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Child labour and health: evidence and research issues

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As part of broader efforts toward durable solutions to child labor, the International Labour Organization (ILO), the United Nations Children's Fund (UNICEF), and the World Bank initiated the interagency Understanding Children's Work (UCW) project in December 2000. The project is guided by the Oslo Agenda for Action, which laid out the priorities for the international community in the fight against child labor. Through a variety of data collection, research, and assessment activities, the UCW project is broadly directed toward improving understanding of child labor, its causes and effects, how it can be measured, and effective policies for addressing it. For further information, see the project website at www.ucw-project.org.

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ABSTRACT

The ILO definition of the worst forms of child labour includes work that is likely to jeopardise health and safety. Effective targeting of those child work activities most damaging to health requires both conceptual understanding and empirical evidence of the interactions between child labour and health. The aim of the paper is to review the current state of such knowledge, which is central to the design of policies that, whilst protecting children from work activities most damaging to their health, do not jeopardise the subsistence livelihood of their families. The relationships between child labour and health are complex. They can be direct and indirect, static and dynamic, positive and negative, causal and spurious. The diversity of potential relationships makes their empirical disentanglement a difficult exercise. A conceptual framework of analysis is required and important issues of measurement and of estimation must be given careful consideration.

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1. INTRODUCTION

1. The International Labour Organisation (ILO) estimates there are 120 million children engaged in work in the developing world.¹ This is an alarming statistic. Not only is child labour, arguably, an infringement of the basic rights of the child, it is also potentially damaging to educational, physiological and psychological development. A first reaction might be to support a legal ban on child work. More considered opinion suggests that a legal ban is likely to have limited effectiveness given the difficulty of regulating the informal labour markets in which many children work and, furthermore, if a ban were effective, it might not be in the best interests of children from poor families reliant upon their children's productive contribution to maintain a subsistence existence. Recent international activity has focussed on efforts to prevent the most harmful forms of child labour. ILO Convention 182 calls for the prohibition and elimination of the worst forms of child labour which, besides the involvement of children in slavery, prostitution, pornography and drug trafficking, includes work that is likely to jeopardise the *health, safety* or morals of young persons (ILO, 1999). Children engaged in work are exposed to a variety of hazards (e.g. dangerous machinery, falling objects, pesticides, chemicals, abusive employers) that have the potential to seriously damage their health. In addition to such health risks, the sheer exhaustion induced by physical labour can be expected to place stress on the body and provoke illness. More than two-thirds of programmes undertaken as part of the ILO International Programme for the Elimination of Child Labour (ILO-IPEC) are directed at hazardous work or hazardous working conditions (Lansky, 1997, Chart 2).

2. In an imperfect world, prioritisation of initiatives directed at the most harmful manifestations of child work is certainly appropriate, as is the inclusion of work activities detrimental to the health of the child among the worst forms of child labour. Effective targeting of those activities most damaging to health requires both conceptual understanding of how child labour and health interact and empirical evidence on the health consequences of various forms of child labour. Possession of such knowledge is central to the design of policies that, whilst protecting children from work activities which are most damaging to their health development, do not jeopardise the short-term subsistence livelihood of their families. The importance of information to the successful implementation of the priority setting approach is well recognised by the ILO (ILO, 1998, p.51).²

3. The purpose of this paper is to review current knowledge of the health consequences of child labour and to identify methodologies that have the potential to enrich the information base available for the effective targeting of health damaging child work activities. Acquisition of evidence on the health effects of child labour is not easy given the complexity of the relationships involved. This is demonstrated by the fact that simple bivariate descriptions of the correlation between child labour and child health do not support fears, possibly well founded, that work is damaging to the health of children. For example, from the eighteen countries covered by Table 1, there is no evidence of any consistent correlation between the percentage of children reporting health problems and the type of activity in which they are engaged. In five countries children working most intensively are most likely to report health problems but in another five countries this is actually the healthiest group of children. In seven

¹ Children under the age of 15 working full-time in 1995. The prevalence estimate for both full and part time work is 250 million (Ashagrie, 1998).

² The ILO has developed information instruments in the form of statistical survey methodology to inform on the size and nature of the problem, and rapid assessment techniques, to guide immediate responses to it.

cases, those children combining work and school are most likely to suffer illness but there are three countries in which children attending school (and not working) are the least healthy.

4. The apparent inconsistency between prior beliefs that work is damaging to the health of children and the lack of a simple relationship between work activity and health might be attributable to a number of factors. Extraneous factors, such as income or region, might confound any relationship.³ A relationship might also be obscured by measurement problems. The measures of health and of work that are utilised in Table 1 are quite crude and might be incapable of reflecting a relationship between the *intensity* of child work and more objective and detailed indicators of health.⁴ Child labour is not homogeneous but varies from helping out on the family smallholding to employment in a glass or brick factory to heavy labour in a quarry or mine. The health consequences of these different types of labour can be expected to vary tremendously and the stronger effects will be diffused in the average picture captured by the figures presented in Table 1.⁵

Table 1. Percentage of children with health problems by type of activity

Country	Work only	Study only	Work & Study	No activities
Angola	8.4	7.5	1.6	4.4
Bolivia	8.3	8.6	17.6	17.8
Brazil	18.2	20.8	20.9	12.7
C.A.R.	3.5	3.7	6.5	3.7
Cameroon	5.2	14.2	0.3	16.2
Ecuador	53.8	35.7	39.7	43.9
El Salvador	26.7	20.5	23	22.2
Gambia	3	6.8	8.1	6.6
Ghana	9.3	12.4	7.1	14.9
Guinea	16.6	18.3	24.1	15.9
India	0	2	2.2	2
Madagascar	6.9	10.6	9	6
Mali	1	3.9	3.6	0
Paraguay	21.4	33.4	30.6	30.4
Peru	33.2	25.9	30.8	31.8
Philippines	30.8	40.5	44.9	41.2
Tajikistan	8.3	4.7	3.3	3.7
Zambia	19.8	15.2	20.5	19

Source: Understanding Child Work Project (2001), Country Statistics, Table 14 (see there for source country surveys).

Notes: C.A.R. - Central African Republic. Various years 1992-1999. Age groups: 5-14 (Paraguay); 6-11 (Zambia); 6-14 (Brazil, CAR, Cameroon, Ghana, Mali, Peru, Philippines); 7-14 (Angola, Bolivia, Gambia, Guinea, India, Madagascar); 10-14 (Ecuador, El Salvador); 11-14 (Tajikistan).

