

**Women's Employment and Children's Education: Longitudinal evidence from Nepal**

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### **Abstract**

The increase in female labor force participation (FLFP) in the paid labor market since the mid-1900s is one of the most pronounced family transitions of the past century and is increasingly a global phenomenon. At the same time, improving children's education, particularly girls' education, is a global priority. And yet, we know relatively little about how maternal employment is related to the educational attainment of their children in low and middle income countries where these two policy agendas are increasingly dominant. This study examines how maternal employment is related to children's educational attainment in rural Nepal. Using the Chitwan Valley Family Study we are able to combine over 60 years of yearly data on maternal employment and their children's education with similarly detailed information on the employment of other household members including fathers and a range of individual, household, and neighborhood level characteristics that may influence both mother's selection into the labor market and children's education. We estimate hazard models of dropping out of school, with and without instrumenting mother's employment with her childhood exposure to work opportunities, along with child-level fixed effects models of being in school. Results reveal heterogeneity by social class and important selection factors in maternal employment. Once we account for that selection mother's employment is positively associated with girls education for low status families but is negatively associated with children's education for high status families.

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Increasing female labor force participation (FLFP, defined below) and increasing children's education are two watershed demographic changes currently unfurling across the globe. As of 2000, FLFP rates were at least 40-50% and over 80-95% of children are enrolled in primary school in Southern Asia and Central America<sup>2</sup>. These are both transformative transitions for the family, changing the dynamic within the household and having profound implications for children's.<sup>3-6</sup> However, we know relatively little about the interaction between these two societal changes in low and middle income countries. This study explores one dimension of these complicated relationship by examining how maternal employment is related to children's educational attainment in rural Nepal. Nepal is an ideal setting for this research because FLFP in Nepal increased from 48% in 1996 to over 80% in 2008.<sup>2, 13</sup> We take advantage of a unique, longitudinal, multilevel dataset, the CVFS, and estimating multilevel hazard models of dropping out of school for the children of mother's born between 1937 and 1993.

Identifying the relationship between FLFP and children's education because both of these transitions occurred within a broader context of changing societies. Major society wide changes such as the spread of mass education, the shift to market-based economies from subsistence farming, and the spread of health services are all related to both increases in women's employment and changes in children's education. The CVFS allows us to estimate the strength of the association between mother's employment and child education, accounting for these major community and household-level changes, and family-level experiences and employ causal analytic approaches (individual fixed effect models of change and instrumental variables) to assess the robustness of our findings.

To date most of analytically robust research on these relationships has focused on wealthy countries, in particular countries like the United States where the transition occurred decades ago. With women making up a growing share of the global labor market and the increase in low-skill, female-dominated jobs in poor regions further increasing demand for their labor,<sup>7</sup> it is imperative that we understand how

this transition has influenced children in diverse settings. Given the policy focus on women's empowerment and girl's education on a global level it is crucial that we understand these associations between FLFP and education in poor countries.

Existing research on the relationship between FLFP and child outcomes in low and middle income countries has focused on child health as an outcome and yields mixed findings—that is, it provides evidence of a positive, negative, and null relationship. Some of the conflicting findings may be explained by methodological problems such as inappropriate temporal ordering of the predictors and outcomes measures and sample selection issues in many of the studies.<sup>8-10</sup> But even the studies that have addressed potential endogeneity issues of FLFP and child health have yielded inconsistent findings.<sup>11;12</sup> Furthermore, most of these studies focus on health outcomes, particularly nutritional status, for children under 5. This study contributes to the research in these settings by focusing on children's education and therefore examining the consequences of mother's employment for older children.

### **Hypotheses**

By “female labor force participation (FLFP)” we refer to paid work, regardless of whether it occurs in or outside of the home. Of course, women have been and continue to perform unpaid labor in the household and on family farms. The study focuses on the transformative shift of women working for pay, an activity that is often done in addition to their unpaid, domestic work.

