



2004/ED/EFA/MRT/PI/7

Background paper prepared for the
Education for All Global Monitoring Report 2003/4
Gender and Education for All: The Leap to Equality

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2003

This paper was commissioned by the *Education for All Global Monitoring Report* as background information to assist in drafting the 2003/4 report. It has not been edited by the team. The views and opinions expressed in this paper are those of the author(s) and should not be attributed to the *EFA Global Monitoring Report* or to UNESCO. The papers can be cited with the following reference: "Paper commissioned for the *EFA Global Monitoring Report 2003/4, The Leap to Equality*". For further information, please contact efareport@unesco.org

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31 May 2003

1. Introduction

Child labour is not uniquely a contemporary phenomenon and, for economic historians, sociologists and anthropologists, it is not a new subject. For economists, it is. A lively interest in the economics of child labour is less than a decade old but has been growing exponentially, in line with public interest in the subject. Discussion of child labour has been stimulated by contemporary debates on globalisation and international labour standards. For instance, the suggestion that the US ban imports from developing countries that are produced with the help of child labour has motivated analyses of the rationale for and the likely consequences of legal actions of this sort. Economists have produced models focused on trade and labour markets at one level and on decision making within the household that supplies child labour on the other. They have investigated the predictions of these models using both cross-country (macro) data and household and individual level (micro) data. This paper draws largely on the recent economics literature although it reflects insights and empirical findings from across disciplines.

One reason, it may be argued, that child labour has become such a fertile research topic in economics is that it has arisen at a time when the literature on endogenous growth¹ has matured and there is fairly widespread agreement in the field that the cornerstone of pro-poor growth strategies is investment in human capital. This investment occurs largely in children, in building their health and educational capital. Thus the inherent value of education apart, it is recognised that it has a functional role in encouraging productivity and growth. Even in societies where nobody is very poor in absolute terms, there is a case for subsidising education that rests on positive externalities associated with it.² In developing countries, this case is strengthened by the fact that many poor households are credit-constrained and simply unable to afford, by their own means, to send their children to school. Their children therefore grow up to be relatively poor and this poverty is potentially perpetuated across the generations. With large sections of society caught in poverty traps of this nature, overall economic growth and human development is constrained. International organizations of varied persuasions (such as the ILO, UNICEF and the World Bank) have adopted the goal of reducing child labour and currently have fairly large programmes directed at this goal. While research is now fairly active, this is an area in which policy has run ahead of research. There is now an urgent need to identify

¹ Endogenous growth models are models of the growth process of an economy that incorporate increasing returns associated with human capital. For an introductory account of this literature, see Ray (1998).

² Positive externalities are benefits that flow (at no cost) from an individual's education to the wider society around him or her. Thus the education of a mother will not only bring her a higher expected wage but will additionally generate positive benefits for her children and other people around her. Or the education of a scientist will tend to create positive knowledge spillovers for other researchers.

which of a number of intuitively plausible policies is likely to be most effective. This, as we shall see, depends on understanding the nature and causes of child labour.

In setting out an analytical structure for thinking about why children work, it is useful to go down to the level where parents are faced with a choice between sending a child to work or to school. This choice can be structured in terms of constraints, incentives and agency. The common presumption is that it is the *constraints* of poverty that drive children into work. If this is so, the appropriate policy will attempt to relax this constraint by, for example, offering cash transfers to very poor households. However, if schools are costly, unavailable or of poor quality then, even when the household is not very poor, it may be rational to send the child to work. This is especially so for work, like farm work, which can produce experience gains that are valuable if the child grows up to inherit the farm. This is the case where *incentives* dominate: the rewards to work exceed the rewards to schooling. In this case, policies that make schooling more attractive are likely to reduce child labour. A third interesting possibility relates to parent *agency*. Parents typically decide whether the child works and their interests may not always coincide exactly with the child's interests. If parent altruism were limited then a case could be made for legislative action involving a ban on child labour or compulsory schooling laws. Table 1 summarises these alternative hypotheses, showing how they produce dramatically different policy implications. Region-specific research is therefore needed to establish whether policy should primarily address poverty, inadequate schooling or the freedom that parents have to decide what their children do.

The empirical literature is now quite vast, including studies from a number of countries in each continent. A striking feature of this literature is the sheer variety of results that it has produced. It is unclear whether this reflects the diversity of country experiences of child labour or whether, instead, it reflects weaknesses in methodology.³ This paper will attempt to cull from the corpus of results whatever patterns are discernible and likely to be policy-relevant.

The rest of the paper is organised as follows. Section 2 presents an overview of the incidence and nature of child labour. Section 3 briefly contrasts child labour in Asia and Africa. A review of theoretical models of child labour is presented in Section 4, where the discussion is aimed at bringing out the policy relevance of the different models that have been proposed. The evidence is surveyed in Section 5, which relies primarily upon recent microeconomic research. Section 6 presents an in-depth analysis of the data for Ghana and Pakistan in order to illustrate contrasts between an African and an Asian country. In Section 7 we bring theory and evidence together and, using the Pakistan data, illustrate the potential for research to inform policy. Section 8 concludes with a broader discussion of what we have learnt so far that is relevant to policy making in this area.

³ There is an interesting parallel here with research on female labour supply in OECD countries. This has produced a wide range of estimates of income and wage elasticities, often based upon the same data source! This is thought to be the result of differences (and errors) in methodology. See Mroz (1987), for example.

2. Incidence & Nature of Child Labour

2.1 Incidence

The ILO estimates that the number of children aged 5-14 years in the year 2000 who were economically active was 211 million, while the number classed as child labourers was 186.3 million. Of these 120 million are estimated to be in full-time work (ILO, 2002). Children are, for these purposes, defined as 5-14 year-olds. Individuals are, by ILO conventions, deemed economically active if they worked for at least one hour in the week before the survey. For children aged 5-11 being a child labourer is synonymous with being economically active. However, for 12-14 year-olds, child labour is more restrictively defined, as either 14 or more hours of non-hazardous work or 1 or more hour of hazardous work per week. The child labour participation rate is 15.5% on average, while the participation rate in hazardous work is rather surprisingly high, at 9.3%.⁴

There are dramatic differences in the incidence of child labour by region. Africa has the highest incidence while Asia, being more population-dense, has the largest number of child labourers. The incidence is recorded by the ILO as having been 41% for sub-Saharan Africa, 21% for Asia and 17% for Latin America. Of children in work, it is estimated that 61% are in Asia [127.3 m], 32% in Africa [80m] and 7% in Latin America. While the incidence of child labour in Asia and Latin America has witnessed a secular decline in the post-war era, this is not the case in sub-Saharan Africa. Fertility remains high and education systems are already struggling to cope with the number of children. Slow or negative economic growth, famine and disease, war and conflict, poor governance and the spread of HIV/AIDS in Africa are all likely to have contributed further to keeping the incidence of child labour high.

Measurement Issues

Estimates of incidence are, of course, only meant to be indicative of the broad scope of the problem and can be useful in monitoring changes over time or, under certain assumptions, in making cross-regional comparisons. This section discusses measurement issues or choices that will affect estimates in any region.

Definition of child: As discussed, the ILO typically defines children as under 15 and collects statistics for 5-14 year olds. Research on child labour tends to define children either as under 18 or as under 15. The relevant threshold is probably region-specific, depending upon both the expected age of starting and leaving school and on cultural norms relating to the age at which children begin to exert their independence, make decisions for themselves and possibly leave home.

Definition of work: There are two issues here. *First, what counts as work?* The ILO definition, for children as for adults, refers to work that produces a marketable output. This includes waged work and also regular work done on a household farm or enterprise, the produce of which is commercially viable. It does not, however, include domestic

⁴ In this paper, the terms labour and work are used synonymously. Some authors distinguish them.

chores. To the extent that the burden of this work falls disproportionately upon girls, the work of girls will be under-estimated compared with that of boys. *The second question pertains to how hard a child must work in order that he or she be classified as a child labourer.* The ILO definition for children under 12 (stated above) will count as labourers children who work only a few hours a week, possibly without any negative consequences. Participation data collected in this way need to be supplemented with data on hours. For example, surveys often collect information on hours worked in the week before the survey as well as on the number of weeks worked in the year. Looking, as some studies do, at the previous week alone can be misleading when child labour is intermittent or seasonal (for evidence of this, see Levison *et al* (2002), Jacoby and Skoufias (199?) for children in rural southern India). Since children may combine work with school and since educational deprivation is one of the reasons that child labour is considered undesirable, it is also useful to have comparable data on school participation.

Types of work: It would be useful for statistics on the number of children in work to be disaggregated by type of work. The prospects facing a child forced into prostitution or soldiering are very different from those facing a child who spends a few hours working on the household farm after school. The ILO has set out a list of activities that are classed as the “worst forms” of child labour and it does produce a separate count for participation in these activities. Most household survey data that gather information on the time allocation of children distinguish three sorts of work: waged work, work on the household farm or enterprise for which no explicit wage is paid, and domestic work.

Gender: As indicated in the following section, some regions exhibit remarkable gender differentials in child work participation and hours of work. Even where participation rates of boys and girls are similar, they often specialise in different sorts of work. For example, in rural Ethiopia, girls *specialise* in domestic work and boys in farm work (Cockburn 2000). In rural Pakistan, girls in waged work are mostly engaged in seasonal agricultural work whereas boys in waged work are primarily engaged in the non-agricultural sector (Bhalotra 2000). In order for the statistics to inform the direction of policy, they should be presented disaggregated by gender.

The household as the unit of observation: Most micro-econometric research relies upon household survey data that, by their nature, exclude street children and vagrants. They do, however, include foster children and orphan children who are incorporated in households. To the extent that households are the target of policy interventions⁵, this is a relevant unit of observation. However, analyses of these data should take account of household composition and, in particular, of the size and gender of the sibship and the gender and birth order of the child.

⁵ This is typically the case. For a detailed account of the Mexican child labour program, Progresá, see Skoufias and Parker (2000) and for description and analysis of the Bangladeshi Food for Work programme, see Ravallion and Wodon (2000).

2.2. Nature of work

Although the features of the data differ by continent, country, rural/urban sector, gender and type of child work, below we sketch some “stylised facts” that emerge from perusal of micro-data⁶. We will argue below that recognition of the facts is an important first-step in defining the direction of policy-relevant research. *After each fact a quick summary of some of its policy consequences is presented.*

1. *The vast majority of working children in developing countries is engaged in agricultural work, typically on family-run farms⁷.*
 - Parents are, therefore, the main employers of children.
 - Consistent with this, the work participation rates of children tend to be higher in rural than in urban regions. This is noteworthy in view of media attention having focused on child work in export-sector factories, many of which are in urban locations.
 - In Latin America and Asia, a non-negligible fraction of children also work outside the household for a wage. This is much less common in Africa, where wage labour markets are more incipient.

Recent theoretical and policy-level discussion has neglected to recognise the implications of the fact that most child labour is household-based. Thus, for example, considerable attention has been dedicated to consideration of the impact on child labour of minimum wages or trade sanctions (e.g. Basu 1999; Basu 2000) when, given the nature of work performed by most children in Africa (and, indeed, by the majority in other developing countries), these interventions are largely irrelevant (see Bhalotra 1999).

2. *Child labour is not the inverse of school attendance:*

- Household surveys for several developing countries find that a substantial fraction of children are neither in work nor in school. This fraction is typically larger for girls than for boys, an indication that “doing nothing” may correspond to doing housework.
- Many children combine work and school and this is especially common when the work they do is on family-run farms or enterprises. This is facilitated by school schedules that accommodate agricultural seasons. It seems more common to combine work and school in Africa and Latin America than in

⁶ This set of facts was first sketched out in Bhalotra (2001).

⁷ This fact emerges consistently from looking at the vast array of household-survey data from developing countries that include the World Bank’s Living Standards Measurement Surveys (LSMS) and the International Labour Organisation’s SIMPOC Surveys, all of which are downloadable on the internet. Several authors report the higher incidence of rural as compared to urban work and of household-based as opposed to market work; for partial surveys of the empirical research see Andvig (1999), Bhalotra and Tzannatos (2002), Edmonds (2003). A comparison of African and Asian data is made, using the cases of Ghana and Pakistan, in Bhalotra and Heady (2001).

Asia.⁸ Even where they are combined, there is a tradeoff between work participation and school attendance (e.g., Boozer and Suri 2001, for Ghana).

- The effects of engaging in work on education should be considered separately for *attendance* and *achievement* since, even when working children attend school, the quality of the education they effectively receive is likely to be lower than for full-time school-goers (this is shown, for Ghana, in Heady 2003 and discussed, for Ethiopia, in Cockburn (2002)).

Although there does appear to be a trade-off between work and school (both attendance and performance), if the main concern is with low educational attainment (and the gender gap therein), then policies designed to discourage child labour may be rather less important than policies that directly promote school attendance (Ravallion and Wodon (2000) find support for this for the case of Bangladesh).

3. *Most countries exhibit large gender differentials in total child labour force participation. Even more often, the distribution of girls and boys across different types of child work is different.*

A rough generalisation is that the proportions in work and out of school are larger for girls than for boys in Asia, the proportion in work but not necessarily the proportion out of school is larger for boys than for girls in Latin America, and the proportion of boys and girls in work and school is roughly similar in most parts of Africa, though there is gender segmentation in occupations.⁹

Where gender gaps in child labour are large, a good start for policy would be to close the gender gap. This would, of course, significantly reduce average participation rates. To the extent that the girls drawn out of work are put into school, such a policy will generate positive externalities for the next generation of children: a significant body of research shows both that maternal education reduces infant mortality and fertility (e.g. Hobcraft 1993) and that educational and health indicators are better amongst the children of educated mothers (e.g. Strauss and Thomas 1993).

4. *The history and geography of child labour reveal a negative relation of economic development and the incidence of child labour¹⁰. However:*

⁸ See the previous footnote. Once again, the finding that some children participate simultaneously in work and school and that some report participation in neither emerges from looking at data for some 15-20 developing countries that are described in recent empirical research. For example, relevant data for India are presented in Cigno and Rosati (2002) [where, exceptionally, the fraction of “idle” children is greater amongst boys than girls], for Nepal and Vietnam are in Edmonds (2003), for Ethiopia are in Cockburn (2002) and for Ghana and Pakistan are in Bhalotra and Heady (2001).

⁹ Regarding evidence for these claims, see the preceding two footnotes. These stylised facts are the author’s assertions based upon a wide reading of the literature and perusal of a number of data sets from different countries.

¹⁰ This is evident in a glance at aggregate statistics on child labour presented by country and year (see ILO 2002). Using cross-country data for 83 rich and poor countries, Dessy and Vencatachellum (2001) find a negative correlation of child labour and the log of GDP per capita (at

- The relation of household income and child labour in micro-data tends to be non-linear and, in many cases, is weak (see Andvig 1999, Bhalotra and Tzannatos 2002, Brown et al 2003).
- Ownership of productive assets like land can increase child labour. Bhalotra and Heady (2000) illustrate this argument with a theoretical model, and present evidence from rural Ghana and Pakistan. Also see Cockburn (2000), Skoufias (1995).

Economic growth and associated structural and technical change or policies of land reform may, on their own, fail to produce an all-round reduction in child labour in the short run (although Edmonds and Pacvnik 2002 show that an increase in rice prices in Vietnam is associated with a reduction in child labour). On the other hand, cash transfers that are targeted at the very poorest households and tied to school have been shown to be fairly effective (e.g. Skoufias and Parker 2001). The effects on school enrolment may, at least at first, be larger than any effects on child labour incidence if the children enrolling in school come from the group of idle children rather than from the group of working children (as was the case in an experiment conducted in Bangladesh: see Ravallion and Wodon 2000).

3. Contrasting Africa and Asia

This Section focuses on differences between Africa and Asia and this involves briefly restating some of the facts mentioned in the preceding section. Here and elsewhere in this paper, Africa refers to sub-Saharan Africa and Asia to South Asia. In both cases, child labour is concentrated in rural areas and the ensuing discussion is restricted to evidence from rural areas unless otherwise specified. The generalisations made here are likely to be somewhat biased by our focus on countries on which more research has been done. We have not checked whether the statements made here actually hold for a representative sample of households from each continent. Also, the following discussion is not comprehensive. It merely highlights some interesting differences that emerge from recent data analyses.

Differences in child labour evident in household survey data

1. The incidence of child labour is higher in Africa than anywhere else in the world. While child work participation has been declining in Asia and Latin America, economic decline, war, famine and HIV/AIDS have combined to prevent this in Africa.
2. Virtually all working children in Africa are engaged by their own households. While this is also the case for the majority of working children in Asia, a non-negligible fraction work for wages- either on other people's farms or in non-agricultural activity.

purchasing power parity). [They also find a positive relation of child labour incidence and the log of the Gini index of inequality.]

3. Combining work and school is more common in Africa than in Asia. This is likely to reflect (a) more flexible school schedules and (b) the greater engagement of African children in household-based work which, by its nature, is more flexible.
4. Possibly related to the two preceding points, the effects of parental income on child labour in Africa appear to be smaller than in Asia.
5. Gender differentials in work and school participation, on average, appear to be greater in Asia than in Africa.
6. Africa has a larger fraction of orphan and foster children living in the household, typically along with biological children of the household head than is the case in Asia. The limited evidence we have suggests that, in Africa, biological children of the head are more likely to work and less likely to be in school. The evidence for Asia- which rests mainly on comparing sons and daughters with nephews, nieces and others- is ambiguous.

Differences in the correlates of child labour

7. Population densities are typically greater in Asia than in Africa, resulting in a relative shortage of cultivable land in Asia.
8. Possibly related to the above point, labour markets are, on average, better developed in Asia than in Africa.
9. Female heads of household are much more common in Africa than in Asia. For example, 30% in Ghana as compared with 3% in Pakistan.
10. Men and women in African households often own separate plots of land that they may cultivate independently. In Asia, it is far more common for the household to own a single plot of land, rights to which typically run through the male line of the family (for details on land rights in India, see Agarwal 1998?).
11. Household composition (proportions of elderly men and women in the household, proportions of male and female siblings, etc) appears to have more significant *effects* on child labour in Asia than in Africa.

Other potentially relevant differences in the environments facing children in Africa and Asia that we do not have information on but that merit exploration are inequalities in land distribution; differences in tenancy type; development of land markets; credit availability; prevalence and importance of single sex schools; the share of public as opposed to private schools; school quality.

4. Theoretical Models: The Economics Of Child Labour

Constructing and estimating a complete structural model of household time allocation raises some challenging issues (see Blundell *et al* (2000) where some of these complexities are highlighted). Dynamic investment decisions involving household production (of both goods and children), expectations formation under uncertainty, credit constraints, potentially heterogeneous preferences within the household, and varying social and cultural norms must be modelled and estimated. Different authors have focused on different elements of the problem. This Section presents a brief overview of theoretical developments in the economics literature, indicating their relevance to policy.

4.1. Subsistence Poverty

The seminal paper is that of Basu and Van (1998). It has been so influential in generating academic research and stimulating policy debate that it deserves a close look. In this paper, a critical assumption is that children only work when the adult wage (or, more generally, adult income) is too low to support the household's subsistence requirements (the authors call this the luxury axiom). This assumption generates a discontinuous labour supply curve for a region: above a critical level of the adult wage, only adults work and below that level, adults and children work. The labour demand curve is a standard smooth downward sloping curve as long as we admit some degree of substitutability between adult and child labour in production. It is straightforward to see that, in this model, the labour market can exhibit multiple equilibria. If the labour demand curve intersects both sections of the labour supply curve then there is a *good* equilibrium in which only adults work and a *bad* one in which children also work. The remarkable result of this paper is that, in this case, a *ban on child labour can swing the economy from a bad to a good equilibrium*. The idea is this: if the ban can be enforced for a brief period in which all children are withdrawn from the labour force then employers will start chasing after adults to fill the jobs that children had, as a result of which the adult wage rate will be bid up. If the new level of the adult wage exceeds the critical subsistence level then, by the luxury axiom, families will cease to supply child labour. As a result, the good state of the world will persist without any further monitoring of the ban being necessary!

