged 10 to 14. The limitation of this measure is that it does not count children working at younger ages (the participation rate for the age group 6-10 is far from negligible)<sup>2</sup>, and children engaged in unofficial, especially if illegal, work activities. It thus leaves out what are probably the most undesirable forms of child work. In addition to this measure of child labour, we thus consider the primary school non-attendance rate (the complement to unity of the primary net enrolment rate reported in the *Development Indicators*). The problem with using the latter as an indicator of child labour is that children not attending school are not necessarily working (in the home or elsewhere).<sup>3</sup> However, since children not attending school are more difficult to monitor by the authorities than children who do, and thus more exposed to the worst forms of abuse (from hazardous or very hard work, to soldiering and prostitution),<sup>4</sup> the non-attendance rate is at least a danger signal.

Poverty is generally assumed to be the main cause of child labour. Indeed, as Figures 2 a-c and 3 a-c show, there is a negative association between income and child labour. For similar levels of per-capita income, however, both our indicators of child labour show very large variations. That may be partly due to the fact that countries with similar levels of per-capita income can have very different income distributions, but partly also to the effects of different policies.

**Figure 1a:** Asia



<sup>2</sup> Cf. Cigno and Rosati (2000), Rosati (2000), Rosati and Tzannatos (2000), and the statistics available at [www.ucw-project.org](http://www.ucw-project.org).

<sup>3</sup> In a sample of Indian rural households, Cigno and Rosati (2000) find that the characteristics of children reported by their parents as neither working nor attending school are very similar to those of children reported as working full time.

<sup>4</sup> See Cigno, Rosati and Tzannatos (2001).

Figure 1b: Africa

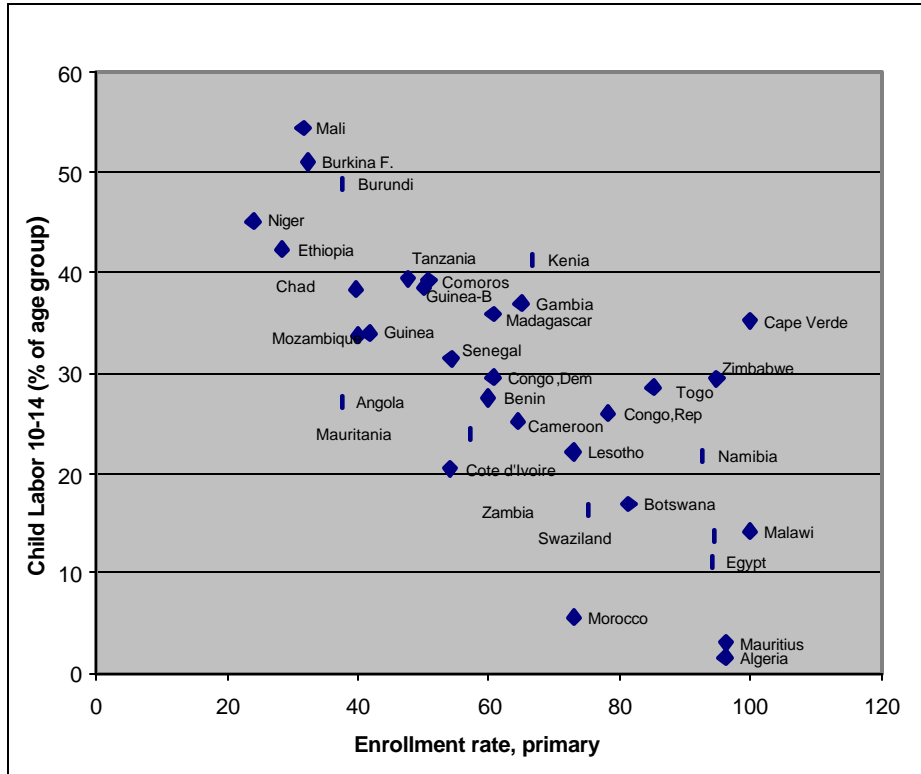
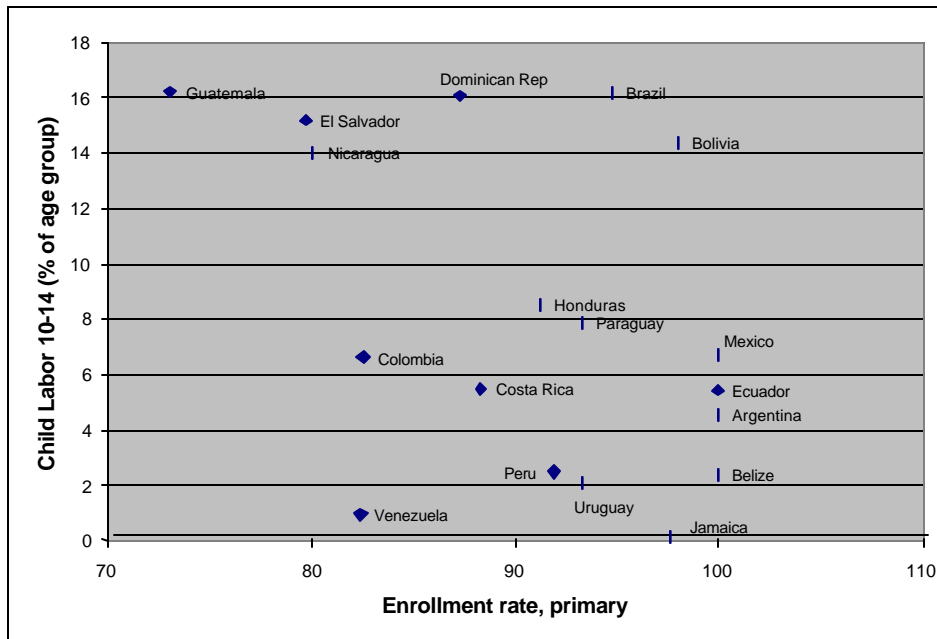
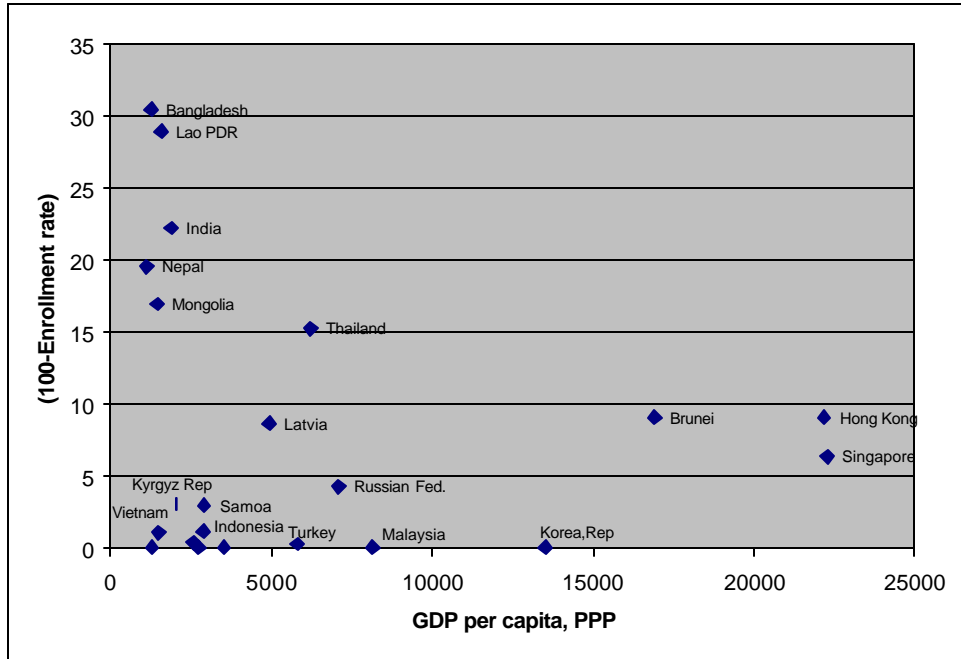


Figure 1c: Latin America and Caribbean

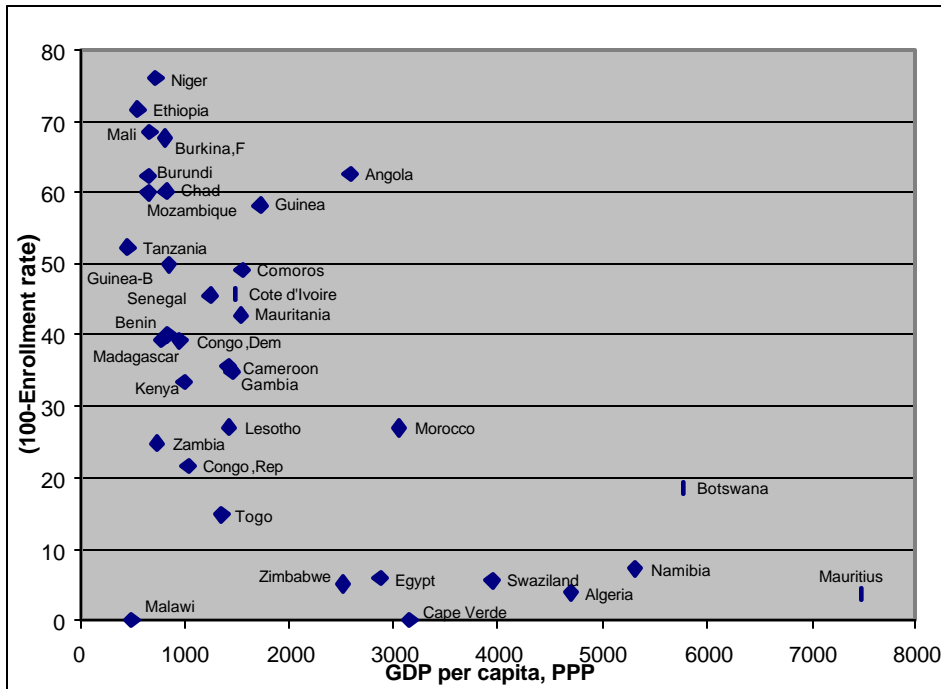


**Figure 2a: Asia**



For all their limitations, these indicators give us a broad-brush picture of the evolution of child labour over time, and across countries. As Figures 1 a-c show, higher primary enrolment is associated with lower labour participation among the 10-14 year olds. The correlation is far from perfect, however, not only because the primary enrolment rate refers to a younger age group than the 10-14 child participation rate, and because work in informal or illegal labour markets is likely to be underreported, but also because a sizeable proportion of both age groups combines, in some countries, work with school attendance.<sup>5</sup>

