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Are Work and Schooling Complementary or Competitive for Children in Rural Ethiopia? A Mixed-Methods study¹

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In Ethiopia, most children work and attend school. The most recent Child Labour Force Survey (2001) showed that 52 per cent of children of primary school age in rural areas combined paid or subsistence work with schooling (Guarcello and Rosati 2007: 5).² For policymakers to cater for these children, it is important to understand when children's work competes with education and when it complements it (cf. Boyden et al. 1998: 251). If work and school are complementary, children can participate in each activity at different times of day. At best, engaging in work makes it more possible to engage in school, or vice versa. In contrast, the activities can compete with each other: working may make it impossible or more difficult for children to attend school or prevent them from benefiting fully from it.

Anthropology and childhood studies have used qualitative methods to uncover a range of characteristics that make work and school complementary or competitive, which have been largely ignored in survey

work. I draw on literature from these disciplines and on my own qualitative research in a Young Lives survey site to question the exclusive focus of many economists on the hours taken by activities. I argue that whether work and schooling are complementary or competitive depends not only on the time each activity takes, but also on the characteristics of the activity. With variables from the Young Lives survey as proxies for these characteristics, I then undertake exploratory quantitative analysis across all 13 rural survey sites. Some correlation between these proxies and decisions about children's schooling and work suggest that the characteristics of activities are generally relevant.

[A] Economic models of children's work

Early economic literature assumed that work and school are mutually exclusive: children either attend school all day or work full time for pay in petty trade or industry (Psacharopoulos 1997; Ray 2003). A more recent strand argues that whether a child enrolls in school, whether they work, and how much leisure they have is a single, jointly determined allocation of the time and budget available to the household, so it is artificial to isolate the effect of work on school (Edmonds 2007).

Cigno and Rosati (2005) nest the two most widely used models of child time allocation (Baland and Robinson 2000; Basu and Van 1998) within a general model. Families choose the child's mix of activities to optimize household utility, trading off between the child's current income and

future returns to their education. Choices are constrained by parents' budget and the amount of time in a child's day. Depending on which constraints are binding, children work full time, combine work with school, attend school full time, or (if there are costs to schooling) do nothing. Based on this model or variants of it, empirical papers examine determinants of child time allocation, among them schooling price changes (Ravallion and Wodon 2000), household shocks (Beegle et al. 2006), and household composition (Fafchamps and Wahba 2006).

These models emphasize the household budget as the binding constraint on decision-making. However, the models have in common another constraint: the number of hours in a day. Some authors argue that the time constraint should be adjusted to capture that particular activities take a fixed amount of time (Ravallion and Wodon, 2000: C163); for example, the model could specify that children attending school can only take on part-time work (de Janvry et al. 2006: 353). But even with these adjustments, the time constraint assumes that the amount of time activities take is the only influence on the extent to which children can participate in both.

No models found in my literature search consider characteristics of work and school. Schools are assumed to be similar: most studies assume all schools occupy the whole day, except de Janvry et al. (2006), who assume schools teach for half the day. There is also limited recognition that different tasks have different characteristics. Studies find strong

heterogeneity in determinants of time allocation across genders (Admassie and Bedi 2003; Cockburn and Dostie 2007) and ages (Duryea et al. 2007; Wahba 2006) but do not discuss reasons for it. One plausible reason is strict gender and age differentiation in characteristics of tasks.

[A] Insights from anthropology and childhood studies on children's work

Researchers in sociology, anthropology, and childhood studies are critical of the view that work and schooling are mutually exclusive, arguing that this perspective is rooted in culturally specific notions of childhood as a time for leisure and learning (Boyden et al. 1998: 246–7). Research uses children's descriptions of how they balance work and schooling to elucidate characteristics that make the activities complementary or competitive. Shift schooling enables children to work and go to school, and work enables schooling when children's wages meet its expenses (Nieuwenhuys 1994). Work may also teach children many relevant skills, and should be considered part of 'education' (Bourdillon et al. 2010: 94–105).

However, work can disrupt schooling (Boyden et al. 1998: 249). Children may be too tired to concentrate in class or do homework. School may be scheduled at times of day difficult for working children and children may be punished for arriving at school late after working at home (Nieuwenhuys

1994: 70). If children miss classes or days because of work, they may fall behind and become discouraged (Boyden et al. 1998: 256).

