The contribution of girls' longer hours in unpaid work to gender gaps in early adult employment: Evidence from Ethiopia, India, Peru and Vietnam

Abstract

Across many countries girls perform more unpaid work than boys. This article shows how time spent in unpaid household work by young women and girls contributes to the gender pay gap which is already evident by age 22. We analyse employment participation, type of employment and wages using five waves of the Young Lives longitudinal survey for Ethiopia, India, Peru and Vietnam. Longer hours in unpaid household work in adolescence positively predict later employment participation but have a scarring effect in negatively predicting job quality, that is a job with a private or public organization, and hourly earnings, particularly for women. Blinder-Oaxaca decompositions of the gender wage gap show young women's penalty for past household work is due to longer hours of such work rather than a higher female penalty for a given amount of unpaid work.

1. Introduction

In childhood, as in adulthood, unpaid work is allocated in gendered ways in low- and middle-income countries where 90% of the world's girls live (UNICEF 2016). Studies consistently find that girls spend more time on unpaid household chores than boys (Khanam 2008; Webbink, Smits and de Jong, 2011). According to UNICEF (2016), girls spend 40% more time on household chores than boys. Unequal shares of household care work are highly consequential for girls and linked to wider inequalities (OXFAM 2020) such as access to piped water which shapes the amount of necessary work (Assaad, Levison and Zibani, 2010). The amount and nature of household work influences girls' school participation, reduces their time for study and can thus constrain their future employment opportunities. Not counting children's unpaid household work alongside their paid work underestimates child labor, especially for girls. Discussing a long-standing controversy, Deborah Levison (2000) argues children would often prefer paid work to unpaid work and unpaid work can limit their education more than paid work.

To further understanding of the consequences of children's unequal participation in unpaid work on gendered labour market inequalities, this article estimates and decomposes the gender wage gap across Peru, India, Vietnam and Ethiopia, four countries of varying income levels and educational attainment. The data are drawn from across the life-course from age eight to age 22.

We make four main contributions. Firstly, the results confirm young women spend substantially more time than young men in household work in childhood and young adulthood. Secondly, we relate gendered work transitions to job quality: Longer hours in unpaid household work at earlier ages increase the likelihood of subsequent lower paid self-employment or work for another individual or household rather than a private company or public organization. This

result highlights women's self-employment which accounts for a larger share of female than male employment across developing countries (Gindling and Newhouse, 2014; Nix, Gamberoni and Heath, 2016). Thirdly, through Blinder-Oaxaca decompositions of the gender earnings gap we uncover that earlier-age participation in household work negatively impacts the wages of young women but not young men, mainly because of young women's observed longer hours in household work. Finally, and counteracting the overall gender earnings gap, girls whose parents have higher aspirations for them at age 12 have better chances of higher paid employment at age 22.

2. Gendered paid and unpaid work participation

Gendered wage differentials vary in impact, cause and persistence in different countries. Overall, the ILO Global Wage Report estimates the global gender wage gap at 20% in 2018/2019 (ILO, 2019). In high-income countries studies attribute the gender wage gap to a mix of discrimination, women's lesser job experience relating to gaps from employment and fewer hours on the job, job crowding, segregation and choices constrained by social norms (Blau and Khan 2017). Social norms also uphold unequal distributions within households, underlying women's disadvantage in labour markets (Agarwal 1997).

In high-income contexts considerable research investigates how within-couple inequality in housework and caregiving supports gender unequal employment participation and earnings (Cutillo and Centra 2017). Studies document a negative relationship between concurrent housework hours and wages in the UK (Bryan and Sevilla-Sanz, 2011) and USA (Hersch, 2009). Substantial evidence also points to the negative effects of concurrent family caregiving on employment participation, hours of work and, in some cases, earnings (Van Houtven,

Carmichael, Jacobs and Coyte, 2019; Heger and Korfhage, 2020; Kotsadam 2011). Rather than focusing on within couple interaction or concurrent effects, this article directs attention to how childhood and adolescent participation in unpaid household work relates to employment and earnings in young adulthood. Evidence already tells us unpaid work in childhood can negatively impact school attendance for girls, with consequences unfolding over the life course (Khanam 2008). This is in line with feminist economic theorising of unequal investments in children by gender, starting at an early age (Jacobsen 2020:57).

We take a much-needed further step in relation to low- and medium-income countries by asking two questions: first, if unpaid work in childhood negatively affects subsequent paid work participation and wages across four low- and middle-income countries. Second, to ask if any of these effects are gendered and, if so, how. These questions lead to the hypothesis that time in unpaid household work in childhood and adolescence negatively impacts future opportunities for paid work and earnings. Two mechanisms are suggested. First, both the evidence on unpaid work and school attendance and the literature on adult caregiving suggest that time in unpaid work necessitates trade-offs with time in other activities including schooling, study at home, paid work, leisure (play in the case of children) and sleep. Longer hours of household work may therefore constrain educational attainment, limit networking and lower self-esteem, all of which could potentially impact future employment opportunities (Cappellari and Tatsiramos, 2015; UNICEF, 2016). Secondly, if girls undertake unpaid household work with lower job-related value than boys, this could set women on a lower-paid employment path. The first channel predicts a more negative effect on women's employment and earnings because they commit longer hours to household work. The second channel predicts a harsher penalty to a given amount of unpaid work for women.

We employ regression analysis to establish whether time in household work at younger ages is negatively linked to later employment participation, earnings and the gender earnings gap. Blinder-Oaxaca decompositions investigate whether the gender wage gap is wider because young women spend more time in household work (an endowment effect) or because the time they spend on household work carries a higher earnings penalty (a coefficient effect).

In addition, the analysis includes measures of earlier life course socioeconomic conditions and events, which are important determinants of employment and other outcomes (Gould, Lavy and Paserman, 2011; Currie and Vogl, 2013).   For example, family shocks, such as parental death, increase the amount of children's unpaid work, affecting their adult outcomes (Crivello and Morrow, 2019), while environmental shocks have gendered effects (Maccini and Yang, 2009).

3. Country context

Analysis of Young Lives data shows few systematic differences in educational attainment between boys and girls at primary school; differences emerge at secondary level (Singh and Krutikova, 2017). Boys complete more years of schooling in all four countries, although the means are almost equal in Vietnam, at 8.0 years for girls and 8.8 years for boys (UN Human Development Report, 2020). Furthermore, educational participation and expenditure on after-school additional lessons for girls is similar to boys in Vietnam (Iyer, 2016). India is in stark contrast with divergent expenditure on girls and boys (Duraisamy and Duraisamy, 2016). Across the four countries of the Young Lives study, gender gaps in education favour boys in Ethiopia, India and Peru but girls in Vietnam (Singh and Krutikova, 2017).

In many countries a source of women's lesser access to resources is their lower labour force participation. This is borne out by World Development Indicators (World Bank, 2021)

showing women's labour force participation relative to that of men at 86% in Ethiopia, 83% in Peru, 89% in Vietnam and the vastly lower figure of 27% in India. Such low and even falling rates of participation in India (Lahoti and Swaminathan, 2016) combine with women's participation in low productivity and low-paying jobs (Duraisamy and Duraisamy, 2016). Another aspect of power imbalances is demonstrated by the World Development Indicators (World Bank, 2021) that evidence violence against women in all four countries although to varying degrees. The proportion of women subjected to physical and sexual violence in the previous year was: Vietnam 10.8% in 2010, 10.8% in Peru in 2015, 22% in India in 2016 and 19.8% in Ethiopia in 2016. These similarities and differences reflect the range of cultural, economic and social characteristics in the four countries.