5. A further complicating factor is that much of the relationship between child labour and health is likely to be dynamic. Current health reflects past, more than

³ However, even after controlling for household income in six of the countries from Table 1 where the data are available, a consistent relationship still does not emerge between reported health problems and type of activity (UCW, 2001, Table 15).

⁴ However, using an anthropometric indicator (body mass index) as the measure of health does not clarify the relationship in two countries where this measure is available (Brazil and India) (UCW, 2001, Tables 34 & 37).

⁵ Data from Zambia show that, of those children working, those employed in non-farm piecework and those working for food are the least healthy (UCW, 2001, Table 16).

present, work activity. The child seriously injured in a workplace accident last year is currently not working but has poor health. The child working with asbestos today can expect to experience poor health as an adult. A simple bivariate analysis between work activity and contemporaneous health cannot pick up such dynamics. Any negative impact of child labour on health may also be obscured by selection of the healthiest youngsters into work. In this case, simple comparison between the health of working and non-working children cannot reveal the impact which work has had on the health of the former. Finally, the impact of work on the health of very poor children need not always be negative. In circumstances of extreme poverty, the employment of a child can be crucial in maintaining a subsistence livelihood and, consequently, health status.

6. In summary, the relationships between child labour and health are complex. They can be multidimensional, dynamic, positive and negative, causal or spurious, and, in the former case, running from work activity to health or vice versa. The diversity of potential relationships makes their empirical disentanglement a difficult exercise. A conceptual framework of analysis is required and important issues of measurement and of estimation must be given careful consideration. These issues are examined in the remainder of this paper. A distinction is made between relationships between child labour and health which materialise in childhood (section 2) and longer run effects which may become manifest only in adulthood (section 3). Consistent estimation of the impact of child labour on health, in particular the endogeneity problem, is considered in section 4 and measurement issues are examined in section 5. The final section concludes with a summary of the current state of knowledge and recommendations for future empirical analyses of child labour and health.

2. CHILD LABOUR AND CHILD HEALTH

2.1 Negative effects

7. Concern about the health consequences of child labour derives primarily from the belief that work increases the child's exposure to health hazards that threaten to subject the child to illness or injury. The hazards may be obvious and threaten immediate damage to health, such as those risks arising in construction, manufacturing and mining from the use of dangerous tools and machinery and exposure to high temperatures and falling objects. Alternatively, the hazards may be less perceptible and hold longer-term consequences for health such as risks from contact with dust, toxins, chemicals and pesticides, the lifting of heavy loads and the forced adoption of poor posture. Hazards may also threaten psychological health through exposure to abusive relationships with employers, supervisors or clients (ILO, 1998). The health consequences of child labour will vary with the type of hazards to which the child worker is exposed. Variation in the nature of child work across industries and across countries means there is no one relationship between child work and health but a variety of such relationships.

8. A large scale ILO sponsored survey undertaken in the Philippines, found 60% of all economically active children to be exposed to hazardous working conditions: 19% being exposed to biological hazards, 26% to chemical and 51% to environmental (NSOP, 1998). Of all child workers, 24% were found to suffer work related illness and/or injury, a prevalence rate much higher than that for adult workers. Most common injuries were cuts, wounds or punctures, accounting for 69% of the total. Body aches and pains (59%) and skin diseases (22%) were the most common work related illness.

9. A number of factors raise the health risks which children face from work relative to adults. First, child labour tends to be concentrated in particularly dangerous industries. Globally, agriculture is by far the dominant sector of child employment, accounting for 70% of all child workers, and is an industry with a very poor record of safety, with 1 in 8 child workers suffering illness or injury (see Table 2). Relative to agriculture, manufacturing and wholesale/retail trade, which together account for almost 17% of all child workers, are less hazardous but, with 1 child worker in 12 in these industries succumbing to illness or injury, safety levels are far from acceptable. Fewer child workers are located in transport, construction and mining (collectively 6.6% of the total) but extremely poor safety records in these industries - 1/6 to 1/4 child workers become ill or injured - mean that they account for a substantially disproportionate fraction of all work related child illnesses and injuries.⁶ With respect to health hazards, work in transport, construction and mining appear to be the most hazardous forms of child labour. Marginal gains in child health and safety could be realised most easily by measures targeted at these most hazardous industries. However, given the dominance of agriculture in respect of child labour, significant advances in the average level of child health require policies to improve the safety of child work in that sector.

10. More detailed information on child work and health are presented in Appendix 1 for a number of countries. These tables give a break down of the incidence of health problems for working children by kind of industry and by form of employment. Not with standing national differences they confirm the patterns described above.

Table 2. Distribution of child labour and health hazards by industry for 26 countries

		% of all economically active children in industry	illnesses / injuries per 100 economically active children
1.	Agriculture, hunting, forestry & fishing	70.4%	12.2%
2.	Manufacturing	8.3%	9.3%
3.	Wholesale & retail trade, hotels & restaurants	8.3%	8.3%
4.	Community social and personal services	6.5%	7.8%
5.	Transport / storage/ communications	3.8%	18.1%
6.	Construction	1.9%	25.6%
7.	Mining & quarrying	0.9%	15.9%

Source: Ashagrie, 1998, Tables 3 & 6.

11. A second factor raising the health risks faced by child labourers relative to adults derives from the fact that children often work in informal, small scale and illegal settings which, by their very nature, are difficult to regulate (Fassa et al, 2000). Most child labour is undertaken within the family unit. Well over 70% of all working children are found within this mode of employment for each of the countries covered in Table 3. More surprisingly perhaps, in all but one of these countries, children working within the family account for a disproportionately high percentage of all working children with health problems. Relative to other forms of child labour, it does not appear that work for the family is as innocuous with respect to consequences for health as might be imagined.⁷ Children working in small scale farming and manufacturing are often not given the protection promised by health and safety

⁶ See ILO (1998) and Fassa et al (2000) for descriptions of health risks children are exposed to by sector of employment.