A natural corollary to this analysis is to consider whether imposing an *adult minimum wage might be a good alternative to a ban*. If the assumption of parent altruism embodied in the "luxury axiom" is correct and the level of the minimum wage can be chosen to ensure above-subsistence incomes to households, might this eliminate the need for children to work? Basu (2000) shows that this is unclear. The children of employed adults will indeed be less likely to work but, on account of the minimum wage, unemployment may increase and the children of the newly unemployed adults will be less likely to work, other things being equal¹¹. Whether or not an adult minimum wage will reduce the incidence of child labour in the economy depends upon (a) where the level is set and, in particular, whether it is between the subsistence level and the good-equilibrium wage or above the good-equilibrium wage, and (b) whether the level of labour demand is such that child labour alone could satisfy it. The latter, in turn, depends upon *fertility rates* (number

¹¹ The fact that adult unemployment stimulates the supply of child labour at the household level is referred to as *the added worker effect* in the literature on labour supply.

of children in the economy) and *skill levels* (or on how productive child labour is relative to adult labour). The fact that developing countries are characterised by high fertility rates and low skill levels raises the odds that a minimum wage policy will be counter-productive.

The theoretical model in Basu and Van (1998) and Basu (2000) provides an excellent starting point for discussion of policy and has sparked further academic research. However, the applicability of this model is severely limited by the fact that the vast majority of working children are not in wage employment (see Bhalotra, 1999). Amongst their parents too, self employment is at least as prevalent as wage employment. The wage economy is, in many areas (and especially sub-Saharan Africa) only incipient. More generally, labour markets are imperfect (see Bhalotra and Heady 2001). A model that relies upon labour market equilibria and competitive bidding up of the adult wage rate is therefore unable to capture some of the key features of child labour. Similarly, policies like minimum wage laws will have only very indirect effects on the poverty status of self-employed adults.

4.2. Income inequality

Swinnerton and Rogers (1999) show that *the impact of economy-wide inequality on child labour is, in general, ambiguous*. This is because, while redistributing income will tend to reduce child labour participation amongst labouring households it can, at the same time, increase child labour amongst the households paying taxes. The paper shows that policy measures designed to reduce inequality in the economy will have their most favourable impact upon child labour in high-productivity economies. The intuition for why productivity matters in this context is that high productivity implies high wage rates and, therefore, levels of parental income that are sufficiently high that children need not work. As a result, the supply of child labour falls. High productivity also goes hand in hand with high skill, and as skill levels in an economy improve, children become less substitutable for adults and, in this way, the demand for child labour falls. The authors investigate the predictions of the theoretical model using aggregate cross-country data derived from a variety of publications produced by international organisations. The predictions are broadly confirmed.

4.3. Social Norms

Social norms have been shown to affect socio-economic decisions such as adoption of new technology (Bandiera and Islam 2001), fertility levels (see Krishnan 2001) and child labour (e.g. Rogers and Standing 1981). In a development of the multiple-equilibrium model of Basu and Van (1998), Lopez-Calva (2000) explores the role of social norms relating to how acceptable child labour is. *Policy intervention in a model of this sort has the potential to solve coordination problems between households* and switch the economy from an equilibrium with child labour to an equilibrium in which children do not work. Andvig (1999) argues that if it were possible to change norms about what girls and boys should do, economic efficiency would improve. Social norms do seem responsive to economic change. For example, in Zimbabwe, as also in some other African countries,

domestic servants were predominantly boys during the colonial era but they are now predominantly girls (see Grier, 1994).

4.4. Credit Market Imperfections & Commitment Failure

Using insights from the larger and older literature concerned with educational investments, some authors have modeled child labour as arising from credit market constraints (e.g., Ranjan (1999, 2002), Lahiri and Jafarey (2002)). Credit market failure means that not everyone can borrow as much as they like.

In the context of an economy with poor households, Baland and Robinson (2000) describe child labour as arising as a result of the impossibility of inter-generational contracting. They show that a socially inefficient level of child labour can arise when bequests (transfers at death) from parents to children are zero or when credit markets are imperfect, even if parents are altruistic and child labour is socially inefficient. *The conditions under which child labour tends to arise are more likely to characterise poor rather than rich households.* In the zero bequests case, child labour is a substitute for negative bequests, that is, a mechanism for transferring income from children to parents. In the imperfect credit markets case, it is a substitute for borrowing, a mechanism for transferring income from the future to the present. Given this, it would appear that there is a case for banning child labour. The authors analyse the welfare implications of a ban. They show that *while a ban may have the potential to raise welfare, it may be difficult to generate political support for it from richer sections of society.*

4.5. Labour and Land Market Imperfections

Productive assets (like land) owned by the household play a dual role in being a source of wealth and, at the same time, offering the opportunity for productive employment. This generates opposing effects on child labour. It is important to recognise this in perusing the results of available studies. It is also important for policy purposes as it makes clear that *the effects on child labour of land redistribution may be very different from the effects of income redistribution*: rural land redistribution holds the potential to be counter-productive and result in an increase in child labour, at least in the short run. Indeed, a remarkable stylised fact that emerges from analysis of microdata for several developing countries is that, on average, the children of land-rich households are more likely to work and also less likely to be in school than the children of land-poor households (see Bhalotra and Heady 2000). Since land is the most important store of wealth in agrarian societies and a substantial fraction of households do not own land, *this challenges the commonly held presumption that child labour emerges from the poorest households.*

This seeming paradox can be explained by what economists would describe as imperfections in the markets for both labour and land (see Bhalotra and Heady 2000, Cockburn 2001a). While the effects of labour and land market imperfections are mutually reinforcing, credit market failure creates an opposing effect that tends to weaken the wealth paradox. This is because rural households that can offer land as collateral are less likely to be credit-constrained than others.

4.6. Child Labor and Fertility

Other models of child labour have built upon an older demographic (e.g. Caldwell and Caldwell (1967), Blurton Jones et al, (1989), (1994)) and economic (see Becker 1981) literature in modeling the household (parents) as taking decisions on child labour and other human capital (or child quality) investments jointly with fertility (or child quantity) decisions (see Eswaran (2000), Cigno, Rosati and Tzannatos (1999)). Baland and Robinson (1998a) explore the implications of endogenous fertility for efficiency. *How plausible is it that fertility is encouraged by the prospect of sending children to work?* Deaton and Muellbauer (1986) show that even in developing countries the economic costs of having children are high (30-40% of household income). The income due to child labor is not likely to be sufficiently high to compensate: in Ghana children supplied around 5% of total hours worked, in Côte d'Ivoire around 10% (Andvig, 1999).

4.7. Preference Heterogeneity in the Household

A growing literature argues that (a) men and women have different preferences within households and (b) the relative power of women in deciding how to spend household resources (including deciding on the level of investment in child quality) is increasing in their earning power. Basu (2001) shows that the relation of women's power and child labour is, in general, non-linear. Using Indonesian data, Galasso (2000) investigates variations in *child labour as a function of the distribution of power between mothers and fathers* and she finds some support for the view that children work less and study more in households where the mother has a greater weight in decision-making. Other studies allow for the possibility that child workers are independent bargainers who influence the allocation of resources within the household. Bhalotra and Attfield (1998) use data from contemporary rural Pakistan. Ignoring work status, there is no apparent gender differential in the allocation of resources. However, once work status is introduced into the model, they find that working boys acquire a larger share of household resources such as food and child-specific goods than do non-working (or dependent) boys. In contrast, working does not bestow any benefit upon girls. This may reflect differential preferences. However an alternative interpretation is that dependent girls are in fact as heavily engaged in domestic chores as working girls are in more explicit forms of work, whereas working boys are in fact more active than dependent boys. Using nineteenth century data from the US, Moehling (2001) similarly investigates the impact of child labour on the expenditure patterns of households. Her results are mixed, depending upon the category of expenditure in question but there is overall support for the hypothesis that children's share of family consumption is increasing in child labour.

4.8. Parent Altruism

Micro-data from several developing countries reveal a surprisingly small effect of parental income on child labour and, related, a considerable prevalence of child labour amongst households that cannot be classified as subsistence-poor (see Bhalotra and Tzannatos 2000 for a partial review). These findings potentially challenge parent altruism because altruism predicts a negative effect of parental income on child labour that is

larger the larger is the degree of altruism. Economists typically assume parent altruism and, in popular economic models of child labour such as that of Basu and Van (1998), it is critical. This assumption has far-reaching implications for policy. For instance, the *effectiveness of income transfer programs targeted at child labour is conditional on the degree of parent altruism*. Also, if parents are altruistic, it may be difficult to argue that the state is more so and, consequently, it may be difficult to *justify legal interventions such as bans on child labour*.

The only microeconomic evidence on altruism that we are aware of is in Bhalotra (2001). This paper proposes a method of testing for altruism and presents results for rural Pakistan. The estimates decisively reject the null of parent selfishness. This result is robust to the definition of the child good as child clothing, child schooling or, inversely, child labour. The paper finds, however, that, parents spend less on children, other things equal, if they smoke. This is consistent with the addictive properties of tobacco. It is also consistent with fathers having different preferences than mothers, tobacco being a predominantly male good.

5. The Evidence

There have been a number of empirical studies of child labour in recent years. However, there remains considerable scope for good empirical work in this field. This section attempts to draw out some patterns from the variety of results in the literature, corresponding to the vast variety of regions, types of child work, and empirical specifications. It is organised by variable. (Table 13 summarises some of this evidence).

5.1. Child-Specific Characteristics

Child-specific characteristics that may be expected to influence the current-period probability (or intensity) of child labour include *age, gender, birth order, ability, relation to the head of household (or to the relevant adult decision-maker), health, and accumulated years of education*. Most existing research defines child labour to refer to children over the age of 5, 7 or 10 and under the age of 15 or 18 and most of these studies include age as a regressor. Most studies also include a gender dummy as a regressor, although this is restrictive relative to allowing separate equations for boys and girls. The latter strategy, adopted in a few papers, permits the effects of other covariates (like parent's education or size of farmland) to be different for boys and girls. Birth order, relation to household head, health and education of the child are neglected in several studies. Consider, briefly, the expected effects of each and the available evidence.

1. Age

There is no unambiguous theoretical prediction of the effect of age on child labour but the evidence from many countries is that it is positive and quadratic. Child labour may be expected to be increasing in age if labour productivity is increasing in age. Alternatively, child work may be perceived less harmful or more socially acceptable as the child grows older. At the same time, school participation may be positively related to age. There is some evidence that poor health delays school enrolment in developing countries (see Glewwe and Jacoby 1995). Thus the estimated impact on child labour may be positive or

negative. In the case of girls, both school and any work that takes the girls outside the home may become less acceptable as girls get older: in Pakistan, for example, the participation rates of girls in wage work exceed those of boys up to age 15, after which they decline in favour of home-based work. Thus *the effect of age is likely to be gender-specific*.

2. Gender

In Africa and Asia, the educational attainment of girls tends to fall below that of boys. *The data do not always show girls as more heavily engaged in work than boys because they are often more likely than boys to be classed as “inactive”*. This probably corresponds to a greater engagement in household chores. Gender differences in child labour may arise if boys and girls face different returns to education or if parents perceive, for example, boys to be more likely to offer old-age support to them¹². Given work participation, the *type of activity* that children engage in may also be gender-specific. Although the physical strength and endurance of boys and girls may not differ much until adulthood, anticipation of gender-segmentation in work activities may imply a segregation of tasks in childhood.

Regressions run on data that pool observations for boys and girls and include a gender-dummy produce mixed results (see Psacharopoulos (1997)), Alessie, Baker et al. (1992), Canagarajah and Coulombe (1997) and DeTray (1983)). This is not commonly done but an interaction between age and gender is likely to be revealing. Some studies estimate separate models for boys and girls, allowing the intercept as well as the slopes (i.e. the effect of every covariate) to be gender-specific (e.g. Nielsen (1998), Ilahi (1999), Cockburn (2000), Ray (2000), Bhalotra (2000a, 20001b, 20001c), Bhalotra and Heady (2000)). For Asian countries, the gender dummy tends to be significant indicating a greater participation of girls on account of factors that are not captured by the covariates included in the model. It is tempting to ascribe this to culture but it could equally be a reflection of technology. In the papers that estimate separate models for boys and girls, most variables show significant differences in their effects by gender. *Since many international and national organisations influencing policy already regard educating girls as a specific priority that is expected to yield large social returns, it is useful for policy to have some guidance from research on what causes girls to work, if this is distinct from what causes boys to work*.

A startling finding in this direction is that the data for rural Pakistan suggest that *boys take wage work only when their income contribution is necessary to household subsistence whereas girls take wage work even when the household could survive without this* (Bhalotra, 2000a). The raw data are consistent with this result: households supplying boy labour are on average poorer than households supplying girl labour. Another pertinent finding is that, in settings as diverse as those of rural Ghana and Pakistan, the probability (and intensity) of girls' work on household-run farms is increasing in land size, income constant. In contrast, land size has no significant effect on boys' work (Bhalotra and Heady 2000). These results are consistent with the (discounted) returns to

¹² There is a more general literature examining gender bias in intrahousehold resource allocation, including the allocation of household time. See, for example, Behrman and Deolalikar (1993) for a study of the intrahousehold distribution of market labour supply in rural South India.

school for boys being perceived to be larger than for girls, although there may be alternative explanations.

3. Birth Order

The birth order of the child may influence whether the child works for economic or cultural reasons¹³. For example, the oldest child in the household may be expected to work and to contribute, along with parents, to the education and upkeep of younger children (e.g. Levison (1991), Patrinos and Psacharopoulos, 1995). Ota and Moffatt (2002) directly investigate birth order effects using a small sample of data from India. They find a significant role for birth order, although analysis of their results is compromised by the fact that they do not condition on the socio-economic status of the household. Bhalotra (2000) and Bhalotra and Heady (2000) investigate birth order effects in Pakistan and Ghana by gender and find that they are insignificant. Other authors (e.g. Goldin, 1979) investigate birth order effects indirectly by including as regressors the number of older and younger brothers and sisters. Goldin's results indicate a decrease in work participation with descending birth order.

4. Biological Relation To Decision Maker

Households in developing countries are large and complex and often contain not just vertical but also horizontal extensions. As a result, nephews, nieces and sisters-in-law may be counted amongst children along with sons and daughters of the head of household. In sub-Saharan Africa, there is, further, a high prevalence of the practice of fostering children and of taking in orphans (see Section 8). If child labour is decreasing in the altruism of the decision-maker and altruism is to some degree motivated by "the selfish gene" then we may expect to see a higher incidence of child labour amongst non-biological children of the household head.

Evidence from a cross-section of African countries indicates that *biological children of the head, as opposed to other relatives and non-relatives, are more likely to attend school* (e.g. Case, Paxson and Ableidinger, 2002). The motivation for this may be genetic to the extent that better educated children are likely to do better on the marriage market, to be richer and healthier and, thereby, to yield, on average, more descendents. Alternatively, the motivation may be economic if parents believe that their own children will be more likely to remit to parents a fraction of their education-augmented income (see Baland and Robinson, 1998)). *Evidence of the biological-child effect is less apparent for child labour than it is for schooling*. For example, in an analysis of Peruvian data, Levison and Moe (1998) find no effect. The evidence for two countries in Bhalotra and Heady (2000) is mixed: sons and daughters of the household head are more likely to be in work in rural Pakistan, although only daughters are less likely than other child relatives to be in school. In rural Ghana, sons of the head are less likely to be in work and daughters are no more or less likely to work than other 10-14 year old girls in the household; the effects on school attendance are insignificant.

5. Completed School Years

¹³ See Behrman and Taubman (1986), who discuss reasons why birth order may affect investments in children.

The completed years of education of the child is likely to influence child work participation conditional on age. For instance, if returns to school increase with the number of school years or if there are sheepskin effects then parents may concentrate investments in one child rather than spread schooling investments across children in the household (see Horowitz and Wang (2001).

We know of only three studies that include completed years of education in regressions for child labour: Mueller (1984) for Botswana, Bhalotra (1999) for Pakistan and Bourguignon et al (2002) for Mexico. None of these authors attempt to address the endogeneity problem arising from the fact that completed schooling is likely to be correlated with current decisions on schooling vs work since it is extremely difficult to find a valid exclusion restriction. The results obtained for this variable are not very robust.

6. Health Endowments

The health of the child will, at any time, tend to determine his or her ability to perform work, walk to school and perform the necessary cognitive activity at school. Extreme cases of poor health may be expected to lead to inactivity. The effect of variations in health beyond this are ambiguous because poor health lowers the productivity of both work and schooling. As indicated earlier, there is evidence that childhood malnutrition delays school enrolment.

There is scarce evidence on the relation of health and child labour. Morbidity variables such as whether the child was ill in the week before the survey (a question posed in most LSMS surveys) are clearly endogenous by their contemporaneity: it is unclear whether ill-health affects participation in work or whether participation in work creates illness. The conditional correlation of illness with both work and school participation is found to be insignificant for children in rural Pakistan (see Bhalotra, 1999) and Ghana (see Bhalotra 2002). Stock variables like weight and, more so, height may be less subject to simultaneity bias. Their effects on child labour in Ethiopia are explored in Bhalotra and Cockburn (2003). They find that healthier children, as indicated by both height and weight, are less likely to be inactive and, given activity, more likely to be in school than in work. *This suggests synergies in health and education*, reflected in recent interventions such as Progresa (see Section 8).

7. Innate Ability

The innate ability of the child may be expected to be positively correlated with school attendance, other things being equal. Less clear, but plausible, it may also make work engagement more likely than inactivity. Ability is particularly difficult to measure and, in most data sets, no attempt is made to measure it. Test scores for reading and maths are available for Ghana. Analysis of these data show that *ability increases schooling and decreases child labour for boys, while having no significant impact on the time allocation of girls* (see Section 6).

5.2. Socio-Economic Status Of The Household

Research on children in the US and other industrial economies has, in areas ranging from education to drug-abuse, noted the significance of family background in determining both

current and future outcomes for children (e.g., Behrman, Pollak and Taubman (1995)). In developing countries, the role of the state in provision of education and health and in buffering families against income shocks is considerably more limited than in richer countries. As a result, child well-being in low-income countries is much more dependent upon the resources and the preferences of households and the communities in which they live. Empirical research on child labour indicates that household characteristics are the most powerful set of determinants of child labour supply.

The socio-economic status of the household is often a strong predictor of child welfare outcomes in both poor and rich economies. This is measured, variously, by the income, expenditure or assets of the household, or else by the education, age or occupation of adults in the household. Expenditure is often favoured over income because it is less volatile and so more likely to reflect permanent income. The other indicators are also more stable than income. A close relative to household expenditure which is consistent with an inter-temporal model is the net dissaving of the household (suggested in Blundell and Walker (1986), used in studies of child labour by Bhalotra (1999, 2000)). In the case of child labour, more than in the case of most other measures of child welfare, the effects are quite sensitive to which of these measures is used. It is often appropriate to include more than one of the indicators of socio-economic status. For instance, better educated parents generate more resources and, if child leisure (or schooling) is a normal good, their children should be less likely to labour. If we control for resources (household income), parental education is expected to exert a further dampening effect on child labour if more educated parents value education more highly than less educated parents. Similarly, for a given level of household income, the occupation of parents may influence the probability that their children work if children are more likely to adopt their parents' occupation (and accompanying assets) in certain occupations (e.g. farming) than in others. We discussed, in Section 4, the fact that the effect of productive assets on child labour compounds standard income effects with substitution effects to produce an effect the sign of which is *a priori* ambiguous, though it can be determined empirically. The rest of this Section discusses the evidence on some of the often used measures of SES.

1. Income Effects

The effect of parental income on child labour carries information on credit constraints and on parent altruism. Moreover, if estimated from a correctly specified model, it is a parameter of direct interest to policy formulation as it offers a quantitative *estimate of the likely impact on child labour of making income transfers to households in which children work*.