We consider several competing, theoretically motivated hypotheses regarding the relationship between maternal employment and children's education. First, consider household economics. Following from a rational choice framework, net of household assets and wealth, increasing FLFP leads to increases in household income (assuming the return to women's labor is greater outside the home than inside), which should lead to an increase in resources devoted to children and better child outcomes. When families have additional resources they may devote some to tuition costs and send children to better quality schools or keep children enrolled in school longer.<sup>21; 22</sup> Additional earnings may be devoted to

children's education, for instance by paying for private schooling, which can increase attainment and achievement. Private schooling is becoming increasingly common in low and middle income countries and mother's often prefer this type of schooling [cite here]. Even public schools in LMIC tend to have direct costs associated with them—uniforms are often required and there may be additional fees for certain activities or resources [CITES HERE]. Studies across the globe have found tuition and fees to be barriers to education, particularly in terms of staying school {Kornrich & Furstenberg 2013)cites here}. Additionally, in an agricultural setting such as Nepal, children are often important contributors to household economics, and one common reason for leaving school is to increase that contribution. When mothers are earning more this need for child labor may diminish, resulting in children staying in school longer and being more likely to complete their education. Empirical research provides evidence that children in higher SES households are less likely to be engaged in housework or farm work.<sup>23; 24</sup> Mother's employment may also be important because as women engage in non-family activities outside of home such as work they are exposed to new ideas including the importance of education, information on the benefits of health services, and childhood as a period of investment.<sup>25-27</sup> This theoretical perspective leads us to expect that *children whose mothers engage in paid labor will be more likely to stay in school longer.*

The second theoretical approach centers on time investments and constraints and yields a contrasting hypothesis, namely that mother's employment will be associated with poorer child outcomes. At the core of this argument is the acknowledgement that time is limited and when mothers spend more time in paid labor they are spending less time devoted to their children which leads to worse child outcomes.<sup>28-30</sup> This time shortage manifests itself in several ways. Most directly, we would expect less time to take care of important household tasks and less parental supervision and monitoring.<sup>31</sup> A decrease in parental supervision may lead to lower academic outcomes. In fact, research in the U.S. found that an increase in mother's work hours corresponded with an increase in school truancy and

worse behavioral and educational outcomes.<sup>3</sup>

Aside from the time constraint theory, there are other reasons to expect a negative relationship between mother's employment and child outcomes. In direct contrast to the household income argument, children may have to leave school because their mother has started working but someone still needs to tend to household tasks and/or care for younger children. This is of particular concern for developing economies because even though there is increasing pressure and availability for mothers to work there has not been a similar increase in child care options. Most research in wealthier settings has found that when mothers return to work children typically spend more time in non-family care (e.g. formal child care settings). Without this option, it is possible that other children will have to take up this household or care-work thereby negatively impacting their education. Empirical evidence from Botswana demonstrates that daughters who perform more household tasks than sons are more likely to drop out of school.<sup>34</sup> In sum, our competing hypothesis is that *children whose mothers engage in paid labor will have lower educational achievement*

### **Previous literature and contributions**

The vast majority of research on the consequences of FLFP for people other than the women themselves uses data on wealthy countries like the U.S. where FLFP has been over 40% since at least the late 1960s/early 1970s.<sup>41</sup> By focusing on a lower-income setting where participation in non-family labor has only recently begun to be widespread we can learn more about the processes through which FLFP influences children's health and education. Relatedly, there is little thorough investigation of the relationship between FLFP and educational child outcomes in countries where this transition is currently on going. There is some work on socio-economic status more broadly, that may include a control for whether a mother is working or has ever worked in models of these child outcomes, but these models do not address the many possible confounding factors related to employment.<sup>34</sup> And, most research in

this vein typically measures family socio-economic status with father's employment and mother's education, ignoring mother's employment. Research on children's education and child labor is rare.

### **Methodological considerations**

To examine the relationship between maternal employment and children's education in an empirical robust manner one needs data to address possible selection and omitted variable biases with respect to maternal employment and have longitudinal data of child outcomes. Because of these complex and detailed data requirements most research is either able to excel at one or the other. The CVFS data allows us to address both because it provides unique panel data that links communities, households, parents, and children. These data include complete yearly information on school attendance for all children ever born to respondents, complete life histories of parents and other household members including yearly measures of work, household dynamics including births, marriages, and migration of household members, and complete histories of neighborhoods including access to schools and employers.