**Figure 2b: Africa**



<sup>5</sup> See footnote 2

Fig 2c: Latin America

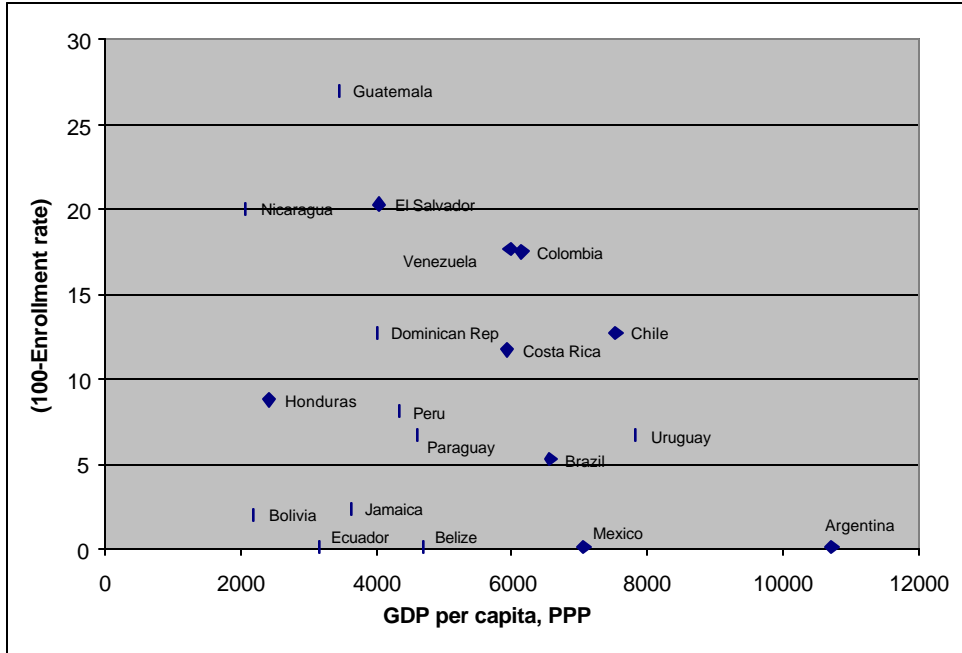
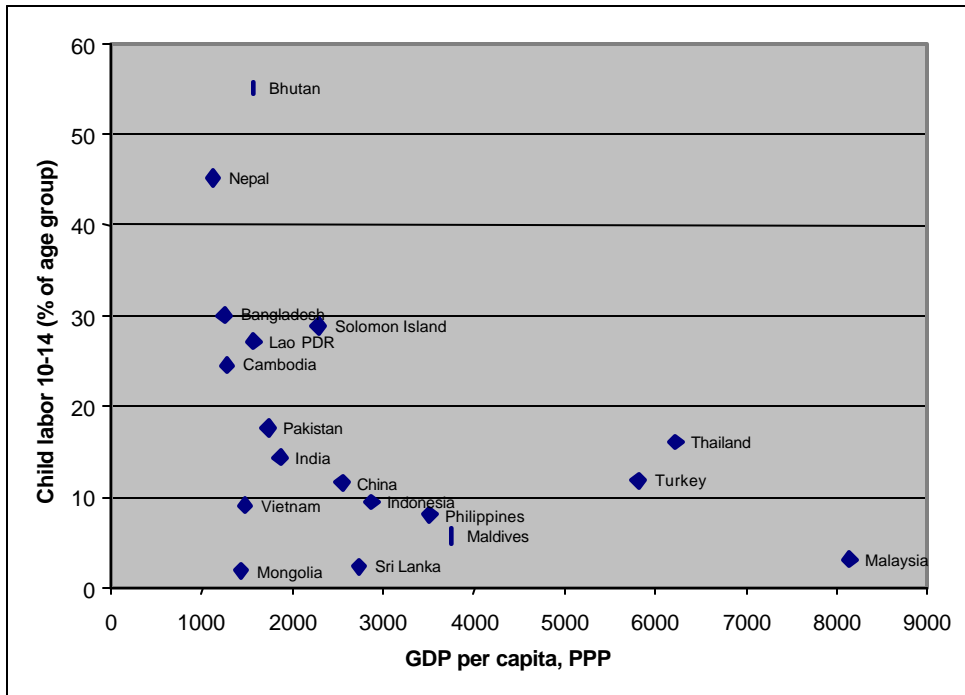
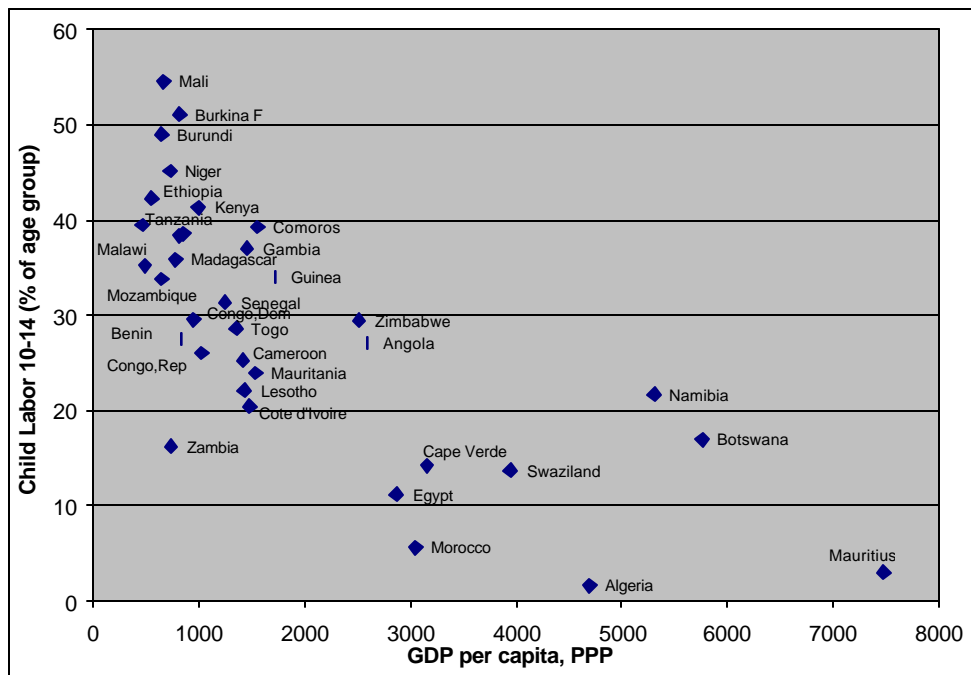


Figure 3a: Asia



**Figure 3b:** Africa

What about globalisation? Is there a direct link between exposure to international trade and child labour? To measure a country's relative position in the globalisation process, we use the standard measure of trade openness: the sum of imports and exports, expressed as a percentage of GDP. Later, we shall also use the classification of trade openness in Sachs and Warner (1995). According to this very stringent criterion, a country may be called open if it has *none* of the following characteristics:

1. Non-tariff trade barrier covering 40 per cent or more of trade
2. Average tariff rates of 40 per cent or more
3. A black market exchange rate that is depreciated by 20 per cent or more relative to the official exchange rate, on average, during the 1970's or the 1980's.
4. A socialist economic system
5. A state monopoly on major exports.

As Figures 4 a-c and 5 a-c show, exposure to international trade does not appear to encourage child labour. On the contrary, higher foreign trade appears to be associated with a lower incidence of child labour. Here again, however, we find considerable national differences. At low levels of trade, countries similar in terms of exposure to trade can be very different in terms of child labour incidence. A clearly negative association between trade openness and child labour is evident only for Africa and Latin America. In Asia, the relationship between trade and child labour is much weaker (especially if the latter is measured as a complement to the school enrolment rate). This seems to indicate that the type of activity in which a country specialises, and the policies it pursues, shift the relationship between child labour and globalisation.