What is the evidence? In a survey of case studies of child labour in India, Bhatta (1998) concludes that the relation of child labour and poverty is ambiguous. The results of micro-econometric analyses of household survey data are similar in that they do not suggest a consensus. Although a meta-analysis of available econometric results would be frustrated by the use of different definitions of child labour and of poverty, it is clear that the average picture is of rather *smaller* effects of household income (or poverty) than one might have expected (see, for example, Grootaert (1998), Kassouf (1998), Patrinos and Psacharopoulos (1997), Patrinos and Psacharopoulos (1995), Psacharopoulos (1997)), Bhalotra (2000a) and Ray (2000), Boozer and Suri (2001), amongst others). These studies

typically report reduced-form participation equations. In a partial review of these studies, Bhalotra and Tzannatos (2000) discuss specification issues that may create a downward bias in the estimate of this effect. However, these considered, income effects on child labour still look small.

There are cases where a sizeable income effect is observed and a promising avenue of research would be to investigate whether it is different markets and institutions or different estimation methods that distinguish these cases from the others. For example, Edmonds (2001) shows that the unconditional non-parametric relation of income and child labour over successive years of the LSMS panel for Vietnam is negative. In an analysis of the effects on child labour of a new pension scheme in Brazil, Carvalho (2000) finds a fairly large negative impact of income, larger for girls than for boys, especially when the (pension) income recipient is a grandmother rather than a grandfather.

Effects of income on schooling depend upon whether we study enrollment or achievement or some other indicator of educational attainment. In a review of income effects on different indices of education, Behrman and Knowles (1999) conclude that these effects are often small. On average, however, *a positive impact of income on education is rather more evident than the corresponding effect on child labour* (e.g. Filmer and Pritchett, 1998, Canagarajah and Coulombe 1998, Carvalho 2000, Bhalotra and Heady 2000). This reinforces the fact that child labour and schooling are not strict “opposites”, so that *policies directed at reducing child labour may not imply that more children are in school. Conversely, investing in schools may not draw children out of labour* (see Section 8).

Income elasticities for both child labour and schooling are often higher for girls than for boys (for example, see Ilahi (1999), Ravallion and Wodon (2000), Behrman and Knowles (1999), Carvalho 2000). This suggests that *education is more a luxury good for girls than for boys*, which is consistent with the fact that, in many traditional societies, educated women do not seek employment or, when they do, they earn a lower wage than men with comparable education.

2. Poverty Compulsions

A negative effect of parental income on child labour says that the children of the poor are more likely to work than the children of the rich. This is not the same as saying that poverty compels child labour. The latter is a sharper question with clearly relevant policy implications. If poverty compels child work then trade sanctions or bans on child labour will tend to impoverish the already very poor households supplying child labour¹⁴. Second, the force of any interventions in the education sector is likely to be limited unless they also lower the opportunity cost of sending a child to school. Since the marginal utility of consumption increases very rapidly as people get close to subsistence¹⁵, creating matching increases in the marginal return to education may not be in the scope of policy.

¹⁴ The recent surge in public interest in child labour has provoked debates on trade sanctions and the setting of international labour standards (e.g. Golub (1997), Fields (1995), Basu (1999), Bhalotra (1999)).

¹⁵ This simply means that people value consumption very highly as they approach subsistence levels where consumption resources are very scarce. This intuitive idea seems not to have exerted

Bhalotra (2000) argues that the question of poverty compulsions can be addressed by studying the wage elasticity. If poverty were compelling then children would appear to work towards a target income, set as the shortfall between subsistence needs and other income. A testable prediction of this scenario is that a decrease in the child wage will result in an increase in child hours of work- and *vice versa*. This will be reflected in a negative wage elasticity. In a world without subsistence constraints we would expect that a rise in the wage rate stimulates an increase in labour supply, that is, that the wage elasticity is positive¹⁶. Studying the sign of the wage elasticity therefore offers a nice test of survival constraints.

Most studies of child labour do not include the child wage as a regressor. Information on the child wage is typically only available for working children and most previous research has estimated reduced form participation equations. Negative wage elasticities reflect a dominant income effect and this we can only expect to observe at the intensive margin, that is, with data on hours rather than on participation. The only study we are aware of that provides the relevant estimates using hours data finds a negative wage elasticity for boys and a wage elasticity of zero for girls (see Bhalotra, 2000). These results are for children engaged in wage work in rural Pakistan, who comprise 10% of the 10-14 year-old population. They suggest that boys work under poverty compulsions. This is much less clear in the case of girls. The policy implications of these findings are detailed in Section 8.

The contribution of children to household income :Working children often contribute a substantial fraction of household income. This is apparent from case studies (e.g. See Sharma and Mittar (1990) and Swaminathan (1998) for India, Cain (1977) for Bangladesh, Myers (1989) for Paraguay,) as well as from analysis of large scale household survey data (see Patrinos and Psacharopoulos (1994) and Kassouf (1998) for Brazil, Cockburn (2001b) for Ethiopia and Bhalotra (2000a) for Pakistan). This may suggest that households *need* the child's income, though it is of course not a necessary implication.

4. Parent's Education

Parental education is an alternative index of socio-economic status and a good predictor of household income. *Controlling for household income, parents' education is found to have significant effects on child education* (see Strauss and Thomas (1995)). This is consistent with better-educated parents having a taste for child quality. For a review of specific effects obtained for a number of countries, see Bhalotra and Tzannatos (2000).

Distinguishing the education of the father and the mother of the child typically reveals effects of different sizes and significance. This is consistent with the following interpretations. First, if education determines bargaining power between spouses and if mothers and fathers have different preferences over children then we would see different

its power until recently. See, for example, Deaton (1997, Chapter 6) in the context of the precautionary savings hypothesis.

¹⁶ For the village economies that we are concerned with, we can safely ignore “backward bending” labour supply behaviour which occurs only at high wage levels. The negative wage elasticity associated with subsistence constraints occurs at low wage levels, yielding a “forward falling” labour supply curve.

effects of mother's and father's education on child labour. In particular if, as the evidence suggests, mothers are more altruistic towards children (see Strauss and Thomas (1995) for a general review and Bhalotra (2001) in the context of child labour), then we would tend to see a stronger negative effect flowing from increases in mother's education. This is also what we would tend to see if the productivity of child schooling depends upon mother's education to a greater degree than upon father's education. This is because mother's spend more time at home with children and whether directly through home teaching or indirectly, her education influences what her child gets out of a year of schooling (see Foster et al (2000), Lam and (2001)). Alternatively if most fathers work but only very educated mothers work, and if mothers and children are substitutes in household production then we may find a smaller negative effect on child labour from mother's as compared with father's education. Policy interventions should consider not just the direct impact of mother's education on child labour and schooling but also the likely indirect effect working through reduced fertility. The absolute level of women's education is very low in most developing countries and the returns are often very high (e.g. Appleton 1999). Since uneducated daughters tend to grow up to produce uneducated daughters and since female education is known to generate strong social externalities (e.g. Sen 1999: chapter 8) there is a *strong case for policy interventions that promote female education*.

5. Employment Status of Parents

The labour supply of an individual in a household depends, in general on her own wage and that of other household members. The wage rate of other members can be replaced by their employment status¹⁷. We can then directly ask policy relevant *questions such as how increased unemployment amongst adult men (on account of, for example, structural change associated with trade liberalisation) or employment-generation amongst women (resulting, for example, from a micro-credit scheme that favours women in offering production loans) impact upon child labour in the homes of the affected men and women*.

Consider the evidence on the effects of parent employment status. Using data from the Phillipines, Sakellariou and Lall (1997) find that the children of working mothers are more likely to be engaged in work and this effect is especially marked for female children. A similar result suggesting complementarity of the labour of women and children is reported for Columbia by Cartwright (1996) and for Pakistan by Bhalotra (2001).¹⁸ In their study of Bolivia, Cartwright and Patrinos (1996) find that children shift from full-time to part-time work when mother's enter the labour market. This is an interesting illustration of the fact that results from a univariate model with choices in-work vs not-in-work may appear to contradict results from a multinomial model in which the choices are defined to distinguish part-time and full-time work. In their analysis of Ghanaian data, Canagarajah and Coulombe (1998) find that child labour is encouraged by parents being in self-employment. As parents in self-employment will typically own productive assets, this is consistent with our discussion of wealth effects (Section 4).

¹⁷ This gives a conditional model. This is useful when data on wages are largely missing given the prevalence of self-employment.

¹⁸ This is the only study that allows for the work status of parents to be jointly determined with that of children.

6. Price Effects

In contexts, such as that of Africa, where household production is substantial, the prices of own-produced goods have income and substitution effects on family labour. The income effect, arising from an increase in farm profits, will tend to have a depressing effect on child labour (and other family labour). As long as markets are imperfect, the price increase will, at the same time, encourage household labour by virtue of raising its productivity. The two studies that have used information on product prices find that the *income effect usually dominates*. Thus increases in rice prices over time appear to have contributed significantly to the reduction of child labour on farms in Vietnam (Edmonds and Pacvnik, 2002). Alessie *et al* (1992) find that the income effect of producer price variations in the Cote d'Ivoire dominates the substitution effect among youths who attended school in the previous period. However, the reverse is true for youths who previously worked. Unlike in the Vietnam study, these results are conditional on food expenditure (lagged a year to mitigate endogeneity).

Variations in the prices of consumption items can also influence child labour though the sign of this effect is ambiguous and there does not appear to be any empirical evidence on the subject (see Cockburn, 2002: Chapter 2).

7. Wealth Effects: A Paradox?

Several studies investigate the conditional impact on child labour of assets owned by the household, most commonly, land owned. Many of these studies then do not include any other measure of resources such as household consumption or income. Estimates of the land coefficient show up as zero, negative or positive, seemingly defying interpretation. In fact, the range of signs obtained is unsurprising since land ownership generates price (or productivity) effects in addition to wealth effects as long as markets are imperfect (see Section 4). The wealth effect will tend to decrease child labour. This will be reinforced under imperfect credit markets: to the extent that land is an important form of collateral, larger landowners will be less constrained in acquiring credit. Working in the opposite direction is the fact that the additional family worker is more productive, the larger the family farm. Other productive factors such as livestock, irrigation and electricity may, like land, increase the return to child labour at the same time as they improve income generation but the case of land is especially interesting because it is not easily bought or sold and because it is often the most important store of wealth that a rural household has.

A first step in separating the wealth effect from the other (substitution) effects of farm size (or other indices of productive assets) is to include both farm size and income in the equation explaining variation in child labour¹⁹. Then a zero coefficient on land in an equation for child labour suggests no market imperfections or else counter-balancing

¹⁹ It is much more complicated to try and disentangle the different types of substitution effects: the marginal productivity effect associated with labour and land market failure and the collateral effect associated with credit market failure. In a dynamic model, these may be further compounded with an inheritance (via experience/education) effect of farm size.

imperfections. A non-zero coefficient signals market imperfections. A positive coefficient suggests that both the land and labour markets are imperfect and more so than the capital market. A negative coefficient suggests that the capital market is imperfect and more so than the land and labour markets (see Bhalotra and Heady, 2000).

The evidence is now summarised. A negative effect on child labour is found for Peru (Levison and Moe (1998)), and a positive effect for rural Indian children (Cigno and Rosati 2000) and for girls in rural Ghana and Pakistan (Bhalotra and Heady (2000)). Insignificant effects are reported for Ethiopia (Cockburn 2001a), Vietnam (Rosati and Tzannatos 2000), boys in rural Ghana and Pakistan (Bhalotra and Heady (2000)) and for all-children in Ghana (Canagarajah and Coulombe (1997)). In his application to rural Ethiopia, Cockburn finds that some assets (e.g., livestock, land) increase child labour in Ethiopia while others reduce it (e.g., oxen, ploughs). These results are not strictly comparable as they emerge from different equation specifications.

8. Land Tenancy and Organisation

Land tenancy forms may affect the probability of child work. For instance, one rationalisation of the benefits to the landlord from pursuing sharecropping instead of renting the land out or hiring wage labour in, is that it improves the landlord's access to labour by making available the labour of the tenant's family in addition to the labour of the tenant (e.g., Basu, 1997). The *sub-division of land within the household* may affect the level of child labour, either for reasons of productivity (scale efficiency and efficient input-allocation – see Udry (1996) for example) or for reasons of bargaining (e.g. Iversen 2000). In sub-Saharan Africa, in contrast to Asia, it is not uncommon for a household to own more than one plot of land and, indeed, for the plots to be controlled by different members of the household, men and women. The only study of child labour that includes land tenancy variables is Bhalotra and Heady (2000). They find that all children in Ghana and girls in Pakistan are more likely to work in households that rent land, and that Pakistani boys are more likely to work in households that sharecrop land. “Free farms” raise work participation in Ghana amongst boys and girls and village farms raise participation amongst girls alone. The estimates for Ghana show that, at a given land acreage, the number of plots of land owned by a household also raises child labour, a result that might be investigated further by modelling bargaining between the men and women that own the different plots, allowing for heterogeneity in parental preferences over their children.

9. Income Shocks

Rural households, many of whom derive their income from farming, are particularly vulnerable to income fluctuations. These may be associated with the any or all of the weather, pest infestations, the illness or death of a household member, international fluctuations in commodity prices, or war and conflict. Given their limited access to credit and insurance markets, rural households take both *ex ante* and *ex post* measures to buffer their consumption against income shocks. *Ex ante*, members of a household may diversify their income sources, and this may involve increased child work participation. *Ex post*, or following an income shock, the household may send children to work to make

up the shortfall. For example, using panel data for rural India, Jacoby and Skoufias (1997) find evidence of children being taken out of school and sent to work in response to negative income shocks. The smaller the accumulated *wealth* of the household and the more limited its *access to credit*, the greater will be its need to use child labour as an insurance device (evidence of this is in Dehejia, Beegle and Gatti 2003). *Potentially helpful policy interventions in this area include provision of consumption credit (which is often harder to acquire than credit for production), public health and sanitation facilities, and the building of irrigation networks.*

10. Credit constraints

Cross-country data on child labour incidence and financial development indicate a negative association of these two variables (see Dehejia and Gatti 2002). Using a panel of data for twenty-five villages in Pakistan to examine the sequential nature of schooling decisions, Sawada and Lokshin (2001) find a high educational retention rate conditional on school entry. School progression rates become comparable between boys and girls at higher levels of education. Consistent with credit constraints, the human and physical assets of the household as well as its income variability have significant effects on the educational patterns of children. The authors identify supply-side constraints on girls' primary education, indicating the importance of supply-side interventions.

11. Intergenerational persistence in child labour

Emerson and Souza (2002) use survey data from Brazil to intergenerational persistence. They find that individuals who start work at a young age end up with lower levels of educational attainment and lower earnings as adults. Also, children are significantly more likely to be engaged in work if their parents worked when young, which shows as a significantly negative effect of the education of both parents and grandparents on the probability of child work. Using the Brazilian data again, Ilahi, Orazem and Sedlacek (2000) find that individuals who enter the workforce before the age of thirteen earn 13-17% less when adult and face a significantly higher probability of being in the lowest two income quintiles. Although child labour does appear to reduce the productivity of schooling, the net effect of an extra year of schooling on adult wages is positive, irrespective of whether or not the child works while attending school. *These results confirm that child labour perpetuates poverty.*

5.3. Other Household Characteristics

1. Household Size

It has been argued that children from larger households are more likely to work, as a consequence of resources per person being smaller in larger households (e.g. Patrinos and Psacharopoulos, 1997). However, we would not expect this association to persist after controlling for household income *per capita*. An alternative basis for positing a correlation of household size and child labour is that fertility may be encouraged by the prospects for child work (e.g. Rosenzweig and Evenson (1977), Cain (1977), Singh and

Schuh (1986), Eswaran (1998), Bardhan and Udry (1999)). In this case, desired household size is endogenous. Yet household size is typically treated as exogenous in empirical studies. It is clearly of policy interest to determine the association between fertility and child labour. *For example, what impact are fertility-control initiatives expected to have on child labour?* In a simple economic model of labour supply and demand, a lowering of fertility will reduce the supply of available children and, amongst other things, raise the equilibrium adult wage rate (see the model in Basu and Van (1998), for example). In OECD countries, larger households and higher fertility are closely connected. In contrast, households in developing countries expand not just downwards (children) but also upwards (grandparents) and horizontally (uncles, aunts). For this reason, household size is not a good indicator of fertility. A better indicator is a simple count of the number of children in the household. In the following Section, we review estimates of the impact of this variable on child labour.

Since size and composition are clearly correlated, the relation between household size and child work will depend upon whether household composition is held constant. The relation of household size and child labour will also depend, in rural areas, upon whether farm size is held constant. Controlling for land size, we may expect child hours of work to be decreasing in household size because of diminishing returns. The literature contains a variety of specifications and often two of these three variables are in the model rather than all three.

Unsurprisingly, empirical results are diverse (see Cochrane, Kozel and Alderman, 1990). For rural Ghana, Bhalotra and Heady (2000) find a negative effect of size for girls and no effect for boys. For rural Pakistan, they find the reverse: a negative effect for boys and no effect for girls. Negative effects for all-children are also found in Cigno, Rosati and Tzannatos (2000) for rural India and in Rosati and Tzannatos (1999) for Vietnam. Ilahi (1999) finds a negative effect for boys and no effect for girls in Peru. Also using data from Peru, Patrinos and Psacharopoulos (1997) find a negative effect of the number of siblings (not household size) on the probability of combining work and school relative to the probability of simply attending school if the number of children not in school is held constant (insignificant if this control variable is not included). A positive effect is found in Psacharopoulos (1997) for Venezuela. Patrinos and Psacharopoulos (1995) find a positive effect of the number of siblings (not household size) on the probability of combining work and school relative to the probability of simply attending school in Paraguay, though not in Peru.

2. Household Composition

Most theoretical and policy-level discussion of child labour implicitly thinks of the representative child. We indicated in Section 1 that a feature of the child labour decision that makes it analytically different from the decision to supply adult labour is that the decision is taken not by the child but by the parent. A corollary to this is that the parent is often making this decision not for one child but for many. A second motivation for studying the effects of household composition is that it offers some (limited) insight into the intra-household allocation of work. Rural households are large and complex and the variation in composition provides a rich base for analysis. A particular axis of interest is

gender. In households that are credit-constrained, siblings compete for scarce resources. If investments in boys yield a higher payoff or if there is parental favour for boys, then *children with sisters will tend to do better than children with brothers* (see Garg and Morduch 1998).

Several studies of child labour include as regressors variables reflecting the *age and gender structure* of the household. Assuming that a child is a closer substitute in household and home production to other children, particularly those of the same sex, the number/proportion of these children will negatively affect his/her participation in these activities. Some degree of substitution may also be expected between children and adults of the same sex. However, children may also be substitutes in household education investment decisions, rendering the net effect on labour and school participation ambiguous. The effect on leisure is unambiguously positive.

There is some evidence that children (especially girls) with more *siblings* work longer hours on average (see Lloyd (1993) and Jomo (1992)). Grootaert (1998) finds no clear evidence of sibling effects in Cote d'Ivoire although Coulombe (1998), using the same data, finds that the number of children under-6 raises work participation for older children. In Vietnam, both the number of siblings under 6 (pre-school) and the number of school-age siblings (6-15 years) raises the probability of school-age children being at work (Rosati and Tzannatos, 2000). This is confirmed for pre-school children by Liu (1998). Ilahi (1999) finds no household composition effects on child labour in Peru. Using the same data, Sasaki and Temesgen (1999) confirm that the number of children in the household does not affect full-time work participation of children in Peru but they find it does increase the probabilities of school and work and of being engaged in neither, relative to full-time study. On the other hand, estimates of binary probits in Ray (2000) suggest a positive effect of the number of siblings on work probabilities in Peru. The presence of younger siblings discourages work participation amongst girls in rural Ghana, household composition having no effect on the work hours of Ghanaian boys (e.g., Bhalotra and Heady, 2000). The same study finds that the presence of younger boys (under 10) in the household reduces the work participation of both boys and girls aged 10-14 in rural Pakistan, whereas the presence of little girls in the household has no effect. Without controlling for the work status of the mother, it is difficult to interpret this in terms of relative neglect of little girls. Cigno, Rosati and Tzannatos (2000) find that having both younger siblings (0-6) and siblings in one's own age group (6-12) raises the probability of working of school-age children in rural India. Similarly, the number of 0-6 year old siblings raises the probability of work relative to school-only in Peru (Patrinos and Psacharopoulos, 1997). Using data from Colombia and Bolivia respectively, Cartwright (1993) and Cartwright and Patrinos (1996) find that having older brothers and sisters reduces the probability that a younger child works.