⁷ The simple bivariate relationship is likely to be confounded by omitted factors. For example, poverty is likely to both raise the propensity to work within the family and reduce health.

regulation. Even when this protection is available, it is likely to be much less effective for children since the measures are usually designed for adult, and not child, workers (ILO, 1998; Fassa et al, 2000). Hence, safety devices and clothing may not be usable by children and permissible exposure limits are usually established for adults and may not be appropriate for children. The substantial number of children worldwide working in domestic services and the sex industry are left particularly vulnerable to physical and psychological abuse.⁸

Table 3. Children working unpaid within the family as:

	% of all child workers	% of all child workers with health problems
El Salvador	73.7%	75.8%
Bolivia	88.8%	92.2%
Ghana	91.4%	95.4%
Central African Republic	81.1%	74.6%
Peru	89.6%	91.5%

Source: Understanding Child Work Project (2001), derived from original country surveys. Various years 1992-99.

12. Given their physiological and psychological immaturity and the biological process of growth, children may be more vulnerable than adults to abuse and to given health risks. Children are more prone to injury through accidents and have been found to be more sensitive to noise, heat, lead and silica toxicity, and ionising radiation (Bequele and Myers, 1995; Forastieri, 1997; ILO, 1998; Fassa et al, 2000).

13. The literature is richer in hypothesising negative effects of child work on health than it is in testing these hypotheses. In the absence of comparison with the health experience of a control group of non-working children, prevalence rates of illness and injuries among working children do not constitute evidence of a deleterious effect of work on health. Studies that involve controlled comparisons tend to be small scale and rather context specific (Parker, 1997). This is understandable given that the rich array of data required in order to unravel the linkages between child labour and health makes large scale studies extremely expensive. One study of a rural part of India reports growth deficits among working boys in comparison with boys in school (Satyanarayanan et al, 1986) but other data from rural India do not support this finding (Cigno and Rosati, 2001). Fentiman et al (2001) find no growth differences between children enrolled and not enrolled in school in rural Ghana. Assuming the non-enrolled children are more likely to be working, this does not support a negative effect of work on child growth. However, the non-enrolled children were found to suffer greater morbidity, apparently deriving from the health hazards of lake fishing, the main occupation of boys not attending school. In Bombay, the prevalence of health problems (e.g. muscular, chest and abdominal pains, headaches) among children working primarily in hotels, restaurants and construction was found to be greater than that among children in school (Naida and Parasuman, 1985 - quoted in ILO, 1998, p.8). In summary, good evidence on the direct effects of child labour on child health is lacking. With respect to the impact of child growth rates, the evidence is mixed. There is more support for deleterious effects of labour on particular forms of morbidity related to the nature of the work undertaken.

14. In addition to any direct negative impact of labour on the working child's health, there may be an indirect impact on the health of siblings operating through the intra-household allocation of resources. Even without bias in a household's preferences toward its working members, a welfare maximising family unit will direct

⁸ In Table 2, these sectors fall under domestic and personal services, which account for 6.5% of all child workers.

disproportionate resources to maintaining the nutritional and health status of its productive members.⁹ This is particularly true in the context of low-income countries where productivity is most sensitive to nutrition and health status. Consequently, notwithstanding the impact of health hazards confronted in the workplace, siblings might be expected to experience lower nutritional status and greater morbidity than working children themselves. There is empirical support for this hypothesis. A study in rural Guatemala found that while participation of school-age children in farm production was not associated with a reduction in their own growth and development, younger siblings did experience growth deficits (Immink and Payongayong, 1999). Ralston (1997), with data on calorie intakes from rural Indonesia, found the intra-household calorie allocation to be related to children's labour contributions. In turn, lower calorie intake was associated with higher levels of morbidity. In addition, there is a bulk of evidence indicating gender bias in the household allocation of resources (*c.f.* Rosenzweig and Schultz, 1982; Das Gupta, 1987; Behrman, 1988; Pitt et al, 1990). This bias may reflect a variety of social and cultural prejudices but, at the very least, the economic expediency of directing resources toward family members who bear the greatest burden of heavy labour is likely to be a contributing factor (see Rosenzweig and Schultz, 1982 and Pitt et al, 1990 for evidence). In the extreme, it might be argued that the prejudices are themselves supported by, or even a reflection of, economic expediency.

15. While there may be strong empirical support for the contention that household resources are disproportionately directed toward working children, it does not necessarily follow that child labour has a negative impact on the health of siblings. The relevant comparison is not between the nutritional intake, status or health of the working and the non-working children but between the health of each child, working or not, with and without the presence of any child labour in the household. The non-working children may receive proportionately less resources than their working siblings but still receive a greater magnitude of resources than they would if their siblings did not work. Unfortunately, the counterfactual required in order to test the impact of child labour on the health of siblings is impossible to observe directly and difficult to construct statistically.

2.2 Positive effects

16. The final point of the previous sub-section implies the possibility of a positive impact of child labour on child health. Whilst child labourers are exposed to health hazards they would not otherwise encounter, they also generate resources, which help maintain themselves and their families. If a positive impact of a child's labour market participation on the resources at a household's disposal is accepted, then strong empirical support for a positive impact of living standards on health can be cited (Steckel, 1995; Appleton and Song, 1999; Smith 1999) to support the argument that child labour potentially affects child health positively.

17. In conditions of extreme poverty, this is a plausible and persuasive argument. However, several caveats are warranted. First, any positive effect of child labour on health through living standards must be offset against the deleterious effect of occupational health hazards. A child, and its family, might enjoy a few years of fruitful work before suffering an accident and the subsequent loss of both livelihood and health. This potential risk implies a difficulty for empirical work. Contemporaneous correlations between children's work and their health may reveal

⁹ This does not require that the household be income maximising, it can hold even with inequality aversion (Pitt et al, 1990).

little of the true impact of child labour on health since those who have suffered severe workplace accidents will be recorded as currently not working and in poor health. Longitudinal, or at least retrospective, data are required to uncover such effects. This leads to the second caveat; much of the relationship between child labour and health is likely to be dynamic. While child labour may raise family living standards and child health in the short run, the long-term health effects of working, and any corresponding loss of education, need to be considered. A third caveat concerns the hypothesis that child labour has a positive impact on household resources. This seems a reasonable proposition when children are used to supplement the labour input of their parents. However, abusive parents might use their children to substitute for their own labour. No doubt examples of this can be found, but where child labour is a widespread phenomenon, it is not plausible that it is the result of parents exploiting their offspring (Basu, 1999). The final caveat to the argument that child labour may impact positively on child health through a positive contribution to household living standards concerns the distinction between effects at the individual and aggregate level. Whilst a child's work may make a positive contribution to the family's standard of living, it does not necessarily follow that, in the aggregate, child labour raises living standards and consequently health. A large supply of child labour can be expected to reduce market wages and may leave the economy at a low level equilibrium with a large supply of low skilled (child) labour, low wages, low education levels and poor health (see Basu, 1999). Such general equilibrium effects point to a further difficulty with the interpretation of any empirical relationships between child labour and health established from household survey data. Such micro data can only improve our knowledge and understanding of individual level relationships and are not necessarily informative of how population health would change in response to a dramatic change in the aggregate labour input of children.