[A] Methodology

I used survey data collected by Young Lives, in collaboration with the Ethiopian Development Research Institute, on 1000 Older Cohort children. They and their caregivers were surveyed in 2002/03, when the children were aged between 7 and 8, and again between October 2006 and April 2007.

For qualitative data, I conducted a case study of children's time allocation in Leki, a rural Young Lives site,³ between July and September 2008. This was one-and-a-half years after the Round 2 survey; so children were between 12 and 13 years old. I selected 24 of the 50 Young Lives children in Leki for focus groups based on their gender, working status, and schooling status. Each group participated in two exercises run by a research assistant, one (from Woodhead 1998) asking children to rank activities they did on various criteria, and one based on protocols for the Young Lives qualitative component (Camfield et al. 2009), where children discussed the characteristics of those who did well or badly at school. With an assistant, I conducted semi-structured interviews with 17 children, and follow-up interviews with ten children, together with home observations and interviews with parents. I also interviewed two teachers, the elected

chairperson of the village governing committee, the manager of an NGO providing irrigation, and managers of vegetable farms.

Data collection and analysis was sequential and iterative: findings from one method of analysis suggested issues for investigation by the alternative method in the next stage. Quantitative analysis before fieldwork suggested qualitative work should focus on rural areas, where children's work was more prevalent. It also enabled the selection of respondents and suggested some themes for interview protocols and child-specific questions. Initial qualitative analysis based on field notes encouraged me to reshape my research questions and generated the conceptual framework of the characteristics of work and school. I then applied this framework in the third stage, a detailed quantitative analysis, and the fourth stage, detailed qualitative analysis of transcripts. Finally, the combination suggested questions for further surveys.

I used qualitative descriptions of work and school in a particular village to develop theoretical propositions about how particular characteristics of the two affect children's allocation of time. Children's descriptions provided 'a map' (Ritchie and Lewis 2003: 269) of the characteristics of school and work that could make schooling complementary or competitive. Bina Agarwal (1997: 6), an economist, argues that such 'analytical descriptions' are useful when the factors being considered are not captured adequately in current models.

Econometric analysis explored which of the relationships described in qualitative work were present across the sample of 633 rural children. Since the 13 sites in the sample were purposively selected, the sample was not nationally representative. However, the sample was random within villages, so I drew conclusions about 12- and 13-year-old children in the sample and similar villages.

I used an econometric specification based on Cigno and Rosati's (2005) theoretical model. The specification, assumptions and results are presented in Orkin (2008). I examine seven outcome variables using independent probit equations. Work variables are equal to one if a child allocated more than an hour on a typical day to the work. Four types are considered: paid work, subsistence work, chores, and care. There are three school outcome variables: enrolment, regular attendance (that is, missing fewer than 20 days), and spending more than an hour a day studying.

All regressions included controls for household composition, parental education, whether children were stunted, children's religion, gender and birth order, and whether or not children were recent migrants, of a minority ethnic group, or the biological children of the household head. I use village-level fixed effects (Fafchamps and Wahba 2006) to control for omitted village-level variables, but do not use household fixed effects

because of data limitations. Omitted variable bias is likely, so I merely note when correlation is present and do not attribute causality to relationships.

Since the Young Lives survey does not capture information on characteristics of work and school, I used the insights of qualitative work to select proxies for children undertaking work or attending a school with particular characteristics, with some but limited success. If one of these proxies correlated with children attending school less and working more, I concluded that that the characteristic of work (or school) made work and school competitive.

[A] Children's work and school in Leki: Qualitative evidence

Leki is a lakeside village of 410 households, two hours' walk from the nearest town. 285 households own land, on which they grow maize, wheat and *teff* (a cereal that is made into *enjera*, the staple flat bread). 99 families belong to an irrigation scheme, and can grow and sell a second harvest of peppers, tomatoes, or onions. There are also five commercial vegetable farms.

[B] Paid work

Vegetable farming is labour-intensive. Children work unpaid for their own families if they have irrigated land. Both commercial vegetable farmers and families with irrigated land often hire children as casual labourers for transplanting and harvesting. Even children whose families have irrigated

land work for pay. The duration, intensity, and flexibility of work vary depending on the employer.

On both family and commercial farms, a rate is paid for a piece of work. On commercial farms, pieces take a woman or child roughly a day to complete.

