1 Introduction
According to the ILO, nearly one out of every five children aged between the ages 5 and 14 works. The participation rate rises to nearly one in four if we include boys and girls up to the age of 17. Most working children live in developing countries, where the participation rate of the 5–14 age group can be as high as 30 percent. The activities in which these children are engaged range from the fairly harmless like helping out in the home (but even that may conflict with studying), to what international conventions call ‘unconditional worst’ (physically or morally dangerous) forms of child labor such as soldiering, stealing, begging and prostitution. Most working children are employed by their own parents on the family farm, helping with the family business or doing household chores. Only a small minority, less than 4 percent of all working children, is engaged in unconditional worst forms of child labor. What has economics got to say on the matter?

The individual optimization assumption underlying standard economic reasoning implies that one does, on average, what one regards as best for oneself. In general, therefore, public intervention has to be justified on either efficiency (coordination failure) or equity grounds. Does that apply to child labor also? In less developed countries, where child labor is concentrated, inefficiency and social injustice are rife. But there is an additional consideration, which applies to all parts of the world. As young children are not free agents, it cannot be assumed that those who make decisions on their behalf will act in their best interest. If a child is abducted, or has fallen into evil hands (for example, after losing his or her parents through war or social upheaval), we can be pretty sure that what will happen to him or her is not what he or she would have chosen. Many, but unfortunately not all, unconditional worst cases of child labor fall into this category.

The question is much more complicated if, as generally assumed in the economic literature, the child is under the control of his parents. If that is the case, the equity argument in favour of public intervention must be that wealth is too unequally distributed either across households, or between parents and children within the same household. The former is a relevant argument if it can be shown that a child will work if and only if the household to which he belongs is very poor (as we shall see, the second part of this proposition is unproven). The latter raises a difficult conceptual problem,
because it implies that parents attach lower weight to the wellbeing of their own children than society as a whole does. Perhaps for this reason, the theoretical literature has concentrated more on trying to demonstrate that parental decisions may be inefficient, than on trying to demonstrate that parents use their superior decision-making power to their own advantage. With few exceptions, the empirical literature has steered clear of these fundamental issues, and concentrated instead on trying to establish a causal link between child labor and various exogenous factors such as policy or the estimated present and future health and wealth consequences of child labor. A number of empirical studies have also attempted to evaluate the effectiveness of policy intervention.

2 Theory
Basu and Van (1998) start from the assumption that households are too poor to save, and that consumption is allocated between parents and children according to fixed equivalence scales. They also assume that child labor is perfectly substitutable (at a fixed rate lower than one) for adult labor in production. In other words, child consumption is a given fraction of adult consumption, and child productivity a given fraction of adult productivity. These simplifying assumptions reduce the problem of finding the adult and the child wage rates that simultaneously clear the adult and the child labor markets, to that of finding the adult wage rate which clears the market for adult-equivalent labor.

Parents are assumed to have a lexicographic preference ordering of alternative child consumption-labor baskets (therefore, a utility function does not exist). A basket containing child labor is always preferred to one that contains the same amount of child labor, but lower consumption. The ordering of baskets containing different amounts of child labor depends crucially on whether consumption is below or above the subsistence level. If it is above, a basket containing no child labor is always preferred to one that contains child labor, irrespective of how much parents and children consume. If it is below, a basket containing more consumption is always preferred to one which contains less consumption, irrespective of how much the children work. Therefore, if the household can get by with what the parents earn, the latter will not countenance any amount of child labor, not even if they and their children could get a large amount of consumption in return. If child labor is necessary for survival, however, consumption will become the overriding consideration.