4. Data and sample

This article uses data from Young Lives, a longitudinal cohort study (coordinated at the University of Oxford) conducted in Ethiopia, India, Peru and Vietnam. Young Lives has followed two cohorts, 8,000 children from age one and 4,000 children from age eight, in five survey rounds over 15 years - 2002, 2006, 2009, 2013 and 2016. In each country 20-21 sentinel sites (clusters) were selected in purposive sampling. In Peru, Vietnam and Ethiopia sites were selected across the country while in India the sample was drawn from two states, Andhra Pradesh and Telengana. In each site 100 households with younger cohort and 50 households with older cohort children were randomly sampled, intentionally oversampling poor households to facilitate analysis of childhood poverty. For fuller details of the survey design and sampling see Young Lives (2018) and Favara (2017). Young Lives selected these countries to enable analysis of comparable data of four countries at different income levels (Ilie, Rose and Vignoles, 2021). In

2021 the World Bank classified Ethiopia as low income, Peru as upper-middle income, and Vietnam and India as lower-middle income. Notwithstanding substantial improvements in income in all four countries, the paid work participation of children has remained relatively high. Even in the younger cohort of Young Lives participants, born in 2009, many children reported working for pay by age 15: 10.2% in Ethiopia, 16.5% in India, 21.8% in Peru and 16.0% in Vietnam.

This analysis uses data from the older cohort of Young Lives, following them until age 22 when the majority (78%) were in paid employment. As the research investigates the effect of earlier life conditions on later life outcomes, we restrict the sample to the 3,091 children who were surveyed in all rounds. Although attrition can bias results from longitudinal studies, Young Lives (2018) report lower attrition rates than other longitudinal datasets in developing countries.

We define paid employment by participation in any paid work in any sector including agriculture. Paid employment includes working for a private company, cooperative or public sector/government organisation or being self-employed, working for another household member, or another individual or household. Amongst those not in paid employment are 320 participants (48.75% female) enrolled in education but not concurrently in paid employment. Hourly earnings in US dollars are calculated from responses to three questions asking for the cash value of earnings, the time period over which the respondent was paid and average daily hours of paid work.[1] Answers to all three questions were available for a sub-sample of 1,336 participants. Earlier survey rounds provide records of daily hours of unpaid household and paid work at ages 12, 15 and 19 but not at age 8. We do use records from when the children were aged 8, and 12, to

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[1] Local currency units were converted to US Dollars using daily real exchange rates from Thomson-Reuter Datastream.

construct variables capturing other aspects of their younger lives, including health, household wealth, household composition and parental aspirations for children.

The sample is almost equally split between male (50.08%) and female respondents. At age 22, there was already a gender gap in employment participation (85.72% of men versus 70.64% of women). Figure 1 shows wage variation within and between genders. Women's hourly wage of US$1.46/hour is significantly less (p=0.001) than men's US$1.77/hour. Pursuing the research questions in Section 2, the analysis evaluates the extent to which these differences reflect gender inequality in time spent in unpaid household work as children and in adolescence.

Figure 1: Hourly earnings of males and females

5.   Hours of unpaid household work

At ages 12, 15, 19 and 22 females worked on average 3.11, 3.43, 4.60 and 5.78 hours of unpaid household work per day, higher at each age than for males with the difference increasing over time (Table 1) and significant at all ages. That unequal participation in household work starts at a young age, widening over time suggests gendered trajectories.

We can see that as teenagers boys and girls do different types of unpaid household work. Following the survey data, we differentiate two categories of work at the household level: (i) caring and chores, which includes caring for others and household chores (e.g., fetching water, cooking) from (ii) a separate category of tasks (e.g. family farming, herding or other family business activities). At all ages, boys spend less time in caring and chores than girls but more time in tasks: at age 19 women spent 3.66 hours a day and men 1.34 hours on average in caring and chores. Men spent more time (1.83 hours) on tasks than women (0.94 hours) but this does

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not compensate for the overall disparity in unpaid household work. Gender disparities in caring and chores, and tasks, are significant in all years.

Gender also differentiates time in other activities. Girls spend significantly less time in play or leisure at all ages, less time sleeping at younger ages and more time sleeping at older ages. Girls spend significantly more time studying outside school at younger ages while differences in time in school are insignificant at younger ages. Girls only start spending significantly less time than boys in paid work from age 19. These figures suggest potential trade-offs and complementarities between time in household work and other activities as the correlations reported in Table 2 support. Positive correlations indicate that time in caring and chores and time in household tasks are complementary within each gender. The negative correlation for the pooled sample reflects men's lower hours in caring and chores and higher hours in tasks. Longer hours of caring and chores and (for boys) tasks are positively correlated with time in sleep, potentially indicating a need for sleep because of tiredness. Predictably, time in caring and chores and time in tasks are both negatively correlated with time in paid work, school, study and play/leisure. Hours of paid work are low at younger ages, suggesting that the impact of longer hours in household work is on time in school, study and leisure. The positive correlations between daily hours in housework at ages 12, 15 and 19 in Table 3 suggest potentially cumulative effects of the associated opportunity costs.

Table 4 shows correlations between sample characteristics (mainly at age 22) and hours of household work averaged over ages 12-19. Participants who had worked for longer hours in household work at younger ages attained lower school grades by age 22, were more likely to be married/cohabiting, have their own children and their parents had held lower aspirations for their educational attainment when they were age 12. They are from less wealthy households which

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included more young children. In contrast, those from households with more adults and female heads worked fewer hours in caring and chores but not tasks. Better childhood health is associated with longer hours in caring and chores but fewer hours in tasks. Previous research shows that shocks impact children's involvement in unpaid work (Crivello and Morrow 2019). Our results show differential effects by type of shock: exposure to economic shocks before age 19 is associated with longer hours in caring and chores and tasks, family shocks are only correlated with hours of caring and chores while environmental shocks are only correlated with time in tasks. These results are pertinent as the young people regularly experienced shocks: for example, between 2002 and 2006, 87% of the households in Ethiopia experienced some kind of economic shock with food price rises affecting both urban and rural households (Berhane, Abay and Woldehanna, 2015).

Table 4 shows that longer hours in household tasks at younger ages are positively associated with employment participation at age 22. But, time in both types of household work is negatively associated with higher quality employment for a company, cooperative or organization with regular wage employment and positively associated with lower quality self-employment or employment by another individual or household. A minority of jobs (38.93%) are of higher quality; difference in means tests show that employees in this category have higher earnings, report higher life satisfaction, are more likely to have formal written contracts and longer tenure than those in the lower quality category.[2]

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[2]Employees in companies/cooperatives/public sector/government organisations also had greater access to in-work benefits (e.g. health insurance, holiday pay, sick leave, maternity benefits.).

6. Empirical model

We use regression analysis to investigate whether time in household work at younger ages is negatively associated with employment and earnings at age 22. We use Blinder-Oaxaca decompositions to investigate whether the contribution of prior household work to the gender earnings gap is due to the longer hours young women spend in household work or whether women pay a higher penalty for a given amount of time in this type of work, in line with the research questions set out in Section 2.