Figure 3c: Latin America and Caribbean

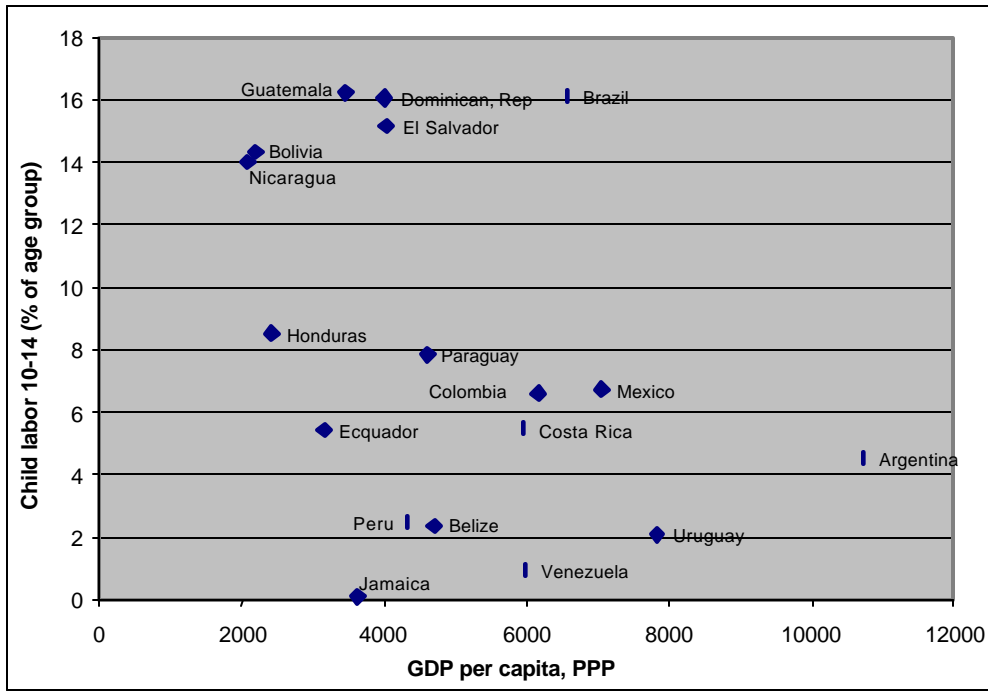
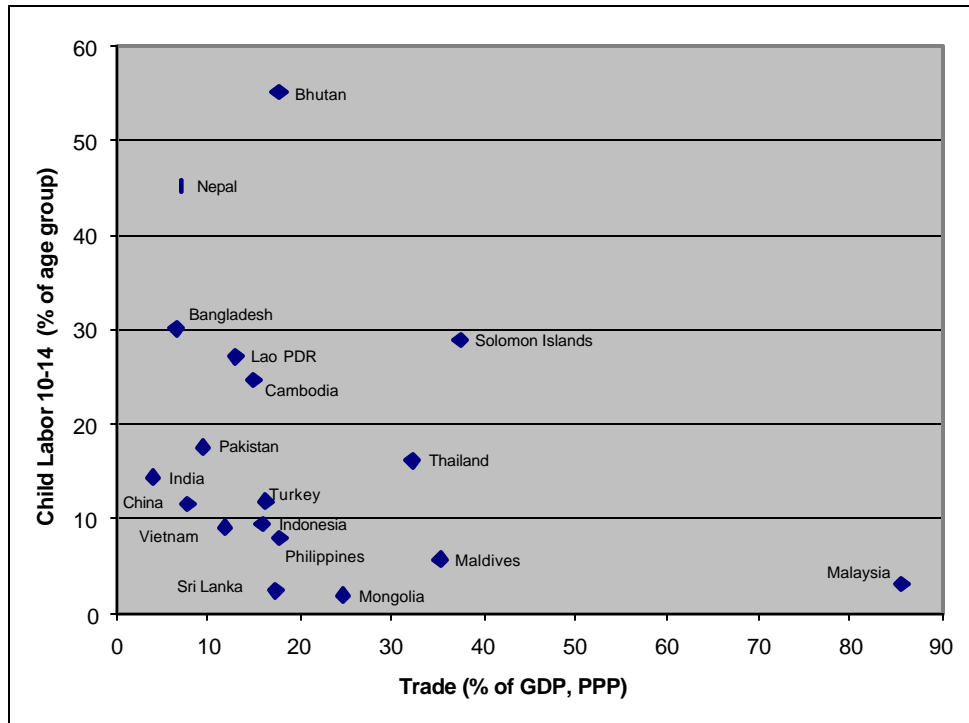
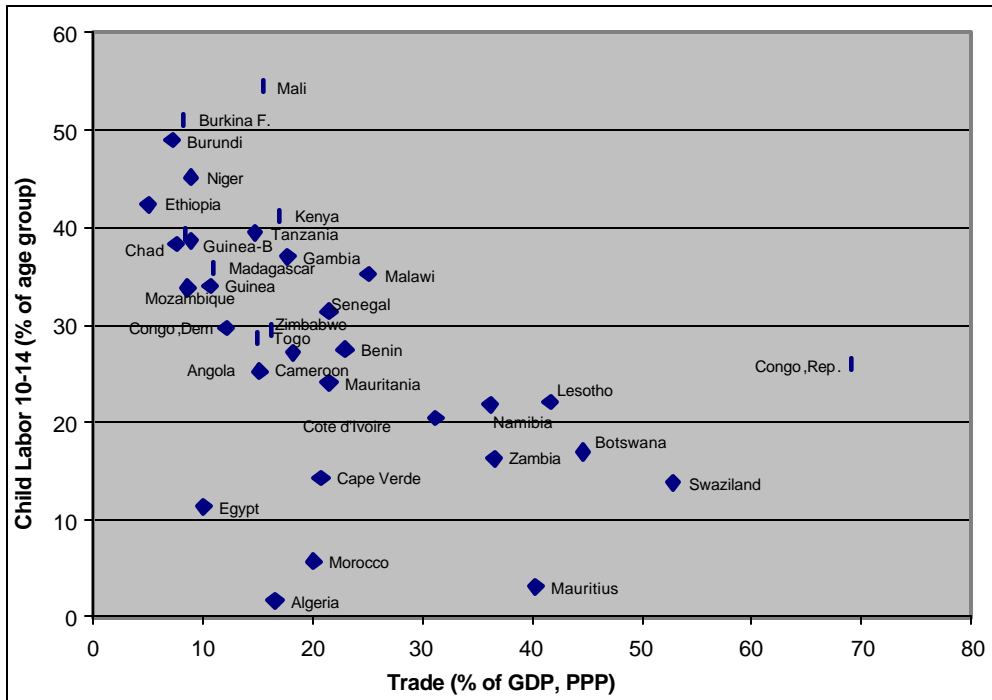