This representation of parental preferences generates a backward-sloping household supply of adult-equivalent labor. As adults do not receive satisfaction from leisure, they will work full time. Children will work either full time, or not at all. At adult wage rates such that the
earnings of the adult family members are sufficient to maintain them and their children at or above the subsistence level without any need for the latter to work, the household supply of adult-equivalent labor will be equal to the time endowment of the adult household members. At lower wage rates, however, it will be equal to the sum of the time endowment of the adults, and the endowment of adult-equivalent time of the children. The market for adult-equivalent labor has up to two possible equilibria, one characterized by a relatively high wage rate and no child labor, the other characterized by a relatively low wage rate and child labor (Basu 2001). If both equilibria exist, households will prefer the former, but firms will prefer the latter (which gives them higher profits). Therefore, we cannot say whether child labor is efficient or inefficient.

An attraction of the Basu–Van approach is that it conforms to the commonly held view that child labor is a consequence of dire poverty. A limitation is that the model is only really appropriate to describe what happens in a situation of extreme poverty. In particular, it is not concerned with what the children do when they do not work, and does not address two important questions essential to make an efficiency judgment. The first question is whether it would be advantageous for parents to finance their children’s education on credit if they could; the second question is whether it might not be better to invest in conventional assets. Baland and Robinson (2000) go a long way towards remedying these shortcomings by making the future human capital endowment (hence, the future earnings) of today’s child an increasing function of the amount of time that the child spends not working. Their paper shows that parental decisions may be inefficient because certain kinds of inter-temporal trade are precluded.

Parental preferences are represented by a Becker-style utility function increasing in present and future parental and child consumption. Choice is subject to an inter-temporal budget constraint and two further restrictions: one is that saving cannot be negative (credit rationing); the other is that parents can take money from their children now by making them work and appropriating their earnings, but not when they become adults. The first of these additional restrictions is justified if market imperfections make it impossible to borrow without collateral and the parents at risk of making their children work do not have sufficient assets. The second is justified if contracts between parents and young children (of the kind ‘I send you to school instead of work if, in exchange, you give me some of your earnings when I get old’) are not enforceable. The model predicts that child labor will be inefficiently high if either of these two additional restrictions mentioned is binding. If parents cannot borrow against their children’s future income, they will invest in their children’s human capital less (make their children work more) than would be efficient. If a young child cannot
borrow from his parents because his promise to pay the loan back when they are old is not credible, the only way he can increase his consumption is by working more. Otherwise, the allocation chosen by the parents will be efficient even if it envisages child labor.

A possible justification for the assumption underlying the Baland–Robinson model that a child’s future earning capacity increases with the amount of time spent not working is that early work experience may have adverse long-term repercussions on the child’s health, and hence on the number of years, and number of days per year, that the future adult will have to work. But a person’s health in adult life is positively affected also by how well he was fed and by the amount of medical care he received as a child. If the latter depend on how much the child earns, there is then another channel through which early work experience can improve adult earning capacity (Smith 1999). Another possible justification is that time spent working as a child is time not available for education. As we shall see, however, there are theoretical arguments and empirical evidence to the effect that a child may neither work, nor study. Indeed, the correlation between child labor and school enrollment is negative, but low. Besides, education requires monetary expenditure as well as time. If we assume this away, we ignore the possibility that a child might work to pay for this monetary cost. As we shall see in the next section, many children work their way through school. A further point to be kept in mind is that most forms of work have a ‘learning-by doing’ element, which, in a low-technology economy, may be more valuable than formal education. It is thus an empirical question whether the algebraic sum of all these effects will be positive or negative. On the other hand, work at a very young age may yield disutility directly, as well as indirectly through its possible negative effect on future health and earnings. Bommier and Dubois (2005) show that, if this is the case, child labor may be inefficient even outside the circumstances identified by Baland and Robinson. That applies in particular to unconditional worst forms of child labor.