The *presence of men and (especially) women over 60* reduces the probability that a girl in Pakistan works, there being no effects on Pakistani boys or on Ghanaian children. Overall, the effects of household composition are gender-specific and they are stronger and exhibit a more complex pattern in Pakistan than in Ghana (Bhalotra and Heady, 2000). It is unclear whether this is a general difference between the Asian and the African household. Canagarajah and Coulombe (1997) who use the same Ghana data find, curiously, that the *number of adult males* in the household has a significantly positive effect on the work participation of 11-14 year old children in rural and urban

areas, though there is no effect for 7-10 year-olds. They find that numbers of siblings and other compositional variables have no effect. Ray (2000) uses the same Pakistan data as Bhalotra-Heady and, aggregating over the sibling terms, finds no effects of number of siblings on child labour.

Additional compositional effects that may be taken into account are whether both *parents are alive* and whether they are *present* in the household (or have, for example, migrated away for work). The evidence on these effects is limited. It is also difficult to interpret without supplementary information on whether the absence is short or long term and whether it involves the household receiving remittances. The *age of the household head* is correlated in some data sets with child work participation: Goldin (1979) and Rosenzweig (1978) report a positive effect but other studies have found negative or insignificant effects. What does it signify? It is an indicator of the stage of the lifecycle that the household is at²⁰. Older heads may have different attitudes to education than younger heads. If the equation also includes a full set of age-gender variables that reflect household composition, then the age of the household head has a weaker role to play.

3. Female Headship

Female headship is much more common in households in sub-Saharan Africa than it is in Asia (for example, it is 30% in rural Ghana as compared with 3% in rural Pakistan: Bhalotra and Heady, 2001). Its significance is probably culture-specific as well. It will depend, amongst other things, upon attitudes to widowhood, the extent of migration, the patterns of formation of joint families, the prevalence of polygamy, sex-biases in property rights, and the status of women.

Why would we expect the gender of the household head to matter? First, we may expect that households with female heads have fewer economic resources- because the average education of women is lower, because there is often some labour market segmentation (access) or discrimination (wage differentials), or because they face sharper credit or other constraints. Most studies that investigate the impact of female headship on child labour have household income held constant. If, at a *given* level of income, female headship has a positive effect on child labour then there must be a degree of vulnerability in these household that is not picked up by household income. This could be its borrowing ability or, more generally, its ability to deal with a crisis. Alternatively, female headship, which probably signifies a greater role for women in decision making, may decrease child labour if it is the case that women are more altruistic towards children than men.

The evidence on these effects is rather more coherent than is the case for some of the other correlates of child labour discussed in this paper. Support for the hypothesis that children of female-headed households are more likely to work and less likely to be in school is found for Paraguay in Patrinos and Psacharapoulos (1995) and for rural (but not urban) Cote d'Ivoire in Grootaert (1988). Ilahi (1999) finds no role for female headship in

²⁰ In certain cultures a resident grandparent may report to be household head even if the prime-aged male is present. In this case, the age of the head is an indicator of whether the child lives in a vertically extended household.

Peru. Bhalotra and Heady (2000) find a positive effect of female headship on work hours for both boys and girls in rural Pakistan. In the case of rural Ghana, they find a positive effect restricted to girls. Using the same Ghana data but pooling information on boys and girls, Canagarajah and Coulombe (1997) find an insignificant effect of female headship.

4. Religion and Ethnicity

These are expected to shape preferences. For example, certain social groups may value education more than others in the same region (this appears to be the case amongst Indians in South Africa, for example). Alternatively, certain groups may be constrained from sending their children to work by group-specific norms or by virtue of labour market segmentation. Controls for religion and ethnicity are significant in most studies of child labour.

5. Region

In most developing countries, the incidence of child labour is higher in rural than in urban areas. The most likely reason for this is the predominance of self-employment in rural economies and, related, the relative underdevelopment of both markets and infrastructure (economic and social, including schools). There are also province or region effects within rural areas which are typically significant, reflecting the vast regional differences in productivity that characterise developing countries.

5.4. Community Characteristics

Several of the surveyed studies include indicators of the **community infrastructure**. These include indicators of whether there is a primary, middle and secondary school, whether there is a road, a bus, shop, a post-office, a bank, a regular market, and the fraction of households that have access to safe water and electricity. There are no very consistent results across studies but there are some occasional interesting results. The presence of schools in a community (proximity) often increases school attendance and decreases child labour. Measures of school quality and costs are less often investigated but, when they have been, they are significant (e.g. Canagarajah and Coulombe (1997) for Ghana). The presence of a road and a bus may be expected to improve access to a school, though we cannot rule out the possibility that it improves access to outside work for a child. Irrigation and electrification may be expected to reduce local labour demand and thereby reduce child labour (we indicated earlier that Levy (1985) supports a beneficial effect of mechanisation in Egypt) but it is difficult to generalise.

Regional unemployment: In order to allow for the possibility that children want to supply more labour than they are able to given prevailing labour demand, a sensible empirical specification should condition on the regional unemployment rate (e.g. Ham (1986), Card (1988)). The only study that does this is Bhalotra (2000a), who finds a negative effect of unemployment on the labour supply of boys. Note that this is distinct from the effects of household-level unemployment, for example, of a father.

6. In-Depth Studies in an African and an Asian Country

6.1. Child Labour in Ghana

1. A Profile of Child Activities

The data refer to rural households covered in the Ghana Living Standards Survey (GLSS) for 1991/2 which is a large nationally representative surveys collected by the national government in cooperation with the LSMS unit of the World Bank. The GLSS collects data on employment for persons 7 years or older.

Child labour: participation and hours

Refer to Tables 2a and 2b which profile participation rates in work and school for boys and girls respectively. Amongst 10-14 year-olds, about 49% of boys and 44% of girls undertake work on the household farm. Household enterprise work involves 2.5% of boys and 3.6% of girls. Less than 1% of children report any employment outside the household. The Tables also show participation rates for 7-9 and 15-17 year olds. Data on domestic work, which includes fetching firewood or water, cooking, cleaning, laundry, shopping and child-care, were collected for both boys and girls and these reveal that virtually all children participate in domestic work of some sort. The question of whether child labour is a “bad thing” or whether some farm work may just be good exercise and practical training depends upon the hours spent in such work and the extent to which it conflicts with school.²¹ So consider the data on work hours. In the age group 7-14, average hours per week in farm work for children who participate in farm work are 15.5 for both boys and girls, with a standard deviation of 13. Thus farm work is, on average, a half-time job for children, although there is wide dispersion in hours around the mean.

School participation rates

Of children aged 10-14 years, 79% of boys and 72% of girls report being “currently in school” (*i.e.* at the time of the survey). School participation is lower in the 7-9 and 15-17 year ranges suggesting late entry and early exit, the latter tendency being more marked for girls. Consistent with this, participation in all sorts of work, for boys and girls, tends to increase steadily with age (Figures 1 and 2). The school system in Ghana is considered less demanding than that in countries at a roughly similar level of economic development such as Côte d’Ivoire, where combining work and school is harder and school enrolment rates are lower (Andvig, 1999). See Glewwe (1996) for a comprehensive analysis of schooling in Ghana.

Competition between work and school

A sizeable fraction of Ghanaian children combine work and school. The percentage of 10-14 year olds that combine school attendance with work on the household farm is 36%

²¹ Cigno and Rosati (2002), for example, find no difference in the health status of working children and school-going children in India and they find that children that are neither in work nor in school are the least healthy.

for boys and 31% for girls (Table 3).²² There is nevertheless a tradeoff between work and school attendance. Using the Ghanaian data, Boozer and Suri (2001) show that an extra hour of work reduces school attendance by 0.38 hours. Additional to the impact of work on attendance is the possibly adverse effect of child labour on school performance. This is confirmed by Heady (2003). A substantial proportion of children neither work nor go to school and this fraction is especially large among girls: 14% as compared with 8% (Table 3).

2. Some Correlates Of Child Labour

Child labour tends to be correlated with child gender, birth order and relation of child to household head, with household living standards, household human capital and demographics, and with community-level infrastructure including schools. This subsection describes the raw correlation of child labour and schooling with some of these variables in Ghana. A comparison of means of potential explanatory variables across the samples of children who do and do not work on the household farm is detailed in Bhalotra and Heady (2001).

Table 4 shows the percentage of children in work and school by expenditure (proxy for income) quintile. The relation of child work and household poverty is non-linear. This may be influenced by expenditure being correlated with land wealth and with ownership of productive assets (like land) raising the incentive to employ children (see Section 6.3 below).

Table 5 tabulates child labour and school attendance by household structure. The probability of child labour is decreasing in household size (the mean of which is 7 in Ghana) and there is a corresponding increase in school attendance rates with size. This challenges the common perception that children in larger households are worse off. Approximately 35% of fathers and 25% of mothers were absent from the home at the time of the survey. Boys are more likely to work in households where the father is present or the mother is absent. Girls work seems less responsive to parental absence. The data suggest that girls are slightly more likely to work if the father is absent or if the mother is present. These correlations invite further research but are difficult to interpret without more systematic empirical research guided by a theoretical model. A striking 30% of households in Ghana have a female head. Children, and especially girls, are clearly more likely to work if they come from female-headed households. To establish whether this is the result of the greater poverty of female-headed households or whether there is a further effect after controlling for poverty levels we need to refer to multiple regression results, reported below.

Child participation in work and school is tabulated by the level of parents' education in Tables 6a and 6b. About 65% of mothers of 7-14 year olds have no formal education, while close to 20% of mothers in Ghana have completed secondary school. Less than 50% of men in Ghana have no formal education and the percentage of fathers that have

²² A simple unconditional correlation of probabilities suggests that the probability of being in school is lower by 0.1 for boys and by 0.006 for girls if they also work on the farm.

completed secondary education is about 40%. The education of both parents has a powerful depressing effect on child labour, the effect of mother's education being more striking than that of father's education.

3. The Wealth Paradox In Ghana

We discussed above the “wealth paradox”, indicating that this was found to hold in both Pakistan and Ghana. Refer to Table 7a. Let us first compare landless and land-owning households, the latter comprising 44% of all households. The patterns for child labour and school participation conform to expectation with the children of land-owning households being more likely to be in school and less likely to be in work than the landless. So there is no apparent paradox in this case, though the difference in probabilities is rather smaller than one might have expected. However, a paradox emerges once we condition on ownership and consider size of land owned, allowing thereby for non-linearities arising from the sizes of both the wealth and the substitution effects being a function of land-size. The probability of both farm work and all-work increases steadily with land size for boys and girls. School participation increases from marginal to small but then, surprisingly, decreases from small to large farms. The fact that school participation does not mirror work participation is consistent with the fact that it is possible to combine work and school in Ghana. About 45% of households operate land without owning it. Table 7b describes work and school participation of children by land used (operated) rather than land owned. It is convenient to think of land used as reflecting opportunities in the way that land owned does, but without the corresponding wealth (and inheritance) effect. In line with this, the paradoxical patterns are rather stronger here than in Table 7a. Employment rates behave similarly to the case of land owned. However, school attendance now decreases steadily in size of land operated.

Overall, there is considerable support for the notion that landholdings, whether owned or operated, increase the probability that children work and decrease the probability that they attend school. After controlling for differences in incomes and in household size and structure between households, Bhalotra and Heady (2000) find that this “wealth paradox” persists for girls' hours of farm work, although the work hours of boys are now independent of size of landholding. These results parallel those obtained for Pakistan. An interesting difference is that, in Pakistan, land-rich households not only had girls more likely to work but also had girls less likely to be in school. In Ghana, while girls from land-rich households are again more likely to work, they are not any more or less likely to be in school than the girls of land-poor households.

What might explain the gender differential in the results? Although boys are more likely than girls to inherit land in the two countries studied, they also tend to get higher monetary rewards from their education than girls. The results in this paper are consistent with the view that the rewards from education outweigh the rewards from work experience for boys. Moreover, since boys rather than girls traditionally look after their parents in their old age (except, possibly, amongst the *Akan* in Ghana) this may motivate parents to invest more in ensuring that they grow up to be rich.

4. Child Labour, Schooling and Ability

The second round of the Ghana survey, GLSS-2, conducted in 1991-2, includes a school questionnaire and the results of tests administered to household members aged 9 years and older. The tests were on mathematics, reading and abstract thinking skills and their results summarised in a Raven score. The tests were taken in half of the clusters surveyed. The scores are used as an index of ability in Glewwe (1996), Heady (2003) and Bhalotra (2002).

Figure 3 shows the distribution of ability for 9-14 year-olds. Girls appear to exhibit lower ability than boys but the differences are small. Table 8a shows that children of higher ability are more likely to attend school and less likely to work. It also indicates that, as ability rises, the child is less likely to combine work and school and also less likely to be participating in neither of work and school. Table 8b presents a more definitive relation of education and ability, showing that completed years of schooling increase secularly with ability.

The raven score is introduced as a proxy for ability into a bivariate probit regression describing the reduced form determinants of work and school in Ghana (see Bhalotra 2002). The main result is that ability has a significantly positive effect on school attendance and, at the same time, a significantly negative effect on child labour. Coefficients on other regressors do not show any significant change upon the inclusion of ability- in particular, child ability does not seem to be effectively proxied by parental education. In Table 9, column (1) reports the estimates on pooled data. Gender-specific estimates are reported in columns 2 and 3. They reveal that ability has no significant effect on the work/school decision for girls. The results obtained on the pooled sample are driven by boys, for whom ability significantly increases the chances of going to school, at the expense of participating in work. This is a result of considerable interest. *It suggests that other factors such as culture or, indeed, differential labour market returns to boys and girls play an important part in determining the lower school attendance rates of girls.* However, to the extent that ability measured by test scores is, itself, an outcome of earlier investment in schooling, the interpretation of this result is in terms of the effects of exhibited ability/achievement on continuation of schooling.

6.2. Child Labour in Pakistan

This section first describes the incidence and nature of child labour in Pakistan and then presents the results of analyses of these data that attempt to understand the factors underlying the household decision to supply child labour. Unless otherwise specified, the data refer to the rural section of the Pakistan Integrated Household Survey collected in 1991 by Government agencies in Pakistan in collaboration with the Living Standards Measurement Survey Unit of the World Bank. This is a cross-section of 2400 households with supplementary information on the communities in which they live. Questions pertaining to employment and wages are put to all individuals aged 10 or more. An individual is deemed to have participated in work if he or she worked at least one hour in

the week preceding the survey. Participation data are supplemented with information on hours of work in the discussion that follows.

A Profile of Child Activities in Pakistan

Striking features of these data are a high prevalence of child labour, a remarkable gender gap and a substantial fraction of children engaged in waged work²³. See Table 10, which refers to 10-14 year old children. Overall, about one in three children in the sample work. The sample probabilities of being engaged in *wage* work are 6% for boys and 12% for girls.²⁴ These participation rates are high for a rural economy where self-employment still dominates wage employment. Comparing these figures for children with the corresponding figures for adults puts them in perspective: amongst adults 18 years and older, 36% of men and 15% of women are wage workers. Girls exhibit higher work participation rates as well as higher rates of “non-activity” (possibly domestic work). This results in an alarming differential in school attendance with only 31% of girls in school as compared with 73% of boys.

Mean hours of wage work are 45 a week for boys and 31 a week for girls (Table 11). There is considerable variation around this mean, which is exploited in estimating the wage elasticity. Figure 5 shows kernel density plots of wage work hours. The bimodality apparent in these plots is consistent with a concentration of the data around “part-time” and “full-time” work but there is a spread around these points. Given the high commitment of time that wage work appears to require, it is unsurprising that virtually no children combine it with school attendance. Participation rates in household-farm work are 22% for boys and 28% for girls. Farm work is, on average, a half-time job for children, though there is again wide dispersion around the mean. Of children who work on the household farm, one in two boys but only one in ten girls is also in school. A simple unconditional correlation of probabilities suggests that the probability of attending school is down by 0.4 for boys and 0.3 for girls if the child is engaged in farm work²⁵.

Figure 4 presents participation rates by quartile of household consumption expenditure. The data support a positive relation of child wage work and poverty. They also suggest that the burden of household poverty is born disproportionately by girls. If expenditure were adjusted for the income contribution of children, the poorest households, amongst whom child work is more prevalent, would appear even poorer. The pattern we observe across quartiles is therefore unlikely to be altered. Work on the family farm/enterprise is less closely associated with poverty and, in the case of girls, the

²³ This Section is based on Bhalotra (2000).

²⁴ These data challenge the view that Islamic girls do not venture out of the home though, at age 15, the participation rates of girls in wage work drop and are exceeded by the rate for boys.

²⁵ While the effect of hours of farm work is negative and significant, it is quite small. An increase of 1 hour in farm work reduces the probability of school attendance for girls by 0.03 and for boys by 0.015.

relation appears perverse²⁶. School attendance is increasing in income though the rate may be deemed modest. Table 11 suggests that the relation of household expenditure with *hours* of child wage work conditional on participation is non-linear. This is confirmed in Figure 6 which presents non-parametric estimates of the relation obtained using a Gaussian kernel. Consistent both with the participation data (and with the results reported in Section 6), the expected negative relation of household living standards and child hours of work is clearer for girls than for boys. *Overall*, the data support a broadly positive relation of poverty and child labour but it is not as striking as one may have expected. Income appears more tenuously related to hours than to participation.

A two-way scatter plot of hours in wage work against the wage rate is in Figure 7, and the fitted line is a cubic spline. The graph reveals a negative relation for boys and no relation of the two variables for girls. Although the plot is only indicative because non-labour income and other variables have not been held constant, the unconditional correlation observed here persists after conditioning on income and a range of other covariates (see Bhalotra 2000).

7. Hypothesis Testing: Causes of Child Labour in Pakistan

1. Child Labour And Living Standards

In a paper called *Is Child Work Necessary?*, Bhalotra (2000) investigates the hypothesis that household-level poverty compels child work. In this case, the child works to a target income defined as the shortfall between subsistence needs and adult income. A testable implication is that a drop in the child wage results in an increase in child hours of work and *vice versa*. Since, in the absence of constraints, economic theory would predict the converse (that people respond to a lower wage offer by working less), this is a good test of the role of survival constraints. To capture this, a theoretical model of child labour supply is constructed from which a behavioural empirical equation is derived. This suggests which possibly confounding (or correlated) factors it is important to take account of in the statistical implementation. Applied to *children in wage work* drawn from 2,400 households in Pakistan, the test suggests that boys work when necessary for household survival. The results are more ambiguous for girls, indicating that they work even when their income contribution is not critical. This may be due to parental favour for boys or to the perception that girls' schooling is associated with lower returns.