Figure 4a: Asia



**Fig 4b:** Africa



**Figure 4c:** Latin America and Caribbean

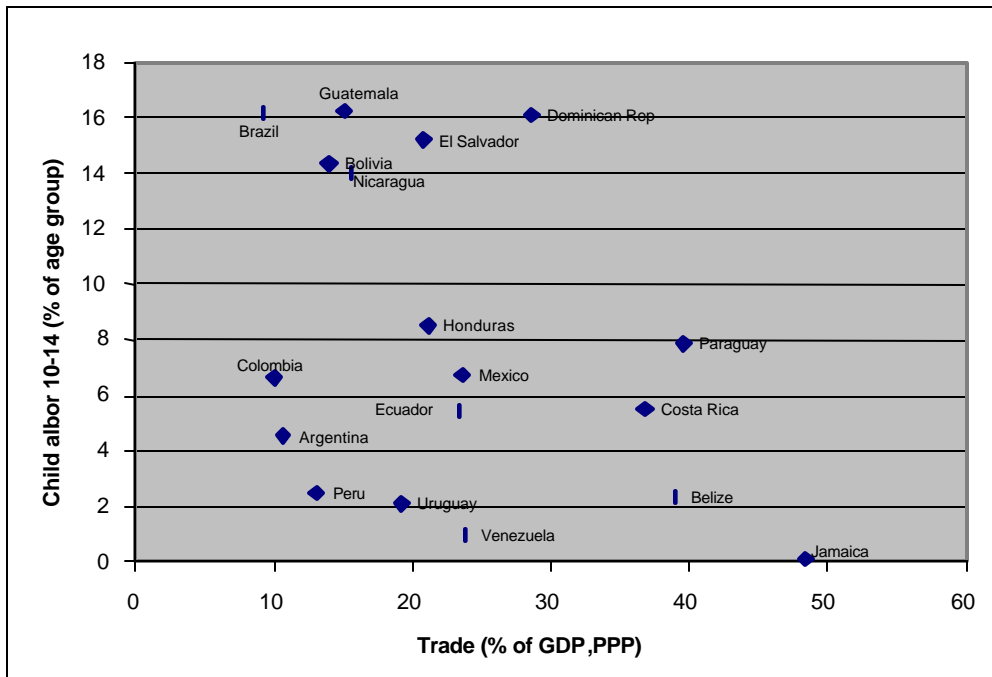


Figure 5a: Asia

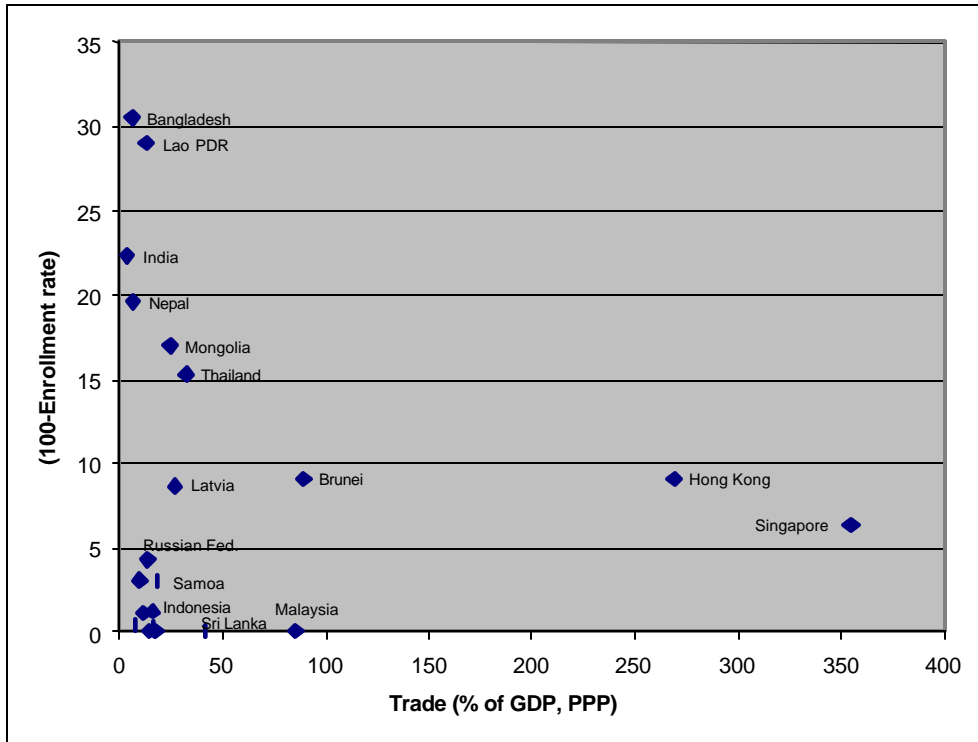
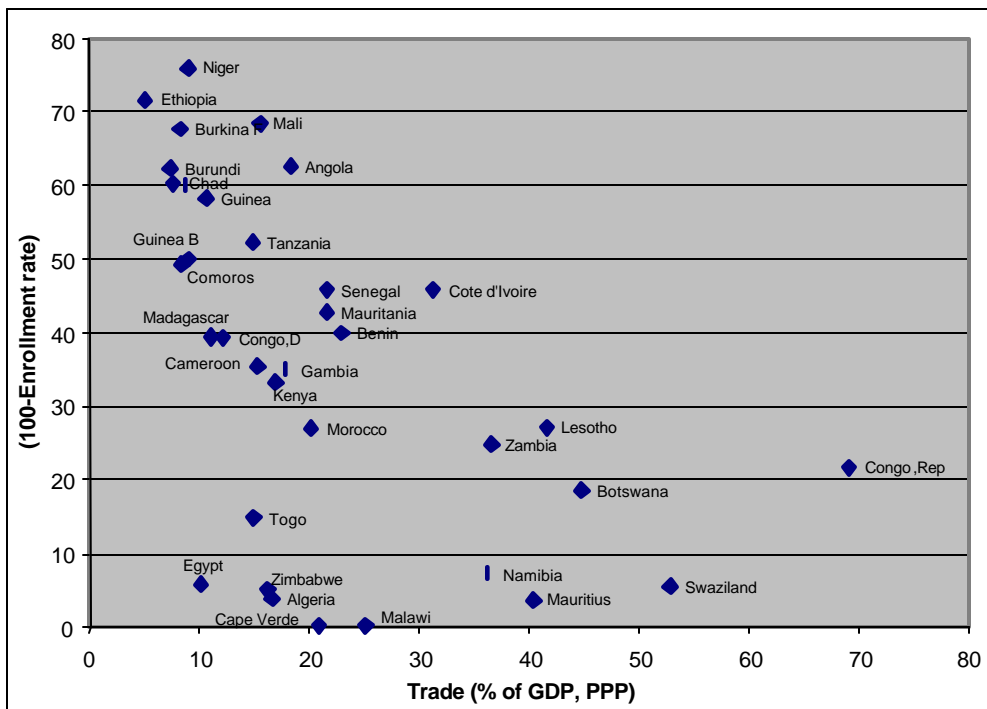
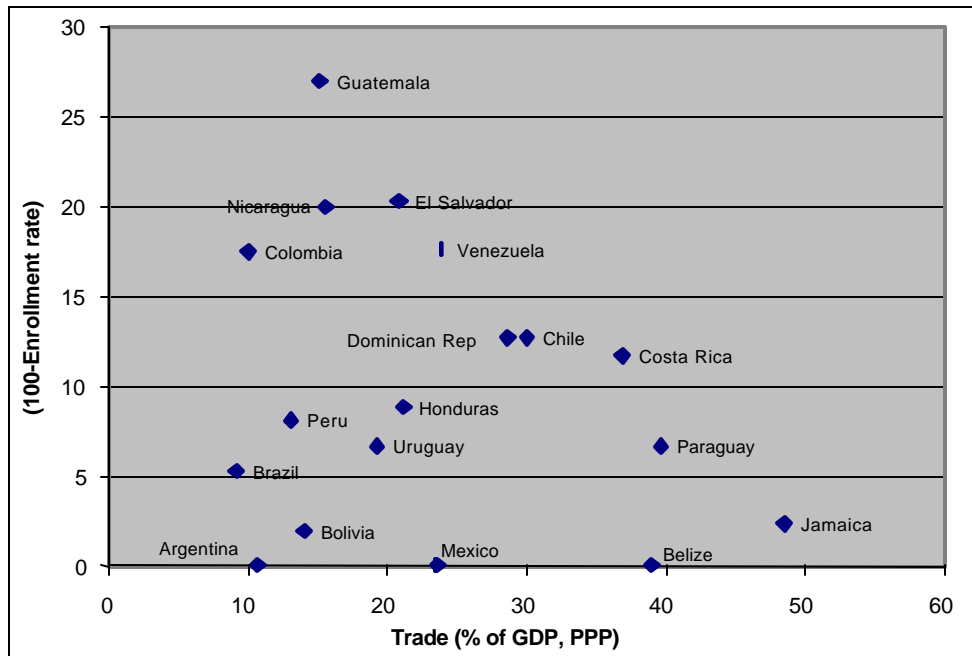


Figure 5b: Africa



**Figure 5c:** Latin America and the Caribbean

There is, therefore, no *prima facie* evidence that globalisation will necessarily result in more child labour. Indeed, there are signs that international trade and economic integration offer governments the opportunity to *reduce* child labour. Since trade promotes economic growth, the opportunity could come in the form of higher income. Or it could be that the relative wage changes brought about by international trade are conducive to less child labour. Let us try to understand how.

### 3. Why do children work?

The first thing to be kept in mind, in answering this question, is that children do not normally *choose* to work. Most have that decision taken for them by their parents. Even in the case of the child who was expelled or run away from home<sup>6</sup>, the reasons for his or her present working can be traced back to parental actions that made it impossible for the child to remain in the home. The only real exception are children who were abducted, and children who lost, or were separated from, their family of origin because of war, or of some natural disaster (Cigno, Rosati and Tzannatos, 2001).

Parental actions affect the number of working children under their control in three ways. By conditioning the probability that a child is born. By conditioning the probability that the child will survive to an age, as early as 6, when he or she can be made to work. By actually making the child work. On all three accounts, household

<sup>6</sup> It makes little practical difference whether the child jumped or was pushed.

economics<sup>7</sup> is the appropriate conceptual framework within which to examine the emergence of child labour.

An assumption often made in the household economics literature is that parents<sup>8</sup> act as a kind of benevolent dictator as in Becker (1981). Except in extreme cases,<sup>9</sup> however, many of the behavioural implications are the same if it assumed that parents are ultimately self-interested as in Cigno (1993) and Rosati (1996). So long as parents care about their own, as well as their children's consumption, the decision whether to send a child to work or to school does in fact depend on essentially three things: the cost (including the opportunity-cost) of education, the expected return to education, and the extent to which parents are able to finance educational investments.<sup>10</sup>

Conceptually, parental decisions may be described as a two-stage process.<sup>11</sup> Parents decide whether to procure the birth of a child, and how much to spend for the child's health and nutrition, under conditions of uncertainty about whether the child will survive to school age. The probability that the child will survive is conditioned not only by external causes, but also by how much the parents spend for the child. If the child survives, parents decide how the child's time should be allocated between work and study. They also decide how much of the family budget (augmented, if the child is sent to work, by his or her earnings) is spent on the child. If the child is sent to school, parents also decide how that sum is to be divided between consumption and educational expenditures.

Stage 2 of the decision process can have one of three possible types of outcome. One occurs if the marginal cost of human capital (say, the cost of increasing the child's future earning capacity by one dollar) is higher than the maximum that parents are willing to pay.<sup>12</sup> If that is the case, the child is made to work full time. Another arises if the marginal cost of human capital is lower than the minimum, at or below which parents are willing to buy as much education as possible. If that is the case, the child does not work at all. Between these two extremes, there is a third possible type of solution, where the child works and attends school at the same time. Parents, in that case, allocate family income, and the child's own time, to the child's education up to the point where the marginal cost of human capital just equals the price that parents are subjectively willing to pay for it.

An important role is played by the capital market and educational policy. Suppose that, by acquiring education, a child could substantially enhance his or her future earnings. If they could borrow against those future earnings, parents could finance the child's education and current consumption, and leave also something for everyone else. If that is not possible, however, the child's education and current consumption would have to be financed out of the parents (and other members of the family's)

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<sup>7</sup> See Becker (1981), Cigno (1991).

<sup>8</sup> Whether it is the father, the mother or the two jointly who make the decisions, and how the balance of power is affected by external events, is important from several points of view, but not particularly relevant in the present context.

<sup>9</sup> See Chapter 12 of Cigno, Rosati and Tzannatos (2001).

<sup>10</sup> See Cigno and Rosati (2000), Grootaert and Kanbur (1995), Rosati (2000).

<sup>11</sup> For a detailed analysis, see Cigno and Rosati (2000).

