
PUBLIC HEALTH IN THE ECONOMICS OF CHILD LABOR

ERIC V. EDMONDS
DARTMOUTH COLLEGE, IZA, AND NBER

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Most of the world's economically active children work by their parents' side, often in a family farm or business. A 2000 UNICEF project surveyed working children in 36 developing countries [1]. The data represent more than 120 million children ages 5 to 14. Although nearly 70 percent of children in these countries spend time in some form of economic activity or domestic chores, less than 3 percent work in the formal wage labor market [2]. Most of this wage employment, like most employment overall in the world's poorest economies, is in agriculture.

The specific public and personal health concerns associated with child labor will vary from task to task and across working environments. A child in a carpet factory, mine, or brick yard will face different risks from the child in agriculture. Other chapters consider the health risks associated with different jobs and tasks. These risks influence the private calculation of whether to send a child to work and the public calculation about the costs of that work in very much the same way. This chapter does not distinguish between safety issues, work environment issues, and more general health issues associated with a specific work setting.

Public health is important in the child labor discussion for more reasons than just the consequences of child labor. The morbidity and mortality of caregivers and earners may be central in understanding how children end up in dangerous or exploitive conditions. The purpose of this chapter is to outline how public health issues enter into the economics of child labor. It examines both how public health influences child labor and how child labor influences child health. This chapter begins by reviewing the state of economic research on why children work.

THE ECONOMICS OF CHILD LABOR

Children are more likely to work in poor countries than in rich. Nearly three-fourths of the cross-country variation in economic activity rates can be explained by GDP per capita alone, and children rarely work in countries with a GDP per capita of US \$8,400 or more [3]. Rich and poor countries differ in many ways. This strong cross-country correlation does not necessarily imply a causal relationship, but there is an abundance of evidence that suggests child labor and poverty are closely linked.

Poor families balance the child's potential economic contribution against alternative uses of the child's time. What is the child's potential economic contribution? Direct wage income paid to working children may be important in some contexts, but wage work is rare. In most situations, working children's primary economic contribution comes through the help they offer their families. Most often, this help is providing domestic services that free up adult time for income-generating pursuits. When there is a family business or farm, the child and other family members often help, and working in the family business or farm is the most prevalent economic activity of children. The value of the child's economic contribution to family farms and businesses can be large. One recent study from Nepal estimates that children are responsible for nearly 9 percent of the nation's gross domestic product [4].

It should be obvious that the child's potential economic contribution, whether earned as wages or as the child's contribution to household production, depends on the child's local economic environment. Children are better at some tasks than others. Skill intensive work excludes most children who are not likely to have had the appropriate education or training. Similarly, activities that require strength and physical development tend to be relatively difficult for young children. For example, certain industries in Brazil such as the cultivation of cotton and tobacco are more child intensive than industries such as

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lumber or root cultivation [5]. Declines in child intensive industries can account for around 30 percent of the decline child labor in rural Brazil between 1980 and 2000.

The availability of land, livestock, and other productive assets within the household can be an important influence on the child's potential net economic contribution. Children can only work in family businesses when there is one. Given that wage child labor is rare in most countries, studies frequently find that children are more likely to work if their household owns a business. Some types of businesses and productive household assets are more conducive to child involvement than others. For example, children in Ethiopian families are more likely to work on the farm when there is small livestock present than large livestock [6]. Of course, families that own productive assets are often wealthier than families without productive assets. A recent study from North India documents that the relationship between family landholdings and child labor follows an inverted U-shape: poor children are more likely to work and work more intensively as their family adds productive assets, but at some point, child labor declines with the addition of productive assets as the family becomes sufficiently wealthy to avoid child labor [7].

This later observation from India hints at how important poverty is as a determinant of whether children work. During an economic crisis, when the child's potential economic contribution declines, researchers often find that children work more. For example, one study recently documented find that children transition in and out of employment in reaction to adult unemployment spells in urban Brazil [8]. Another observes that children work more when coca eradication efforts in Peru reduce economic activity and family incomes [9]. A study of the impact of India's trade liberalization on child labor in urban India found that children work more in cities and towns that had more employment in industries losing tariff protection [10].