The technology of human capital formation is examined by Cigno and Rosati (2000). This kind of capital is partly innate, and partly the product of time and money spent on education. If human capital production is characterized by constant returns to scale, the marginal cost of education is constant to the point where the child’s time endowment is fully occupied in education. It will increase from that point onwards, however, because human capital can be further increased only by raising the ratio of money to time spent on education (for example, by buying more educational material, or sending the child to a more expensive school). In the presence of diminishing returns to scale, the marginal cost of education will be increasing throughout, but the cost curve will still have a kink (the marginal cost
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will start to rise more rapidly) at the point where the child’s time endowment becomes fully occupied in education. Since a child’s human capital endowment cannot be reduced below the innate level, the cost curve has another kink at the point where the child works full time.

The Baland–Robinson demonstration that child labor may be inefficiently high rests on two assumptions: one is that current adults may be credit rationed, the other is that they cannot make mutually advantageous inter-temporal trades with their children because the deal would not be enforceable. The latter ignores the role of family norms. The issue had already been addressed by Cigno (1993), where it was demonstrated that, although a contract between adults and very young children is not legally enforceable, the same effects may nonetheless be generated by a self-enforcing ‘family constitution’, requiring every family member to give at least a specified amount of money (or personal services yielding the same utility) to his children when these are young, and to his parents when they are old. Cigno (2006a) shows a family constitution may effectively constrain behaviour even if parents are altruistic towards their children and identifies the conditions in which the allocation brought about by such a constitution would be efficient. Rosati (1996) extends the model by introducing uncertainty; Anderberg and Balestrino (2003) add educational investment.

Cigno and Rosati (2005, chapter 2) nest these different theoretical contributions into a fairly general model. Parents are assumed to derive utility from their own and from their children’s present and future consumption, as in Baland and Robinson (2000). Here, however, the choice set reflects not only the trade opportunities offered by the market as in that article, but also those offered by the technology of human capital formation as in Cigno and Rosati (2000), and by the possible existence of self-enforcing family norms as in Cigno (1993). The subsistence requirements are introduced as further constraints, rather than subsumed in the preference ordering as in Basu and Van (1998). Depending on assets, number of children in the household, and wage and interest rates, these additional constraints may or may not restrict choice. Depending on which combination of constraints is binding, children may work full time, combine work with study, or study full time. In the presence of fixed costs of access to education or work, there is also the possibility that the children will do nothing (as we will see, this is a widespread phenomenon).

Credit and asset markets play a crucial role. If parents are free to either borrow or buy assets, and provided that the subsistence constraints are not binding, they will invest in their children’s education to the point where the marginal return (rental price divided by marginal cost of human capital) is equal to the interest factor. For values of the interest factor which are no
higher than the marginal return to education at the point where the child
studies full time, children will study full time. At higher values, the children
will work full time. Whichever is the case, a child’s current consumption
(inclusive of medical expenditure, but exclusive of education costs) will be
so determined that his marginal rate of substitution of present for future
consumption is equal to the interest factor. The allocation will be efficient.
If it involves a certain amount of child labour, this will be at the efficient
level.

If parents are effectively constrained in the amount of money they can
borrow or the amount of assets they can buy, the children will work either
full time, or for that amount of time which equates their marginal rate of
substitution of present for future consumption to the marginal return to
education. This may be larger or smaller than the amount of time they
would have worked otherwise, but inefficient anyway. As in Baland–
Robinson, child labor will be inefficiently high if the parents cannot borrow
from the market, or the children from the parents, as much as they would
find advantageous. The second of these eventualities is less likely if a family
constitution is in place, because the parents are then obliged to support
their young children, and the children to support their elderly parents, at
least to a certain level. Child labor will be inefficiently low if the parents
cannot invest in conventional assets as much as they would find advanta-
geous. This possibility, not considered in Baland–Robinson, is a far from
remote possibility in a developing country, where large strata of the popu-
lation do not have the expertise necessary to make financial investments,
and the only asset really worth buying for a peasant, land, hardly ever
comes on to the market.1