Studies of FLFP in lower-income countries that do address child welfare issues are typically done by sampling women in a specific setting and asking them questions about their children. The problem is that some of these women have already moved away from their families because of work. This raises a host of methodological challenges. The data we propose to use allow us to include measures of the women's home communities, their labor market experiences, and measures of the children's communities, regardless of the mother's migration status or location. The temporal nature of these data and the fact that CVFS has successfully collected data from over 92% of selected respondents regardless of their residential location (including domestic and international migrants)<sup>43</sup> allows us to estimate child based models that account for whether mothers are working, even if those mothers have moved away from their children. This is particularly important because the income those mothers send back to their children may be a crucial household resource.

### **Heterogenous relationships: class, gender, type of employment**

The relationship between maternal employment and children's education may not be the same across subgroups of the population. Existing research in both high and low/middle income countries has found support for heterogeneity. One body of literature has explored the importance of wealth or social class. A recent study using the PSID in the US demonstrated that a large proportion of the difference in educational attainment was due to the income gap between high and low income children (Duncan et al. 2017). Also in the US, Hsin and Felfe (2014) found substantial variation in the time mothers spend with their children across maternal education levels.

Class differences may also be apparent because of the type of work mothers are engaged in. Higher class mother's may be more likely to be engaged in labor that is more financially rewarding or work that may itself serve to motivate children, particularly girls, to stay in school. Seeing one's mother engaged in a status, salaried job may encourage children to stay in school longer. On the other hand, unskilled, wage labor work likely does not have that same role modeling effect.

Empirical research also supports the idea that the effect of mother's employment may be different for boys and girls. As discussed above, girls are more likely to become their mother's replacement in terms of completing house and childcare work (CITE HERE). Also, in many LMIC, and certainly in Nepal, families often prefer to invest in their sons education before investing in that of any daughters (Stash and Hannum 2001). If a child in a family needs to leave school it is typically the daughter who does so. We see this in the much higher educational attainment for boys than girls across countries (CITE DATA HERE). On the other hand, research in the US has found that a change in mothers work hours negatively affected boys rather than girls, potentially because boys needed more parental supervision (Gennetian et al 2008).

### **Setting**

Nepal is a small, landlocked country in South Asia and until the 1950s it was completely isolated from