The observation that children tend to work more during economic downturns, when the economic contribution of children is lower, may seem surprising. Even when the net economic contribution of the working child is small, it may be important to the welfare of a poor family. A family surviving on a dollar a day doubles its standard of living if a working child brings an additional dollar into the household. In fact, children often work more during family crisis when the family's need for income is likely to be elevated relative to the family's norm. A study of rural families in Tanzania found that families turn to child labor to help deal with crisis on their farm [11]. Another documents that children in northern Mali fill in for their mother when she is ill [12]. Children assume their mother's family responsibilities and replace her in the family farm and business.

The decision to work does not depend on the potential economic contribution of the child alone. It also depends on the perceived returns to other available activities. Schooling is not the only alternative use of a child's time outside of work. Leisure and play are important components of how children spend their time and may be critically important for child development. In fact, the debates over child labor in the United States and Great Britain during later part of the Nineteenth Century and the early part of the Twentieth Century emphasized the value of leisure and play as reasons why children should not work. A right to play is codified in Article 31 of the 1989 Convention on the Rights of the Child [13]

In the modern era, schooling is typically viewed as the most important alternative use of a child's time outside of work. This is not always a logical view as child labor is most prevalent in the poorest places where schools can be absent or lacking in teachers and educational materials. Overall, the child's potential economic contribution must be weighed against the return to education and how the family values that return. Schooling costs can play a critical role in this calculation. One recent study of rural India argues that the child's most important economic contribution may be the avoidance of schooling costs that result from attending school [14].

There is a conspicuous lack of direct evidence showing a connection between the additional income children can expect to earn in the future if they acquire more education and child labor. However, some

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of the apparently most effective interventions against child labor, work by increasing the returns to education. Conditional cash transfer programs give poor families cash for sending their children to school. Programs like Mexico's Progresa have been shown to substantively alter child time allocation, increasing schooling and sometimes decreasing child labor at the same time [15]. By increasing returns to education and reducing poverty, conditional cash transfers appear to both reduce the net economic gain from having the child work and diminish the family's need for that economic contribution.

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Health related issues enter into the discussion of the economics of child labor in three ways. First, adult illness may lower living standards, motivating poor families to send their children to work to compensate for some of the lost adult income. Second, adult illness may increase the return to children working inside their own family as families need the child to fill in for the lost worker or the adult illness creates new demand for the child's labor. Third, the possibility that the child becomes ill or injured during work can influence how the family values the child's potential net economic contribution from working.

There is a great deal of evidence from a wide variety of country contexts that poor families have difficulty buffering illness and injury shocks to adult earners. Families become poorer when an adult earner loses his ability to work. The evidence discussed in the previous section suggests a strong link between living standards and child labor. Hence, we expect adult illness and injury to lead to more child labor. The evidence from northern Mali that children fill in for their sick mother, mentioned above, supports this hypothesis [16]. A recent study of ragpickers and porters in Nepal suggests that parental morbidity may be especially important for understanding entry into worst forms of child labor [17]. Porters are 5 times and ragpickers 4 times more likely to have disabled parents than other wage working children in Nepal.

It is not obvious that parental morbidity will lead to more participation in worst forms of child labor in general. Family illness and injury may alter the return to work inside the household. Sometimes changes in the return to work might draw children into the labor market. At other times, another adult might fill in for the ill or injured in the formal labor market, causing the child's labor to be more valuable in household duties and chores. The family may also need the child to take care of the ill or injured. Hence, while the effect of a decline in income associated with poor adult health or injury is likely to push the child towards working. With all of this different ways that adult morbidity might interact with child time allocation, we cannot draw generalizations about how children will be affected by adult morbidity.

Less ambiguous is the impact of the child's illness or injury potential on child labor. The threat of illness and injury makes the child worse off. The threat of illness or injury makes it less likely that the child will work in that task by lowering the welfare improvement associated with the child's potential economic contribution, provided these threats are observable and understood by whomever is making child labor decisions. These effects will be more readily observable with injuries but perhaps less so with chronic illnesses such as asthma.