The domestic allocation of resources will be inefficient also if some or
other of the subsistence constraints are binding. For example, parents may
not be able to invest in their children’s human capital, or in conventional
assets, as much as would be advantageous because that would reduce
someone’s current consumption below the subsistence level. Worse, the
subsistence constraints may be incompatible with the other constraints (as
we shall argue, this may be the case in the presence of a catastrophic event).
Then, something will have to give. One possibility is that the parents will
disregard the family constitution.2 Suppose that, if they obeyed the con-
stitution, the parents would be left with less than the subsistence amount

1 The reasons why, in a developing country, those who own land tend to hang
on to it are discussed in Biswanger et al. (1995).
2 So long as it is not expected with certainty, the event is not incompatible with
the existence of a self-enforcing family constitution up to that moment; see Cigno
(2006b).
of consumption. For the descending altruism assumption incorporated in this as in all the other models considered, the first thing they would do is to give their own parents nothing. If that were not enough, the next thing would be to reduce the net amount transferred to the children below the level prescribed by the constitution. What if parental consumption remains below subsistence even if the net amount transferred to the children is set equal to the children’s subsistence consumption level? At that point, the children cannot be made to work more because they are already working full time. Given that a child’s native human capital cannot be sold separately from the child, one possibility would be to sell some of the children as slaves. Another would be for either or both parents to deliver themselves into bonded labor. *Tertium non datum.*

Bonded labor and slavery are illegal almost everywhere, but survive unabated in many parts of the world (United Nations 1998 and Bales 1999). Can we assume that enslaved children will engage in some unconditional worst form of labor? If the parents are credit rationed, they will agree to sell a child for a price that is lower than the actuarial value of the money that the child could be expected to earn in a lifetime of ordinary work. The buyer could thus make money out of the deal even without exploiting the child. Once sold and delivered, however, the child loses the protection of the parents (and of the law, because slavery is illegal, and the activities of a slave are thus necessarily clandestine). The buyer can thus make even more money by exploiting the child. The probability that a child will engage in some of the unconditional worst forms of labor is consequently higher if he or she is sold. According to this argument, a child may end up performing some unconditional worst form of labor only if there is no other way of satisfying the subsistence constraints. Dessy and Pallage (2005) take the argument further by showing that these forms of child labor may be the result of optimizing decisions on the part of well-informed parents even if the subsistence constraints are not binding. In other words, altruistic parents may send their children to do this kind of work, knowing full well what the consequences for the physical or moral health of the children are going to be, even if there is no absolute necessity to do so. The argument is essentially that there may be a market equilibrium such that the wage rate for unconditional worst forms of child labor is sufficiently higher than the one for ordinary child labor to compensate for the adverse consequences. The model predicts that, in equilibrium, the wage rate commanded by non-harmful child labor is higher than it would be if harmful child labor were not available.

Directly or indirectly, insurance also plays an important role in the determination of child labor. Indirectly because one of the reasons why asset-less parents cannot finance their children’s education on credit
is that, for moral hazard reasons, the risk associated with this form of investment is generally uninsurable. Directly because, in the absence of assets on which to draw, or to use as collateral, parents may respond to a negative shock (serious illness of the main breadwinner, poor crop) by making their children work. Indeed, since the return to child labor is less uncertain than the return to education, parents may view children as a form of insurance, and have more children than they otherwise would for precisely this reason. The theoretical connection between credit constraints and uninsured shocks in a simple model without children and child labor is well understood, at least since Deaton (1992). Households respond to what they regard as a transitory reduction in their income by either borrowing or drawing on assets, but they cannot do this forever. After a series of negative shocks, the household’s reserves will run out, and its consumption will fall abruptly. In an extended model like the one we are considering, there is a second line of defence however: when credit runs out, parents can make their children work or work more.