6.1 Regression analysis

We first estimate an employment participation equation using probit; next, conditional on participation, a probit model for type of employment and finally, OLS earnings equations for young men and women. In the first estimation, the dependent variable, *Employed,* takes the value one if the individual is recorded as employed in paid work and zero otherwise. In the second estimation, the dependent variable *JobType* takes the value 1 if the individual works for a private company, cooperative or public sector/government organisation and zero if self-employed, working for another household member, or another individual or household. This categorisation distinguishes between jobs that are more/less likely to be regular wage employment. In the earnings equation the dependent variable, *lny,* is the log of individual hourly earnings in US dollars. We estimate the equations for the pooled sample and for men and women separately. The specifications are:

$$Pr(Employed_i = 1) = \alpha_0 + \alpha_f Female + \alpha_h HUnpaid + \alpha_x X + \alpha_g G + \varepsilon_i \qquad (1)$$

$$Pr(JobType_i = 1) = \alpha_0 + \alpha_f Female + \alpha_h HUnpaid + \alpha_x X + \alpha_g G + \varepsilon_i \qquad (2)$$

$$lny = \alpha_0 + \alpha_f Female + \alpha_h HUnpaid + \alpha_x X + \alpha_g G + \alpha_j JobType + \varepsilon_i \qquad (3)$$

where, *Female* records the individual as female. *HUnpaid* records average daily hours of unpaid household work (caring for others and doing chores and separately, household tasks) for the previous three surveys when the young people were age 19, 15 and 12. The regressions (in Tables 5, 6 and 7) include two alternative sets of *HUnpaid* variables. The first model reported in Tables 5, 6 and 7 includes as explanatory variables average daily hours in (i) caring and chores, and (ii) household tasks at each of the three survey time points, at ages 12, 15 and 19 (six variables in total). Model 2 in each table includes a constructed variable which averages hours for (i) caring and chores, and (ii) household tasks over the three previous time points (two variables in total). These average hours variables facilitate interpretation. Focusing the analysis on the lasting effects of unpaid work in childhood we initially report results without measures of concurrent hours of unpaid household work at age 22, adding these measures in subsequent estimations.

X is a vector of variables recording individual characteristics and circumstances, including age in months, educational attainment (grade completed), being married or cohabiting, having a child, family composition at age 8 measured by the number of young children and adults in the household, parental aspirations for their child's education. Having a child and early marriage are known to limit women's employment participation (Wodon, 2016). Parental aspirations record the grade the parents stated they wanted their child to attain when the child was age 12. The measure is assumed to reflect the value parents attribute to their child's schooling and is associated positively with children's education outcomes in India (Darko and Vasilakos, 2020). To capture any effects of past experience of paid employment on future employment X also includes average hours per day in paid work when previously surveyed at

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ages 19, 15 and 12 (either at each age or averaged over ages 12-19). X also includes a measure of exposure to environmental shocks in the four years since the last survey. Exposure to economic and family shocks were not included since neither were significant in any of the estimated regressions. The vector X additionally includes measures of household wealth and health at age 8 (see Table 4).

JobType in equation (3) controls for type of paid work. The vector G includes variables to account for some of the regional and country variation. These include a measure of employment participation at the local area level which Pagán (2002) finds has a significant positive effect on employment propensity. The $\alpha_0 - \alpha_g$ are coefficients, ε is the error term. We report robust standard errors allowing for intragroup correlation within local areas.

Selection into employment was tested using the Heckman two stage formulation but was not expected to bias results for the male sample as the majority were in paid employment. However, the selection term was insignificant in all earnings estimations, most probably because of the inclusion of a wide set of controls for current and historic circumstances known to impact gendered outcomes.

6.2 Blinder-Oaxaca Decompositions

We are concerned with how prior participation in household work contributes to gender differences in earnings. We investigate this issue by employing the Blinder-Oaxaca decomposition method to distinguish explained endowment and unexplained coefficient effects. The endowment effects measure the contribution to the gender earnings gaps of women's longer hours in household work. The coefficient effects identify whether there are gender differences in the earnings penalty associated with time in household work.

Following Oaxaca and Ransom (1994), we use pooled parameter estimates to provide 'group-neutral' coefficients. The decomposition of the difference between the predicted mean log of earnings $(\overline{lny})$ for females $(\overline{lny}^f)$ and males $\overline{lny}^m$ is:

$$\overline{lny}^f - \overline{lny}^m \;=\; (\bar{\Omega}^m - \bar{\Omega}^f)A^p \;+\; \bar{\Omega}^m(A^m - A^p) + \bar{\Omega}^f(A^p - A^f) \;\;(4)$$

Where the superscripts f, m and p represent the female sample, the male sample and the pooled sample respectively. Ω is a vector of all the variables included in the earnings equation (3) except the gender variable (over-lines indicate mean values). A is a vector of the respective coefficients. In the decomposition $(\bar{\Omega}^m - \bar{\Omega}^f)A^p$ are the explained endowment effects due to differences in the characteristics captured by the included variables. $\bar{\Omega}^m(A^m - A^p) \;+\; \bar{\Omega}^f(A^p - A^f)$ are the unexplained coefficient effects that capture different returns to the same endowments for men and women.

7. Results

7.1. Regression analysis

Tables 5-7 show results for estimates of equations (1)-(3). In each table, estimations (1)-(2) and (5) are for the full sample, estimations (3) and (4) are separate estimations for women and men. Estimation (1) includes the measures recording daily hours in household caring and chores and tasks at ages 12, 15 and 19. Estimations (2)-(4) include hours in household work averaged over ages 12-19. Estimation (5) in each table adds concurrent hours of household work.

Table 5. Employment participation

7.1.1 Employment participation

Estimations (1) and (2) confirm that controlling for other factors, the probability of paid employment is lower for women. The probability of being employed at age 22 is higher the more time spent on household caring and chores and on tasks at earlier ages (in estimation (1) at ages 19 and 15). The separate estimations by gender, estimations (3)-(4) show the effects of caring and chores at younger ages are only significant for women. However, the positive effect of hours in tasks at younger ages is significant for both men and women. Including interaction terms for gender and average hours in household work when younger in estimation (2) had little impact on the marginal effects for the interacted variables and the interactions were insignificant.[3] These effects are nevertheless gendered since women spent more time in household caring and chores.

In relation to the other variables, hours in paid work at younger ages is positively associated with employment participation. This implies an indirect positive effect of male gender on employment since boys worked more paid hours than girls. Having a child is, as expected, negatively related to the likelihood of employment, a result that mainly relates to women who comprise 86.61% of the 684 participants with children. The effect size of having a child is comparable to being female and is only significant for females as is the negative effect of marriage or cohabitation. Household wealth at age 8 is negatively associated with employment while recent exposure to an environmental shock which impacted crops is positively associated with employment. Taken together these results suggest that young people from more disadvantaged households are more likely to be in paid work. As predicted the local area employment rate positively relates to participation. Relative to India, young women in Vietnam

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[3] Caution is required in the interpretation interaction effects in non-linear estimations (Ai and Norton, 2003).

and Peru are more likely to be in employment even after controlling for other factors but country differences for men are insignificant.

Estimation (5) covering the full sample includes current hours of caring and chores and hours in tasks as a robustness check, although trade-offs between concurrent paid and unpaid work are not our focus. As expected, concurrent caring and chores takes a negative sign. Time in tasks is positive suggesting that by age 22 tasks and paid work are complementary.[4] Critically, the inclusion of these variables does not affect the signs or weaken the significance of the lagged measures of household work in the participation estimates. We discuss below further checks for the potential endogeneity associated with concurrent household work.