Girls described planting seedlings:

Children wake up early in the morning to start their work. They are given 20 rows to put onion seeds. They prepare openings and put the seeds in each opening [and] cover them with soil. It takes a day to complete the 20 rows. This may keep students from going to school. (Girls Group Two, 15 August 2008)

Children are expected to finish a piece of work in one day, or else they are not paid. Only 3 of 17 children interviewed said they would not leave work to go to school before they had finished work. Buzu, a girl, said, 'If we fail to finish the work we are assigned to, the organization does not allow us to go home. Sometimes they beat us and instruct us to finish the work.' In contrast, on family-owned farms, 'If you fail to finish, you come back to doing it the next time.' One boy prefers to work for individual farmers because 'you can earn whatever you do, half day or full day'. The system on commercial farms prevents work from being divided into small chunks of time, which makes work particularly competitive with schooling.

Work on commercial vegetable farms was particularly tiring. Girls said

planting onions was their most tiring activity: 'You do it stooped over so you feel pain in your back' (Girls Group One, 13 August 2008). Some boys said, 'Paid work has a huge impact. It is heavy and beyond our capacity' (Boys Group Two, 24 August 2008). Dasse, a boy, said, 'The work in the commercial farms is difficult, and you can't take a break, you have to work all the ten hours in the sun. But with the individual farms you can take breaks and go home earlier.'

Performing tiring tasks made it difficult to participate fully in school: 'Whenever we go to school after doing heavy tasks, we cannot easily follow the lecture in the class' (Boys Group One, 22 August 2008). Senayit, a girl, said, 'When I come home from the place of work I feel tired and fail to do assignments.' A boy said, 'If we have to work on the farm weeding, we go to bed early so that we may wake up in the night to study. We ask our parents to wake us up.' One of the teachers agreed: working children 'come without doing their homework ... When we ask their friends after class, they tell us that the student was working on some vegetable farm the previous day.'

Many children used their wages to buy school materials, which makes work and schooling complementary. The school at Leki demanded no fees or uniforms. However, children had to buy exercise books, stationery, and adequate clothes and shoes. Two children interviewed had dropped out of

school because their parents could not afford these materials. They worked and saved money and returned to school the next year.

‘Children whose parents don’t have land and are economically poor need to do paid work to survive and to attend school’ (Boys Group Two, 24 August 2008). But work is scarce: the boys said, ‘We cannot even get the job opportunity even when we want to do it.’ The foreman at one farm reported that children beg to work there.

Thus children worry about finding jobs, which in turn can affect their concentration. Senayit said, ‘I think about my payments while I am in class or studying; this definitely affects my learning.’ Banche, another girl, described a child doing badly at school: ‘She cannot study because she has to worry about many things ... She has to look for a job.’

The scarcity of jobs also meant children missed school if it conflicted with work (Girls Group Two, 15 August 2008). Teachers sometimes allowed children to leave school early for paid work. One of the boys said, ‘If we get one [a job], we work. We ask teachers for permission and go to work. The teachers may ask us to bring them some onions and we do accordingly.’ But children who were often absent without permission were ‘fired’ by their teachers (Girls Group One, 13 August 2008).

[B] Work in family enterprises

Most children whose families owned land helped their families to farm.

Boys assisted with weeding, ploughing, guarding crops, harvesting, and building fences and barns. Girls and women assisted with harvesting and sowing seed.

Work for families could be divided into small chunks of time, which made it less competitive with schooling: 'Concerning the household work ... parents don't refuse to send you to school though you don't finish the work. You can finish the work after school. That is not the case with the paid work.' (Boys Group Two, 24 August 2008).

Children started herding smaller animals at around the age of 5. From the age of 7, boys herded cattle. Grazing land was two hours' walk from the village. In dry weather, cattle were taken further away to graze, which took the whole day (Boys Group Two, 25 August 2008). However, if grazing was plentiful, herding took place after school. Children could study while herding: one boy said: 'When my father tells me to look after the cattle, I feel happy because I can read my books.'