3 Evidence
Child labor is clearly associated with poverty, but the proposition that children are sent to work only if the alternative is death by starvation is not borne out by the facts. If we take a cross-section of either households or countries, and plot child labor against income, we find that the observations are indeed scattered around a negative curve, but the dispersion around this curve is very large. Especially at low income levels, households or countries with similar incomes may have very different child participation rates. Furthermore, statistical association does not necessarily imply causation, and if it does, it is not clear which is the cause, and which the effect. Grootaert and Patrinos (1999), and Bhalotra and Heady (2003), indeed find that household income has only a weak effect on child labor. A clue is provided by Edmonds (2005). Using data from Vietnam, this author finds that an exogenous improvement in economic circumstances reduces child labor only if it brings the household above the subsistence level; otherwise, it has no significant effect. This is consistent with descriptive evidence in Bales (1999) that, in certain cultural contexts, even the decision to let a child engage in unconditional worst forms of labor such as prostitution may be motivated by the desire to buy a consumer durable, rather than actual necessity.

By contrast, the proposition that parental decisions are affected by the marginal return (that is, the ratio of the marginal benefit to the marginal cost) to education and by the availability of credit and insurance is supported by the evidence. Cigno and Rosati (2002, 2005, chapter 5) test the predictions of the synthesis model using survey data from rural India. The
same authors remark that a large number of school-age children is reported as neither working nor attending school, and explain this apparently paradoxical phenomenon with the presence of fixed costs of access to education or work. Consistently with the presence of fixed costs of access to school and work, the data show that a very large number of school-age children (nearly a quarter of the 6–16 age group) do nothing. The probability of studying only is found to be increasing, and those of working only, working and studying at the same time, or doing nothing, decreasing in parental income. But the effect on the probability of doing nothing is much larger than the effect on the probability of working either full or part time. The additional students would come primarily from the ranks of previously idle children. Ravallion and Wodon (2000) report similar findings for Bangladesh. In general, household income raises school attendance more than it reduces child labour (see Behrman and Knowles 1999; Bhalotra and Tzannatos 2002). Therefore, a generalized income increase would lead to a rise in the school attendance rate, but hardly dent child labor. Cigno and Rosati find that not only the probability of attending school, but also the amounts parents spend on a child’s education conditional on the child attending school, increases with parental income. Since education is a form of investment and could thus be financed on credit, this finding may be taken as evidence that a large proportion of the parents are credit constrained. While the poor spend less than would be efficient on their children’s education, however, there is some evidence that the only just comfortably off may be spending too much (Waldman 2003). The latter suggests that some parents may not have access to more lucrative forms of investment.

Consistent with the proposition that parents respond to marginal incentives, Hazarika and Bedi (2003) find that the decision to let a child go to school is negatively affected by the monetary cost of education. Cigno and Rosati (2002, 2005, chapter 5) find that it is negatively affected also by the opportunity cost of the time a child spends attending school, doing his homework, and travelling to and from school. This cost consists in the income that the child could otherwise generate either directly by working, or indirectly by releasing the adults in the family from domestic chores such as looking after younger children, fetching water and fuel for the home, etc. These authors find that both the distance from school (proxied by the absence of a school in the village) and the potential productivity of children in the 6–16 age range either in the family farm (proxied by the amount of

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3 The first of these studies excludes children reported as neither working nor attending school. The second, on which I focus, uses the full sample.
land farmed) or as carers for younger siblings (proxied by the number of children under the age of 6) reduce the probability of attending school. The value of a girl in that age range as mother substitute increases with the mother’s potential salary (proxied by her educational level). Regarding the use of children to fetch water and fuel for the home, Guarcello et al. (2003a) find a strong positive association between school attendance and the presence in the home of basic facilities like piped water or mains electricity, in survey data from El Salvador, Ghana, Guatemala, Morocco and Yemen. The El Salvador and Guatemala data sets contain sufficient information for a causality test, and the results of this test confirm that lack of piped water or mains electricity in the home is indeed a reason why children take time away from study, or do not study at all.