3. LONG-RUN HEALTH CONSEQUENCES OF CHILD LABOUR

3.1 Direct effects

18. While many of the health risks child labourers are exposed to threaten immediate damage to health, others are likely to develop over many years and might only become manifest in adulthood. Exposures to pesticides, chemicals, dusts and carcinogenic agents in agriculture, mining and quarrying and manufacturing increase the risks of developing bronchial complaints, cancers and a wide variety of diseases (Forastieri, 1997; ILO, 1998; Fassa et al, 2000). In India, industries with large proportions of child labourers also tend to have high rates of TB and silicosis; stonecutters and slate workers, for example, have silicosis rates of 35% and 55% respectively (Parker, 1997). Cancer risks are raised significantly through exposure to asbestos in mining and construction and to aniline dyes in carpet and garment manufacturing (ILO, 1998). Ergonomic factors such as heavy lifting and poor posture raise the chances of musculoskeletal problems developing in later life (Forastieri, 1997; ILO, 1998; Fassa et al, 2000). Individuals who have worked as a child are at particular risk of developing chronic health problems not only because they are exposed to risk factors for longer periods but because the biological process of rapid cell growth reduces the latency period of some diseases (Fassa et al, 2000).

19. On the other hand, the possibility of positive impact of child labour on health in adulthood is not implausible. Working as a child provides resources, which may be crucial to the avoidance of under-nourishment in childhood. This would be expected to have a long-run positive impact on the individual's lifetime health experience.

3.2 An indirect effect through education

20. An intuitively appealing proposition is that child labour is at the expense of education. If this is true, then, even in the absence of any direct effect of child work activity on health, there can be indirect effect through the sacrifice of education. A lower level of educational attainment might impact negatively on health through two mechanisms. First, an individual entering adulthood with a lower level of education has less human capital and, *ceteris paribus*, can expect a lower stream of lifetime earnings. Reference has already been made to the close positive association between material living standards and health (Steckel, 1995; Appleton and Song, 1999; Smith, 1999). A second channel for a health effect of education operates directly through the accumulation of knowledge of health production mechanisms (Grossman, 1972). Educated individuals are likely to be better informed of the factors which impact on health, to be more productive in the use of their own time to generate health and to be more responsive to health education materials (Schultz, 1984).

21. There is strong empirical support for a positive effect of education on *adult* health, even after controlling for initial health using panel data (van Doorslaer, 1987; Wagstaff, 1993). This leaves the issue of whether child labour is indeed a substitute for education. In a simple model in which a child faces the option of either full-time education or full-time work, increased work activity is obviously at a substantial cost to education. However, the child may be able to divide its time more flexibly between work, school and play. In which case, the issue is whether marginal increases in work are at the expense of schooling, play or both. Where schooling choices are severely constrained by family resources, there is the possibility that child labour even has a positive effect on education through providing the resources necessary to pay for schooling.

22. The existence and the degree of any trade-off between child labour and education is an empirical question on which the evidence is mixed. There is growing evidence of a substantial proportion of kids in developing countries combining school and work (Patrinos and Psacharopoulos, 1995; Akabayashi and Psacharopoulos, 1999; Anker, 2000; Cigno and Rosati, 2001). There is, however, a great deal of heterogeneity across countries in the extent to which child work activity and schooling overlap (Anker, 2000; Heady, 2000). In general, the combination of work and schooling is most common in Latin America and least common in Asia, with some African countries lying in the middle. Testing the proposition that child work “crowds-out” schooling is complicated by the fact that child labour and schooling decisions are taken simultaneously and so are potentially influenced by common unobservable factors, which bias the estimated relationship. In order to circumvent this endogeneity problem, the existence of a trade-off has been tested indirectly by examining whether factors that encourage child work activity also tend to discourage school attendance. The weight of the evidence is in support of a trade-off. Analyses of data from Bolivia and Venezuela (Psacharopoulos, 1997), Cote d’Ivoire (Grootaert and Patrinos, 1998), India (Rosenzweig and Evenson, 1977; Cigno and Rosati, 2001) and Zambia (Nielsen, 1998) all support the crowding-out hypothesis. On the other hand, no support is given from another analysis of data from India (Skoufias, 1994) and in data from Peru (Patrinos and Psacharopoulos, 1997).¹⁰

23. A limitation of all the research quoted above is that it concentrates on the trade-off between work activity and time spent in school whereas the central concern is

¹⁰ Ravallion and Wodon (2000) take a different approach to circumventing the endogeneity problem, examining the impact of a subsidy for school attendance in Bangladesh on time spent in work and school, instrumenting participation in the subsidy programme. The subsidy is successful in raising school attendance, with most of the extra study time coming at the expense of leisure, rather than work.

whether child work is at the expense of the educational *achievement* of the child. School attendance may be a poor measure of educational achievement and result in either upward or downward bias in the estimated relationship between child work and education (Heady, 2000). Addressing this limitation, time spent by the child in work has been found to have a negative impact on reading and maths test scores in Ghana (Heady, 2000) and Tanzania (Akabayashi and Psacharopoulos, 1999).¹¹ In the case of Ghana, this effect does not operate through reduced school attendance. In Tanzania, this is true for boys but for girls the effect is mostly indirect, operating through lost study time.

24. In summary, the available evidence is that child work activity, even for a few hours, does reduce educational achievement. Consequently, there is some support for the proposition of an indirect effect of child labour on health, operating through education.

25. Any relation between child labour and health is not necessarily confined to a single generation. If child labour does come at the expense of education and the child worker's lifetime earnings and health profiles, then the health of offspring can also be expected to suffer. There is a possibility of child labour supporting cycles of poverty and ill-health (Basu, 1999; Baland and Robinson, 2000). There is good evidence that parental, particularly maternal, education is one of the main determinants of child health (Barerra, 1990; Thomas, Strauss and Henriques, 1991; Behrman and Lavy, 1994).