7.1.2 Type of job

Table 6: Type of job

Estimations (1) and (2) in Table 6 show that women in employment have a higher probability of being in a higher quality job in a public or private organization than men, although women are less likely to be in employment (Table 5). However, longer hours in household caring and chores and tasks when younger reduce the probability of being employed in a higher quality job. Separate estimations by gender (3)-(4) show the negative effect of hours in caring and chores at younger ages is only significant for women while the negative effect of hours in tasks at younger ages is significant for men and women. Interacting female and hours of caring and chores when younger in estimation (2) yields a weakly significant (p=0.071) negative effect while the interaction of hours in tasks and gender is insignificant. Including these interactions slightly reduced the significance of the marginal effect of caring and chores when younger (from

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[4] In separate estimations by gender, concurrent caring and chores is only significant in the female estimation.

p=0.004 to p=0.011) but had no effect on the marginal effect of hours in tasks.   This suggests that the stronger negative effect for women's hours in caring and chores when younger is due mainly to their longer hours on these activities.

In relation to the other variables, hours in paid work at younger ages is positively associated with employment in higher quality jobs for women, but with lower quality jobs for men. There are other gender differences: being married and recent exposure to an environmental shock are negatively significant for women while for men rural location is negatively associated with the chance of a higher quality job. Household wealth at age 8 is positively related to job quality in the combined male and female full-sample estimations, but not in the separate gender estimations. There is a lower probability of a higher quality job in India (the reference country) than the other countries.

As in Table 5, estimation 5 for the full sample includes current hours of caring and chores and hours in tasks as a robustness check. Both hours in concurrent caring and chores and hours in tasks take negative signs and are significant[5]. Of note is that, as in Table 5, the inclusion of these variables does not affect the signs or weaken the significance of the lagged measures of household work but hours in paid work in earlier years lose significance.

7.1.3 Earnings

Gender is significant in the pooled earnings estimates in Table 7: otherwise equivalent employed females earn over 17% less than males. Hours of caring and chores at earlier ages are negatively associated with earnings, although only at age 19 in estimation 1. Estimations (3)-(4)

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[5]They are also significant in separate estimations for men and women (not reported)

show that for women both hours in caring and chores and in tasks when younger are negatively associated with earnings, but for men neither are significant. Hours in paid work at younger ages are mostly insignificant (with the exception of age 12) but type of job is significant in all estimations, confirming higher earnings in jobs in private and public organizations. Combining these results with those for type of job (Table 6) indicate longer hours of household work when younger predict lower earnings for women widening the gender pay gap. The Blinder-Oaxaca decompositions test whether these gendered associations are due to women's longer hours of unpaid work at younger ages or a gendered penalty for a given amount of work.

Table 7. Earnings

Among the other included variables, educational attainment is insignificant which is surprising. However, parental aspirations for education are associated positively with future earnings in the full sample estimations and for women (but not men) suggesting that parental valuation of daughters' schooling is an importance influence on girls' outcomes. The only other consistently significant variables are the country indicators. Compared with India (the reference country), earnings are lower in Ethiopia and highest in Peru.

As in tables 5-6, estimation (5) in Table 7 includes current hours of caring and chores and tasks. Neither are significant. The coefficient on gender remains significant, and the lagged measures of household caring and chores on earnings are hardly altered.

7.2 Decompositions

Blinder-Oaxaca earnings decompositions are used to explore the contribution of household work at younger ages to the gender earnings gap. Table 8 reports individual endowment and coefficient effects for time in household and paid work when younger and job

type. The overall gender earnings gap in predicted logged earnings of 0.1623 (US$0.15, 15% of predicted male earnings) is driven by the overall unexplained coefficient effects which capture gender differences in returns to characteristics.[6] Overall, the differences in the mean characteristics (endowments) have an insignificant effect on the earnings gap because negative and positive effects cancel out.

It is noteworthy that the endowment effect of hours of caring and chores undertaken between the ages of 12 and 19 is significant, and widens the gap. Time spent in these activities has a significant negative effect on earnings and it is women who do more of this work. The coefficient effect associated with hours in caring and chores is insignificant so the negative effect on earnings of women's longer hours in household work when younger are driven by their longer hours in caring and chores rather than a higher penalty for a given number of hours. Interestingly, the endowment effect of employment in a higher quality job is negative and significant. Conditional on employment, women are more likely to be employed in higher quality jobs in a company or public organisation which reduces the gender pay gap.[7]

Table 8. Decomposing earnings differences between males and females

7.2.1 Distributional effects

To examine whether observed gender differences in earnings and the effects of unpaid work varied at different points on the earnings distributions, we generated decompositions for the 10th, 50th and 90th quantiles of the earnings distribution using the unconditional quantile regression methodology (Firpo, Fortin, and Lemieux, 2018). Table 9 summarises the results for

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[6] The largest coefficient effect driving the gap is that of subjective health at age 8.
[7] Other significant negative endowment effects reducing the gap are those of Vietnam and of being married/cohabiting while the endowment effect of having a children is positive, widening the gap.

the household work and employment type variables. The gender gap in earnings is wider at the 10th percentile; the difference in the log of earnings is 0.492 ($0.64) in this percentile compared with 0.0884 ($0.9) at the 50th percentile, the difference at the 90th percentile is insignificant. The endowment effect of hours of household caring and chores between ages 12 and 19 widens the gender earnings gap at the 10th percentile, but not at the 50th or 90th percentiles. In contrast, the unexplained coefficient effect of hours in household tasks over ages 12-19 widens the earnings gap at the 50th percentile but narrows the earnings gap at the 10th percentile. This implies that at the bottom of the distribution there is a higher positive return to household tasks for young women than men but this is reversed in the middle of the distribution. Possibly, household tasks provide relevant experience for the kinds of paid work women in the lowest decile perform. Hours in paid work when younger remain insignificant across the distribution. The proportion of women working in private and public organisations narrows the gender earnings gap across the distribution although the coefficient effect widens the gap at the 90th percentile, suggesting women earn less in higher earning jobs.

7.3 Robustness checks

As we have explained concurrent time in unpaid work is not our focus but is included in estimation (5) in tables 5-7 to address potential omitted variable bias. We treat prior time in household work as exogenous to current choices (at age 22). The time lags (from 3 to 10 years) combined with uncertainty about the future and lack of children's agency over household work mean that reverse causality or feedback from future employment to the past is unlikely. Connelly, DeGraff, Levison & McCall (2006) employ similar reasoning in relation to fertility and future employment. However, concurrent time in unpaid work may be codetermined with

time in paid work, a potential endogeneity issue which is usually addressed by employing instrumental variables (IV), although as Connelly et al. (2006) note, it is challenging to find sound instruments. We require instruments with causal links to current hours of unpaid work but no direct effect on current employment or earnings. We used exposure to family shocks since last surveyed as an IV for current hours of household caring and chores. These variables are highly correlated (Table 4) while family shocks were insignificant in all of regressions. First stage estimations indicated that exposure to family shocks was a sufficiently strong IV for current hours in caring and chores for the female sample but not for males. Unfortunately, we could not find a suitable IV for current hours in tasks, possibly because time in tasks and employment participation are complementary (tables 4-5).