As discussed earlier, the proportion of children in wage work is exceeded by the proportion that *work on household-run farms*. In a paper called *The Wealth Paradox*, Bhalotra and Heady (2000) analyse data from both Pakistan and Ghana for these children. While this discussion is focused on Pakistan, the main result is, remarkably, just the same in the very different environment of Ghanaian farms. A casual look at the data reveal an unexpected pattern (see Tables 7a and 7b): children from land-rich households are *more* likely to work and less likely to attend school than are children from land-poor

²⁶ This "wealth paradox" is explored in Bhalotra and Heady (2000). The intuition is straightforward: consumption will tend to be higher in households that own large plots of land. The wealth effect of land ownership will tend to reduce child work but ownership of land (and other productive assets) also increase the incentive to work and this may be a compelling factor if labour markets are imperfect.

households. This is called the ‘wealth paradox’ because it seems to fly in the face of the popular presumption that child labour is less likely in wealthier households. The paradox can be resolved by appeal to imperfections in the markets for land and labour in the following way. *[if this is in theory section and that has appeared above then delete and include cross-ref here]*. [Households that own more land do tend to generate more income which, by itself, depresses the extent to which they use the labour of their own children. However, where it is difficult to sell land and to hire labour, this effect may be overwhelmed by the fact that an extra hour is more productive on a larger plot of land, giving larger landowners a greater incentive to employ child labour.] The main finding from the data analysis is that the ‘wealth paradox’ persists for girls, but for boys it vanishes once account is taken of household variation in income and demographics. In other words, controlling for all other observable influences on child labour, girls are more likely to work rather than attend school in households with relatively large plots of land! These results for farm-labouring children are consistent with the findings for children in waged labour presented earlier.

Both studies suggest that when household resources permit then boys attend school rather than take work- and this holds for both waged work and work on household farms. This is much less clear in the case of girls. Hours worked by girls in waged work are insensitive to the wage rate they earn. So while we cannot reject the hypothesis that their earnings are essential for household survival, the evidence is ambiguous. For girls that work on household farms we find a more clear-cut rejection of the view that they work only because they must. Girls from land-rich or relatively wealthy households are found to be more likely than girls from land-poor households to engage in work on the household farm at the expense of school attendance. This suggests that the decision regarding whether to send a girl to school or not is driven primarily by assessment of the reward to schooling (typically conceptualised as the increment in the expected wage of the girl when she enters the labour market with an extra year of education) relative to the reward to work (which is larger on a larger plot of land, other things being equal).

A policy implication of this research is that households with working boys need income-support. Bans or compulsory schooling laws would be likely to make matters worse because they would deprive these households of an essential source of income. Making schools more accessible or improving their quality would probably make little difference since the reason boys are out of school is that their families cannot afford the opportunity cost of sending them to school. Cash transfers that compensate this opportunity cost would very likely result in increases in school enrollment: this is strongly suggested by the finding that boys seem to work if and only if their earnings are “necessary”. The results are, in each of the studies, different for girls. Total bans, compulsory schooling laws and investments in schooling may all have some impact on girls education, although in order for cash transfers to make a positive differences, they may have to be made conditional upon the girl attending school. The main lesson for policy here is that increasing the returns to schooling for girls is likely to have a payoff. This may involve any or all of the following strategies: building more single-sex girls’ schools with female teachers, making schools more accessible or improving conditions for transport to school, lowering fees and other costs, improving the quality and relevance of the education provided, and removing male-female differences in wage and

employment prospects on the labour market. What about changing attitudes to the education and employment of women? Effecting cultural change is often regarded as falling outside the scope of policy. Yet recent socio-demographic research has found significant effects of TV and radio coverage on fertility decline, for example, in India (e.g. Kirsty, Cassen and Arokiasamy 2000?). Similarly, fertility decline in Bangladesh has been associated with NGO activity (see Kabeer 2000?). These studies indicate the potential for education and social mobilisation in improving the status of women. Once a dent is made in the system, there is a built-in mechanism likely to make it self-perpetuating. This is the fact that educated women produce children with higher levels of health and educational capital than other women, whether or not they work (e.g. Glewwe 1996?, Strauss and Thomas 1995, Sen 1999: chapter 8). Additionally, working outside the home tends to confer upon women greater say in the allocation of resources within the household and this has been seen to benefit children and, in some cases, especially daughters (e.g. Thomas 1990).

A lesson from this research relative to previous research by economists is that it is important in the data analysis to distinguish the flow of household income from wealth held as stocks of productive assets. This is because income generates only an income effect whereas ownership of productive assets generates, in addition, a number of substitution effects (see section?). Since these work in opposite directions, giving a poor household more land or tools could increase child labour. On the other hand, cash transfers to households will always tend to reduce child labour. Failure to separate these effects can contribute to explaining why many previous studies find surprisingly small negative effects (and, for some regions, even positive effects) of household living standards on child labour.

2. What Do We Learn From Looking Within The Household?

Economists have been preoccupied with the relation of child labour and living standards and the previous two studies are focused, in different ways, around this central question. Although, for analytical reasons, the previous discussion was around effects of the child wage rate and the size of the household farm, both studies also included in the equation determining child labour supply the level of parental income. Some caveats aside²⁷, we expect lower child labour in households with more parental income. Now parental income may come from their labour or other sources (land rent, interest on loans, inheritance, etc). This separation is interesting because the amount that parents work is a choice and this choice is probably made simultaneously with how much their children work. It leads us to ask *how parent's level of engagement in work affects the extent of child labour*. This relates to some topical questions to which we do not seem, as yet, to have rigorous answers. For example, *why do we find adult (male) unemployment in regions where child labour is prevalent?* If able-bodied fathers always work (as is commonly assumed), their unemployment must reflect rationing on the labour market, that is, that there are no jobs for some of them rather than that some of them don't want to work. We might then expect that there are not enough jobs for their children, making the prevalence of child labour a puzzle. On a broader canvas, this question may be translated

²⁷ An example of a caveat is that this assumes parent altruism.

as asking whether macroeconomic policies (like devaluation or tight fiscal policies) that potentially increase adult unemployment (in some areas) will tend to increase or decrease the incidence of child labour. The answer to this question is informed partly by understanding the labour market (for an example of a model that describes the interaction of adult and child labour markets and the scope for multiple equilibria, see Basu and Van (1998), discussed in Section ? below) and partly by understanding the relation of labour supply and consumption within the household (see Bhalotra 2001, discussed here). Another question that has been discussed in the broader social science literature but seldom analysed beyond small-range field studies is that of the *effects of women's employment on child employment*. A complete analysis of this question involves endogenising fertility (that is modelling it explicitly as a choice rather than taking it as predetermined). However a fair sense of the long run relation between the labour supplies of women and children can be obtained from cross-sectional analyses of data such as are commonly available for developing countries today.

In a paper called *Investigating separability of parent and child labour*, Bhalotra (2001b) investigates the effects of parents' participation and hours of work on child labour, allowing these effects to be gender-specific. Economic theory predicts two effects. The first is the familiar "income effect". This refers to the idea that parents' work generates household income which, other things being equal, reduces the extent of child labour. Previous research on child labour largely ignores the potential for a second effect that allows parent and child labour to be substitutes or complements at a given level of household income. Simple cross-tabulations obtained using the Pakistan data show that boys and girls are more likely to be in work when their fathers and mothers are in work! This is the case for both waged work and household farm or enterprise work (see Tables 12a and 12b)²⁸. This "complementarity" amongst labour supplies within the family is most marked for the mother-daughter pair. It indicates a polarisation of households with some having parents and children in work and others having both parents and children out of work²⁹. However, these descriptive data are only indicative. In order to gain some insight into the underlying mechanisms, these data need to be carefully modelled. Amongst other things, this involves controlling for household income and the simultaneous determination of parent and child labour. The micro-econometric results obtained upon doing this indicate that parents' work has only income effects on boys' work. In the case of girls, father's work has only income effects too. However, mother's work has a *further* effect which is restricted to girls. In particular, at any *given level* of household income, we find that daughters of working mothers are *more* likely to work- and also less likely to attend school. Another way of putting this is that the labour supply of girls is complementary to that of mothers. This result holds when work is defined to include either or both of waged work and work on household farms and enterprises (i.e.

²⁸ Table 6c shows that boys labour substitutes that of fathers to some extent when they are dead but no such effect is apparent for the labour of girls.

²⁹ A similar tendency towards polarisation has been uncovered in data for a number of OECD countries, including the US and the UK (see Gregg and Wadsworth 2002?). These authors find that, contrary to the expectation generated by both common sense and economic theory, that when one individual works the other can afford not to work, the observed tendency is that either both husbands and wives work, or neither. Child labour is, of course, not considered in this analysis. However, the unexpected polarisation of work that is found in the Pakistan data is, in broad terms, similar. And, like the result for OECD countries, difficult to find a conclusive explanation for.

the ILO definition of work). Although reliable measures of time spent in domestic work are not available, we might expect school attendance to be inversely related to *all work* (i.e. work by the ILO definition plus domestic work). The results which show that school attendance is lower amongst girls whose mothers work are consistent with the hypothesis proposed (but seldom tested) in previous research that daughters take on household chores when mothers take on more regular market work³⁰. However, the results which show that girls do more ILO-work when mothers do more ILO-work contradict this hypothesis. This is an important, if puzzling, result as it drives a wedge between two common policy objectives. Policy would like to encourage women in developing countries to work and gain economic independence but this would appear to conflict with the objective of getting more girls into school. The paper argues that the results of this research are consistent with precise mechanism involved merits further research.

Economists typically assume that parents are altruistic towards their children. This assumption is critical to thinking about aspects of macroeconomic policy (see Barro 1979) and, again, critical to recent theoretical models of child labour (e.g. Basu and Van 1998). It has, however, been challenged by economic historians and anthropologists studying child labour (e.g. Nardinelli 1990?, Khan 2000, Rizzini 1999). Whereas there is a greater prevalence of child labour amongst poor households than amongst the rich, we have seen that there is scope for the data to suggest otherwise. For instance, as discussed above, land-rich households are more likely than others to have their daughters in work and out of school. We have also seen that there is a positive association of women's employment (which may be thought an indicator of better living standards) and girl labour. In economics, a convenient way of modeling altruism of a parent towards a child is to include in the parent's utility function the consumption and leisure (or schooling) of the child. It can be shown then that an implication of altruism is that there is a positive co-variation of child consumption (or leisure) with adult consumption (or leisure) at given prices (see Bhalotra 2001a). To gain an intuitive handle on this, consider the following thought experiment. If we walked through a village and noticed that some households had child labour and others did not, we would expect that in the households with child labour, adults are worse off. One way of checking on this is to check whether adults consume less or work harder in such households. Taking the Pakistan data and dividing the sample of 2400 rural households into those with and without working children, we found that the sample with working children smoked *more* tobacco and spent, on average, the same amount on adult clothing as did the sample with no working child! This is indicative of altruism and may be (loosely) read as suggesting that child labour finances tobacco consumption. However, simple correlations can be misleading. For example, both child labour and tobacco consumption may be positively related to poverty and, controlling for the poverty status of the household, this correlation may disappear. In a paper called *Parent Altruism*, Bhalotra (2001a) devises a test of parent altruism that can be applied to large-scale data to produce an 'average tendency'. Results for Pakistan decisively reject parent selfishness. However, at the same time, they indicate that households in which at least one adult smokes systematically spend less on children, other things being equal.

³⁰ This substitution of the daughter's time for the mother's time in domestic work will express itself as complementarity in all-work.

The important policy-relevant result here is that the data are consistent with parent altruism. This justifies offering cash transfers to parents in the expectation that these will translate into investments in children. At the same time, it weakens the case for top-down legislative interventions like bans. The idea is that forcing parents to take a different course of action is unlikely to raise child welfare when parents are altruistic. There remains, however, a case for legislative actions if they can be shown to be solving a coordination problem between parents (e.g. Basu 2000). A further result of the analysis is the finding that tobacco consumption is associated with lower investments in child schooling and consumption. Further research is needed to establish whether this reflects addiction or, possibly, unobserved differences in attitudes or altruism towards children between smokers and non-smokers.

8. Policy

Justification

Although the average man or woman on the street would probably agree that child labour should be reduced, not all social scientists would agree. A body of academic opinion argues that child labour encourages socialisation, independence and self-esteem in childhood and associates policy interventions with a cramping of the freedom to choose (e.g.). Most economists, on the other hand, would be likely to see sensibly designed interventions as expanding the choice set facing families. For example, building more schools, reducing fees or offering credit to families to help them smooth over income fluctuations are all potentially beneficial policies that do not involve constraining individual behaviour. To make a real difference, intervention may additionally have to “incentivise” families to take advantage of the expanded choice set. However not all possible interventions expand the choice set. A clear counter-example is a legislative intervention such as a ban on child labour or a decree making school attendance compulsory. These interventions reduce the choices facing households, forcing them to an alternative that they would not independently have chosen. Overall, it seems clear that policies that encourage families to change their actual choices, whether by offering them a wider set of choices or by altering the incentives they face, are desirable. Neither the indifference of the state nor authoritarian action can be justified *a priori* on welfare grounds.

There are also efficiency grounds for taking policy action to reduce child labour. As discussed above, research has shown that participation in work reduces school attendance and lowers achievement. A growing body of research in economics on endogenous growth models has, in turn, shown that the educational capital (importantly, to include a wide base of basic education rather than just higher qualifications amongst the wealthy) of a country has positive and increasing effects on its productivity and economic growth (see Temple 2001 for a survey). The increasing returns to education arise from its generating positive externalities or spillovers. A well-established results in economic theory is that activities which generate positive externalities will tend to be under-supplied under free market conditions, making it efficient for governments to subsidise these activities (e.g. Varian 1997). It is therefore straightforward to make an efficiency

case for policy interventions that reduce child labour and expand educational attainment. A fact that is less well-recognised in a macro-economic context is that the positive externalities generated by educating women (girls) are even greater. There is now plenty of microeconomic evidence that the children of educated women are more likely to survive and, conditional on survival, are better educated and healthier, other things being equal. Thus investing in women's education (and agency) is an investment in the human capital and welfare of the next generation (see, for example, Strauss and Thomas 1993, Sen 1999: chapter 8).

Design

Deriving direct insights for the appropriate design of policy ideally involves three linked steps. First, we need theoretical models of child labour that capture relevant aspects of the decision-making process that results in children supplying labour and that are able to accommodate the "institutional" facts relating to child labour. Second, we need to develop empirical procedures that are able to investigate the predictions of alternative theoretical hypotheses and, thereby, reject one model in favour of another (allowing context or region specificity). Third, we need to have in place mechanisms for the implementation, monitoring and evaluation of the program that are sensitive to the political economy of the region.³¹ Evaluated in these terms, the design of policy in this area is currently very rudimentary.³² The rest of this section illustrates some of the easily-remedied flaws in current thinking on the subject of child labour policy.

A weakness of recent discussion of policy interventions targeted at child labour is that they have neglected to recognise the predominance of household employment amongst child workers (evidence of which was cited above). This has been influenced by media coverage of child labour in export sectors such as the carpets, garments and sports equipment industries, resulting in debate on the role of trade sanctions, international labour standards and minimum wages (see Basu (1999), Basu (2000)). To the extent that the parents of child labourers are self-employed, an adult minimum wage will have, at best, indirect effects on child labour. Trade sanctions that involve banning the import of products made with child labour will typically have no direct effect on children who work on subsistence farms. Legislation that makes schooling compulsory or that bans child labour is especially difficult to monitor when children are employed in household-run or home-based activities. The preoccupation with these sorts of legislative interventions exhibited by the media, international organisations such as the ILO, and also the theoretical literature on child labour (e.g., Basu and Van (1998)), therefore, seems

³¹ Amongst other things, this requires commitment from governments. The relative success with child labour interventions in Latin America reflects, to some degree, better governance. Also, in contrast to Latin America, interventions in Asia and Africa have not been adequately monitored and evaluated. Thus, while there probably are regions that have been transformed, there is little *evidence* as yet of real success in these regions.

³² In contrast, the design of welfare to work policies in the US, Canada and, more recently, the UK has benefited from considerable progress in each of the three ways listed here: so the systematic approach to policy design that it proposed here is achievable!

misplaced. The design of policy to address child labour depends upon recognising that most children work with or for their parents in economies where markets are underdeveloped and the legal and political infrastructure is thin.

Another fact that policy has, in its detachment from large-scale representative data, neglected is that a fairly substantial fraction of children report being neither in work nor in school (“idle”)- this too was discussed above. While these children may be engaged in domestic chores that are not counted as work, it is by no means evident that this is the case. First, by common accounts, boys in Asia do not do much domestic work and, nevertheless, a non-negligible fraction are reported to be idle. Second, even if these children do engage in some domestic work it seems unlikely that this is a full-time occupation. A plausible explanation of the extent of “idleness” is that it is seen where opportunities for both work and school-attendance are limited. In this case, general “economic development” may, by stimulating both opportunities, result in some tendency for *both* work and school attendance to rise. While this tendency is unlikely to dominate in data that include non-idle children, it may contribute to explaining why the relation of economic growth and child labour incidence is, in some cases, non-linear.

Policy Tools

Alternative policy instruments were discussed in the paper in the context of alternative theoretical models and in relation to the findings of empirical research. This section presents an inventory of the options with brief comments on their likely relevance. It is useful to make a few conceptual distinctions. First, long run policies address the big goals of encouraging economic growth and reducing poverty and inequality. Given the efficiency benefits of reducing child labour at the economy-level, these long run interventions are relatively sustainable. These need to be placed on a different platform from short run policies that are targeted at the most poor sections of society and that are designed to assist them in breaking out of poverty traps or to avoid falling into them.

To the extent that the main underlying cause of child labour is poverty, long term strategies of poverty alleviation and elements of pro-poor growth policy are relevant to addressing child labour. Amongst these are measures that raise the productivity and hence the wages of adult labour.³³ Further, any measures that reduce employment and wage discrimination against women will, by raising the return to girls’ education, tend to discourage child labour amongst girls. More specific short run measures may be necessary to make a more immediate difference. For example, where poverty compels child labour, cash transfers that cover the opportunity cost of school attendance (i.e. the forgone wage of the child) may carry the potential to release children from work.

³³ The adult wage is a key variable in the much-discussed paper by Basu and Van (1998). However, too much emphasis can be placed upon “labour market reform” : in most developing countries less than half of the able adult male population earns a wage on a labour market; most are self-employed. It is therefore more appropriate to think in terms of measures that raise labour productivity- these will range from provision of irrigation to offering support prices for agricultural produce. In the longer term, education and training programs will raise the skill level of the adult population, making children a less and less good substitute for adult labour and, thereby, lowering the demand for child labour.

In line with its emphasis on poverty, the literature on child labour has, at least implicitly, favoured policies that offer credit to poor households (e.g. Ranjan 2000, Lahiri and Jafarey 2000, Dehejia and Gatti 2002). Assessment of micro-credit schemes across the developing world suggests that it does help the poor but not the most poor. Also, most micro-credit has typically been offered for production purposes.³⁴ Cash transfers conditional upon children being enrolled in school would seem to deliver the goods more effectively, and they can be targeted at very poor households. More generally, development policy has celebrated micro-credit policies, not least because they are seen as offering a way of “enabling” rather than subsidising the poor. While they retain their relevance to one section of the poor, it is important not to lose sight of the value of making large-scale public investments in creating both the supply and the demand for child education and health. This is not only “enabling” by virtue of raising the productivity of the next generation but generates a substantial social payoff.

As discussed earlier, there is some evidence to suggest that children work on account of imperfections in factor markets i.e markets for land, labour and credit. This suggests policies that encourage the development of these markets. Micro-credit schemes have spread around the world, more often than not led by non-governmental organisations. Educational programmes that feed into the development of labour markets are also now quite widespread, encouraged by local governments and also by UNICEF and other international organisations. Not a lot has been written about the development of land markets but this is likely to be related to the development of credit and labour markets- and in fact to the development of schooling infrastructure as well. In a subsistence economy, a farmer must keep his land even if it is not very profitable. Once a labour market develops, the farmer has the option to work for a wage. Similarly, if credit were available to start up a business, a farmer would be less tied to his land. Bequests are important in a society in which a parent can assume that his children will receive little support from the state. Land is, in such societies, an important form of inheritance. However, if a good supply of schools is available and the children of the farmer can acquire an education then they become more mobile, weakening intergenerational attachment to the land and, thereby, stimulating the land market.