<sup>12</sup> The cost includes not only the actual expenditure for books, transport, etc. incurred sending the child to school, but also the opportunity-cost (forgone income) of keeping the child away from work. The willingness to pay for this cost reflects the expected return.

current income. This liquidity constraint establishes a direct link between current income and child labour participation: only families with above subsistence income can contemplate investing in a child's education.<sup>13</sup> Educational policies such as free schooling or subsidised educational material can help relax the constraint, but not eliminate it. To eliminate it altogether, there would have to be scholarships generous enough to cover the child's current consumption, and on a large enough scale to reach all liquidity-constrained families. Capital market imperfections thus help explain the finding of a negative effect of income on child labour at the aggregate level: as GDP rises, the proportion of liquidity-constrained families falls, and the extent to which a government is able to finance educational policies (if it so wishes) rises.

Now take a step back, to the first decision stage. Since the child's survival probability is conditioned not only by external causes, but also by the actions (parental expenditure for the child's nutrition and health) taken by the parents themselves,<sup>14</sup> the latter face a trade-off between procuring an extra birth, and improving the survival chances of the children that they already have. In taking their first-stage decisions, parents take into account not only this, but also the other trade-off, between work and education, that they will face at the next decision stage (if the child lives that long).

The external causes that condition the probability of a child's survival include not only climate and genetic factors, but also government expenditure on sanitation, and public health. The higher this expenditure, the higher, other things being equal, the probability that a child will survive to school age, and later to adulthood; the higher, consequently, the return to investing in that child's education. If public health expenditure is a complement for private expenditure on the child's health and nutrition, an increase in the former will induce parents to raise the latter; if it is a substitute, the effect may be the opposite (Cigno, 1996). An increase in public health expenditure could thus induce parents to have fewer children, and spend more for each of them, first on health and nutrition, then on health, nutrition and education.<sup>15</sup>

Under standard assumptions, household economic theory makes a number of important predictions about the effects of changes in the economic environment.<sup>16</sup> A lump-sum increase in household income (*e.g.*, a government subsidy) tends to reduce the proportion of school-age children that works. It also tends to raise the amount spent by parents for the health and nutrition of each child, and for the education of each child that attends school. These effects are stronger if parents have difficulty in borrowing, because the increase in current income relaxes the liquidity constraint. The effect of income on fertility is ambiguous, because it raises the expected marginal utility, but also the expected marginal cost of children. The effect on the *absolute*

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<sup>13</sup> That raises an additional problem. If the motive for investing in children is non-altruistic (but also for equity towards other members of the family), parents will be reluctant to allocate family resources to a child's education, unless the child's enhanced future earnings will in some way benefit the parents themselves (or the family as a whole); *cf.* Cigno (1993), Rosati (1996).

<sup>14</sup> Expenditures on nutrition and health reduce not only mortality, but also morbidity. Since the two are positively correlated, everything we say about the effects of parental and government actions on the probability of premature death applies also to the probability of illness (and thus to a child's future ability to work or study with profit). We talk of mortality for short, but most of the time we mean "mortality and morbidity".

<sup>15</sup> In Becker's terminology, public health expenditure could thus trigger a substitution of quality for quantity (of children).

<sup>16</sup> For a detailed exposition, see Cigno, Rosati and Tzannatos (2001).

number of children who work is also ambiguous, because the *proportion* of school-age children that works falls, but the number of school-age children may increase (either through an increase in fertility, or through a reduction in infant mortality large enough to more than compensate for the fall in fertility).

If the income change is the product of an increase in someone's wage rate, and of a change in someone's labour supply in response to the wage rate increase, there will be substitution as well as income effects, and the signs and sizes of both will be different depending on *whose* wage rate has increased.

Suppose that the wage rate for *unskilled* labour rises. This means that not only unskilled adult workers, but also child workers, are paid more per unit of time. As the opportunity-cost of time spent in education will consequently go up, the marginal cost of education will rise. At the same time, as the remuneration gap between educated and uneducated labour will become smaller, the return to education will fall. Both these changes will reduce the incentive for parents to invest in their children's education. If the income-effect is not large enough to compensate for the substitution-effect, an increase in the unskilled wage rate will then raise child labour. Evidence related to the farm productivity child labour in India suggests that this may indeed be the case (Cigno and Rosati, 2000).

By contrast, an increase in the remuneration of *skilled*, or just literate, adult workers would raise the return to education, and thus the incentive for parents to produce fewer, better educated children. In households where the parents themselves are skilled workers, or if parents are able to borrow against their children's expected future earnings, the substitution-effect will be reinforced by the income-effect. That makes it likely that a skilled wage rate increase would reduce not only the number of children,<sup>17</sup> but also the labour force participation of each school-age child.

Wage rate increases encourage also the labour participation of women with children. This introduces yet another effect on child labour. In the short run, a wage increase will tend to raise the number of working children, as young girls will be called upon to substitute for their mothers in the performance of domestic chores; in particular, looking after younger siblings (Basu, 1993). As the opportunity-cost of their time increases, however, women will be less willing to give birth to more children (Cigno, 1991). In the long run, the supply of potential child workers could thus fall.

Public expenditure on health, sanitation, etc., induces parents to have fewer children, and to spend more for each child, if private and public expenditure are complements; the other way round if they are substitutes. Evidence consistent with the hypothesis of complementarity is reported in Cigno and Pinal (2001), Cigno and Rosati (2000), Rosenzweig and Wolpin (1982). If that is the case, an increase in public health expenditure will reduce child labour.

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<sup>17</sup> If capital market imperfections make it difficult for parents to discount the future benefits of educational investments, the reduction in the demand for children is merely a reflection of the fact that a child who goes to school costs more to his parents than one who works. If parents can discount their children's future earnings, the reduction in the demand for children comes from the fact that a smaller number of educated children can have the same total expected income as a larger number of uneducated ones.

Also public expenditure on education induces parents to have fewer children, and to spend more for each child, and is thus likely to reduce child labour. Survey evidence that school enrollment responds positively, and child labour negatively, to various indicators of public school provision is reported in Cigno and Rosati (2000), Ravallion and Wodon, (2000), Ray (2000), Rosati (2000), Rosati and Tzannatos, (2000).

#### **4. The effect of trade**

Why do countries trade? The answer, handed down by Ricardo, is comparative advantage. A country can increase its welfare if, instead of directly producing all the goods its members wish to consume, it specializes in the production of those goods that it can produce at relatively lower cost than other countries, and exchanges the surplus for the goods it does not produce. What determines this comparative advantage?

Since the cost of a good depends on the prices of the factors used for its production, and the prices of traded inputs are the same everywhere, differences in the relative costs of traded goods reflect differences in the relative prices of non-traded goods used as factors of production. In turn, the relative prices of these immobile factors reflect differences in factor endowments. Standard (Heckscher-Ohlin) trade theory predicts that countries specialize in the production of traded goods that make more intensive use of the non-traded factors of which they have relatively greater abundance.

In traditional classroom accounts of Heckscher-Ohlin theory, the non-traded factors are labour and capital. Countries with a relative abundance of labour (developing countries, the so-called South) will thus export labour-intensive products, countries with a relative abundance of capital (developed countries, the so-called North) will export capital-intensive products. Since, within each country, an increase in trade raises the price of the abundant factor relative to that of the scarce one, an implication of this vision of the world is that “globalisation” will make workers worse-off relative to capitalists in the North (hence the alarm of trade unions), better-off in the South (then why the opposition of so many self-appointed paladins of the underprivileged?).

This vision of the world has somewhat changed over the last couple of decades. Partly, this reflects a general re-thinking of the development process. While early growth theory equated economic growth with the accumulation of physical capital (buildings and machinery) per head of population, modern theory does in fact attach much greater importance to the accumulation of human capital (knowledge and personal skills). Partly, however, the change of emphasis comes also from a recognition that physical capital is not immobile. Machinery can be moved around, and buildings can be taken down and rebuilt anywhere. All that is needed is the financial capital (equity or debt instruments) to pay for plants and machinery. Since financial capital is highly mobile, physical capital is then mobile too.

Human capital is embodied in skilled workers. These are more mobile than unskilled workers, but they, too, have their international mobility restricted by immigration rules and sentimental ties. As a broad generalization, one might then say that the fixed

factors determining the comparative advantages of different a countries are their different endowments of labour skills. Of course, in the same way as capital endowments can be modified by investment, so skill endowments can be modified by education. But education takes much longer than the purchase of a new machine, or the construction of a plant, and workers are by and large more durable than physical capital. Starting from this premise, Adrian Wood has re-formulated the theory of comparative advantage in terms of relative skill scarcities: countries export the products which make greater use of the relatively more abundant type of labour. Within each trading country, the benefit of increased world trade will then accrue to members of the relatively larger skill group.

For most purposes, the relevant skill categorization is into illiterate (including workers with an incomplete primary education), literate (those with just a basic education) and skilled (those with a higher level of education, or a marketable skill in addition to basic education). In developed countries, where there are comparatively more skilled than literate workers, and the number of illiterates is insignificant, globalization widens the gap between skilled and unskilled wage rates. By contrast, in developing countries with a relative abundance of literate workers, what widens is the wage gap between literate and illiterate workers; the wage gap between skilled and just literate workers becomes narrower. In developing countries with relatively more illiterates, the wage gap between this and other categories of workers will narrow.