3.3 Evidence on long-run health effects

26. For the obvious reason of the strenuous data requirements, empirical examination of the long-term health consequences of child labour is limited. One small-scale study following children over a 17 year period in a rural region of India finds that children who work in agriculture, small-scale industry and services grow up shorter and lighter than those who attend school (Satyanarayanan et al, 1986). Two larger-scale studies based on different Brazilian data sets provide further support for a negative impact of child labour on health in adulthood (Kassouf et al, 2001; Guiffrida et al, 2001). Kassouf et al use a cross-section of adults living in both urban and rural settings in north-east and south-east Brazil to examine the correlation between participation in work as a child and self-reported health in adulthood. Simple bivariate analysis reveals that the probability of reporting less than good health in adulthood rises as the age of entry into the labour force falls, although the correlation attenuates with increasing current age. The depletion of the correlation with age could be the result of selective mortality – only the healthiest survive to older ages, whether they have worked or not. In the case that child work activity and schooling are mutually exclusive, age of entry into the labour force will be extremely closely correlated with years of education and it is impossible to conclude whether a simple correlation between age at first job and health reflects a (child) work effect, an education effect or both. If some kids combine work and school, the independent variation in the two factors allows both to be included in the analysis. Any remaining influence of age at entry to the labour force must reflect a direct effect of child labour on health. Kassouf et al find evidence of such an effect but only for males 28-47 years and females 18-27 and 38-47. The dilution of the effect suggests that either the initial correlation between child work activity and health is largely spurious, reflecting the influence of

¹¹ Both studies control for the potential endogeneity of work (and school) time either through the use of instruments (Akabayashi and Psacharopoulos, 1999) or by the inclusion of a measure of innate intellectual ability in the regressions for test scores (Heady, 2000).

omitted education, or that a substantial proportion of the impact of child labour on adult health is indirect, operating through forgone education.¹² Interestingly, current household income had no additional effect on the gradient, which might indicate that the health impact of lost education operates through reduced knowledge of health production mechanisms rather than through lowering lifetime living standards. Alternatively, it could be that education is simply a better indicator of lifetime income than current income.

27. Giuffrida et al employ a nationally representative cross-section survey of 18-60 year old Brazilian adults. After controlling for age, education, (latent) wealth, housing conditions, unemployment status and race, entry to the labour force at or below the age of 9 has a statistically significant and substantial negative effect on (latent) health in adulthood.¹³ Given the inclusion of so many control variables, this result provides even stronger support for a direct effect of child labour on adult health.¹⁴ The magnitude of the effect for women is roughly twice that for men. On average, a 40-year-old woman who started work at or below 9 years of age is estimated to have the health status of a 45-year-old woman who did not work before the age of 9. Reasons for the substantial gender disparity are not immediately obvious and deserve further attention.

28. The two Brazilian studies support the hypothesis that child labour has a long-run negative impact on health. However, as Kassouf et al are careful to point out, caveats need to be placed on a causal interpretation of the relationships. The main weakness of the evidence stems from the cross-sectional nature of the data, in which labour activity as a child is recalled retrospectively. One obvious potential problem is recall bias but a more serious issue is unobservable heterogeneity. It is not possible to rule out the possibility that individual characteristics, not observable in the data set, raise the probability of working as a child and reduce health in adulthood. Examples of such unobservables include the individual's endowed, or initial, stock of health, ability and family background. The control variables and simultaneous modelling utilised by Giuffrida et al ameliorate, but do not remove, the problem. Longitudinal data are required in order to correct for such sources of spurious correlation. The discussion turns to such estimation issues in the next section.

4. ESTIMATION ISSUES

29. The central difficulty confronted in empirical examination of the health consequences of child labour is that of endogeneity. Both child work activity and health, at least to some extent, are the result of household decisions and thus both reflect characteristics of the family that are unobservable to the statistician. These common unobservables induce statistical association between the variables even in the absence of any causal relationships. For example, assuming health is positively associated with labour market productivity, *ceteris paribus*, the healthiest individuals

¹² The omission of other (non-child work) determinants of education from the initial correlation makes it impossible to distinguish between the two possibilities.

¹³ Giuffrida et al (2001) estimate a latent variable structural equations model (SEM). That is health status, wealth, health care access are all treated as latent (unobservable) variables, measured, with error, by observable proxy variables. Variations in all three latent variables, plus health care utilisation, are estimated simultaneously with health status specified as a function of (latent) wealth, plus exogenous variables, wealth a function of exogenous variables, health care access a function of health status and wealth and health care utilisation a function of health status, wealth and access. Identification is through exclusion restrictions, normalisations and restrictions on the variance-covariance matrix. Health status is proxied by self-assessed health, chronic conditions and limited activity.

¹⁴ Child labour is not a central focus of Giuffrida et al (2001) and no attempt is made to test for direct and indirect effects of child labour on health and to compare their magnitudes.

are most likely to offer themselves for employment and to be appointed. In the absence of any causal impact of work on health, the statistical relationship between the two variables would be expected to be positive. Such a “healthy worker effect” may account for the five cases from Table 1 in which children engaged only in work are actually healthier than those only in school.

30. In order to avoid the fallacies that can arise from endogeneity, a theoretical framework is helpful in guiding the construction of an empirical model. The household production approach (Becker, 1965) has proven to be particularly useful in empirical analyses of health variations. According to this perspective, health is a final good, which directly generates utility and is “produced” by the household through the selection of inputs of time and market goods, such as food and medical care (Grossman, 1972). Time allocation decisions are made given the realisation of individual specific health endowments, i.e. physiological predisposition to good/bad health, which are observable to the household but not the analyst. As a consequence, regressing health outcomes on inputs, such as work time, will not render unbiased estimates of the causal impact of the latter since both the inputs and outcomes reflect the value of the unobservable health endowments.