Table 10 summarises the regression results for the female sample only, with and without instrumenting. Endogeneity tests for the second stage estimation indicated that household caring and chores could be treated as exogenous in the employment and job type estimations, in line with previous research which supports the hypothesis of exogeneity for concurrent caregiving in employment outcomes (Van Houtven et al., 2019). In the earnings estimations, current hours in caring and chores are insignificant but after instrumenting take a weakly significant positive sign (in the female estimation only). In all cases, it is important to note that instrumenting for concurrent time in caring and chores has little effect on the included variables recording time in household work when younger.

8. Discussion

Even by the young age of 22 women are less likely to be in paid work and they earn less than men in the low- and middle-income countries in this study. The lower earnings of young

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women stem partly from their larger share of responsibility for household work as children. Moreover, longer hours of household work in childhood have a stronger influence on employment opportunities for young women than men. It is perhaps surprising that employment participation at age 22 is positively associated with time spent in household work at younger ages, particularly for women, until we consider that household work is negatively related to job quality – both type of jobs and earnings. It seems that in comparison to men, women's employment is likely to be driven to a greater extent by lack of choice or by need and is characterized by fewer opportunities for well paid, higher quality employment.

The decomposition analysis suggests that overall the gender earnings gap is driven by coefficient rather than endowment effects. This is consistent with previous research for African countries (Arbache, Kolev and Filipiak 2010). However, it is also the case that the endowment effect of women's longer hours in household caring and chores at younger ages significantly widens the gender earnings gap. The specific coefficient effects of past household work are not significant implying that women do not suffer a higher penalty for a given amount of prior household work.

The results add to studies of life course connections in low- and middle- income countries (Currie and Vogl, 2013). That the connections between household work and employment outcomes are more evident for women adds to previous research that shows girls are less compensated for or are more vulnerable to early-life experiences which widen gender inequalities. Whether this lack of compensation or greater vulnerability is due to decisions within families, schools or other institutions and how these relate to social structure requires further research. However, the positive significance of parental expectations in the earnings estimations, particularly for women, highlights the importance of family circumstances.

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The limitations of this study suggest avenues for further research. Firstly, the longitudinal data used to capture early-life circumstances derives from only five survey rounds spanning fifteen years, limiting the continuity of detail in the data in comparison to annual surveys. Larger sample sizes would also facilitate country level comparisons. Nevertheless, longitudinal data is a considerable advance on retrospectively collected data, providing much needed opportunities for exploring the links between gender and employment outcomes. Future research can certainly consider further the factors that explain hours of unpaid work in childhood and the trade-offs made between time in unpaid work and time in other activities. Investigation of the trajectories of type of unpaid household work from childhood for men and women would additionally provide insight into adult women's time poverty (Bardasi and Wodon 2010).

9. Conclusion

Our findings have policy implications for supporting the employment outcomes of young people in low- and middle-income countries. First, the results link the larger share of unpaid household work undertaken by girls to lower quality employment and the gender earnings gap. This confirms that the care burden to women of their greater share of household work starts back in childhood. Second, the results confirm the existence of gender inequalities in employment participation and earnings even at relatively young ages in these four countries; the predicted gender gap in hourly earnings is already 15% at age 22 - for otherwise equal men and women. This marks a difference with industrialized economies including the USA (Barth, Kerr and Olivetti 2019) and the UK where the gender pay gap for full-time employees under 40 is 'close to zero' (ONS, 2020). Third, the Blinder-Oaxaca decompositions suggest that while the coefficient effects are more important overall than the endowment effects, the endowment effect of

women's longer hours in caring and chores at earlier ages contributes to the gender earnings gap. Lastly, the link between time use, parental aspirations at earlier ages and later life outcomes is suggestive of patterns of cumulative (dis)advantage (Dannefer 2003) that widen gender inequality. As such, the research highlights the importance of gender as well as how gender shapes the way lives unfold in low- and middle-income country contexts. Policy to support the economic outcomes of young women in these countries should consider gender differences in children's hours of unpaid household work as well as children's material living conditions.

The analysis finds that longer hours of household work in childhood and adolescence are associated with higher rates of young women's employment participation but restrict their opportunities for better quality jobs with higher earnings in adulthood. These results support UNICEF's (2016) view that gender inequality in the division of household work in childhood has lasting effects. These gendered 'scarring' effects of hours in unpaid work at younger ages are in addition to the inequalities associated with concurrent caregiving in adulthood which have been given more attention in previous research. Our study breaks new ground in uncovering that part of the inequality in employment outcomes stems from unequal divisions of unpaid household work in childhood.

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Figures and Tables
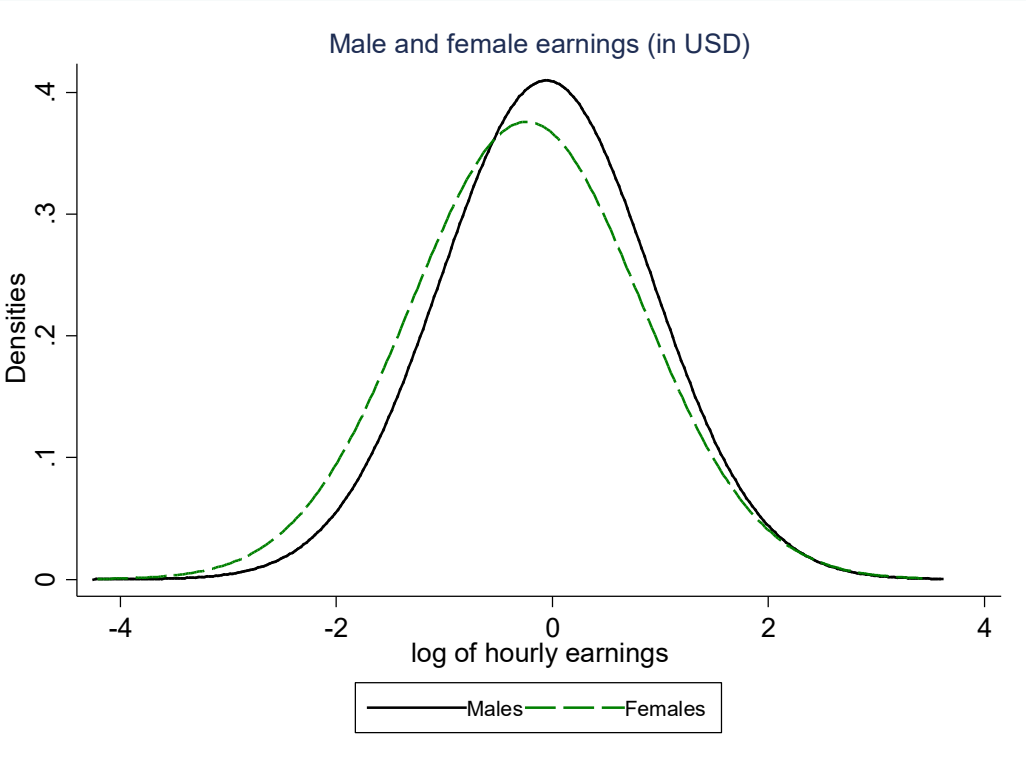
Figure 1. Hourly earnings