There is ample evidence of increasing wage dispersion, and of a consequent increase in income inequality in developed countries (Krugman, 1995; Krugman and Venables, 1995). The inability to explain this phenomenon by means of the traditional trade theory prompted the re-interpretation of Heckscher-Ohlin that we have just mentioned as well as other theoretical developments to which we shall refer later. Evidence on developing countries is sparser, but it, too, appears to support the predictions of reconstructed trade theory. As shown in Wood (1994), there is a negative correlation between changes in income inequality, as measured by the Gini coefficient, and changes in the income share of manufactured exports to developed countries. Since the exporting countries have all got relatively more unskilled (literate or illiterate) workers than the countries to which the exports go, evidence that inequality and exports tend to move in opposite directions is consistent with the hypothesis that comparative advantages reflect relative skill endowments. This has important implications for child labour. By definition, working children fall in fact in the “illiterate workers” category. By and large, these children belong, or originate from, poor rural families. Their parents are more likely to be illiterate than literate, and very unlikely to be skilled.<sup>18</sup>

In developing countries with comparatively more literate than illiterate workers, trade then leads to an increase in the gap between literate and illiterate wage rates. As pointed out in section 3, that gives parents an incentive to produce fewer, better educated children. If parents cannot borrow against their children’s future earnings, however, educational investments are subject to liquidity constraints, and these constraints are all the more stringent in families where the parents are illiterate (*i.e.*,

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<sup>18</sup> Cigno and Rosati (2000), Rosati (2000), Rosati and Tzannatos (2000).

precisely in those families where children are more at risk of being put to work).<sup>19</sup> As already pointed out, there could also be a short-run increase in the number of young girls working in the home, as their mothers are induced to seek outside employment.

In developing countries with comparatively more illiterate than literate workers, trade reduces the ratio of literate to illiterate wage rates. Here, the argument is the exact opposite of the one used for countries with a relatively large literate population. On the one hand, the incentive for parents to have fewer, better educated children is reduced. On the other, poorer families become less poor, and this may tend to reduce the number of working children, though not by much.<sup>20</sup> The net result is likely to be a rise in the number of working children.

In a developing country, trade expansion *could* thus help reduce child labour. Whether it actually does depends to a large extent on education. In countries that start out with too few educated people, parents will see their incentive to produce more educated people reduced, rather than increased. The opposite is true of countries that start out with enough educated people to give them a comparative advantage in exporting goods with a high content of this type of labour, but the greater incentive to produce better educated children will translate into actual school enrollments only to the extent that poorer families, where child labour is mainly concentrated, can afford the investment.

Income re-distribution would thus help reduce child labour, but simulation experiments suggest that it would have to be carried out on an unrealistically large scale to have any noticeable effect (Cigno, Rosati and Tzannatos, 2001). Public school provision, educational subsidies, and generous maintenance scholarships are more effective. As adult female labour participation increases in response to rising female wage rates, gender-specific educational policies may be required to counter a possible short-run tendency by female children to substitute for their mothers in the performance of domestic work. As explained in the last section, public health expenditure, which directly and possibly indirectly reduces mortality, and thus increases the incentive to make human capital investments, also would help. All of this is consistent with the cross-country evidence reported in section 2.

## 5. Intra-industry trade

Globalisation does not simply mean more international trade for final goods. It also means more trade in intermediate goods. Falling transport costs and advances in information technology facilitating the coordination of dispersed production activities, are in fact favoring the segmentation of production processes, and the location of different segments of the same process in different countries. Although much of the resulting intra-industry trade is among developed industrial countries, the potential

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<sup>19</sup> These parents are poor to start with. They become poorer if trade lowers their wage rate in absolute terms. The opposite would be true only if the illiterate wage rate, while falling relative to the literate wage rate, increased in absolute terms.

<sup>20</sup> The income-effect is ambiguous, because it tends to raise the number of school-age children, and to reduce their labour participation. The relaxation of the liquidity constraint, associated with higher earnings, tends to do the opposite.

implications for developing countries, and thus for child labour, cannot be lightly dismissed.

The growing literature on this new aspect of international trade emphasizes the effects of market size on the international division of labour. Duranton (1998) adds an extra dimension to the debate by pointing out that, since the output of different segments of the same production process must be ultimately combined into a final good, the extent to which these different segments can be carried out in different countries is limited by the ability of different work forces to produce intermediate goods that will prove mutually compatible. As this means, in large measure, ability to deliver goods in time, and of the right quality, satisfying the compatibility requirement is clearly facilitated by the existence of work forces with similar characteristics. That is consistent with the observation that intra-industry trade has so far occurred mainly among countries at the same stage of development.

This argument points to a trade-off between comparative advantage (which privileges *trade with unequals*) and compatibility (that favors *trade with equals*). Tension between the two considerations may lead to complex dynamics, with a phase in which international trade is driven primarily by differences in relative factor endowments, and one in which work forces with similar characteristics form integrated production systems (coalitions of individuals, who are better off trading with one another, than with the world at large) that will uncouple from the rest of the world economy. The danger of this for the developing countries is that, instead of increasing wage inequalities *within* countries, which provide the stimulus for educational investment, international trade could end up increasing inequalities *between* countries (Krugman and Venables, 1995).

The emergence of clubs of developed countries who speak only to one another is associated with the availability of educated workers in sufficient numbers to make it possible to create integrated productive systems spanning more than one country. Developing countries with a largely uneducated workforce thus face a double risk: that exposure to international trade may reduce the incentive for their inhabitants to educate their children, but also that they may be excluded from trade and economic integration with the richer countries. As shown in Table 1, in Africa as a whole, only 15 workers out of 100, compared with more than 31 in the developing world as a whole, have completed at least primary education. And the percentage of the workforce with at least that level of education falls as low as 1.6 in some Asian countries. Clearly, for all these countries, globalisation presents great risks. That reinforces the conclusion reached in the last section about the importance of accompanying exposure to international trade with vigorous educational and health policies, capable of rapidly increasing the proportion of educated workers in the country's total labour force.

## 6. Cross-country evidence

We have seen that exposure to international competition *may* result in more children going to school, rather than to work. We have also seen that a necessary condition for this to happen is that a country opening itself to international competition should have

a sufficiently large share of educated workers. We have seen, finally, that policies aimed at lowering mortality are likely to also reduce child labour.

**Table 1:** Descriptive Statistics for the Variables Employed in the Regressions

<b>All Developing Countries</b>				
Variable	Mean	Std. Dev.	Min	Max
Child Labour	18.567	16.180	0	70.89
Trade	32.200	48.685	0	570.87
Open	0.426	0.495	0	1
Gdp	3361.12	3594.67	343.7	24200
Health Exp.	2.409	1.437	0.0001	7.76
100-Enrollment rate	22.257	22.289	0.100	85.5
Primary	0.179	0.153	0.009	0.918
Secondary	0.108	0.115	0.001	0.589
<b>Asia</b>				
Variable	Mean	Std. Dev.	Min	Max
Child Labour	13.308	15.111	0	62.5
Trade	40.283	67.734	2.74	355
Open	0.597	0.494	0	1
Gdp	4442.00	5151.98	422	24200
Health Exp.	2.474	1.809	0.0001	7.76
100-Enrollment rate	9.724	11.287	0.100	40.5
Primary	0.262	0.189	0.013	0.918
Secondary	0.185	0.154	0.002	0.589
<b>Africa</b>				
Variable	Mean	Std. Dev.	Min	Max
Child Labour	28.85	14.41	0	70.89
Trade	25.58	22.54	0	158.9
Open	0.25	0.43	0	1
Gdp	1841.58	1806.17	343.7	8581.56
Health Exp.	1.94	0.88	0.5660	4.2
100-Enrollment rate	37.298	24.056	0.100	85.5
Primary	0.09	0.06	0.009	0.406
Secondary	0.06	0.08	0.001	0.425
<b>Latin America</b>				
Variable	Mean	Std. Dev.	Min	Max
Child Labour	7.43	7.71	0	32.86
Trade	35.86	54.01	5.99	570.87
Open	0.59	0.49	0	1
Gdp	4692.11	2802.04	1339.8	14639
Health Exp.	2.73	1.32	0.3800	6.94
100-Enrollment rate	10.732	9.521	0.100	41
Primary	0.21	0.14	0.034	0.829
Secondary	0.10	0.06	0.022	0.272

To test these propositions, we must measure the effect of trade on child labour while holding all the other variables (income, health expenditure, skill composition of the labour force) constant. Using the data in our Global Panel, we regressed child labour on trade openness, real per-capita income, health policy, and skill composition. It would have been desirable to control also for differences in income distribution, but our data are not sufficiently consistent across countries and dates of observation to permit that.

Child labour is alternatively measured by the 10-14 labour participation rate, or by the primary school non-attendance rate. Trade openness is alternatively represented by the trade ratio (exports plus imports, divided by GDP) or by a dummy taking value one if the country is open according to the Sachs-Warner definition, zero otherwise. Real per-capita income is measured as GDP (in constant PPP terms) per head of total population. Health policy is represented by the share of public health expenditure in GDP. Skill composition is represented by the share of the 15-65 workforce which completed primary education only, and by that which attained secondary or higher education (the share of those who did not even complete primary education is used as the reference group). Descriptive statistics are reported in Table 1.

Skill composition captures essentially the cumulated effects of past educational policies. In view of the fact that current educational policies may affect the incentive to send children to school, it would have been desirable to measure the effects of these policies on child labour. Since child labour is a close correlate of school attendance,<sup>21</sup> however, there was no way we could do that with our data.

Table 2a reports fixed-effects,<sup>22</sup> OLS estimates, over all developing countries, of the relationship between the conventional measure of trade and our two alternative measures of child labour. If skill composition is not controlled for, trade *raises* the 10-14 labour participation rate, but has no significant effect on the primary school non-attendance rate. Income and public health expenditure reduce both measures of child labour. If skill composition is controlled for, trade has no significant effect on either measure of child labour. The effects of the skill composition have the expected signs. The proportion of workers with completed primary education has a negative effect on child labour, and so does that of workers with secondary or higher education.