31. The most popular empirical strategy has been to estimate “reduced form demand relations”. That is, to regress health outcomes on (exogenous) *determinants* of the health inputs. The resulting coefficients are a reflection *both* of the “technological” relationships between the inputs and outcomes and of preferences. In the context of child labour – health relations, the reduced form effect of the child wage (or appropriate proxies) on child health indicates the total effect of wage variation on health, which comprises both the incentive effect of the wage on household time allocation and the technological impact of work time on health. Consequently, the reduced form approach cannot answer the question of how a child’s work activity impacts on its health. Tackling such a question requires resolution of the problems of omitted variables bias and unobservable heterogeneity. The estimated impact of child labour will be subject to omitted variables bias if other determinants of health, correlated with child work activity e.g. education, are left out of the regression. This problem can only be resolved through the use of a sufficiently rich data set. The problem of heterogeneity bias arises from the unobservable child health endowment, which induces correlation between the observable and unobservable arguments in a simple regression of health on child work activity, rendering the estimates biased. With cross-section data, correction of this bias requires the availability of instruments for child work i.e. variables which affect child work activity but not health itself. Potentially valid instruments might include indicators of regional variation in child labour market conditions and opportunities, as well as parental endowments of wealth and human capital established prior to the birth of the child (and so the realisation of its health endowment).¹⁵

32. Panel, or longitudinal, data have two important advantages with respect to estimation of the health consequences of child labour. First, with data on the same individuals at different points in time, it is easier to account for the effect of individual specific unobservable health endowments, which generate much of the endogeneity problem. For example, the fixed effects estimator eliminates the unobservable effects and is consistent, although not efficient. Efficiency gains can be realised through use of a panel data instrumental variables estimator e.g. Hausman and Taylor (1981), which have the additional advantage of not requiring instruments that must be claimed, perhaps tenuously, to influence child work activity but not

¹⁵ The validity of such instruments is weakened, the closer the correlation between the health, and other human capital, endowments of the parents and children.

health. The second important advantage of panel data is that they allow the time dynamics of the relationships between child work activity and health to be investigated. The determination of health is essentially a dynamic process; health today reflects experiences of the past. An infirm child is not currently working but may have been the victim of a serious workplace accident in the past. The education lost by the working child today is likely to have consequences for its health into adulthood. With longitudinal data, the manifestation through time of any influence of work activity in childhood on health can be examined. Retrospective data from a cross-section on work activity in childhood also provide an opportunity to examine the long-run health effects of child labour but with such data instruments must again be relied upon to correct for endogeneity bias.¹⁶ With panel data on health in adulthood, the influence of unobservable individual specific effects on health can be purged and the impact of (time invariant) work experience in childhood estimated using, for example, the estimator of Hausman and Taylor (1981). In short, the availability of panel data is at the top of the “wish list” of any researcher seeking to estimate the health consequences of child labour.

5. MEASUREMENT ISSUES

33. Whatever the methodology adopted to estimate the relationships between child labour and health, appropriate measures of both factors are required. The definition and measurement of child labour has been discussed elsewhere (*c.f.* Anker, 2000). The most important point to note in the present context is that there is substantial heterogeneity in the nature of child labour and, consequently, in the impact it has on health. The health consequences of helping out on the family farm during the summer months are vastly different from those of working long hours, day after day, in a factory with very little protection against hazardous conditions. If the only measure of child labour available is a discrete indicator of whether any work is undertaken, then only the average association between child work activity and health can be estimated. This may be an average of positive effects, for example where vacation work by children provides an important supplement to the family resources, and of negative effects and not be representative of the health experience of many child workers. Such estimates would not be helpful in the identification of the most harmful forms of child labour. In order to take the analysis further, more detailed measures of child work activity, which provide information both on the intensity of work and the sector of employment, are required. But such detailed measurement must be combined with a large sample of child workers in order for there to be sufficient numbers of various types of child workers to facilitate estimation of heterogeneity in the impact of child labour on health.

34. Of course, large detailed surveys are expensive, a factor that constrains the measures of health available for analyses in relation to child work activity. Detailed clinical measures are unlikely to be available, leaving the researcher with a choice between anthropometric measures and self-reported indicators of morbidity. The latter can relate to acute sickness, chronic illness and assessments of general health status. Indicators of chronic conditions and general health status are preferable for analyses of the long-term health consequences of child work activity, acute sickness being a noisier indicator of the individual’s underlying health status and better suited to analyses of the short-run impact of child work on health. The most widely available morbidity indicator for children in the developing world refers to any illness

¹⁶ See discussion of Kassouf et al (2001) and Guiffrida et al (2001) above.

or injury experienced in the last 4 weeks. This is the most typical question used in the Living Standards Measurement Study surveys fielded by the World Bank (Grosh and Glewwe, 1995). However, it often does not produce the expected socio-economic gradients. For instance, one study looking at child health status in 100 villages in Indonesia found higher incidence rates of illness in the higher than in the lower expenditure quintiles and higher in urban than in rural areas (Cameron, 2000). It seems likely that such results reflect, at least in part, differences in the conceptualisation of good health. As Sen puts it, "people's perception of illness varies with what they are used to, and with their medical knowledge. In places where medical care is widespread and good, people often have a higher perception of morbidity, even though they may be in much better general health." (Sen, 1998, p.18).

35. General self-assessed health (SAH), usually available for adults but not so often for children, can be combined with retrospective data on work activity in childhood to examine the long run health consequences of child labour. There is evidence that SAH is closely correlated with underlying morbidity and that, even after controlling for clinically measured physiology, it is a good predictor of future mortality (Kaplan and Camacho, 1983; Idler and Benyamini, 1997). Despite this survival prediction performance, there are persistent worries about the reliability of SAH. Mis-reporting and cut-point shifting would not be a problem if it were random but there is some evidence, particularly from developing countries, that it is correlated with variables, such as income and education, which are potential determinants of true health (Strauss and Thomas, 1998; Sadana et al, 2000). Therefore, the use of subjective health measures like reporting of illness and self-assessed health level remains problematic.