Children with few siblings of their gender missed school more often to help their families. One boy, Desta, had no brothers, so his father often needed him on the farm and would tell him to get permission to miss school. Desta was unhappy about these absences: 'If I miss a class and friends tell me

that they learned many things and took some homework, I really feel upset since I lose marks.’ Such children also enrolled at a later age: Dasse, a boy from one of the richer families in the village, was already ‘a little grown-up’ by the time he started school at 9. He said, ‘There was no one to look after the herd, and I was doing that.’ When his younger sisters were old enough, they took over herding and he went to school.

[B] Work in the home

Both girls and boys fetched water from the pump and collected firewood. In addition, girls cleaned the house, went to market, washed clothes, and made *enjera* (flat bread) and *wot* (sauce). Girls said they did more work than boys. One, Buzu, said, ‘Boys work for longer hours than girls in the paid work. But girls must also do household chores when they come home.’

Tasks that children said were bad for schooling needed a long and continuous block of time and could not be balanced with studying. These tended to be assigned to girls:

Girls are mostly busy and consequently get weak in their education.

The boys may take their exercise books when they go to herd cattle.

But if girls try to study while they bake *enjera*, they may forget and the food may burn (Girls Group Two, 24 August 2008).

Another girl agreed, saying, ‘Making *enjera* has a lot of processes. It requires collecting firewood, mixing the flour with water and a lot more

processes all at once.’ Similarly, collecting firewood required travelling to the forest some way from the village. Fetching water, however, was quick and could take place before or after school (Girls Group One, 12 August 2008).

Girls struggled to study at home, because they could be asked to work at any time: Senayit said, ‘If they order me to work, I work. I cannot disobey them.’ When asked how parents should support their children’s education, she said, ‘Parents should give ample time to their children to read books and prepare themselves for the next class.’ Boys felt more in control of their time: ‘They [teachers] teach us to use our time economically and finish the work we need to do so that we can have time for study’ (Boys Group Two, 25 August 2008).

Girls were also responsible for caring for sick family members. A girls’ group described girls doing badly at school: ‘They engage in paid work. When their mothers are sick they say, “I have to work and with the money I have to buy medicine”’ (Girls Group Two, 14 August 2008). Boys said of girls, ‘If her mother is sick, she focuses on work, quitting her education’ (Boys Group Two, 24 August 2008).

If women were ill, girls took on all their domestic chores. Senayit, whose mother was sick, said:

When she was healthy she did all household tasks and cooked my meal. I used to come from school and eat my meal. But now I do all chores without anyone's assistance. I collect firewood, clean the house, make coffee, fetch water, go to market, and bake bread for the household.

[B] The school

Nearly all children in the Young Lives sample in Leki (96 per cent) were enrolled in school. Many children had started school after the age of 7, the compulsory age of enrolment, because their parents could not pay schooling costs or needed the children for work. Teachers reported high rates of dropout: by halfway through the 2007/08 school year, enrolment in Grades One and Two had decreased by roughly a third.

Illness often caused dropout: two girls stopped school for a year to look after sick parents, and four children dropped out for a year or more because they fell seriously ill. Socioeconomic constraints are another reason. One teacher said, 'The produce from last year gradually depletes in the second semester. Sometimes students come without eating their breakfast; this makes them weak and hopeless; and they quit.' Another teacher agreed, 'The children do paid jobs to get money; they become very money-enthusiastic and their parents do not push them to go to school as they value the daily money the children earn. There could be lack of food, exercise books, and clothing.'

Children often return to school the year after dropping out and thus progress slowly through grades. Only 23 per cent of children in the sample of 633 had passed four grades between 2002 and 2006. 10 per cent of children were in school for some period in these four years but did not complete one grade.

The school operates in only one shift, from 8:00 a.m. until 12:15 p.m. If only school hours are considered, schooling is compatible with some work. Even so, children did not attend regularly. Many students came in the morning and left after the 10:00 a.m. break. Some children reported studying three or four hours a day besides, even waking up early to study, but many did not report any studying.

Children often missed school to work. Senayit said this affected her results: 'If we support ourselves by working as daily labourers, we may lose the lessons the other students have been taught ... and score less in tests.'

Children also missed school if they were late because of work. The school hired a guard, who often shut the gate against latecomers. Senayit said, 'Teachers close the gate against us so that we cannot disturb the class. We kill two or more periods just wandering in the fields. Sometimes teachers beat us ... order us to collect rubbish and clean the compound.'