The decision to let a child go to school and spend money for his education conditional on enrolment is sensitive also to the marginal benefit of education. Chambagwala (2008) finds a positive effect in Indian cross-region data. Foster and Rosenzweig (1996) find that school enrolment is higher in those areas of India where the Green Revolution has raised the demand for skilled labor. As noted above in the theory section, the marginal benefit of education may not be very high, or may fall rapidly, if the future adult is to remain in a low-technology environment (for example, in subsistence farming). Only a level of education high enough to allow the future adult to escape into an environment where skilled labor is at a premium may be worth paying for; studying is otherwise a waste of time and money. Consistent with this argument, Kochar (2004) finds that the wage differential between educated and uneducated workers in urban areas of India has a positive effect on school enrolment in the surrounding rural areas, especially among the children of landless peasants who would have little to gain from education if they remained in the area of origin. Again consistent with the hypothesis that education may be seen as an escape route, Cigno and Rosati (2002, 2005, chapter 5) find that the availability in the village of a higher-grade school raises the enrollment rate not only for that grade of school, but also for the lower grades. Analogous results are reported in Rosenzweig and Everson (1977), Rosenzweig and Schultz (1982) and Rosenzweig and Wolpin (1982). Another reason why the benefit of education might not be high is that the quality of the school might be poor. Case and Yogo (1999) find that a reduction in the pupil-teacher ratio would greatly increase school attendance among black South Africans. Using survey data for Yemen and Cambodia, Guarcello and Rosati (2007) similarly find that various measures of school quality (teacher-pupil ratio, teacher qualifications and experience, availability of a library) raise school attendance – at the expense of labour participation in some cases, of idleness in others.
The Dessy–Pallage argument that even the unconditional worst forms of child labor respond to marginal incentives is difficult to test empirically because the main source of child labor information, household surveys, either does not include or is reticent about children engaged in these activities. The non-sample origin of such evidence as there is on harmful forms of work does not allow the researcher to relate the probability that a child will engage in this kind of work to the characteristics of the household of origin. Nonetheless, case studies like those reported in Bales (1999), or Mayorga and Velasquez (1999), seem to agree with the model’s assumption that parents are well aware of the consequences of letting a child engage in such activities, and also with the model’s prediction that parents may make such a decision even if there is no absolute necessity. There is also evidence that letting a child engage in activities such as prostitution or deep-sea diving causes distress for the parents, and that the wage rate commanded by these activities is many times larger than the average for less harmful ones (Rialp 1993). That does not prove that the wage premium is sufficient to compensate for the distress, but is certainly consistent with the model’s predictions.

We now come to the question of the effects of missing or imperfect credit and insurance markets, and the surrogate role of informal intra-family arrangements (Cigno 1993 and 2006a). Consistent with the theory, Blanco and Valdivia (2006), Dehejia and Gatti (2002), Dureya et al. (2007), Guarcello et al. (2003b), and Guarcello and Rosati (2007) find significant positive child labor and negative school enrolment effects of uninsured shocks in the presence of credit constraints. Beegle et al. (2006), de Janvry et al. (2006) and Jacoby and Skoufias (1997) also find evidence that children serve as insurance. Regarding the role of intra-family arrangements, there is ample evidence, coming from both the developing and the developed parts of the world, that working-age persons make transfers to younger and older members of the same family. In particular, Bhaumik and Nugent (2000), Cigno and Rosati (1992) and Foster and Rosenzweig (2000) find that these transfers tend to make up for the absence or insufficient development of credit and insurance markets. This is consistent with the existence of family norms, but also with other hypotheses. A formal test based on Italian data rejects the hypothesis that money transfers are either straight gifts or implicit payment for services rendered, but not the hypothesis that they are generated by self-enforcing family constitutions (Cigno et al. 2006). The child labor implications of these informal arrangements remain to be investigated, but the evidence of a strongly positive response by child labor to uninsured shocks may be taken as a symptom of breakdown of previously self-enforcing family norms in the wake of a catastrophic event (Wagstaff and van Doorslaer 2003).
Child labor makes a substantial contribution to family income (Rosenzweig and Everson 1977; Menon et al. 2005). The health effects of child labor are examined in Cigno and Rosati (2005, chapter 7), Francavilla (2003), Kassouf et al. (2001) and O’Donnell et al. (2003). Using data from various parts of the developing world, these studies find that early work experience, even work within the home, can have a negative effect on health not only in the short term but also in the long term. Consistent with the findings of Bhalotra (2003), Smith (1999) and Steckel (1995), however, Cigno and Rosati (2002) find that children working full time have better nutritional status, and better health and survival prospects (proxied by the body mass index) than children studying full time, and better still than children studying part time. This seems to confirm that the sign of the indirect health effect of early work experience (via the budget constraint) is the opposite of the direct one. One can only surmise that the net result will depend on the nature and extent of the work carried out by the child, and on how much of the extra income generated by this work will translate into extra consumption for the child himself.