If the dependent variable is the 10-14 labour participation rate, however, the share of workers with secondary or higher education reduces the significance of the workers with completed primary education. Conversely, if the dependent variable is the primary school non-attendance rate, what is non-significant is the share of workers with secondary or higher education.

The picture is somewhat more favourable to globalisation if the trade ratio is replaced by the Sachs-Warner measure of openness (Table 2b). Openness reduces child labour, however measured, even if we do not control for skill composition. The share of workers with primary education is non-significant if the dependent variable is the 10-14 labour participation rate, while that of workers with secondary or higher education is non-significant if the dependent variable is the primary school non-attendance rate.

These findings are consistent with the theoretical considerations of the last section. What the data tell us in essence is that, other things being equal, international

<sup>21</sup> Its complement if child labour is measured by the primary school non-attendance rate!

<sup>22</sup> To allow for unobserved heterogeneity across countries and dates of observation.

competition reduces or, at worst, has no significant effect on child labour. Interestingly, the more optimistic scenario is associated with the more stringent definition of trade openness, the one that takes into account the conditions under which trade takes place, rather than the actual volume of trade. Since the beneficial effects of international exposure come through relative price changes, it is in fact not irrelevant whether internal prices are subject to government control, or free to adjust to international prices, and whether foreign trade is distorted by quotas and state monopoly or not.

The estimated coefficients of the skill composition variables measure the effects of increasing the proportion of educated (or of more highly educated) workers, holding all the other variables, openness included, constant at their mean values. Given that openness is quite high on average (43.4 percent of the sample is “open” by the Sachs-Warner definition, trade is on average a third of GDP), these findings are compatible with the theoretical proposition that (a) trade increases the skill premium in countries with a comparatively more educated workforce, and (b) only countries with a sufficiently educated workforce are able to integrate in the emerging global economy.

**Tab 2a** All Developing Countries

Dependent Variable Child Labour				Dependent Variable 100-Enrollment rate			
Trade	0.065 (2.34)*	0.05 (1.65)	0.031 (1.1)	Trade	0.063 (1.37)	0.037 (0.78)	0.02 (0.42)
Gdp	-0.003 (8.57)**	-0.002 (4.71)**	-0.001 (2.89)**	Gdp	-0.003 (5.05)**	-0.001 (2.01)*	-0.001 (0.86)
Health expend.	-3.202 (5.05)**	-2.036 (2.60)*	-2.136 (2.92)**	Health expend.	-3.882 (2.95)**	-1 (0.74)	-1.214 (0.91)
Primary		-17.775 (2.57)*	-8.004 (1.18)	Primary		-42.77 (3.83)**	-34.788 (3.00)**
Secondary			-43.291 (4.75)**	Secondary			-37.173 (2.09)*
Constant	31.441 (17.67)**	28.581 (13.78)**	29.735 (15.28)**	Constant	36.286 (10.68)**	30.95 (8.89)**	31.591 (9.19)**
Obs.	211	147	147	Obs.	142	102	102
R-squared	0.41	0.41	0.49	R-squared	0.26	0.33	0.36

Absolute value of t-statistics in parentheses

\* significant at 5%; \*\* significant at 1%

The share of public health expenditure in GDP significantly reduces the 10-14 labour participation rate whether or not we control for skill composition. But its effect on the primary school non-attendance rate is insignificant if skill composition is controlled for<sup>23</sup>. This finding is coherent with the theoretical arguments and micro-econometric evidence mentioned in section 3, namely that health and educational outcomes are jointly determined by health and education policies.

<sup>23</sup> This may indicate that skill composition is correlated with current educational policies.

**Tab 2b All Developing Countries**

Dependent Variable Child Labour			
Open	-10.243 (5.47)**	-7.664 (3.74)**	-6.999 (3.64)**
Gdp	-0.002 (7.39)**	-0.001 (5.22)**	-0.001 (2.89)**
Health expend	-2.881 (4.03)**	-2.198 (2.80)**	-2.474 (3.35)**
Primary		-13.049 (1.87)	-3.086 (0.45)
Secondary			-43.505 (4.35)**
Constant	35.955 (18.36)**	32.165 (14.37)**	33.307 (15.75)**
Obs.	166	136	136
R-squared	0.49	0.44	0.51

Dependent Variable 100-Enrollment rate			
Open	-7.128 (1.86)	-2.077 (0.58)	-1.293 (0.37)
Gdp	-0.002 (4.28)**	-0.001 (2.04)*	-0.0003 (0.63)
Health expend	-4.436 (2.94)**	-1.315 (0.95)	-1.389 (1.02)
Primary		-43.612 (3.73)**	-35.673 (2.96)**
Secondary			-40.63 (2.16)*
Constant	41.921 (10.58)**	32.225 (8.46)**	32.64 (8.74)**
Obs.	116	94	94
R-squared	0.3	0.31	0.35

Absolute value of t-statistics in parentheses

\* significant at 5%; \*\* significant at 1%

**Tab 3a Asia**

Dependent Variable Child Labour			
Trade	0.067 (1.71)	-0.017 (0.32)	-0.067 (1.44)
Gdp	-0.002 (4.10)**	-0.001 (0.93)	0.0005 (0.65)
Health expend	-3.086 (3.49)**	-4.378 (2.23)*	-1.688 -0.91
Primary		-20.106 (2.10)*	-18.876 (2.27)*
Secondary			-44.703 (3.60)**
Constant	26.227 (8.96)**	29.228 (7.86)**	29.823 (9.21)**
Obs.	74	44	44
R-squared	0.36	0.47	0.61

Dependent Variable 100-Enrollment rate			
Trade	0.018 (0.52)	-0.038 (0.69)	-0.107 (2.03)
Gdp	-0.001 (1.39)	0.0005 (0.35)	0.002 (2.09)*
Health expend	-2.164 (1.82)	-2.919 (0.99)	0.096 (0.04)
Primary		-23.448 (2.11)*	-28.754 (2.95)**
Secondary			-48.117 (3.01)**
Constant	15.018 (4.74)**	19.807 (4.77)**	20.939 (5.82)**
Obs.	43	29	29
R-squared	0.15	0.34	0.53

Absolute value of t-statistics in parentheses

\* significant at 5%; \*\* significant at 1%

The picture does not change a great deal if we consider the three continents separately (Tables 3a to 5b). The only notable difference is that, in Africa and Latin America, the effect of the trade ratio is significantly negative even when skill composition is not controlled for. Since the effect of trade openness also is significantly negative everywhere, this strengthens our conclusions about the beneficial effects of international integration *per se*. In Africa, the effects of the share of the workforce with only primary education are never significant. Given the comparatively small size of this group of workers in that continent, that seems to confirm our considerations

regarding the risks of globalisation for countries that start out with a largely uneducated workforce.

**Tab 3b Asia**

Dependent Variable Child Labour			
Open	-16.977 (4.93)**	-19.554 (5.11)**	-17.081 (4.46)**
Gdp	-0.001 (2.94)**	-0.001 (2.55)*	-0.0004 -1.66
Health expend	-2.013 (1.84)	-4.89 (2.48)*	-3.181 (1.55)
Primary		5.771 (0.62)	4.995 (0.56)
Secondary			-22.005 (2.07)*
Constant	33.222 (9.34)**	36.799 (10.43)**	35.856 (10.59)**
Obs.	44	38	38
R-squared	0.58	0.7	0.73

Absolute value of t-statistics in parentheses

\* significant at 5%; \*\* significant at 1%

Dependent Variable 100-Enrollment rate			
Open	-11.837 (2.91)**	-12.568 (2.36)*	-12.576 (2.37)*
Gdp	-0.0001 (0.43)	0.00004 (0.11)	0.0002 (0.52)
Health expend	-1.99 (1.52)	-3.044 (1.22)	-2.361 (0.92)
Primary		-3.598 (0.3)	-1.271 (0.1)
Secondary			-7.84 (1.04)
Constant	21.157 (5.35)**	23.035 (5.61)**	22.477 (5.44)**
Obs.	30	28	28
R-squared	0.36	0.46	0.48

**Tab 4a Africa**

Dependent Variable Child Labour			
Trade	-0.167 (1.98)*	-0.165 (0.97)	-0.004 (0.02)
Gdp	-0.005 (6.14)**	-0.005 (4.64)**	-0.003 (2.11)*
Health expend	-1.761 (1.19)	-2.336 (1.06)	-2.473 (1.18)
Primary		18.81 (0.61)	-12.181 (0.37)
Secondary			-76.958 (2.16)*
Constant	44.297 (14.13)**	41.812 (8.61)**	41.63 (8.99)**
Obs.	73	44	44
R-squared	0.51	0.52	0.57

Absolute value of t-statistics in parentheses

\* significant at 5%; \*\* significant at 1%

Dependent Variable 100-Enrollment rate			
Trade	-0.471 (3.45)**	-0.299 (0.92)	-0.238 (0.74)
Gdp	-0.007 (4.81)**	-0.006 (2.65)*	-0.005 (1.77)
Health expend	-5.725 (2.16)*	-4.841 (1.25)	-3.878 (1.00)
Primary		-13.593 (0.19)	-24.476 (0.34)
Secondary			-112.045 (1.31)
Constant	70.896 (12.96)**	60.281 (6.86)**	59.899 (6.90)**
Obs.	56	33	33
R-squared	0.6	0.51	0.54