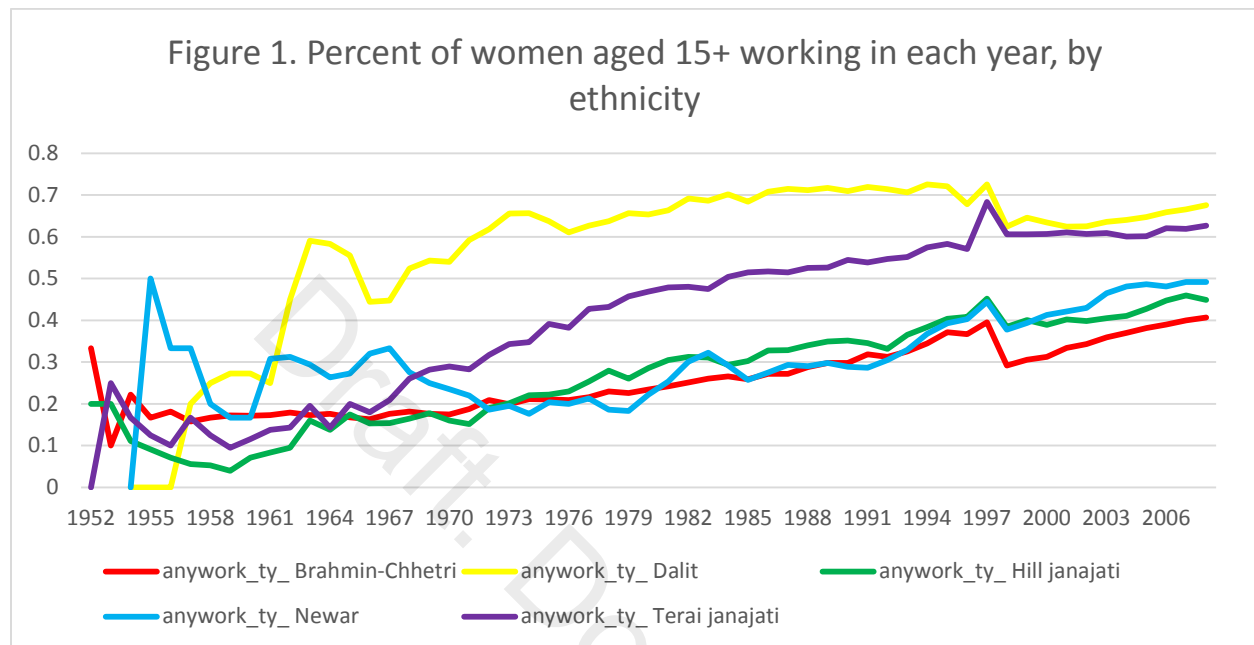


the outside world. Our study site, the Western Chitwan Valley, is located in the central region of the Terai, the relatively flat, highly productive agricultural land. Starting in the 1970s Chitwan began experiencing dramatic social change, easily seen in the growth in schools, employment opportunities, health services, and roads (Axinn and Yabiku 2001).