4 Policy
Basu and Van (1998) offer an apparently simple remedy for child labor, namely making it illegal.4 As the possibility of a low-wage equilibrium with child labor is removed, the only available equilibrium would then be the high-wage equilibrium without child labor. At this equilibrium, parents would have no incentive to send their children to work and the ban would consequently be self-enforcing. But the remedy is effective only if the wage rate adjusts instantaneously to the new equilibrium. Suppose it does not. So long as the wage rate remains below the subsistence level, parents will have no choice but to send their children to work in order to survive and the ban on child labor will not be self-enforcing. It would then have to be enforced by the police. Can a government condemn part of its population to death by starvation in order to implement a policy? If the answer is no, the police will be instructed to turn a blind eye to child labor and the virtuous equilibrium without child labor will never be reached (Cigno and Rosati 2005, chapter 1).

The Dessy and Pallage (2005) argument that the worst forms of child labor may occur in equilibrium even when the parents have no absolute necessity to let their children engage in such activities seems to suggest that a ban would be justifiable on equity grounds (see the discussion in the introductory section of the present chapter). But the authors show

4 A dynamic version of this argument is in Dessy (2000).
that, in the absence of human capital spillovers, such a ban would always reduce welfare. The opposite could be true in the presence of a positive externality, but only if this were extremely large. In any case, a ban on child labor, or even just on its worst forms, is difficult to enforce unless accompanied or preceded by other policies, or exogenous changes, which make it in the interest of employers not to use child labor (Basu 2005; Davies 2004; Doepke and Zilibotti 2005). The historical evidence suggests that such reductions as there have been in the incidence of child labor have had little to do with legal prohibition (Moehling 1999). At best, legislation has accelerated an existing trend away from the employment of children (Nardinelli 1980).

Jafarey and Lahiri (2005) examine analytically the effectiveness of two alternative policies, a food subsidy and an improvement in school quality, in reducing child labor. The result depends on the elasticity of credit supply. If this is less than infinity, food-for-education is more effective than an income-equivalent increase in public expenditure on school quality. As the supply elasticity of credit increases, however, the child labor effect of public money spent on improving school quality increases. In the light of our earlier discussion of the role of credit and of the return to education, the intuitive explanation for this result is that the easier or less costly it is for parents to finance educational investments on credit, the greater the importance of factors affecting the return, and the smaller that of current household income.

Several public programs have attempted to lure children away from work and into the classroom by offering them cash or food conditional on school attendance. Testing the effectiveness of these programs is not easy, because the selection of the area or of the children to be included in the program is typically not random, and it is thus difficult to separate the effects of the program from that of the factors which affected the selection. But contemporary econometrics allows the careful researcher to take account of these confounding factors to some extent (Lalonde 1986; Heckman 1989; Dehejia and Wahba 1999). Conditional transfers appear to have a strongly positive effect on enrollment, but only a weakly negative one on child labor (Ravallion and Wodon 2000; Schultz 2004). The weakness of the child labor effect may be explained by the presence of a large pool of otherwise idle children. As pointed out in de Janvry et al. (2006), however, it reflects also the insurance role of child labor.