Where the driving force behind child labour participation is consideration of the relative returns to work as compared with schooling, investments in the quality and availability of schooling will payoff. Earlier we noted the evidence that girls are less likely to attend school than boys, especially as they get older and especially in South Asia. Studies dedicated to understanding why the relative position of girls is often worse in Asia than in Africa are merited: we appear to know very little about this. Policies that close the gender gap in education (especially in Asia) promise large payoffs. As discussed above, the social benefits to girls’ education are expected to be even greater than those to boys’ education. Another particular consideration is of flexibility in school schedules. Comparison of the experience of different countries shows that such flexibility allows

³⁴ It would, however, seem that consumption loans can feasibly be incorporated in this sort of policy regime in regions where poverty is predominantly transient. See Baulch and Hoddinott 2001 for a collection of studies that use recently available panel data for developing countries to argue that poverty is, indeed, much more a transitional phenomenon than recognised in earlier, more “structural” models of development.

children to combine work and school. There is a vast literature that, for both developed and developing countries, investigates the returns to different forms of investment- for example, teacher's salaries, class sizes, provision of material inputs like blackboards, reduction of fees, public *vs* private management of schools or, indeed, the building of new schools. The lessons are likely to be region and time specific, depending upon the extant condition of the school system.

For girls to reap the (pecuniary) benefits of their education over the long run, measures need to be taken to reduce labour market discrimination against girls. Studies from a number of developing countries indicate labour market segmentation with males and females typically doing different sorts of work. Where they are engaged in comparable work, girls and women appear to be paid lower wages than boys and men. As regulatory measures are difficult to enforce in rural economies, social mobilisation, education and the organisation of women combined, possibly, with monetary incentives to employers are more likely than laws to bring about an equalisation of these differences. Declining fertility and rising living standards will no doubt assist the process of bringing women onto the labour market. In view of widespread evidence that working women have greater say in the household and appear to spend more resources on children than men, this may be expected to further encourage the education of the next generation of children. With role model effects at play, the impact on girls may be expected to be larger than on boys.

Policies may be designed specifically to provide incentives to parents to send their children to school. Financial incentives such as cash transfers may be relevant even when household poverty is not compelling. In such cases, it seems sensible to make these transfers conditional upon school attendance. Incentives are particularly relevant if parent altruism is limited or if social norms create inertia in behaviour since, in such situations, optimal choices regarding child time allocation may not be made. A more extreme response to choices on the part of parents that are not optimal for the child is legislative intervention. This can, in such cases, be justified on the grounds that the state cares more about the child than the parent (or adult carer) does. Recent research (cited earlier) finds some evidence that orphan and foster children are less likely to be enrolled in school than the biological children of their adult carers: this is particularly important in Africa. Beyond incentives and legislation, a further policy response to this problem is to reduce the importance of family-supported investments in children by, for example, extending and subsidising service provision in the education (and health) sectors.

Interestingly, offering pensions to the elderly can reduce child labour. It is not uncommon in developing countries that elderly parents live with their children and grandchildren. In the absence of pensions, the young adults make (implicit or explicit) income transfers to dependent elderly parents that, on average, will deduct from resources available for children. Indeed, analysis of the operation of the Old Poor Law in England suggests that the availability of old-age pensions had beneficial effects on children (see Smith, 1996). There is contemporary evidence that the introduction of a state pension in Brazil was associated with a reduction in child labour (Carvalho 2000). Interestingly, Carvalho finds that the largest impact was on girls living in households where the grandmother received a pension. Similar evidence obtains for South Africa where the extension of the state

pension to Black people (on a means-tested basis) filtered down, within the vertically integrated family, to improved child health (see Duflo 2000).

Policy initiatives to improve child health may be expected to translate into higher levels of educational achievement (although they may or may not result in lower levels of child labour). Recent studies have shown that there are synergies between health and education (e.g. Alderman et al 1997, Cockburn and Bhalotra 2003). This is reflected in the design of some interventions such as Progresa in Mexico (see below). Since adult health can also impact on child labour, more general investments in the health sector may be desirable. Adult health is an important input in the production function that determines household income. Illness of an adult member of the household can drive children into work. There is some evidence that parental death is associated with a lower probability of school attendance (see Gertler et al (2002) for evidence from Indonesia). Using data from Northwestern Tanzania, Ainsworth *et al* (2001) find that AIDS-related adult deaths do not affect enrolment *per se* but do affect when enrolment takes place. In a related study for Tanzania, Beegle (2003) finds small but insignificant effects on the labour supply of other household members following an adult death.

Issues relating to bans on child labour were also discussed in this paper. We argued that they would gain some support if it could be shown that the altruism of the adults making decisions on child labour were questionable. While a study for Pakistani households decisively rejects parental selfishness (Bhalotra 2000), there remains the possibility that adult carers who are not parents may set children to work when this is not necessary. Using a simple theoretical model, Basu and Van (1998) show that the labour market in a developing country may exhibit multiple equilibria, with the implication that a one-off ban on child labour may succeed in switching the economy from an equilibrium in which children work to one in which they do not. In this case, the ban does not need monitoring. If, however, productivity levels are such that there is no “good” equilibrium then the desirability of a ban is questionable. It may well leave families (and children) worse off if child income was necessary for survival. Moreover, introducing a ban raises serious implementation issues in a society with limited legal and political infrastructure. Its design needs to take account of possible unintended consequences. For example, a law passed in India in 1986 that threatened to fine employers found to employ children resulted in lower wages for children (Chandrasekhar 1996). A partial ban may result in child workers moving from the protected to the unprotected sector, where conditions are typically worse (see Bachmann 1998); where bans have any potential, total bans are more effective than partial bans. Bans are often thought especially relevant to the worst forms of child labour (defined by the ILO to include hazardous work, prostitution, soldiering etc). Although it is morally compelling that the worst forms of child labour should be eliminated, Dessy and Pallage (2001) argue that banning them in poor countries is unlikely to be welfare improving and can come at the expense of human capital accumulation. Their argument rests on the premise that the existence of harmful forms of child labour keeps wages for child labour high enough to allow human capital accumulation. They couch their hypothesis in a simple two-period model of parental investment in children's education and nutritional quality.

The question of bans on child labour links into the debate on international standards and trade sanctions (e.g. Golub (1997), Fields (1995), Basu (1999), Bhalotra (1999)). There is a fairly general consensus in favour of open trade (e.g. Edmonds and Pavcnik 2001, cited earlier with evidence of trade liberalization reducing child labour in Vietnam). There is also an accumulation of evidence on the more general harmful effects of protectionism (which is punitive action) and export bans imposed on developing countries. The debate on labour standards is rather more complicated: see Basu (2001), Basu et al (2003).

Actual interventions:

A list of ongoing projects can be found on the website of the Understanding Children's Work project hosted by UNICEF (<http://www.ucw-project.org/about/index.html>). Current interventions reflect some diversity of strategy. For illustration : the Food-for-Education Program in Bangladesh (see Ravallion and Wodon, 2000), 'Progresa' in Mexico (see Skoufias and Parker, 2001 and contextual information at <http://www.ifpri.org/themes/progresas.htm>) and Bolsa Escola and PETI in Brazil (see World Bank, 2001) are amongst programs that offer subsidies to households that send children to school to compensate them for the *opportunity cost* of school attendance. The Back-to-School Program in Indonesia offered block grants to poor schools and scholarships to poor children to lower the *direct cost* of schooling (see Sayed, 2000).

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Table 1: Alternative Hypotheses & Alternative Policies

<i>Why Do Children Work?</i>	<u>Policy Action</u>
<i>Preferences</i> <i>Agency issues- parent altruism</i>	⇒ legislation e.g. Compulsory schooling in many countries, bans on child labour.
<i>Incentives</i> <i>Relative returns, work:school</i>	⇒ raise relative return to school e.g. Back to School Programme, Indonesia
<i>Constraints</i> <i>Compelling poverty</i>	⇒ poverty alleviation e.g. Cash transfer programs in Latin America, Food for Education Program in Bangladesh.

Source: Author's construction.

Table 2a. **Boys: Participation rates in school and work in rural Ghana**

Activities	7-9	10-14	15-17
School attendance	73.3	78.7	59.5
Outside employment	0.14	0.60	1.22
Work on the household enterprise	0.71	2.50	4.90
Work on the household farm	28.5	48.9	63.5
Domestic work	76.8	89.8	85.3
Number of observations	708	1 010	491

Source: Bhalotra and Heady (2001), based on GLSS3: 1991/2. All figures are in percentages. Note that these figures are for all rural households whereas the figures presented in Bhalotra and Heady (2000) are for the sample of rural households that own or operate farmland.

Table 2b. **Girls: Participation rates in school and work in rural Ghana**

Activities	7-9	10-14	15-17
School attendance	65.4	71.6	45.9
Outside employment	0.00	0.11	1.10
Work on the household enterprise	1.90	3.60	9.10
Work on the household farm	22.0	44.1	57.0
Domestic work	82.8	96.2	94.2
Number of observations	673	869	375

Source: See notes to Table 7a.

Table 3. **Combining child activities in rural Ghana^a**

	Boys	Girls
<i>Total participation rates</i>		
<i>Farm work</i>	48.9	44.1
<i>Enterprise work</i>	2.5	3.6
<i>School</i>	78.7	71.6
<i>None of the above activities</i>	8.0	13.7
<i>Participation restricted to one activity</i>		
<i>Farm work only</i>	13.1	12.7
<i>Enterprise work only</i>	0.2	2.1
<i>School only</i>	40.6	38.7
<i>Combinations of types of work</i>		
<i>Farm & enterprise work</i>	0.0	0.0
<i>Combination of work & school</i>		
<i>Farm work & school</i>	35.8	31.4
<i>Enterprise work & school</i>	2.3	1.5
Number of children	1010	869

Data refer to children aged 10-14. All figures are percentages. Source: Bhalotra and Heady (2001), based on GLSS3: 1991-92.

Table 4. Child Activities in Rural Ghana By Expenditure Quintiles

Expenditure Quintile^a	Work only	School only	Work and School	“Idling”, non-ILO work
Q1	13.1	46.4	15.5	24.9
Q2	6.8	54.1	21.7	17.3
Q3	10.5	53.8	18.6	17.1
Q4	8.7	55.2	19.2	17.0
Q5	5.7	64.6	19.1	10.6

Note: Q1 represents the lowest expenditure quintile and Q5 the highest. Figures are percentages and each row sums to 100%. *Source:* Canagarajah and Coulombe (1997), based on GLSS3: 1991/2. Children are 7-14 year-olds.

Table 5. Child Activities By Household Structure In Rural Ghana

	Work participation	School attendance	Both
<i>Size</i>			
Less than 6 members	75.9	19.7	13.4
From 7 to 9 members	73.0	22.5	13.0
More than 10 members	64.5	28.6	17.0
<i>Father Absent</i>			
Boys	22.8	80.9	16.8
Girls	20.4	67.1	11.3
<i>Father Present</i>			
Boys	27.9	72.7	16.3
Girls	19.2	68.1	10.9
<i>Mother Absent</i>			
Boys	29.0	79.2	19.1
Girls	18.7	64.6	9.80
<i>Mother Present</i>			
Boys	24.4	75.1	15.5
Girls	20.5	69.1	11.9

Source: Bhalotra (2002), based on GLSS2: 1988-89.

Table 6a. **Child Activities By Father's Education in Rural Ghana**

	Work	School	Both
<i>Girls</i>			
None	21.0	52.3	8.50
Primary	27.1	66.3	16.3
Middle-sec	17.4	80.4	13.2
Senior secondary	14.1	89.8	12.6
Further	6.70	83.1	5.10
<i>Boys</i>			
None	35.2	57.6	14.6
Primary	32.8	74.1	23.7
Middle-sec	19.4	89.1	17.6
Senior secondary	15.4	92.6	13.4
Further	7.10	90.0	7.10

Source: Bhalotra (2002), based on GLSS2: 1988-89.

Table 6b. **Child Activities By Mother's Education in Rural Ghana**

	Work	School	Both
<i>Girls</i>			
None	22.5	58.5	10.9
Primary	20.7	79.9	15.2
Middle-sec	16.5	85.0	12.7
Senior secondary	3.20	83.8	3.20
Further	0	90.1	0
<i>Boys</i>			
None	30.1	65.3	16.5
Primary	21.7	85.9	17.9
Middle-sec	15.1	91.9	14.7
Senior secondary	7.30	90.2	7.30
Further	0	90.0	0

Source: Bhalotra (2002), based on GLSS2: 1988-89.

Table 7a
Child Participation Rates by Land Owned: Rural Pakistan and Ghana

<u>Land Group</u>	<u>%H</u>	<u>School</u>		<u>Farm work</u>		<u>All work</u>	
		<u>Boys</u>	<u>Girls</u>	<u>Boys</u>	<u>Girls</u>	<u>Boys</u>	<u>Girls</u>
<i>PAKISTAN</i>							
Own Land=1	33	76.7	27.6	31.0	36.4	33.0	43.9
Own Land=0	67	70.7	32.7	17.0	22.9	24.4	32.9
Marginal	9	77.8	24.6	29.1	36.5	31.6	47.8
Small	12	73.0	26.7	34.1	38.0	36.6	44.0
Large	9	79.1	29.6	31.1	36.5	31.8	39.7
<i>GHANA</i>							
Own Land=1	44	81.9	75.7	49.7	46.8	52.9	50.5
Own Land=0	56	73.5	66.7	55.6	48.8	57.6	51.4
Marginal	12	80.3	76.6	44.3	43.9	47.5	47.7
Small	19	83.7	79.7	45.9	47.1	50.7	51.2
Large	13	80.5	69.7	58.5	48.5	59.7	51.5

Notes: In column 2, %H refers to the % of households that fall into the category indicated in column 1. 1 hectare (h)= 2.7 acres. Land size is grouped as follows: *Marginal* is <1h, *Small* is 1-3h, *Large* is ≥3h. This is the classification used by the Indian census and we have adopted it after checking that it is a useful categorisation for the Pakistan and Ghana data sets. For Pakistan, the percentage of households in different land-size categories adds up to less than 33% because acres were missing for some of the households that reported owning land. *All work* refers to participation in any of three activities: work on household farms, work on household enterprises, and work on the wage labour market. It is not the inverse of school attendance because there are children who are neither in work nor in school.

Table 7b							
<u>Child Participation Rates by Land Operated: Rural Pakistan and Ghana</u>							
<u>Land Group</u>	<u>%H</u>	<u>School</u>		<u>Farm work</u>		<u>All work</u>	
		<u>Boys</u>	<u>Girls</u>	<u>Boys</u>	<u>Girls</u>	<u>Boys</u>	<u>Girls</u>
PAKISTAN							
Use Land=1	43	72.0	25.2	32.9	39.1	35.0	46.5
Use Land=0	57	73.5	35.7			20.7	28.0
Marginal	9	74.5	28.3	24.5	39.0	28.6	51.0
Small	20	71.0	21.9	34.8	35.7	36.3	42.9
Large	15	72.0	27.6	34.4	43.1	36.2	48.7
GHANA							
Use Land=1	90	77.8	71.1	52.4	47.5	55.1	50.7
Use Land=0	10	89.2	76.3			9.6	15.8
Marginal	27	84.3	79.1	44.8	42.7	48.8	46.7
Small	40	77.0	71.0	54.2	48.3	57.0	51.4
Large	23	72.7	62.8	57.4	51.4	58.6	53.2
<p>Notes: Land <i>operated</i> includes land <i>owned</i> and land <i>used</i> under rental or sharecropping arrangements or else as free or village land. The cells for farm work are blank for households that do not operate land since farm work refers to farm work on the household-run farm. See Notes to Table 4a.</p>							

Table 8a. **Ability and child activity in Ghana**

Raven Score	Work	School	Both	None
Less than 10	35.4	74	25	12.5
From 10 to 15	32.7	73.1	18.5	12.6
From 16 to 20	33.8	78.5	21.2	8.9
From 21 to 30	33.6	82.6	20.9	4.3
From 31 and more	19.7	93.0	16.9	4.2

Source: Bhalotra (2002), using GLSS2, 1988/9

Table 8b. **Years of completed schooling by ability in Ghana**

Raven Score	Girls	Boys
Less than 10	2.6	2.8
From 10 to 15	3.7	3.8
From 16 to 20	4.2	3.7
From 21 to 30	5.7	6.4
From 31 and more	7.7	6.6

Source: Bhalotra (2002), using GLSS2, 1988-89. Children are 13 and 14 years olds.

Table 9 The impact of ability on work and school participation in rural Ghana^a

Bivariate probit estimates. Gender-specific estimates, 9-14 years

	Sample = Children who took the Raven test					
	Pooled data		Boys		Girls	
	Labour	School	Labour	School	Labour	School
Ability	-0.029 [2.17]*	0.0599 [3.45]**	-0.0575 [2.95]**	0.0926 [3.35]**	0.0096 [0.43]	0.0214 [0.81]
Age	0.2587 [6.76]**	-0.1022 [2.48]*	0.2694 [4.81]**	-0.0476 [0.75]	0.296 [4.59]**	-0.1473 [2.16]*
Boys	0.0337 [0.20]	0.434 [2.31]*				
Acres	0.0076 [1.10]	0.0009 [0.10]	0.0023 [0.23]	0.0041 [0.25]	0.0151 [1.41]	-0.0066 [0.53]
lnCons	0.1615 [1.13]	-0.2086 [1.37]	0.1047 [0.50]	-0.5549 [2.48]*	0.221 [0.92]	0.0614 [0.24]
lnSize	-0.2849 [1.35]	0.3465 [1.38]	-0.3919 [1.25]	0.0792 [0.20]	-0.4888 [1.35]	0.6017 [1.41]
Ma_prim	-0.3586 [1.66]	0.2261 [0.90]	-0.7371 [2.22]*	0.554 [1.26]	-0.3697 [1.08]	-0.1154 [0.30]
Ma_mid	-0.2535 [1.46]	0.1053 [0.50]	-0.7481 [2.79]**	-0.0697 [0.21]	0.0833 [0.30]	0.0022 [0.01]
Ma_hig	-1.3916 [2.50]*	-0.8794 [2.00]*	-1.2546 [1.86]	-1.7528 [2.84]**	-7.2367 [0.00]	5.8779 [0.00]
Pa_prim	0.1141 [0.38]	-0.0305 [0.09]	0.3518 [0.77]	-1.0096 [2.01]*	0.269 [0.59]	0.5577 [1.03]
Pa_mid	-0.0913 [0.46]	0.2388 [1.01]	-0.2337 [0.79]	-0.2659 [0.67]	-0.0362 [0.11]	0.643 [1.76]
Pa_hig	-0.274 [1.05]	0.8714 [2.58]*	-0.4044 [1.07]	0.9516 [1.60]	-0.0439 [0.11]	1.1007 [2.24]*
fem714	-0.5047 [0.68]	0.4077 [0.50]	-0.3274 [0.28]	0.3206 [0.22]	-2.0448 [1.70]	0.9607 [0.78]
fem1525	0.196 [0.26]	1.2719 [1.55]	-0.9911 [0.89]	0.4199 [0.31]	0.6766 [0.60]	1.5651 [1.30]
fem2660	-2.4778 [2.21]*	2.7537 [2.11]*	-3.1703 [1.87]	3.028 [1.54]	-4.3349 [2.26]*	2.4295 [1.17]
fem61+	-1.5397 [1.17]	2.5908 [1.56]	0.2514 [0.13]	3.3058 [0.98]	-4.8651 [2.23]*	2.1679 [0.95]
male714	-1.0318 [1.49]	0.3584 [0.48]	-1.1631 [1.07]	-1.3213 [1.08]	-1.8155 [1.54]	1.0829 [0.95]
male1525	0.2295 [0.33]	1.502 [1.82]	-0.258 [0.25]	0.1223 [0.10]	-0.2373 [0.20]	2.2076 [1.54]
male2660	-1.2204 [1.22]	0.5513 [0.50]	0.4373 [0.29]	0.0983 [0.05]	-4.4059 [2.69]**	0.9018 [0.54]
male61+	-1.3219 [0.99]	1.4951 [1.00]	-0.3403 [0.17]	2.3064 [0.96]	-2.9283 [1.34]	1.0586 [0.48]
Brongh	1.663 [4.98]**	0.1786 [0.51]	2.5784 [4.05]**	0.2828 [0.39]	1.6585 [3.23]**	0.1962 [0.38]
Centre	0.8621 [2.34]*	0.3309 [0.85]	2.4017 [3.58]**	-0.1041 [0.17]	-0.2367 [0.40]	0.7454 [1.19]
East	1.5771 [5.49]**	0.6317 [2.10]*	2.6735 [4.42]**	0.4195 [0.90]	1.3241 [3.11]**	0.9759 [2.07]*
Great Accra	0.9827 [2.52]*	0.2797 [0.72]	2.8017 [3.66]**	0.4131 [0.56]	-0.2347 [0.42]	0.4587 [0.84]
North	1.8108 [3.81]**	-0.8786 [1.73]	2.704 [3.60]**	-0.3288 [0.37]	1.2578 [1.46]	-1.0528 [1.30]
Upper East	2.4251 [4.65]**	-1.3668 [2.36]*	3.3181 [3.95]**	-0.4042 [0.41]	2.4888 [2.90]**	-6.9043 [0.00]
Upper						