Schooling is structured to accommodate children's work. The Leki school management committee, in consultation with farmers, moves the times of the school day according to the cycle of subsistence activities. In October, there is a two-week break so children can help with harvesting, and when school resumes it is moved from morning to afternoon. In November, school is moved back to the morning. In April, school is moved to the afternoon for tilling.

Orthodox Christians in Ethiopia fast before Easter but are allowed to eat fish. During this period, boys attend less than girls because they can earn money from fishing. Teachers made an informal arrangement with boys and 'told them to come to school at 9:00 a.m. after they have finished fishing ... It is better to come late than to quit school.'

However, the calendar does not change around the vegetable harvests, when many poorer children work on commercial vegetable farms.

Moreover, the school is not as flexible as parents and children would like it to be. The chairperson of the village governing committee said parents asked for two shifts for schooling, because they could not send all their children to school at the same time, but the school has not complied.

The school is sometimes inflexible in accommodating children who are seriously ill. 5 of 17 children interviewed had missed two or more months of school because of illness. Two were allowed to return, although one had

to repeat the grade the following year. Three were not allowed to re-enrol until the following school year. This happened to one girl, Shonah, in two consecutive years, once when she got malaria and once when she had worms.

[A] Time allocation to work and school in quantitative data

Across all 13 rural sites, children's activities are very similar to those in Leki. 93 per cent of children are enrolled. Only 5 per cent are enrolled and do less than two hours of chores or caring on the average day, and most children combine school and subsistence work. Leki has unusually high levels of paid work, probably because of commercial vegetable farming.

[\[Table 17.1 here\]](#)

Qualitative data indicate characteristics of work and school that make them complementary or competitive in children's plans for each day. These describe the situation in Leki, but also provide empirical expectations which can be tested more generally in quantitative research through proxy variables.

Results on gender were similar across qualitative and quantitative work.

Qualitative research found that younger boys and girls did similar work – herding smaller animals, fetching water and wood, and looking after siblings – but when children were 12 tasks were clearly differentiated between genders. It also found no differences in enrolment between boys and girls, although girls complained they found it difficult to find time to

study. Quantitative research supported these conclusions. When children were 8, being male or female did not make them more likely to engage in particular types of work. When children were 12, boys were more likely to engage in paid and subsistence work and less likely to engage in chores and caring work. There was no gender-based difference in the likelihood of boys and girls enrolling in school, attending regularly, or studying. Perhaps girls studied despite distractions at home, or perhaps boys had other reasons for not studying.

[B] Schooling costs

Qualitative research found that schooling costs were a barrier to enrolment. I do not examine variation in schooling costs between children, because the majority of children in the survey sites attended the government village school and regressions compared children in the same village.⁴

Instead, I investigated variation in households' ability to pay schooling costs. Survey data showed that children in wealthier families (measured by household durables) were more likely to be enrolled, and less likely to do more than two hours of chores in a day. Likewise, as family land size increased, children were more likely to attend school regularly and less likely to do subsistence work.

[B] Worrying about finding paid work

Children said worrying about finding work made them more likely to work for pay when they had the chance and less likely to attend school. The proxy used is whether families would be unable to raise 150 birr in a week. Since each regression already controlled for household wealth, this proxy captured differences in how credit-constrained families were compared to families with the same level of wealth.

The argument is that worrying about finding work to pay schooling costs in qualitative research mapped onto whether parents were credit-constrained. Richer children sometimes did paid work, but not if it affected schooling. In contrast, children from families burdened by illness and extreme poverty had to find work to pay schooling costs and were more likely to worry about finding work. As expected from qualitative research, quantitative research showed that worried children were likelier to take on work and less likely to be enrolled and attend school regularly. Worrying about finding work also led to lack of concentration in class and while studying, but this was difficult to capture using available data.

[B] Inflexible schooling

Qualitative research showed that the formal schooling system was somewhat flexible regarding work but less flexible regarding lateness, children caring for ill household members, or children's own illness. School flexibility to work is difficult to quantify directly with this round of data,

although it is a major focus of more recent data collection. I therefore only examined the effect of child and family illness on children's schooling.⁵

The first proxy for school flexibility to illness was whether children had had a serious illness in the last four years. If schools were flexible, children who had been sick might have been less likely to attend regularly but should have been as likely to be enrolled. However, as expected from qualitative data, schools were not accommodating of sick children: children who had been ill were less likely to be enrolled and less likely to be attending regularly. The effect is not strong, probably because children's enrolment and attendance was not always measured in the year they fell ill.