36. Anthropometrics are basically measures of height and weight standardised for age and sex and compared to an international standard for normal child growth.¹⁷ There is good evidence of negative correlation between child anthropometric measures and indicators of ill health (World Health Organisation, 1995). Certain caveats are warranted, however, with respect to the suitability of anthropometrics in examination of the health effects of child work activity. The indicators mainly reflect current or past nutritional status and so, if they are used as health outcomes, a crucial control variable is current or past calorie intake. If this is not available, then omitted variable bias will be a problem if calorie intake is correlated with child work activity, as seems likely. A second caveat is that the appropriate indicator must be selected depending upon whether the relationship under examination is short or long run. Weight-for-height is mainly an indicator of acute malnutrition and is not particularly relevant to examination of the health impact of child labour. Height-for-age is a better indicator of long-term health experience but mainly reflects health and nutritional exposure in early childhood and is of limited use in estimating the health effects of child work. A particular problem with the use of anthropometrics in the context of child labour is that they are better measures of nutrition and health experience at younger ages. As the child ages, stature is more likely to be a reflection of genetic factors. Many studies using height-for-age and weight-for-height restrict attention to children no older than 10 years, excluding the age range in which child labour is most prevalent.

37. Within the constraints imposed, the body mass index (BMI) and measures of self-reported morbidity appear to be the most promising measures of health. Each has its limitation and, at a minimum, experimentation with a number of health measures is advisable. The best strategy might be to explicitly recognise the measurement

¹⁷ There are four indicators height-for-age, weight-for-age, weight-for-height and the body mass index. The World Health Organisation recommends standardisation on the US average (de Onis and Habicht, 1996).

problem and model health as a latent (unobservable) variable, which can be measured only imperfectly through a number of indicators, such as BMI, reported health problems and SAH. Supplementing this measurement model with the determination of health by a number of causes, such as child labour, education, etc., gives the Multiple Indicator Multiple Causes (MIMIC) model (e.g. Wagstaff, 1993). The Giffrida et al (2001) study referred to in section 3 adopted this general statistical framework, incorporating, but not focussing on, child labour as one of the health causes.

6. CONCLUSION

38. The most harmful forms of child labour certainly include those that damage the short and long run health prospects of the working child. To an extent, identification of the forms of child labour that are potentially most damaging to health is not difficult. Children working under appalling conditions in construction, mining and manufacturing face immediate threats to their health which are all too often realised. However, the majority of working children are not found in these sectors but in agriculture. While the safety record of agriculture is very far from exemplary, threats from health hazards must be set against the possibility that the working child sustains its own health by helping to maintain subsistence living standards of the family. At present, evidence on the health consequences of child work activity is limited. Illness and injury hazard rates by sector of employment *describe* the risks faced by the working child but, in the absence of comparison with the “no work” counterfactual, they do not provide a basis for *evaluating* the impact of work on health. Comparisons between the growth rates of working and non-working children in rural settings provide mixed results. There is more support for deleterious effects of work on particular forms of child morbidity related to the nature of the work undertaken. There is also some evidence from retrospective studies (based on Brazil) of a negative correlation between work activity in childhood and health in adulthood. Interpretation of all current estimates of the relationship between child labour and health is difficult given the absence of analyses that account for the potential endogeneity of child work activity to health outcomes. If individuals born with a predisposition to poor health are also those who are most likely to engage in work as a child, correlations between child work activity and health will overstate the impact of the former on the latter. On the other hand, if healthy individuals are selected into work early as a child, the true health impact of child labour will be understated. Resolution of the endogeneity problem should be a priority of future research.

39. The design of effective policy requires the accumulation of more detailed evidence of the relationships between work activity in childhood and health both in childhood and in adulthood. Future empirical work should endeavour to take account of a number of characteristics of the true relationship between child labour and health and of factors that govern the statistical relationship between the variables. There are a number of channels through which child work activity can influence health. A direct negative effect as a result of workplace hazards and stress is obvious but there may also be indirect effects, positive and negative, operating through impacts on family living standards and education. The total (net) effect of child work on health can be estimated by examining the relation between work activity and health, while controlling for all factors, other than child work, which influence living standards and education. A more complete understanding requires disaggregation of the total effect into the direct effect of work on health and the various indirect effects. The direct effect can be estimated through the regression of work activity on health while controlling for family living standards and education. Identification of the indirect

effects requires further estimation of the impacts of child work activity on family resources and the children's education.

40. Future work should also recognise the essentially dynamic nature of the relationships between work activity in childhood and health. Even within childhood, the child's health is likely to reflect working conditions confronted in the past as much as, if not more than, the current work environment. Over the longer term, child work activity potentially influences health over time through education and lifetime income levels. Taking account of these dynamics requires the availability of panel data, which have the additional advantage of allowing more effective correction for endogeneity. Of course, long panel data sets with detailed measurement of child labour and health are a scarce commodity. The researcher may have to make do with a short panel, or even a cross-section, with retrospective data on work activity in childhood.

41. Finally, it bears emphasis that there is no one effect of child labour on health but a multitude of effects that vary with the nature of the work undertaken. Regression of health on an indicator of childhood participation in work can inform only of the average effect of child labour on health. This is an average across positive and negative effects, direct and indirect effects and across the variety of health risks faced in different kind of jobs. Such estimates of the average relation between child labour and health can be expected to vary with the nature of work most prevalent in any particular data set. Where available, detailed data on the nature of child work should be fully exploited to inform of the variation of health risks faced within the population of working children. Realistically, the potential for such analysis is likely to be constrained by the availability of data sets with sufficiently large numbers of children working in the more hazardous occupations. There is an argument for the collection of data sets with an over sampling of working children. Alternatively, a case-control approach might be adopted, with the health of working children from a variety of occupations being compared to that of matched controls similar in a number of respects apart from work status.

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Table 5. Percentage of working children with health problems, by sex and industry (as a proportion of all working children)

Industry	Bolivia			Ecuador			El Salvador			Ghana			Paraguay			Peru			Philippines		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Agriculture	20.8	17.7	19.3	54.6	46.9	51.6	26.1	16.9	25.3	9.2	7.3	8.4	25.8	30.1	26.4	33.5	36.5	34.8	40.2	41.2	40.5
Mining and quarrying	12.6	-	12.6	0.0	0.0	0.0	-	-	-	0.0	0.0	0.0	100	0.0	100	-	-	-	39.5	0.0	39.5
Manufacturing	18.8	3.6	12.8	43.4	28.8	38.1	25.1	31.8	28.4	100	6.6	10.1	23.5	17.4	21.5	4.7	21.3	11.8	41	29.0	35.8
Construction	14.6	-	14.6	87.6	0.0	87.6	-	-	-	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-	55.1	100	64.0
Trade	4.7	3.9	4.2	43.9	33.1	38.4	15.0	24.1	19.9	36.8	7.0	13	16.2	18.8	17.3	23.4	10.3	16.6	38.9	44.0	41.8
Transport	-	-	-	0.0	0.0	0.0	5.8	-	5.8	0.0	0.0	0.0	0.0	0.0	0.0	11.7	-	11.7	35.8	100	41.3
Services	-	-	-	0.0	0.0	0.0	-	-	-	10.0	7.6	8.7	45.3	0.0	40.3	-	-	-	21.9	0.0	21.9
Community and social s.	-	-	-	42.3	29.1	34.6	-	-	-	0.0	0.0	0.0	63.3	25.7	42.6	34.1	27.1	31.5	41.1	30.1	34.7
Other	57.0	0.0	7.5	0.0	0.0	0.0	19.0	41.4	39.3	0.0	0.0	0.0	28.4	44.5	31.4	-	-	-	0.0	0.0	0.0
Total	18.7	13.8	16.2	50.8	39.0	45.8	23.6	26.8	24.5	10.0	7.3	8.7	29.7	25.0	28.4	30.8	31.0	30.9	40.1	40.7	40.3