West	1.7121 [3.61]**	-0.8795 [1.73]	2.6473 [3.47]**	-0.559 [0.61]	1.1035 [1.38]	-0.4709 [0.59]
Volta	1.8095 [6.04]**	0.6509 [2.07]*	2.9267 [4.67]**	9.0777 [0.00]	1.6825 [3.74]**	0.7522 [1.81]
West	2.0358 [6.12]**	0.0329 [0.11]	3.2237 [4.76]**	-0.7734 [1.49]	1.7389 [3.44]**	0.318 [0.71]
Muslim	0.032 [0.14]	0.15 [0.61]	-0.1898 [0.52]	-0.069 [0.15]	0.2578 [0.82]	0.3117 [0.89]
Animist	0.1969 [1.05]	-0.3922 [1.93]	0.0098 [0.04]	-0.6974 [2.28]*	0.2133 [0.64]	-0.2191 [0.66]
NoChrist	0.4338 [1.43]	0.116 [0.30]	0.2114 [0.47]	5.1744 [0.00]	0.519 [1.11]	-0.1897 [0.37]
Quarter2	0.6908 [3.59]**	0.6822 [2.88]**	1.0384 [3.35]**	-0.0107 [0.03]	0.4148 [1.49]	1.0693 [2.92]**
Quarter3	1.0324 [3.95]**	-0.1076 [0.39]	0.9959 [2.43]*	-0.8777 [1.89]	0.9848 [2.44]*	0.1884 [0.44]
Quarter4	1.0364 [4.40]**	0.0191 [0.09]	1.1732 [3.08]**	-0.547 [1.36]	1.2677 [3.36]**	0.1233 [0.36]
Savanna	-0.3711 [1.06]	-0.1257 [0.29]	0.4861 [0.97]	-1.4358 [1.70]	-1.4434 [2.27]*	0.2473 [0.35]
Forest	0.085 [0.38]	0.2019 [0.73]	0.8116 [2.33]*	0.1814 [0.41]	-0.7109 [2.05]*	0.259 [0.64]
Constant	-5.3839 [2.93]**	1.2423 [0.65]	-5.5025 [1.95]	6.7799 [2.16]*	-4.8686 [1.62]	-1.8431 [0.59]
Observations	676	676	378	378	298	298

a) Absolute value of z-statistics in brackets. * significant at 5% level; ** significant at 1% level. T-statistics appear below coefficients.

Source: Bhalotra (2002).

Table 10
A Profile of Child Activities in Pakistan

	<u>Boys</u>	<u>Girls</u>
Total participation rates		
Wage work	6.2%	11.9%
Household Farm work	22.1%	28.1%
<i>Household Enterprise work</i>	2.3%	1.6%
<i>School</i>	72.8%	30.5%
<i>None of the above activities</i>	14.0%	42.4%
<i>Domestic work</i>	n.a.	99.4%
<u>Participation in one activity</u>		
<i>Wage work only</i>	3.2%	6.8%
<i>Farm work only</i>	8.6%	21.1%
<i>Enterprise work only</i>	0.64%	1.2%
<i>School only</i>	61.3%	27.6%
Combinations of types of work		
<i>Farm & enterprise work</i>	0.91%	0.09%
<i>Household farm & wage work</i>	2.1%	4.1%
<i>Household enterprise & wage work</i>	0.25%	0.27%
Combination of work & school		
<i>Farm work & school</i>	10.5%	2.7%
<i>Enterprise work & school</i>	0.50%	0%
<i>Wage work & school</i>	0.74%	0.73%
<u>Number of children</u>	1209	1096

Notes: Rural Pakistan, 10-14 year-olds. N.a.=not available.

Source: Bhalotra (2000)

Table 11
Child Activities By Quartile of Per Capita Food Expenditure in Pakistan
Participation Rates and (Hours)

	<u>Boys</u>	<u>Girls</u>
<u>Wage Work</u>		
<i>Full sample</i>	6.2 (31)	11.9 (45)
<i>Quartile 1</i>	8.2 (44.6)	18.8 (31.7)
<i>Quartile 2</i>	6.9 (51.8)	11.5 (33.6)
<i>Quartile 3</i>	4.7 (40.7)	8.0 (35.5)
<i>Quartile 4</i>	5.0 (36.4)	9.4 (24.7)
<u>Work on the Household Farm</u>		
<i>Full sample</i>	22.1 (23.3)	28.1 (13.3)
<i>Quartile 1</i>	24.3 (20.6)	25.4 (11.5)
<i>Quartile 2</i>	23.0 (23.2)	26.8 (15.3)
<i>Quartile 3</i>	21.1 (25.2)	29.7 (13.9)
<i>Quartile 4</i>	19.8 (25.1)	30.8 (12.6)
<u>School Attendance</u>		
<i>Full sample</i>	72.8	30.5
<i>Quartile 1</i>	65.4	26.3
<i>Quartile 2</i>	69.3	26.8
<i>Quartile 3</i>	77.0	33.5
<i>Quartile 4</i>	79.1	36.0

Notes: All figures are percentages except figures in parentheses which are **weekly hours of work** in the reference week, conditional on participation. The mean of p.c. food expenditure by quartile in Rupees per month is 98.7, 163.1, 223.9 and 429.7. The average foodshare in the sample is 0.50, the average p.c. food expenditure is Rs. 228.8 and average p.c. total expenditure is Rs. 493.8.

Source: Bhalotra (2000)

Table 12a
Work Participation Rates of Children in Pakistan
By Parent Work Participation
(Conditional on both parents being at home)

All Children

Participation	(Father participates, Mother participates)				Total	%
	(1,1)	(1,0)	(0,1)	(0,0)		
Children in ILO work	42%	16%	34%	15%	660	32%
(a) Wage work	11%	5%	7%	1%	169	8%
(b) Self-employment	36%	12%	29%	14%	555	27%
Number of children	1,194	640	126	91	2,051	
%	58%	31%	6%	4%		

Boys

Participation	(Father participates, Mother participates)				Total	%
	(1,1)	(1,0)	(0,1)	(0,0)		
Boys in ILO work	32%	21%	23%	14%	296	27%
(a) Wage work	6%	5%	3%	2%	59	5%
(b) Self-employment	29%	16%	21%	12%	257	24%
Number of boys	614	352	73	42	1,081	
%	57%	33%	7%	4%		

Girls

Participation	(Father participates, Mother participates)				Total	%
	(1,1)	(1,0)	(0,1)	(0,0)		
Girls in ILO work	52%	9%	49%	16%	364	38%
(a) Wage work	16%	4%	13%	0%	110	11%
(b) Self-employment	43%	6%	40%	16%	298	31%
Number of girls	580	288	53	49	970	
%	60%	30%	5%	5%		

Table 12b
Work Participation of Children by Parent Work Participation
Distinguishing Types of Work

	Wage work		Self-employment		Does not work	
	Mother	Father	Mother	Father	Mother	Father
Boys (number)	184	375	662	759	475	219
Wage work	16%	11%	6%	5%	5%	7%
Self-employment	25%	18%	30%	30%	15%	19%
Neither	66%	75%	63%	67%	80%	77%
Girls (number)	203	352	584	667	426	205
Wage work	51%	12%	12%	13%	5%	12%
Self-employment	27%	22%	47%	36%	10%	22%
Neither	41%	70%	49%	57%	86%	68%
All children (number)	387	727	1,246	1,426	901	424
Wage work	34%	12%	9%	9%	5%	9%
Self-employment	26%	20%	38%	33%	13%	20%
Neither	53%	73%	56%	62%	83%	73%

Table 12c
Work Participation of Children in Pakistan
By Vital Status and Employment Status of Parent

	Father			Mother		
	Alive & Employed	Alive & Unemployed	Dead	Alive & Employed	Alive & Unemployed	Dead
Boys	990	138	61	734	423	32
Work	28%	20%	38%	32%	21%	28%
Do not work	72%	80%	62%	68%	79%	72%
Girls	891	139	62	670	377	45
Work	38%	32%	32%	52%	11%	38%
Do not work	62%	68%	68%	48%	89%	62%
All children	1881	277	123	1404	800	77
Work	33%	26%	35%	41%	16%	34%
Do not work	67%	74%	65%	59%	84%	66%

Source (Tables 12a-12c): Bhalotra (2001)

Table 13
Findings of Empirical Research on Child Labour: An Overview

<u>Variables</u>	<u>Findings</u>	<u>Comments</u>
Household Characteristics		
Parent altruism	Findings typically confirm parent altruism towards children. However, households that consume tobacco spend less on children.	Evidence usually based on incomplete household data on expenditures by adults and children.,
Parent income	Remarkably small (negative) or even insignificant income effects on child labour (and, to a lesser degree, schooling). Income effect not very sensitive to controlling for parents education; more sensitive to whether land ownership is held constant. Experimental data produce larger income effects. Income effects on child labour and schooling are usually larger (in absolute terms) for girls.	Weak income effect can be explained by inappropriately controlled endogeneity, measurement error in income, or else by income reflecting land ownership in the absence of explicit controls for land. The resulting bias is in the direction of making the income effect on child labor less negative. Need more evidence associated with policy experiments or exogenous income shocks. Results suggest education of girls more of a luxury than that of boys.
Income shocks	Negative shocks appear to increase child labour.	Policy changes such as pension reform or changes in trade regime create exogenous changes in income that can be used to study the effect of income on child labour. Research needs to pay more attention to distinguishing ex ante and ex post responses to shocks. For example, child labour may be used to diversify income sources (ex ante)

		or to compensate for unanticipated income shocks like a bad harvest or an adult illness (ex post)
Child wage (or poverty compulsions)	Some evidence that the child wage has a negative effect on child hours of work for boys, though no effect for girls. A negative effect on child <i>hours</i> of work is consistent with the child working towards a subsistence target. As predicted by economic theory, <i>participation</i> in work tends to be a positive function of the wage.	Results lend support to concerns that trade sanctions or bans may increase child labour by decreasing the child wage, leaving households that rely upon child labour worse off.
Parent education	Fairly consistent finding of negative impact of educational level of both mother and father upon child labor. Different effects of mothers' and fathers' education on daughters' and sons' labor.	Effects of parent education at constant income or wealth levels may be taken to reflect better household information or a preference of educated parents for educated children. Most studies use a linear specification but the education effect may in fact exhibit non-linearity.
Parent employment	Variety of results. A seeming pattern is that father's employment status is negatively associated with child labour while mother's employment exhibits a positive association.	The employment status of parents is potentially endogenous. Its significance in a model in which parent income is constant indicates non-separability of parent and child work. Most studies fail to address these two facts and this can bias the income coefficient.
Parent wage rate	Limited and mixed evidence. No general pattern emerges.	Evidence is limited because wage data are often unavailable on account of the prevalence of self-employment in the rural areas where most working children and their parents live. Some studies present results for parent wages that are consistent with results for parent employment: Father's labour appear to be a substitute and mother's a complement of child labour. However, the reverse pattern

		is seen in some other studies.
Age of head of household	Often insignificant. When significant, sign and size vary with specification/region.	Unsurprising if insignificant when household composition is held constant in the model. Otherwise this variable may indicate stage of lifecycle that household is at.
Occupation of household head	A fairly consensus result is that the children of parents in agricultural occupations are more likely to work.	Interpretation sensitive to whether, for example, land owned is held constant. Few studies include occupation variables.
Farm size	Often increases child labour, especially if parent income or education are held constant.	The positive effect identified is consistent with imperfect markets for labour and land. Implication that land re-distribution can increase child labour, other things equal. Overwhelming majority of working children employed on household farms. Yet many studies neglect to include this variable. .
Mode of operation of land	Indicators for whether the land farmed by the household is owned, rented, sharecropped (etc.) are typically significant. At given acreage, renting or sharecropping increases child labor (compared to land ownership)	Few studies include these variables. Analysis of effects should recognise that renting or sharecropping are likely to be choice variables endogenous to the child labour decision.
Household composition (age and gender structure)	Differing specifications, complex and varied results but a simple pattern appears to emerge: Number of adults in household reduces child labour (depends on biological relation), number of children increases it (depends on birth order).	Households in developing countries are large and complex. Often more than 2 adults (see below).
Household size	Often a negative effect though considerable variation in sign and size of effect, depending (<i>inter alia</i>) on whether	Household size (which depends upon fertility or the quantity of children that parents choose to have) is jointly determined with child labour (a measure of child quality or

	household composition is held constant (see row above).	parental investment in child human capital). Nevertheless household size is included in most studies to capture long-run reduced form effects.
Female headship	Tends to increase child labour though estimated effects vary and are at times insignificant.	Female headship most prevalent in Africa; rare in Asia. Its effect on child labour may reflect economic vulnerability that is not captured by income (e.g. women may be less able to borrow money or to find work), or else that women have different preferences over child welfare than men.
Child Characteristics		
Gender	Intercept (shift) effects suggest that there is a “pure” gender effect or that girls work more even after various socio-economic and regional characteristics are held constant. There are also significant slope effects.	On average, girls work more than boys, at least up to age 15. Gap most marked in Asia. Most studies include gender intercept but do not allow gender-specific slopes although these clearly matter for covariates such as age, parent education or land ownership.
Age	Child labor intensifies with age and the effect is often quadratic	Included in almost every study. Fairly consistent results across regions.
Birth order	Tendency to find that first-born children are more likely to work.	Not many studies include this variable. Sometimes it is insignificant. This may be because birth order effects are very likely interactive with gender and may compete with age.
Relation of child to household head	Varied results. Evidence suggests child in Africa less likely to work if closely related to head but no such effect in Asia. No evidence of effect in interaction with parent characteristics.	Recent interest in biologically-motivated altruism makes this interesting. Africa-Asia difference may arise because Asia has fewer children in the household who are unrelated to head. Alternatively, child farm labour is encouraged by the incentive to gain work experience and this effect may be more powerful in Asia than in Africa as a result of their different land arrangements and inheritance rules.
Highest level of education attained by child	Mixed and scant results.	What might we expect? If there were a target level of schooling, we would expect that children who have

		achieved a higher level of education would be more likely to move into work. If, however, there is no target then we would expect that the (possibly unobserved) factors (like ability or parent's tastes for education) that have led a child to achieve a higher level of education today would keep him or her out of work tomorrow. Increasing returns to educational level would also tend to discourage children with some schooling experience to leave school for work.
Ability of child	Evidence that this increases school attendance and reduces child labour amongst boys while having no effect on the work-school choice for girls.	Difficult to find measure of ability that is not itself a function of the work-school choices. Very few studies explore test scores. Interesting insight into how labour is allocated across children within a household: are the more capable children selected for school while the others work?
Health of child	The limited evidence available indicates a positive effect on child labour relative to inactivity but negative effect relative to school attendance.	This results refers to the effect of the child's innate health endowment on the chances (s)he will work. This may be difficult to disentangle from the reverse effect, that is, the impact that working has on child health.
Community Characteristics		
School costs and quality	Distance to school typically increases child labour. Limited and diverse evidence on effects of school costs and quality. Many surveys ask respondent why child was not sent to school. A common response is that the opportunity cost is too high. It is less common to find people say that quality is too low.	Effects of direct interest to policy. Distance effects are conditional on transport infrastructure. Expenditure on school is a difficult variable in participation models, being zero by definition if child is not in school. Quality is multi-dimensional. Not many studies use it.

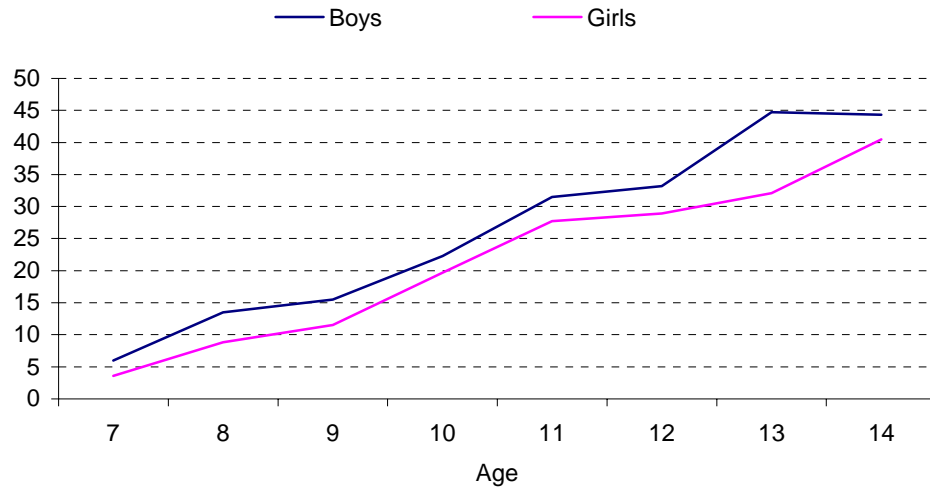
Other community infrastructure	Mixed effects, depending on infrastructure type (e.g. electricity, transportation, credit availability, etc).	Not many studies use these data Mechanisms underlying effects indirect, often unclear.
Unemployment in community	Limited evidence. Some studies find the expected negative effect on child laborepecially for boys..	Not many studies include this variable. Inclusion consistent with modeling labour supply when disequilibrium in market.
Region of residence	Child labour higher in rural areas. Regional and location dummies indicate significant province/district effects even within the same broader.	Important for geographic targeting. Region effects conditional on household characteristics may indicate economic effects (e.g.) labour demand conditions or non-economic ones (such as social norms).

Notes:

1. A “negative” (“positive”) effect of a variable (say, X) on child labour implies that increasing X reduces (increases) child labour.
2. In empirical studies, “adults in the household” typically replace “parents” as households in developing countries often contain more than two adults, usually relatives who, at least to some degree, pool resources with the nuclear family.
3. An “endogenous variable” is one that is jointly determined with the dependent variable, child labour.