Table 1: Time use: Mean daily hours in household work and other activities

	Age 12		Age 15		Age 19		Age 22		Ages 12-22[a]	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
All household work	2.85	3.11***	2.88	3.43***	2.90	4.60***	3.15	5.78***	2.95	4.23***
Caring & chores[b]	1.8	2.52***	1.64	2.80***	1.34	3.66***	1.33	4.67***	1.53	3.41***
Tasks[c]	1.04	0.59***	1.23	0.63***	1.56	0.94***	1.83	1.11***	1.41	0.82***
Paid work	0.19	0.22	0.65	0.61	3.0	1.79***	4.58	3.10***	2.10	1.43***
School	5.19	5.27	5.55	5.50	3.45	3.32	1.89	1.51***	4.02	3.90**
Study (outside school)	2.28	2.35*	2.22	2.35**	1.33	1.36	1.05	0.80***	1.72	1.71
Play/leisure	4.04	3.63***	3.85	3.54***	4.90	4.49***	5.09	4.49***	4.47	4.04***
Sleep	9.02	8.96**	8.67	8.53***	8.24	8.38***	8.08	8.27***	8.51	8.53*

Notes:

Significance in difference in means t tests by gender:*** $p<0.01$, ** $p<0.05$, *$p<0.10$ (means include zero hours).

[a]Survey rounds 2-5

[b]Caring for family members and household chores (e.g. fetching water, cooking). Mean hours ages 12-19 (survey rounds 2-4): females, 3.00; males, 1.59.

[c]Tasks related to family farming, herding, other family businesses. Mean hours ages 12-19: females, 0.72; males, 1.28.

Table 2: Time trade-offs: Daily hours in household work and other activities (ages 12-22)

	Time in caring and chores			Time in tasks		
Activity	All	Males	Females	All	Males	Females
Caring & chores	-	-	-	-0.021**	0.023**	0.035***
Tasks	-0.021**	0.023*	0.035***	-	-	-
Paid work	-0.170***	-0.153***	-0.162***	-0.174***	-0.224***	-0.133***
School	-0.292***	-0.081***	-0.445***	-0.299***	-0.328***	-0.278***
Study	-0.238***	-0.048***	-0.381***	-0.260***	-0.285***	-0.237***
Play/leisure	-0.175***	-0.235***	-0.027***	-0.068***	-0.068***	-0097***
Sleep	0.039***	0.062***	0.0271**	0.014	0.036***	-0.012

Figures are Pearson correlations:*** $p<0.01$, ** $p<0.05$, *$p<0.10$

Table 3: Path dependency: Daily hours in household work over time

	Daily hours in caring and chores			Daily hours in tasks		
Current round	Age 22	Age 19	Age 15	Age 22	Age 19	Age 15
Previous round						
Age 19	0.475***			0.365***		
Age 15	0.261***	0.322***		0.266***	0.361***	
Age 12	0.156***	0.214***	0.378***	0.219***	0.302***	0.452***

Figures are Pearson correlations:*** $p<0.01$, ** $p<0.05$, *$p<0.10$

Table 4: Hours in household work and sample characteristics[a]

	Average daily hours (ages 12-19)	
Individual Characteristics	Caring and chores	Tasks
Female gender	0.444***	-0.179***
Educational grade attained	-0.308***	-0.265***
Has own children	0.390***	0.079***
Married/co-habiting	0.305***	0.088***
Subjective health age 8[b]	0.0072	-0.036**
Objective health measure age 8[c]	0.051***	-0.097***
Educational grade parent would like child to attain[d]	-0.102***	-0.152***
Household characteristics		
Rural area of residence	-0.013	0.250***
Household Wealth[e]	-0.251***	-0.357***
Household Wealth age 8[e]	-0.230***	-0.230***
No. of children < 13 in household (age 8)	0.132***	0.238***
No. of adults > 18 in household (age 8)	-0.051***	0.01
Female head of household at age 8	-0.041**	0.021
Exposure to family shocks (ages 8-19)[f]	0.068***	0.016
Exposure to economic shocks (ages 8-19)[g]	0.094***	0.098***
Exposure to environmental shocks (ages 8-19)[h]	0.025	0.037**
Employment status		
In paid employment	-0.017	0.192***
Works for private company/ cooperative /public sector/government organization	-0.087***	-0.142***
Works for self/household member/other household/individual	0.066***	0.290***
Hourly pay in USD (logged)	-0.140***	-0.108***
Enrolled in education (not in paid work)	-0.102***	-0.124***

Figures are Pearson correlations:*** $p<0.01$, ** $p<0.05$, *$p<0.10$
[a]Unless otherwise stated recorded at age 22
[b]Recorded by main carer (scale 1-3).
[c]Standardised weight-for-age (by gender) anthropometric measure.
[d]Asked when child was 12
[e]Index (0-1) of housing quality, services (electricity, piped drinking water, own toilet, adequate fuels for cooking), and consumer durables (e.g. automobile, mobile phone).
[f]Illness/death of a family member.
[g]Loss of employment/source of income/family enterprise.
[h]Shocks linked to crop failure.

Table 5. Employment participation (probit)

	(1) All	(2) All	(3) Females	(4) Males	(5) All
Female	-0.0963***	-0.0965***			-0.0348**
	(0.0142)	(0.0141)			(0.0156)
Hours of household caring and chores averaged over ages 12-19		0.0232***	0.0387***	0.0133	0.0233***
		(0.0060)	(0.0081)	(0.0105)	(0.0046)
Hours of household tasks averaged over ages 12-19		0.0423***	0.0611***	0.0246***	0.0249***
		(0.0067)	(0.0113)	(0.0092)	(0.0075)
Hours of household caring and chores age 19	0.0084***				
	(0.0030)				
Hours of household caring and chores age 15	0.0132***				
	(0.0044)				
Hours of household caring and chores age 12	0.0021				
	(0.0050)				
Hours of household tasks age 19	0.0235***				
	(0.0054)				
Hours of household tasks age 15	0.0129**				
	(0.0055)				
Hours of household tasks age 12	-0.0035				
	(0.0093)				
Hours in paid work averaged over ages 12-19		0.0416***	0.0363***	0.0501***	0.0382***
		(0.0043)	(0.0083)	(0.0085)	(0.0043)
Hours in paid work age 19	0.0195***				
	(0.0028)				
Hours in paid work age 15	0.0076**				
	(0.0038)				
Hours in paid work age 12	-0.0061				
	(0.0071)				
Grade completed	-0.0083***	-0.0078***	-0.0017	-0.0142***	-0.0094***
	(0.0024)	(0.0024)	(0.0032)	(0.0035)	(0.0024)
Has own child/children	-0.0895***	-0.0931***	-0.1128***	0.0434	0.0299
	(0.0230)	(0.0239)	(0.0374)	(0.0540)	(0.0265)
Married/cohabiting	-0.0530*	-0.0446	-0.0761**	0.0028	-0.0339
	(0.0312)	(0.0332)	(0.0353)	(0.0398)	(0.0275)
Environmental shock since last surveyed	0.0909***	0.0856***	0.1359***	0.0430*	0.0508***
	(0.0151)	(0.0165)	(0.0373)	(0.0261)	(0.0196)
Household wealth age 8	-0.1437***	-0.1309***	-0.1683**	-0.0949*	-0.1393***
	(0.0279)	(0.0310)	(0.0655)	(0.0497)	(0.0313)
Grade parent would like child to attain	-0.0110	-0.0095	-0.0137	-0.0116	-0.0095
	(0.0088)	(0.0094)	(0.0145)	(0.0132)	(0.0094)
Rural location	-0.0070	-0.0086	-0.0002	-0.0247	-0.0161
	(0.0221)	(0.0226)	(0.0284)	(0.0253)	(0.0267)
Proportion in employment in local area	0.2143***	0.2253***	0.1901***	0.2435***	0.1883**
	(0.0786)	(0.0826)	(0.0485)	(0.0526)	(0.0882)
Ethiopia	-0.0262	-0.0378*	0.0062	-0.0795**	-0.0392*
	(0.0262)	(0.0200)	(0.0475)	(0.0315)	(0.0229)
Peru	0.0535	0.0345	0.1566***	-0.0583	0.0250
	(0.0367)	(0.0432)	(0.0569)	(0.0432)	(0.0420)
Vietnam	0.1839***	0.1797***	0.3292***	0.0341	0.1497***
	(0.0258)	(0.0287)	(0.0374)	(0.0270)	(0.0300)
Hours of household caring and chores age 22					-0.0262***
					(0.0032)