The second proxy is the percentage of household members who had been ill for more than 30 days in the last year. The proxy is crude: regressions already control for differences in family wealth that may result from illness in the household, but there may be other effects of household illness on school participation not related to school flexibility. Children whose households were burdened by illness were somewhat more likely to do caring work and much more likely to work for pay, possibly to pay for medicine, as raised in qualitative work. They were less likely to be enrolled and attending regularly.

[B] Indivisible work

In qualitative research, children indicated that piece-work tasks on commercial farms, herding, fishing, collecting firewood, and making *enjera* were difficult to balance with school attendance and studying. They could not be divided into small chunks of time or combined with other activities. This finding proved difficult to test in quantitative research.

Herding was competitive with schooling when cattle had to be taken far away from home, so in quantitative analysis, I examined children whose families had larger herds. There was strong probability that these children would do subsistence work, but they were not more likely to miss school. On average, herding and schooling were complementary.

The second proxy examined was whether irrigation was available in the research site. In the qualitative work, irrigated agriculture increased opportunities for indivisible paid work. I used a variety of cluster-level variables as an imperfect substitute for cluster fixed effects. As expected, availability of irrigation in the area increased the probability that children participated in paid work. However, irrigation in the site unexpectedly increased the probability that children attended school. Perhaps children were using money earned in agriculture to subsidize their schooling costs. Alternatively, in other sites work in irrigation agriculture may have been divisible and complementary to schooling attendance.

[B] Tiring work

Qualitative research found that tiring work prevented concentration during school and decreased studying. Lack of quantitative data on the nature of work prevented examination of tiring work, but the variable has been included in Round 3 of the survey.

[A] Conclusion

Across qualitative and quantitative research, a picture emerges of characteristics of activities that make them competitive. Findings, although preliminary, inform a number of debates relevant to policy.

First, minor adjustments to existing schooling systems, such as synchronizing school calendars with agricultural calendars or providing shorter school days, would help children to combine school with work and could greatly improve enrolment and attendance.

Second, illness among children and families has major effects on participation in schooling. Flexible policies about absence and structures to assist children to catch up would prevent drop out when children or their parents were ill. Better access to healthcare for parents and children would both improve health and increase school attendance.

Third, despite education being nominally free in Ethiopia, the costs of books, clothes, and stationery reduce enrolment. Interventions targeted at poor families to reduce the cost of schooling, such as provision of schooling materials or grants, would probably improve school enrolment and attendance. They might also prevent children worrying about finding work and so improve concentration in class.

Fourth, many interventions in developing countries to improve school participation also aim to reduce children's participation in work (Ravallion and Wodon 2000). This chapter suggests that, if the aim is to improve participation in schooling, intervention should target not all work, but only work that competes with school.

Fifth, work in the home or work supervised by family should be considered together with work for pay. Feminists and others have long argued that to deny that chores and caring are work denigrates and makes invisible the contribution of children (and women) to families (Agarwal 1997; Levison 2000). In addition, I show that some chores and caring share characteristics with work that is competitive with schooling, and are equally important in any analysis of children's work.

The research also makes a methodological point. This analysis is an 'analytic description' (Agarwal 1997: 2) of characteristics of work and schooling which affect time allocation. The most obvious theoretical

extension is to construct a formal economic model that goes beyond the linear time constraint as the main parameter of child decision-making. Qualitative conclusions stand independently, gathering children's perspectives on their lives to advance knowledge and improve policy. But they can also enable economists to improve their economics.

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² Analysis on the Ethiopian Rural Household Survey generates a similar statistic (Admassie and Bedi 2003; Cockburn and Dostie 2007). Qualitative work (Poluha 2004) suggests most rural Ethiopian children work.

³ All names of children and study sites have been changed to protect the children and their families' confidentiality.

⁴ No government schools charge fees, but children pay for stationery and clothing and schools ask for 'contributions' for new facilities, hiring guards, or teachers' salaries.

⁵ Household shocks were found to be exogenous (the values of the outcome variables when children are 8 predict shocks between when children are 8 and 12 (Beegle et al. 2006). It can be argued that household shocks cause particular time allocation choices.