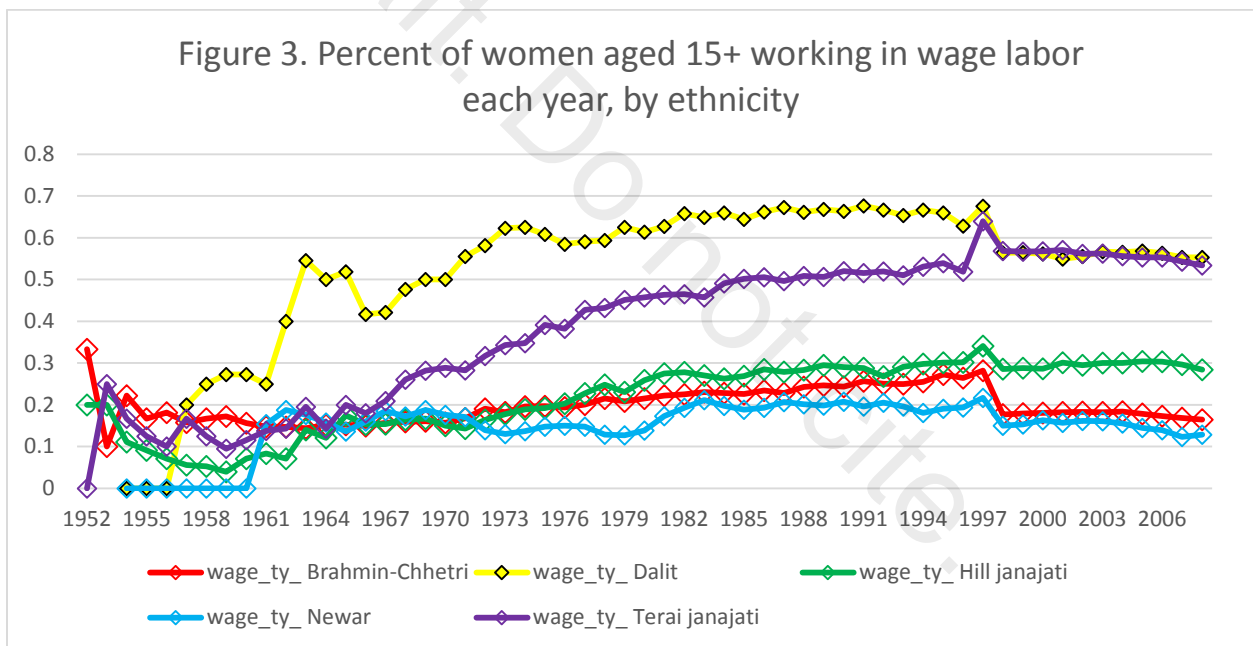
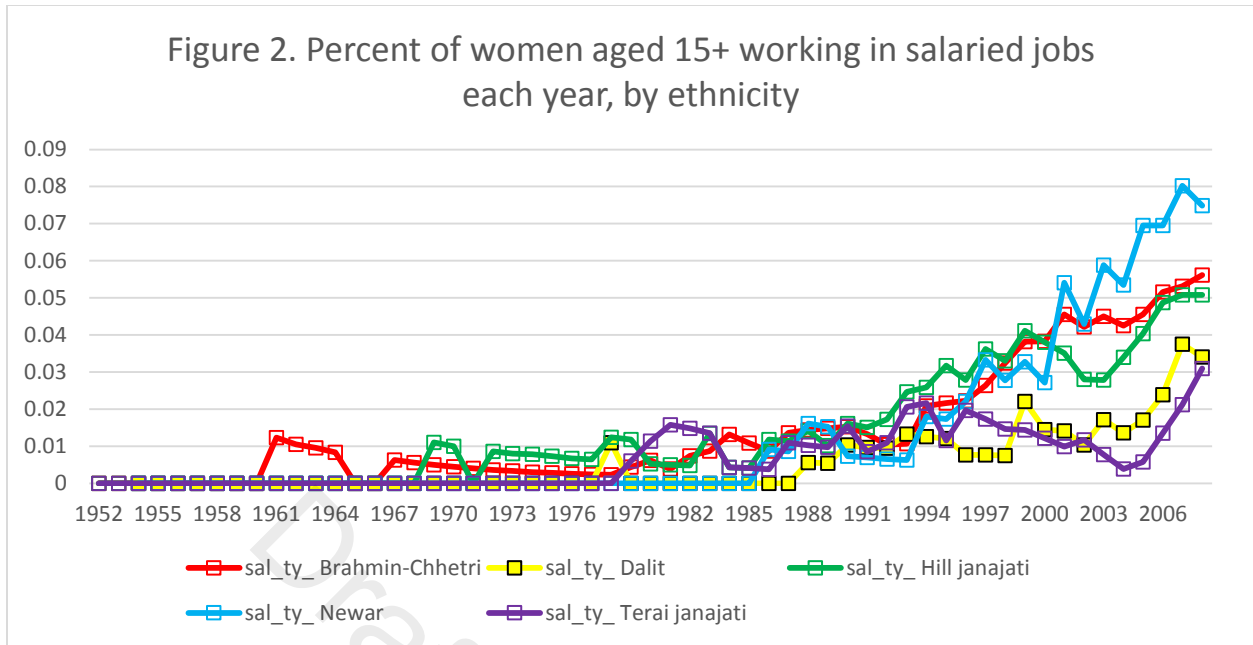
Social status in Nepal is tightly connected to religio-ethnicity. Officially a Hindu Kingdom until 2008, Hindus, particularly higher caste Hindus such as Brahmin-Chhetris, have long held positions of power. However, Buddhists (Hill Janajati ethnic groups), Newars, and indigenous ethnic groups (i.e., non-Hindus) represent a vital part of Nepalese and have incorporated aspects of Hinduism to varying degrees (Guneratne 2002; Gurung 1988). The resulting social status hierarchy incorporates these groups who exist outside and within the Hindu caste system (Levine 1987). Notably, this religio-ethnic caste structure has a weakened hierarchy or lessened social power embedded in the caste system than its more strictly Hindu counterpart in India. Despite this, religio/caste-ethnicity has been linked to a range of factors including access to non-family experiences such as education and employment (Axinn and Yabiku 2001; Yabiku and Schlabach 2009) and variation in religiosity and gender norms (Bennett 1983; Fricke 1994; Pearce, Brauner-Otto, & Ji, 2015). Brahmin-Chhetri are the most still the most advantaged. However, Newars were historically merchants and their prominent place in the economy and different religious affiliation has placed them very high in the social status hierarchy. Other major groups are: Hill-Janajati (e.g., Gurungs, Lamas, Magar, and Tamangs), Dalit includes lower caste Hindus (e.g., Damais, Sarkis, and Kamis) and Terai-Janajati (e.g., Tharu, Kumal, and Bote).