Illness and injury threats reduce a person's willingness to take a job unless these threats are compensated. The existence of compensating wage differentials for unpleasant or risky tasks is documented in labor market data [18]. Adults in riskier occupations are paid more even though public health researchers often find that adult workers cannot accurately detail all of the risks they face. Evidence of compensating wage differentials does not appear to exist for working children. It is possible, in theory, those same factors that lead adults to be paid more in risky occupations also influence the wages of children as children often work by their parent's side.

There are several issues that are salient with children that can lead children to be exposed to risks that are not compensated. We begin with two issues related to who has agency in the child labor decision. First, children rarely have complete agency over their work decisions and parents may not be perfectly altruistic.

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Parents may not understand the risks faced by their children and they may value them in the same way that a fully informed person would for him or herself. Second, children may have too much agency and do a poor job of appropriately assessing risks. The feeling of invincibility that often accompanies adolescence may cause children to undertake more risk than adults would be willing to bear, and it can be challenging for an adult to affect more appropriately cautious or safe behavior.

Another issue that may lead to risks that are not fully compensated is that children and adults may neglect issues associated with child longevity. Children live longer than adults. Hence, any occupational risk associated with a job that may lead to permanent disability is more costly for a child than an adult. Moreover, children that start work earlier will be exposed to health and injury risks for longer. An adult decision-maker may not understand long-term costs for their child's work..

If the present discounted cost of injury to a child is greater because of longevity, then children should receive a larger compensating wage differential than adults. This would appear as a larger premium for children in a task than for adults. That is, children should be expensive relative to adults in the risky activity. So long as there is a riskless activity, children should specialize in that. The fact that children participate in risky activities suggests that longevity issues are either not fully considered, not clearly understood, or both. As pointed to elsewhere in this book, it is difficult for those with significant expertise to understand the risks faced by young workers. Many serious hazards may have effects that go entirely unobserved or may not be attributed to their cause (i.e., work).

This later argument assumed that children are free to switch jobs like adults. Indeed, the whole idea of a compensating differential presumes that there are competitive labor markets for child labor. However, child labor may not fully compensate for health and safety risks, because children often do not participate in competitive labor markets. When working for a parent, children are often not free to leave if they are not appropriately compensated for the risks they face. Similarly, when a child works away from home, the employer often bears a responsibility for caring for the child that may lead to an analogous degree of immobility. When labor is effectively bonded, it has no leverage to affect a compensating differential for the risks it faces.

Thus, there are many reasons to think that health and injury risks are not compensated in children despite the absence of concrete evidence on this point. We would expect these uncompensated risks to cause children to be less likely to work in tasks with risks of illness or injury. However, information can often be a problem. When children work away from their parent, the person who makes decisions about the terms of the child's employment may lack or disregard information about working conditions. Hence, risks are not compensated. When combined with the effective bonded status of many child workers, it is possible that children can face risks that no adult would tolerate, that they go uncompensated for such risks, and that the person making decisions about whether the child should work was uninformed about these risks or powerless to alter the situation for themselves and/or their child.

ARE WORKING CHILDREN LESS HEALTHY AS CHILDREN OR ADULTS?

The previous section argued that caregiver ill health generally makes it more likely that the child works and can also influence how the child works. Health and injury threats to the child worker that are known and understood should reduce the likelihood the child works provided these risks are understood by concerned decision-makers.

Work induced illness and injury may directly worsen the health status of child laborers. There are many reasons other than work-induced illness or injury to suspect worse health outcomes for child laborers. Working children typically face greater caloric demands than nonworking children. When these are not met with increased nutrient intake (either because of the circumstances of the child's work, or the parent's lack of awareness about nutrition related concerns, work may leave the child more vulnerable to illness,

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injury, and a lifetime of health issues. Working children may also suffer health consequences by foregoing the health and nutritional knowledge usually acquired in school. This may be uncompensated, because parents and children are unaware of the value of this information when they themselves have not received it. This is an example of another setting where the health related costs of work are unknown to the person making child labor decisions.

The scope and limitations of studies on child health are discussed elsewhere in this volume. The question of the long-term consequence of working while young for adult health receives less attention elsewhere in this volume, and it is potentially of great importance for understanding the intergenerational transmission of poverty.