Hours of household tasks age 22					0.0496***
					(0.0074)
Observations	2,823	2,823	1,421	1,402	2,823
Pseudo R-squared	0.2486	0.2379	0.2156	0.2702	0.3215
Wald chi^2	746.95***	715.5***	302.19***	173.34***	946.97***
Log Likelihood	-1128.95	-1144.975	-682.990	-424.545	-1029.22

Figures are average marginal effects. Robust standard errors (allowing for intragroup correlation within geographic (sentinel) sites) in parentheses: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

[a]All estimations include controls for age in months and objective and subjective childhood health and household membership at age 8.

Table 6. Type of Employment (probit)

	(1) All	(2) All	(3) Females	(4) Males	(5) All
Female	0.0553*	0.0578*			0.0688**
	(0.0297)	(0.0301)			(0.0274)
Hours of household caring and chores averaged over ages 12-19		-0.0310***	-0.0339***	-0.0026	-0.0253**
		(0.0073)	(0.0114)	(0.0146)	(0.0108)
Hours of household tasks averaged over age 12-19		-0.0528***	-0.0540***	-0.0521***	-0.0372***
		(0.0061)	(0.0123)	(0.0101)	(0.0121)
Hours of household caring and chores age 19	-0.0111***				
	(0.0037)				
Hours of household caring and chores age 15	-0.0059				
	(0.0062)				
Hours of household caring and chores age 12	-0.0103*				
	(0.0062)				
Hours of household tasks age 19	-0.0245***				
	(0.0033)				
Hours of household tasks age 15	-0.0246***				
	(0.0048)				
Hours of household tasks age 12	0.0073				
	(0.0099)				
Hours in paid work averaged over ages 12-19		0.0036	0.0299***	-0.0139*	-0.0022
		(0.0059)	(0.0091)	(0.0078)	(0.0055)
Hours in paid work age 19	0.0025				
	(0.0027)				
Hours in paid work age 15	-0.0087*				
	(0.0046)				
Hours in paid work age 12	0.0114				
	(0.0072)				
Grade completed	0.0026	0.0025	0.0016	0.0019	-0.0004
	(0.0024)	(0.0025)	(0.0040)	(0.0036)	(0.0022)
Has own child/children	-0.0241	-0.0288	-0.0648	0.0468	0.0595
	(0.0382)	(0.0385)	(0.0492)	(0.0683)	(0.0362)
Married/cohabiting	-0.0608	-0.0656*	-0.1127**	-0.0093	-0.0457
	(0.0396)	(0.0381)	(0.0463)	(0.0566)	(0.0377)
Environmental shock since last surveyed	-0.0560	-0.0544	-0.1119**	-0.0133	-0.0377
	(0.0396)	(0.0414)	(0.0483)	(0.0408)	(0.0375)
Household wealth age 8	0.1221**	0.1002**	0.0977	0.1003	0.1277***
	(0.0515)	(0.0468)	(0.0855)	(0.0772)	(0.0481)
Grade parent would like child to attain	-0.0110	-0.0071	0.0066	-0.0242	-0.0041
	(0.0169)	(0.0178)	(0.0189)	(0.0172)	(0.0160)
Rural location	-0.1085***	-0.1041***	-0.0232	-0.1843***	-0.0553**
	(0.0251)	(0.0231)	(0.0382)	(0.0416)	(0.0233)
Proportion in employment in local area	-0.0445	-0.0498	-0.1169	-0.0322	-0.0106
	(0.0366)	(0.0363)	(0.0771)	(0.0860)	(0.0317)
Ethiopia	0.1412***	0.1635***	0.2315***	0.0935**	0.1664***
	(0.0470)	(0.0473)	(0.0521)	(0.0455)	(0.0434)
Peru	0.3237***	0.3537***	0.4007***	0.2665***	0.3133***
	(0.0523)	(0.0503)	(0.0667)	(0.0623)	(0.0430)
Vietnam	0.2826***	0.2897***	0.3300***	0.2364***	0.2806***
	(0.0528)	(0.0525)	(0.0470)	(0.0438)	(0.0458)
Hours of household caring and chores age 22					-0.0201***
					(0.0053)

Hours of household tasks age 22					-0.0512***
					(0.0065)
Observations	2,186	2,186	989	1,197	2,186
Pseudo R-squared	0.163	0.1572	0.2005	0.1483	0.2327
Wald chi^2	481.96***	463.76**	216.66***	195.59***	685.61***
Log Likelihood	-1228.58	-1237.684	-539.069	-675.749	-1126.849

Figures are average marginal effects. Robust standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

[a]All estimations include controls for age in months and objective and subjective measures of childhood health and household membership age 8.

Table 7. Earnings (OLS)