Women's participation in the paid labor market and children's education have both increased tremendously, although not to the same degree across ethnic groups or for various types of jobs. Figure 1 shows the percent of women aged 15 and over working in any type of job in the CVFS data (described more below). (Note, the disjoint in the lines occurring in 1997 is a symptom of changes in the data collection at that time). We see that lower status groups, Dalit and Terai-Janajati, have the highest

participation rates and the Dalits have had fairly high labor female force participation rates for over 40 years. On the other hand, the participation rates for the higher status groups has remained much lower, although has also increased over time.



Figures 2 and 3 show female labor force participation separately by job type. Looking at salaried labor first, Figure 2, we see that this type of work is less common and was extremely rare before the 1990s. The highest status groups, Newars, Brahmin/Chhetri, and Hill-Janajati are the most likely to be engaged in salaried labor. On the other hand, wage labor (Figure 3) has been common throughout the study period and particularly concentrated on the lower status religo-groups.



Education in Nepal has also increased dramatically over time, although much earlier. In our study area by 1996 all children aged 5 and 6 had been to school for at least day (Beutel and Axinn 2002). This increasing education also increased exposure to Western ideas about marriage and family, something reinforced by a concomitant increase in exposure to Western media such as movies (Allendorf 2017). As

a result, along with the increased variance in children's experiences of their parents' marriages the options they face in their transition to adulthood have also become increasingly varied.

During the period of data analysis the educational system in Nepal was structured such that primary school began around age 6 and the completion of secondary school occurred after grade 10 (around age 16). Upon completion of grade 10 students were eligible to take an exam to earn their School Leaving Certificate (SLC), the equivalent of a high school diploma in the U.S.

### **Data and Methods**

To explore the relationship between mother's employment and child education we use the Chitwan Valley Family Study (CVFS). In 1996 the CVFS collected information from residents of a systematic sample of 151 neighborhoods, or *tois*, in the Western Chitwan Valley. *Tois* are distinct clusters of 5-15 households, typically located at crossroads and surrounded by fields. Every resident between the ages of 15 and 59 in the sampled neighborhoods and their spouses were interviewed. In 2008-2011, original 1996 respondents were re-interviewed and additional interviews were conducted with all household members age 12-59 and their spouses and parents of unmarried household members aged 12-34. At both interviews respondents completed Life History Calendars (LHCs) where they provided yearly information on the birth, school attendance, and death of all their children. We limit our analysis to those families where both mothers and fathers were interviewed because the work experiences of spouses is an important component of our theoretical framework. From the 3,872 mothers were interviewed but roughly 15% were excluded because their spouses were not available to be interviewed. Details on the final analysis samples are presented when we discuss our analytic approaches.

In addition to the individual interviews and accompanying LHCs for mothers, fathers, and other household members we use data on household wealth and resources collected in household level surveys conducted in 1996, 2001, and 2006 and information on access to community resources and

organizations collected in Neighborhood History Calendars<sup>42</sup> that cover the same period as the LHCs.

## **Measures**

*Child's education.* Because enrollment is virtually universal we measure children's educational outcomes in terms of dropping out of school. Using yearly data from the mother's LHC we know whether the child was enrolled in that year or not and we consider a child to have dropped out of school the first year they were not enrolled. If he or she attended school for part of the year but did not complete the year they are considered to have dropped out in that year. We use this measure as our dependent variable.

*Employment.*

*Mother's work.* Our information on mother's employment is time varying and also comes from LHCs. For each year we know whether the mother worked for pay at all (any work), in wage labor, in a salaried job, or had her own business (and whether that business was inside or outside of the home). Job type categories are not mutually exclusive as women could have worked in more than one type of job in a given year. Work that did not result in any earnings (e.g. labor on the family farm) is not captured by our measures. Wage labor in this setting was agriculture labor on another households' land. Salaried jobs were office jobs in private, government, or NGO offices. Own businesses could have been operated in or outside the home. For all types of work we created a time varying measure for whether the mother worked in a given year. In our analyses we lag this variable (and all control variables) by 1 year relative to children's education to ensure that the measure of work was not in response to the child's educational status. We discuss this more when we present the analytic strategy.

*Other household member's work.* Because all individuals aged 15-59 residing in the household completed the same individual interviews for fathers and any other adult household members we have employment information identical to what we have for mothers. We created a series of work measures that capture whether the father had worked for pay at all (any work), in wage labor, in a salaried job, or had her own business (and whether that business was inside or outside of the home) in that year and a

separate series for whether any other household member had done so.