Source: Understanding Child Work Project (2001), Country Statistics (see there for source country surveys).

Notes: Age groups: 5-14 (Paraguay); 6-14 (CAR, Ghana, Peru, Philippines); 7-14 (Bolivia), 10-14 (Ecuador, El Salvador)

Table 6. Distribution of working children with health problems, by sex and industry

Industry	Bolivia			Ecuador			El Salvador			Ghana			Paraguay			Peru			Philippines		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Agriculture	85.7	94.8	89.5	60.5	59.5	60.2	79.3	11.5	58.5	65.4	55.6	61.5	51.0	34.2	46.9	85.7	89.7	87.4	85.7	72.9	81.1
Mining and quarrying	1.0	-	0.6	9.6	6.4	8.4	-	-	-	1.6	4.0	2.6	1.7	0.0	1.3	0.0	0.0	0.0	0.4	0.0	0.3
Manufacturing	6.5	1.2	4.3	6.8	0.0	4.4	10.9	29.9	16.7	-	-	-	3.0	3.2	3.1	0.6	2.4	1.4	2.8	2.8	2.8
Construction	0.9	-	0.5	17	23.6	19.4	-	-	-	-	-	-	-	-	-	0.0	0.0	0.0	0.5	0.4	0.5
Trade	2.7	4.0	3.2	-	-	-	9.2	39.1	18.4	6.5	7.4	6.9	7.1	17.8	9.7	10	6.1	8.3	6.9	18.9	11.2
Transport	-	-	-	-	-	-	0.2	-	0.2	0.0	0.0	0.0	-	-	-	0.5	0.0	0.3	1.1	0.5	0.9
Services	-	-	-	-	-	-	-	-	-	26.5	33.1	29.1	7.2	0.0	5.4	0.0	0.0	0.0	0.1	-	0.1
Community and social s.	-	-	-	6.1	10.4	7.6	-	-	-	-	-	-	26.2	40.3	29.6	3.2	1.9	2.6	2.5	4.5	3.2
Other	3.3	-	1.9	-	-	-	0.4	19.5	6.3	-	-	-	3.9	4.5	4.0	-	-	-	-	-	-
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Table 7. Distribution of working children, by sex and modality of employment Modality of Employment	Bolivia			CAR			El Salvador			Ghana			Peru		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Wage employ	7.7	9.0	8.3	1.0	0.5	0.7	20.4	25.5	21.8	0.6	1.0	0.8	-	-	-
Self employ	2.7	3.1	2.9	19.0	17.5	18.2	0.8	2.9	1.4	3.2	2.7	2.9	3.6	1.2	2.5
Unpaid family	89.6	87.9	88.8	80.1	82.0	81.1	74.6	71.6	73.7	93.8	89.3	91.4	85.5	94.8	89.6
Paid Family	-	-	-	-	-	-	-	-	-	2.4	7.1	4.9	-	-	-
Apprentice/other	-	-	-	-	-	-	4.3	-	3.1	-	-	-	11.0	4.0	7.9
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Source: Understanding Child Work Project (2001), Country Statistics (see there for source country surveys). Notes: Age groups: 5-14 (Paraguay); 6-14 (CAR, Ghana, Peru, Philippines); 7-14 (Bolivia), 10-14 (Ecuador, El Salvador)

Table 8. Percentage of working Children with health problems, by sex and modality of employment (as a proportion of all working children)

Modality of Employment	Bolivia			CAF			El Salvador			Ghana			Peru		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Wage employ	20.6	4.7	12.3	0.0	0.0	0.0	18.6	30.2	22.4	-	-	-	-	-	-
Self employ	18.2	0.0	8.6	4.3	5.9	5.1	24.3	14.8	18.7	-	-	-	4.5	18.4	7.4
Unpaid family	18.3	15.2	16.8	4.1	2.7	3.4	24.9	26	25.2	10.8	8.4	9.6	31.5	32.1	31.8
Paid Family	-	-	-	-	-	-	-	-	-	11.6	7.8	8.7	-	-	-
Apprentice	-	-	-	-	-	-	25.5	-	25.5	-	-	-	34.7	18.7	31.1
Total	18.5	13.8	16.2	4.1	3.2	3.7	23.6	26.8	24.5	10.4	8.1	9.2	30.9	31.4	31.1

Table 9. Distribution of working Children with health problems, by sex and modality of employment

Modality of Employment	Bolivia			CAF			El Salvador			Ghana			Peru		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Wage employ	8.6	3.1	6.3	-	-	-	16	28.8	19.9	-	-	-	-	-	-
Self employ	2.6	0	1.5	20	32	25.5	0.8	1.6	1.1	-	-	-	0.5	0.7	0.6
Unpaid family	88.8	96.9	92.2	80	68	74.6	78.6	69.6	75.8	97.3	93.13	95.35	87.2	96.9	91.5
Paid Family	-	-	-	-	-	-	-	-	-	2.7	6.87	4.65	-	-	-
Apprentice/other	-	-	-	-	-	-	4.6	-	3.2	-	-	-	12.3	2.4	7.9
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Source: Understanding Child Work Project (2001), Country Statistics (see there for source country surveys).

Notes: Age groups: 5-14 (Paraguay); 6-14 (CAR, Ghana, Peru, Philippines); 7-14 (Bolivia), 10-14 (Ecuador, El Salvador)