There are at least two basic classes of mechanisms through which a child's labor status may influence adult health. First, physical injury at work may lead to health problems that survive into adulthood. The injuries may be immediately evident to the child (e.g. a crushed foot) or may take years to become evident (e.g. exposure to toxins). Second, psychological stress or trauma at work in childhood may lead to health problems in adulthood.

Speculation about this second mechanism owes to the psychology literature which shows a strong correlation between stress in childhood and the persistence of mental disorders such as depression, anxiety and panic disorders, and schizophrenia or even health problems such as diabetes, heart disease, and immune disorders [19]. There is a debate over the interpretation of this evidence as there is a strong correlation between severe stress in childhood and stressful life events in adulthood [20], but some argue this association reflects that childhood traumas induces a vulnerability to the effects of stress later in life. Most of this research focuses on stresses like the loss of a parent and severe physical abuse at very young ages, so whether this evidence is relevant for typical child labor is an open question. For example, a recent study of the psychological impacts of forced abduction into the military among children from northern Uganda finds little evidence of sustained psychological distress after the end of conflict in child combatants relative to non-combatants [21].

Two recent studies consider whether child labor impacts future adult health. Individuals in Brazil who start work earlier have worse self-reported health status as adults [22]. The younger a person starts working, the greater the chance the individual reports being ill as an adult. This finding may reflect something about the impact of child labor on child health and how that persists into adulthood, the impact of education on adult health, the impact of income on adult health, or something about the child or adult's environment associated with both youthful work and adult health. A subsequent analysis of this data find that the negative association between adult health and child labor disappears completely when one controls for education [23]. This might reflect that the lack of education is the underlying causal mechanisms or that early entry into the workforce and a lack of schooling are correlated jointly with entry into more hazardous occupations.

PUBLIC POLICY, HEALTH, AND CHILD LABOR

Public health enters the discussion of the economics of child labor because of the impact of caregiver health on the decision to work and because of the impact of work on child health and vice versa. On average, the impact of work on the health and injury status of working children has been difficult to identify in the data. There are many cases, discussed elsewhere in this book, where work exposes children to health and safety risks, and there are several places in the preceding discussion where there may be a strong case for public intervention because of the health and safety risks of working.

Health and safety issues are more salient for working children than adults. The person making decisions about child labor (a parent, the family, the child, a third party) may not fully understand or take into account the impact of the work environment on the child's welfare. This could arise above because of a

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lack of altruism, poor information about the work environment, difficulties understanding the health effects of work, a lack of education, or myopia that does not properly weigh future consequences. Child labor's immobility leaves it especially susceptible to uncompensated health and safety risks.

The implications of these issues for economic policy are substantive. These agency and market power arguments can be used to make a case for government intervention against child labor where the government is acting on behalf of the child. Externalities and information problems create a separate economic justification for government intervention even when the person making decisions about how the child spends her time has the child's best interests at heart. For example, a distinct argument for government intervention comes from the externalities created by an elevated incidence of illness and injury. Weak children with poor health or unhealthy work environments can contract and spread diseases that leave everyone worse off (e.g., tuberculosis, flu, HIV/AIDS). Injured children, unable to work or whose productivity is diminished, face a lifetime of depending on others for support. Both these costs are borne by society and will not be internalized by the person making child labor decisions.

What economic policy tools are available if a case can be made to justify their use. Enforced prohibitions on certain types of work would reduce the incidence of illness and injury from the prohibited work category, but such labor regulations do little to address the factors that push children into that work to begin with.

A comprehensive approach to the problems of public health in child labor would consider both the health consequences of work and the role morbidity and mortality plays in pushing children into work. This essay has highlighted the important role that caregiver illness may play in motivating children to enter risky work in the first place. Efforts to strengthen social safety nets have considerable promise in keeping children out of work in general so that they never are exposed to risks of injury and illness in work. The recent growth of conditional cash transfer programs in poor countries is one promising avenue for strengthening social safety nets in ways that both ameliorate poverty and create positive incentives for caregivers to invest in the human capital of their children.

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