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**Tab 4b Africa**

Dependent Variable Child Labour			
Open	-5.85 (2.16)*	-5.997 (1.48)	-5.489 (1.43)
Gdp	-0.005 (6.79)**	-0.005 (4.52)**	-0.003 (2.34)*
Health expend	-4.346 (2.52)*	-3.612 (1.48)	-3.164 (1.36)
Primary		19.063 (0.65)	2.492 (0.09)
Secondary			-74.113 (2.23)*
Constant	47.64 (14.02)**	44.399 (7.84)**	44.901 (8.38)**
Obs.	64	40	40
R-squared	0.56	0.53	0.59

Dependent Variable 100-Enrollment rate			
Open	5.251 (0.88)	8.488 (1.06)	11.341 (1.42)
Gdp	-0.008 (4.27)**	-0.005 (1.8)	-0.003 (1.09)
Health expend	-9.696 (2.67)*	-5.952 (1.38)	-3.796 (0.86)
Primary		-88.486 (1.34)	-93.387 (1.46)
Secondary			-145.572 (1.59)
Constant	67.142 (9.72)**	57.964 (5.97)**	56.491 (5.98)**
Obs.	47	29	29
R-squared	0.5	0.51	0.56

Absolute value of t-statistics in parentheses

\* significant at 5%; \*\* significant at 1%

**Tab 5a Latin America**

Dependent Variable Child Labour			
Trade	-0.295 (5.66)**	-0.316 (5.77)**	-0.248 (5.82)**
Gdp	-0.001 (4.21)**	-0.001 (3.46)**	-0.001 (1.72)
Health expend	-0.493 (0.95)	-0.158 (0.29)	-0.813 (1.89)
Primary		-3.365 (0.48)	11.716 (2.03)*
Secondary			-77.171 (6.37)**
Constant	20.761 (11.47)**	22.634 (11.38)**	24.768 (16.13)**
Obs.	64	59	59
R-squared	0.54	0.55	0.75

Dependent Variable 100-Enrollment rate			
Trade	-0.28 (2.64)*	-0.279 (2.76)**	-0.223 (2.23)*
Gdp	-0.001 (1.23)	0.000268 (0.35)	0.001 (1.05)
Health expend	-0.54 (0.54)	0.453 (0.47)	0.023 (0.02)
Primary		-39.466 (3.31)**	-27.285 (2.13)*
Secondary			-56.994 (2.06)*
Constant	20.569 (5.43)**	22.514 (5.66)**	23.651 (6.16)**
Obs.	43	40	40
R-squared	0.22	0.41	0.47

Absolute value of t-statistics in parentheses

\* significant at 5%; \*\* significant at 1%

**Tab 5b.** Latin America

Dependent Variable Child Labour				Dependent Variable 100-Enrollment rate			
Open	-4.341 (2.19)*	-4.349 (2.18)*	-3.124 (2.13)*	Open	1.792 (0.5)	0.911 (0.28)	2.007 (0.69)
Gdp	-0.001 (3.35)**	-0.001 (2.59)*	-0.0002828 (0.78)	Gdp	-0.001 (1.15)	0.001 (0.62)	0.001 (1.54)
Health expend	-0.965 (1.53)	-0.93 (1.42)	-1.538 (3.16)**	Health expend	-0.755 (0.66)	0.022 (0.02)	-0.495 (0.52)
Primary		-1.884 (0.22)	16.953 (2.48)*	Primary		-40.099 (3.03)**	-20.608 (1.52)
Secondary			-96.059 (6.77)**	Secondary			-84.909 (2.99)**
Constant	19.666 (8.13)**	19.695 (8.06)**	23.207 (12.50)**	Constant	15.174 (3.12)**	15.882 (3.63)**	18.699 (4.63)**
Obs.	58	58	58	Obs.	39	39	39
R-squared	0.33	0.33	0.65	R-squared	0.07	0.27	0.43

Absolute value of t-statistics in parentheses

\* significant at 5%; \*\* significant at 1%

## 7. The effect of agricultural protectionism

A notable feature of the growth of international trade since World War II is that the share of agricultural goods in the total exports of developing to developed countries has fallen from nearly a quarter in 1955, to barely a fifth in 1989. Over the same period, agricultural exports from developed to developing countries have staid roughly constant at just under a fifth of the total.

That may be judged positively, from the viewpoint of developing countries, if one believes that industry is where technical progress occurs, and that industrialization at any cost is thus the only key to development. A closer look at what many developing countries export, however, reveals that much of the growth in manufactured exports consists of low-tech goods, made internationally competitive by the low wage rates prevailing in the exporting countries. By contrast, the Green Revolution experience, and agricultural productivity growth in developed countries, suggest that developing countries with a high ratio of cultivable land to population<sup>24</sup> may have forgone the opportunity of exploiting their comparative advantages, for no great benefit in terms of productivity growth.

However one judges it, this is in some measure a consequence of agricultural protectionism in Western Europe and North America. As mentioned in the Introduction, the European Common Market (now Union), the United States and Canada have tended to shelter their own farmers behind tariff barriers and import quotas, and to further distort international competition by directly subsidizing them.

<sup>24</sup> Hong-Kong, Singapore and Taiwan, with their very low ratios of land to people, are a different story.

The resulting agricultural surpluses<sup>25</sup> have been sold below cost, or donated in times of food crises, to developing countries. This policy has discouraged agricultural production in developing countries. By holding food prices, and thus wages, low in developing countries, it has also made it easier for these countries to produce and export manufactures with a high content of unskilled labour.

Ending agricultural protectionism would bring efficiency gains. It would also cause a re-distribution from European and North American farmers, to European and North American consumers, and to Third World farmers. Since child labour is predominantly supplied by farming families, or by former farming families who have emigrated to the cities, in the developing world, the welfare of working children would undoubtedly rise. Under certain conditions, child labour would fall.

We have seen that simply making parents richer has ambiguous effects on child labour. To be sure that child labour will fall, the return to education has to rise. That would happen spontaneously in the longer term, as increased international demand for agricultural imports, and the higher quality standards required by first world markets, induce farmers in developing countries to adopt modern production methods. That can in fact be expected to put a premium on skilled, or at least literate, labour. The process could be accelerated by deliberate policy, by spending on education and health on the one hand, and encouraging technical development in agriculture on the other. There is empirical evidence of an enhanced effect of educational policies on school enrolment in parts of India that had been touched by the Green Revolution (Lavy, 1985; Behrman, Foster, Rosenzweig and Vashishtha, 1999).

## 8. Conclusion

There is no empirical evidence that globalisation increases the incidence of child labour. If anything, the available cross-country evidence shows that globalisation can reduce child labour. There is evidence also that educational and health policies affect child labour. The theoretical explanation may be summarised as follows.

The parental decision to make a school-age child work depends on the costs and benefits of education. Due to capital market imperfections, parental investments in their children's education are limited by liquidity constraints. Wage rate changes affect both the costs and the benefits of education, and the liquidity constraint. Exposure to trade raises the wage rate of the comparatively larger skill group, relative to that of the others.

In a country that starts out with a largely uneducated workforce, globalisation raises the wage rate of uneducated, relative to educated workers. The cost of education, that includes the opportunity-cost of time spent in education, will then rise relative to the benefit, that reflects the wage differential between educated and uneducated workers. This will reduce the incentive to educate a child, and raise the incentive to have more children. On the other hand, the wage change may relax the liquidity constraint on the poorest families (if the wage rate of uneducated workers, children included, increases in absolute terms). Unless the government takes steps to counter the reduction in the

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<sup>25</sup> These surpluses have tended to become smaller in recent years, thanks to reduced farm subsidies in North America, and production quotas in the European Union.

incentive to educate children, the net effect of globalisation is likely to be an increase in child labour. Indeed, according to some variants of new trade theory, these countries are at risk of uncoupling from the more developed countries, as the latter form exclusive clubs that trade only with one another.

In a country that starts out with a relatively large educated workforce, globalisation raises the wage rate of educated, relative to that of uneducated workers. If we distinguish between basic education, and higher (or basic plus technical) education, we can then expect the wage rate of the higher educational category to rise relative to that of the lower category in developed countries. By contrast, the wage rate of the lower educational category can be expected to rise relative to that of uneducated workers in developing countries that spent sufficiently for education in the past, to have a relative large number of workers with a basic education. In this elite of developing countries, the benefit of education will rise relative to the cost, thereby making it more advantageous to have fewer, better educated children. On the other hand, the wage change may tighten the liquidity constraint on the poorest families (those with uneducated parents, if the uneducated wage rate falls in absolute as well as relative terms), where most child workers originate. Here, therefore, public intervention is need not to raise the incentive to educate a child, but to help parents overcome the liquidity constraint.

What can a developing country do to help itself, and turn globalisation into an opportunity to reduce child labour? The policies recommended include, obviously, school provision, educational subsidies, and maintenance grants for school children. They also include public health expenditure, which raises the incentive to make educational investments on a child, and helps to reduce fertility.

What can developed countries do to help developing countries to participate successfully in the globalisation process? First, they can help developing countries finance their educational and health policies. For countries with a largely uneducated workforce, temporary shelter from international competition is probably unavoidable until a sufficiently large proportion of workers is educated at least to primary level. More generally, these countries need to be compensated for the adverse short-term effects of changes in productive structure. Second, developed countries can stop protecting their own farmers. By allowing globalisation to extend to agriculture, the countries of West Europe and North America would help stem the internal migration from the country to the cities of the developing world, which is a major cause of urban child labour, and the exportation of child labour to the developed world.

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