In recent years, the insurance issue has attracted policy makers’ attention. The World Bank (2001) and Holzmann and Jorgensen (2002) suggest getting away from the safety-net idea and viewing the social consequences, including child labor, of uninsured shocks as a risk management issue. But evidence that credit rationing on its own, as well as
in combination with uninsured shocks, has a strongly negative effect on schooling suggests that policy makers should pay attention also to the credit issue. Educational subsidies reduce the marginal cost of education and relax the liquidity constraint to some extent, but can never anticipate the expected return from the future to the present. For that to happen, parents must be able to borrow. There is a substantial literature on the merits and limitations of microfinance (see Armendáriz de Aghion and Morduch 2005 for a systematic exposition). But the implications for education and child labor policies in poor countries do not appear to have been explored in full.

International trade would merit a chapter of its own. The very mention of trade in conjunction with child labor conjures up images of children knotting carpets or stitching garments for foreign consumption. Exposure to trade does indeed create a domestic demand for child labor to be employed in the production of export goods, but that is not enough to conclude that it increases child labor. It all depends on what the children employed in the production of these goods would have done instead. Would they have gone to school, worked anyway for less pay and perhaps in less healthy surroundings or done nothing and thus been at risk of swelling the ranks of unconditional worst cases? In the second case, child labor would not increase. In the the other two cases, child labor would increase but this would clearly be undesirable only if the increase were at the expense of education.

There is also a more subtle consideration. International trade changes relative factor prices, in particular the ratio of skilled to unskilled wages (the ‘skill premium’). If a country opens itself up to trade, it tends to specialize in the production of goods which make intensive use of factors in relatively abundant supply. If the country has a relative abundance of skilled labor, the demand for that factor of production will then increase and the skill premium will consequently rise. As this will raise the return to education, parents will then have a greater incentive to send their children to school. The opposite will happen if the country has a relative abundance of unskilled labor. Pulling down trade barriers will thus reduce child labor if the country starts from a position of comparative advantage in the production of skill-intensive goods, increase it if the opposite is true. These propositions appear to be supported by the evidence.

Edmonds and Pavcnik (2005) and Shelbourne (2001) find a negative effect of trade on child labor. Cigno et al. (2002) find, however, that controlling for the skill composition of the workforce takes significance away from trade. The proportion of educated workers in the total labor force has a significant and strongly positive effect on school enrollment, and an equally significant, but strongly negative, effect on child labor.
participation. Since the stock of skilled workers changes slowly over time, this skill composition effect may be taken to be the cumulative effect of past education policies. This finding is consistent with evidence reported in Wood and Ridao-Cano (1999) that exposure to international trade tends to accentuate differences in school enrollment rates between developing countries with more and less educated labor forces. Therefore, trade liberalization may be counted as an anti-child-labor policy only if the country has invested sufficiently in education to give it a competitive edge in the exportation of at least moderately skill-intensive goods.

A related argument is that of international labor standards. Sanctions against countries which produce export goods using child labor are advocated by anti-child-labor activists, but also by exporters and trade unions in developed industrial countries concerned about the ‘unfair’ competitive advantage that this gives producers in developing ones (Brown 2001). Basu (1999) argues that the effects of a ban on the importation of goods with a child labor content vary according to whether it is universal or imposed on just one country, and also on whether capital is or is not internationally mobile. But there is also another consideration. A ban on imports with a child labor content is equivalent to a monetary sanction against the exporting country. In the absence of compensatory international transfers, it would thus make the already poor exporting country even poorer. As this would increase the number of households living close to subsistence, the effect of the ban could then be that of increasing instead of reducing child labor (Jafarey and Lahiri 2002). Similar remarks apply to the use of labels certifying that a product is ‘child labor free’. Using a price-competition model à la Bertrand, Davies (2004) shows that the consumer boycott triggered by this kind of product information is unlikely to raise welfare. At the national as at the household level, the way forward could be conditional cash transfers.

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