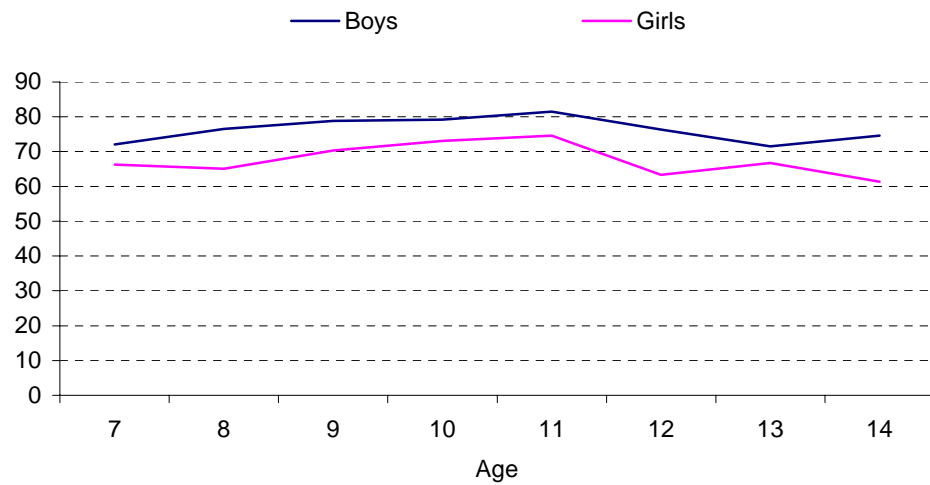
Source: Bhalotra and Tzannatos 2002.

Figure 1. Labour market participation in Ghana by gender and age



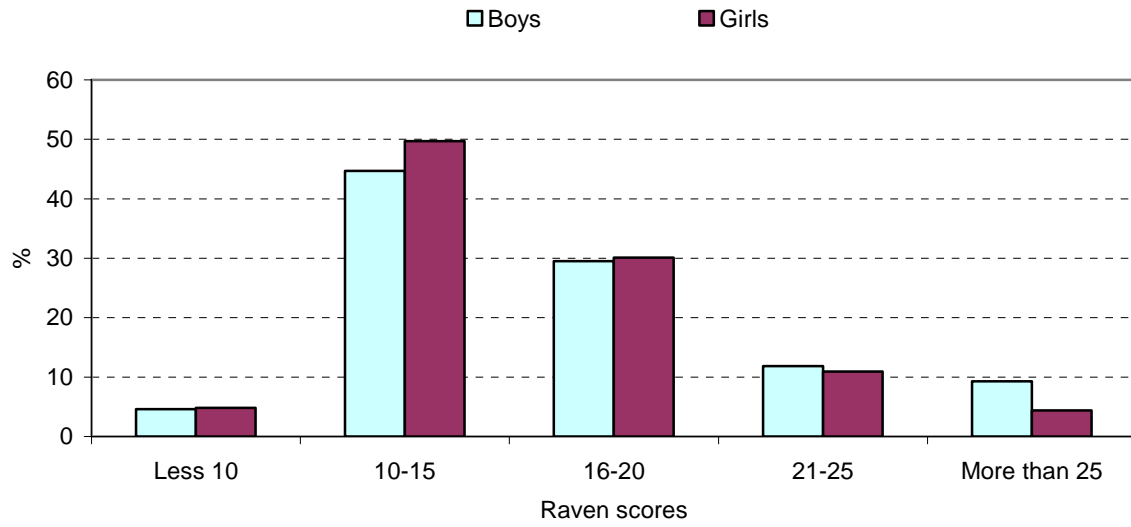
Source: Bhalotra (2002), using GLSS2, 1988/9

Figure 2. School attendance in Ghana by gender and age



Source: Bhalotra (2002), using GLSS2, 1988-89.

Figure 3. Distribution of Raven test results in Ghana by gender



Source: Bhalotra (2002), using GLSS2, 1988-89.

Figure 4

Child Participation Rates by Quartiles of Food Expenditure Per Capita in Rural Pakistan

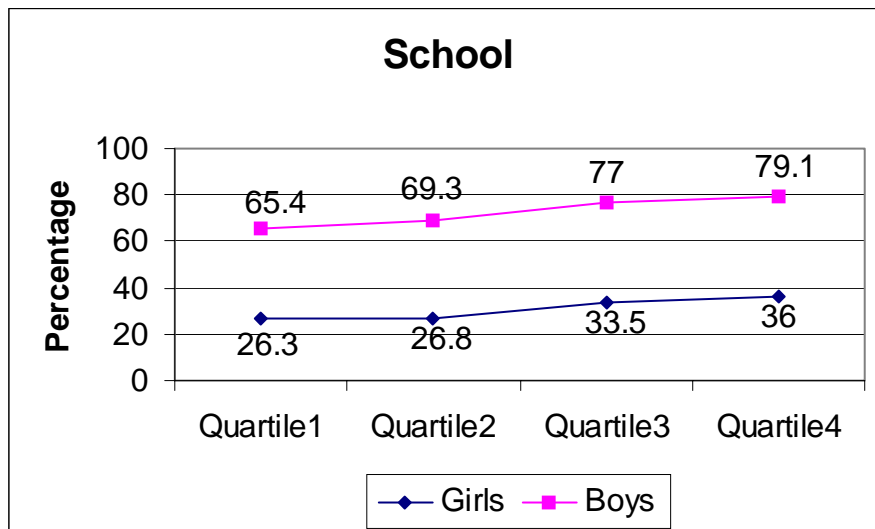
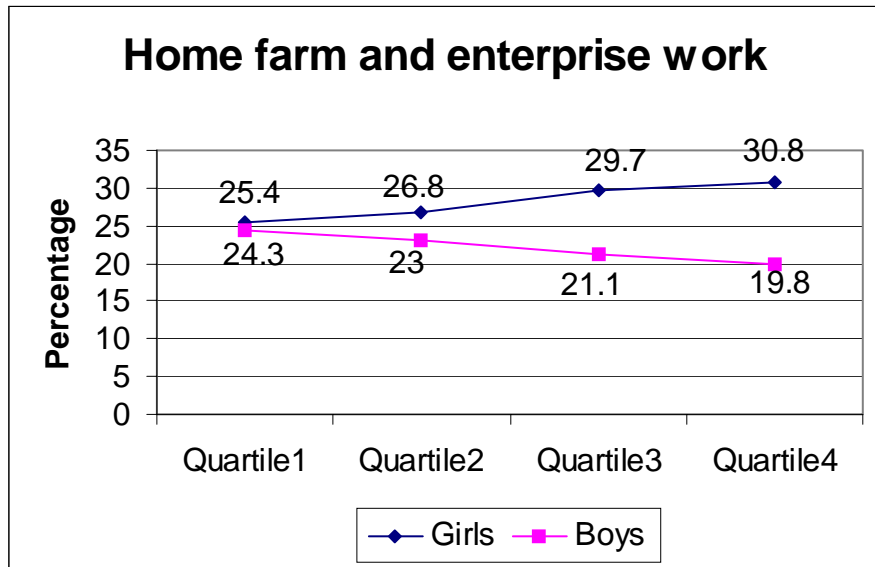
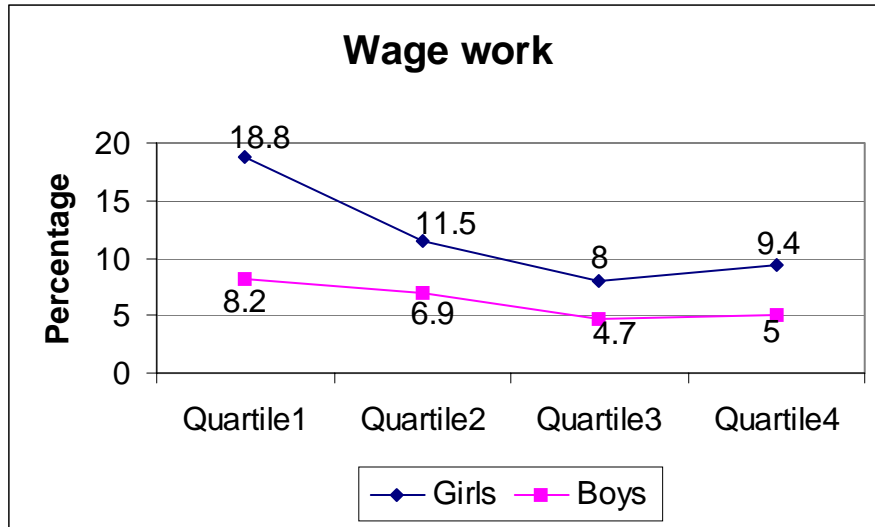
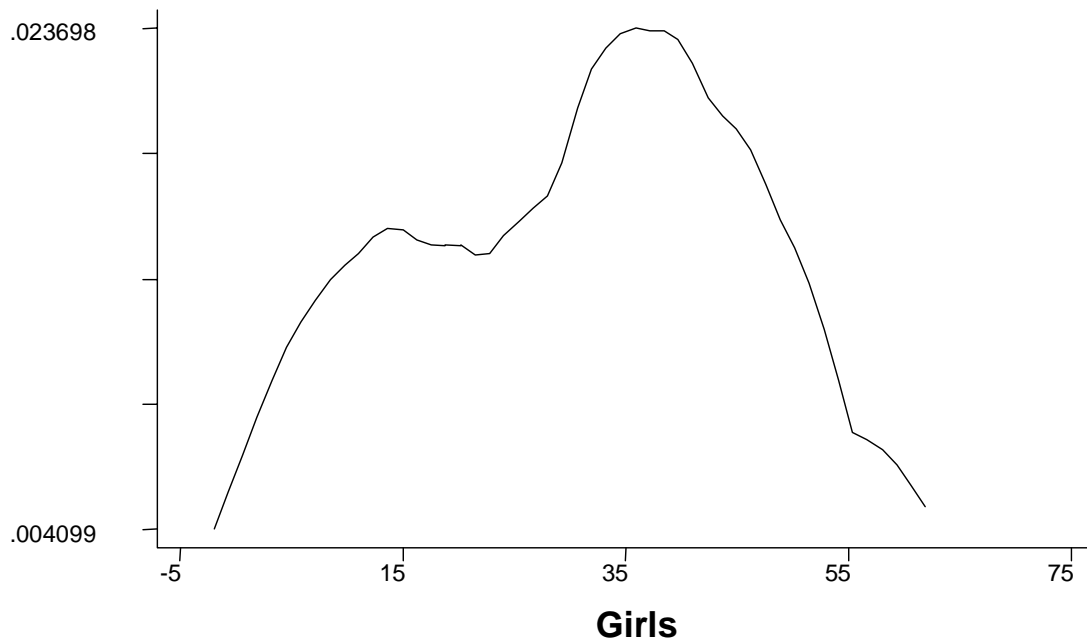
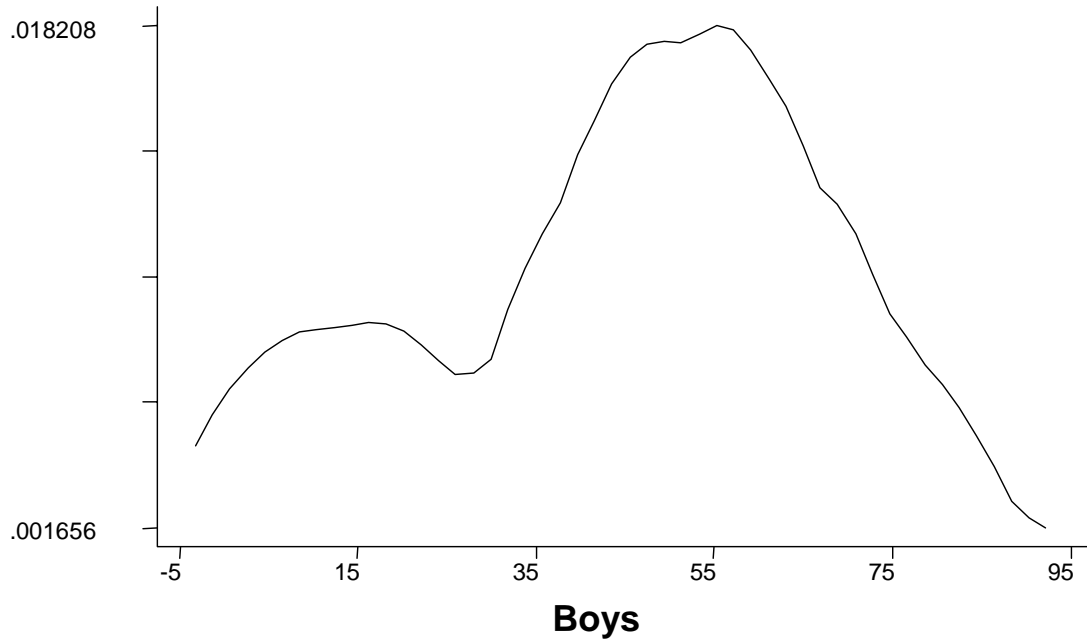


Figure 5

Hours of Wage Work in Rural Pakistan

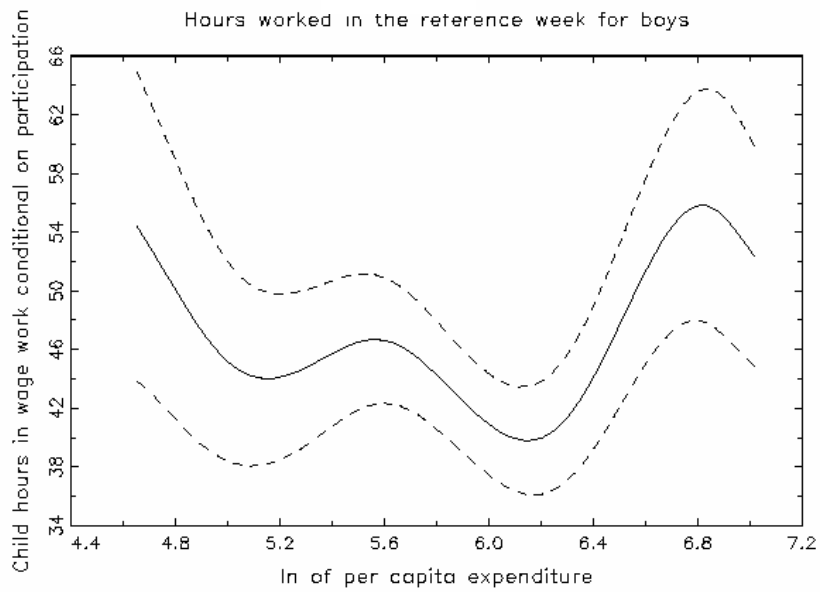


Notes: 'Children' are 10-14 years old. The figures show a kernel density fitted to data on hours worked for wages in the reference week.

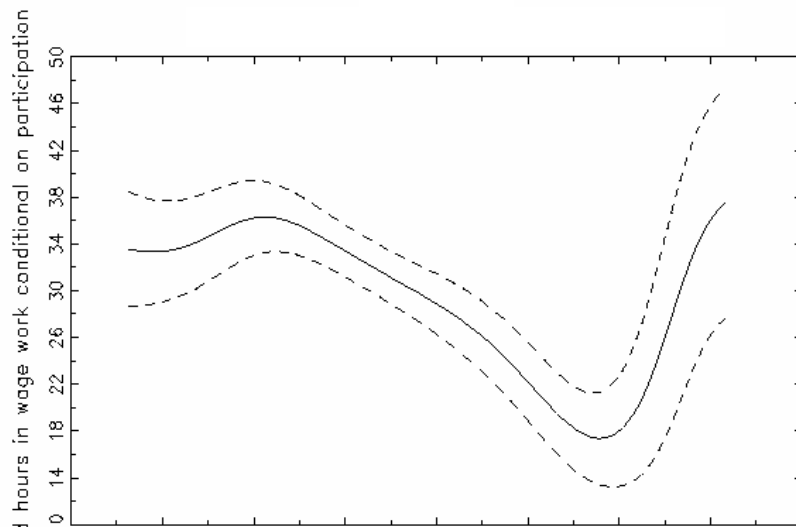
Figure 6

**The Relation of Hours of Wage Work and Expenditure:
Nonparametric Estimates for Rural Pakistan**

Boys



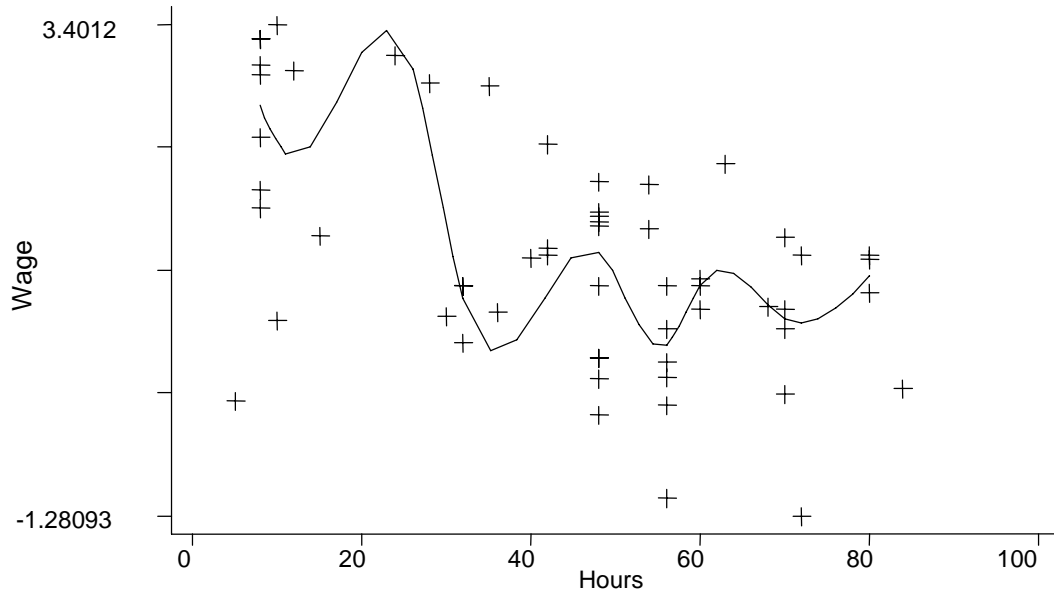
Girls



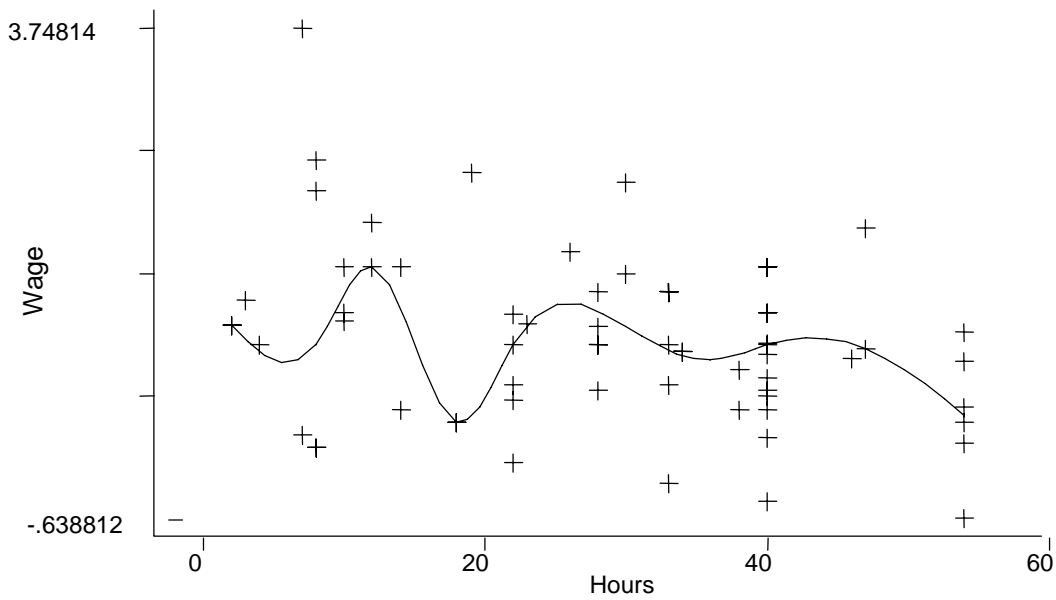
Notes: Child hours in wage work conditional on participation as a function of the logarithm of per capita expenditure of the household. The nonparametric estimation uses a Gaussian Kernel.

Figure 7

Hour-Wage Scatter: Wage Work in Rural Pakistan



Boys



Girls

Notes: The fitted curve is a cubic spline. The data are hours of wage work in the reference week and a child- specific wage rate