	(1) All	(2) All	(3) Females	(4) Males	(5) All
Female	-0.1734***	-0.1796***			-0.1574***
	(0.0476)	(0.0479)			(0.0550)
Hours of household caring & chores averaged over ages 12-19		-0.0668***	-0.0777**	-0.0224	-0.0636***
		(0.0204)	(0.0306)	(0.0361)	(0.0205)
Hours of household tasks averaged over ages 12-19		-0.0138	-0.0521*	0.0001	-0.0151
		(0.0177)	(0.0250)	(0.0262)	(0.0186)
Hours of household caring and chores age 19	-0.0353***				
	(0.0121)				
Hours of household caring and chores age 15	-0.0124				
	(0.0180)				
Hours of household caring and chores age 12	-0.0056				
	(0.0174)				
Hours of household tasks age 19	-0.0010				
	(0.0102)				
Hours of household tasks age 15	-0.0121				
	(0.0129)				
Hours of household tasks age 12	0.0038				
	(0.0195)				
Hours in paid work averaged over ages 12-19		-0.0069	-0.0122	0.0013	-0.0085
		(0.0108)	(0.0195)	(0.0147)	(0.0112)
Hours in paid work age 19	0.0016				
	(0.0051)				
Hours in paid work age 15	-0.0089				
	(0.0070)				
Hours in paid work age 12	-0.0499**				
	(0.0214)				
Job with private company, cooperative or government/public organization	0.2592***	0.2608***	0.2122***	0.2951***	0.2520***
	(0.0305)	(0.0297)	(0.0708)	(0.0655)	(0.0363)
Grade completed	-0.0084	-0.0076	-0.0088	-0.0011	-0.0082
	(0.0076)	(0.0075)	(0.0069)	(0.0133)	(0.0075)
Has own child/children	-0.1226	-0.1509*	-0.1483	-0.1651	-0.1093
	(0.0808)	(0.0784)	(0.1130)	(0.1777)	(0.0764)
Married/cohabiting	0.1093	0.1216*	0.1066	0.1481	0.1251*
	(0.0690)	(0.0664)	(0.0985)	(0.1674)	(0.0661)
Environmental shock since last surveyed	-0.0856	-0.0752	-0.2486	0.0097	-0.0774
	(0.0965)	(0.0963)	(0.1466)	(0.1089)	(0.0985)
Household wealth age 8	0.1393	0.1133	0.1510	0.0209	0.1120
	(0.1074)	(0.0980)	(0.2235)	(0.1251)	(0.0955)
Grade parent would like child to attain	0.0683***	0.0750***	0.0858**	0.0519	0.0749***
	(0.0239)	(0.0239)	(0.0311)	(0.0438)	(0.0239)
Rural location	0.0106	0.0041	0.0725	-0.0642	0.0081
	(0.0569)	(0.0593)	(0.0617)	(0.0926)	(0.0591)
Proportion in employment in local area	-0.1862	-0.1469	-0.3488	0.0251	-0.1376
	(0.1578)	(0.1557)	(0.2184)	(0.1970)	(0.1558)
Ethiopia	-0.6933***	-0.6513***	-0.6059***	-0.6877***	-0.6576***
	(0.0916)	(0.0934)	(0.2006)	(0.1400)	(0.0920)
Peru	1.0064***	1.0624***	1.1866***	0.9531***	1.0542***
	(0.1663)	(0.1598)	(0.2149)	(0.1966)	(0.1600)
Vietnam	0.5837***	0.6035***	0.6348**	0.5886***	0.5948***

	(0.1070)	(0.1125)	(0.2328)	(0.1399)	(0.1127)
Hours of household caring and chores age 22					-0.0158
					(0.0096)
Hours of household tasks age 22					-0.0025
					(0.0132)
Constant	-2.5113*	-2.6948**	5.2918***	-0.7227	-2.8265**
	(1.2538)	(1.2638)	(1.1531)	(1.6997)	(1.2724)
Observations	1,238	1,238	576	662	1,238
R-squared	0.421	0.417	0.472	0.381	0.418
F	32.66***	41.53***	24.93***	19.79***	37.99***

Figures are coefficients. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

[a]All estimations include controls for age in months and objective and subjective measures of childhood health and household membership age 8.

Table 8. Decomposing earnings differences between males and females

Mean predictions of log of earnings	*Differential in log of earnings*	
Males -0.026	0.1623*** (0.054)	
Females -0.1883	*Total Explained (endowment effect)*	*Total Unexplained (coefficient effect)*
	-0.0173 (0.048)	0.1796***(0.050)
	% explained	*% unexplained*
	-10.7	110.7
Contribution to gender earnings gap	*(1) Explained*	*(2) Unexplained*
Hours of household caring chores averaged over ages 12-19	0.0709***	0.0983
	(0.0220)	(0.1063)
Hours of household tasks averaged age 12-19	-0.0048	0.0358
	(0.0062)	(0.0279)
Hours in paid work averaged over ages 12-19	-0.0044	0.0194
	(0.0069)	(0.0346)
Job with private company, cooperative or public/government organization	-0.0193**	0.0524
	(0.0089)	(0.0762)
Observations	1,238	

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Other included variables as in Table 7

Table 9. Unconditional quantile decomposition[a] of gender earning gaps

Main variables[b]	Quantile 10		Quantile 50		Quantile 90	
	Mean predictions of log of earnings					
	Males	Females	Males	Females	Males	Females
	-1.1549	-1.6472	0.0309	-0.0575	1.0041	0.9193
	Differential in the log of earnings					
	0.4923*** (0.1020)		0.0884** (0.0469)		0.0847 (0.0757)	
	Contribution to gender earnings gap					
	Explained	Unexplained	Explained	Unexplained	Explained	Unexplained
Hours of household caring chores averaged over ages 12-19	0.1355***	0.1106	0.0383	-0.0133	0.0143	0.2255
	(0.0512)	(0.2382)	(0.0264)	(0.0629)	(0.0456)	(0.2139)
Hours of household tasks averaged age 12-19	-0.0171	-0.1234*	-0.0003	0.0497**	-0.0054	0.1058
	(0.0258)	(0.0674)	(0.0079)	(0.0243)	(0.0071)	(0.0670)
Hours in paid work averaged over ages 12-19	-0.0013	0.0005	0.0016	-0.0055	-0.0118	0.0281
	(0.0202)	(0.0689)	(0.0068)	(0.0329)	(0.0137)	(0.0725)
Job with private company, cooperative or public/government organization	-0.0316**	0.0458	-0.0158**	-0.0682	-0.0133*	0.2128***
	(0.0161)	(0.1308)	(0.0075)	(0.0817)	(0.0078)	(0.0739)
Total	0.0445	0.4478***	-0.0639	0.1524***	-0.0223	0.1070
	(0.0887)	(0.0828)	(0.0432)	(0.0537)	(0.0678)	(0.1043)
Observations	1238					

Robust standard errors in parentheses: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.
[a]Regression of the transformation (Recentred Influence Function) of the unconditional quantile of earnings.
[b]Other included variables as in Table 7

Table 10. Instrumenting for current hours of caring and chores (age 22): female sample

	Employment (probit)		Type of job (probit)		Earnings (OLS)	
Caring and chores age 22 instrumented	Yes	No	Yes	No	Yes	No
Main results[a]						
Hours of household caring chores averaged over ages 12-19	0.1312***	0.0308***	-0.0981**	-0.0253**	-0.1056**	-0.0767**
	(0.0399)	(0.0065)	(0.0419)	(0.0108)	(0.0469)	(0.0298)
Hours of household tasks averaged over ages 12-19	0.2854***	0.0421***	-0.1025	-0.0372***	-0.0121	-0.0564**
	(0.0981)	(0.0088)	(0.0693)	(0.0121)	(0.0353)	(0.0268)
Hours in paid work averaged over ages 12-19	0.1899***	0.0309***	0.0998**	0.0235***	0.0344	-0.0146
	(0.0575)	(0.0054)	(0.0418)	(0.0087)	(0.0309)	(0.0202)
Job with private company, cooperative or government/public organization					0.2993**	0.2153***
					(0.1239)	(0.0720)
Hours of household caring & chores age 22	0.2615	-0.0312***	0.0584	-0.0201***	0.2668*	-0.0124
	(0.3051)	(0.0038)	(0.2135)	(0.0053)	(0.1540)	(0.0077)
Hours of household tasks age 22	0.4028***	0.0768***	-0.1715***	-0.0512***	0.0376*	0.0067
	(0.0764)	(0.0099)	(0.0292)	(0.0065)	(0.0214)	(0.0185)
Observations	1421		988		576	
Wald χ^2 (1) test of exogeneity[b]	0.34		0.39			
F(1, 20) test of exogeneity[b]					3.081*	

Average marginal effects for probits; coefficients for OLS.

Standard errors in parentheses:*** $p<0.01$, ** $p<0.05$, *$p<0.1$.

[a]Other included variables as in tables 5-7.

[b]H$_o$ is instrumented variable is exogenous