*Religio-Ethnicity.* Ethnicity in Nepal is a complex combination of religio-ethnic groups organized within a caste system. The hierarchy embedded in the Hindu caste structure does connote important privileges in Nepal, but it is not as strict as seen in India. Nepal was officially a Hindu kingdom until recently and Hindus, particularly higher caste Hindus such as Brahmin-Chhetris, have long held positions of power and had better access to education and employment. One reason for the weakened hierarchy or social power embedded in the caste system is the large presence and integration of non-Hindus, such as Buddhists (Hill Janajati ethnic groups) and Newars, who simultaneously exist outside and within the structure (Levine 1987). Newars were historically merchants and their prominent place in the economy and different religious affiliation has placed them very high in the social status hierarchy. We consider three broad ethnic groups based on their overall religio-ethnic identity and status: high status ethnic groups (Brahmin-Chhetri and Newar), Hill-Janajati (e.g., Gurungs, Lamas, Magar, and Tamangs), low status ethnic groups including Dalit (e.g., Damais, Sarkis, and Kamis) and Terai-Janajati (e.g., Tharu, Kumal, and Bote).

*Controls.* We control for a range of characteristics at multiple levels that previous research has found to influence child health and/or women's employment. For all of these measures we attempt to establish clear temporal ordering whenever possible such that these measures would capture events or experiences that occurred *before* the measure of child education. Some features of the CVFS make it an exceptionally rich source of control variables. We have complete labor histories of other household members, household structure and composition over time (e.g. numbers of, and relationships between household members). We also use information from histories of other important neighborhood-level characteristics known to influence both the probability of employment and children's outcomes: changes in access to schools and employers, and other important non-family services such as health services, markets, transportation, and media outlets.

Time varying measures we include are: education (child years in school, mother's years of schooling, father's years of schooling), migration (mother temporarily living elsewhere, father temporarily living elsewhere, any other household members temporarily living elsewhere), number of people living in the household, media exposure (mother, father), mother participated in youth club or group (which can be an entry into employment), number of siblings (mother's children ever born), household wealth (consumer durables index, number of livestock owned, whether household owns the land their house is on, number of stories in house), and current community context (index of organizations within a 5 min walk: school, employer, health service, market).

Time invariant measures are: mother's childhood community context (whether an employer was within a 1 hours walk when she was 12 years old, index of other community services at age 12), child sex, age child started school, mother's birth cohort, and ethnicity.

### **Analytic strategy**

We employ four different analytic approaches. First, we estimate hazard models of dropping out of school without controlling for the employment of other household members. These models start the year the respondent started school and stop the year the child stops going to school. Children are censored when they reach age 16, die, or at the last date of the mother's interview. The analysis sample is 65,539 person-years for 7,673 children with 2,633 mothers. Second, we add in our measures of father's and other household members' employment status to the hazard models. Third, we employ an instrumental variables approach in the hazard of dropping out using mother's exposure to an employer in childhood as an instrument for her current work status. Fourth, we estimate child level individual fixed effect models. Children contribute person-years starting the first year they attend school until they reach age 16 or year of their mother's interview if that occurred before age 16. Children who only contributed 1 person-year of data (i.e. they started and stopped school in the same year) cannot be included in the analysis and are dropped from the analysis sample. In the end 1,980 children contributed

21,132 person-years for this analysis of change. For all approaches we estimate multilevel models as mothers have multiple children in the data. We also estimate pooled models using the entire sample, separate models by gender (boys and girls), and separate models by ethnicity.

Each approach has its own strengths and weaknesses. A simple hazard model approach allows us to best estimate the education process for children, but only uses temporal ordering and a large range of control variables to attempt to deal with selection issues and reverse causality. Instrumental variables are an attempt to further establish a causal linkage, but they are only as good as their instrument and instruments are often weak. Individual fixed effects are an ideal way to measure how a change in mother's work status is related to a change in child's education status, but this question is slightly different from the process we are able to investigate with hazard models. We take this three pronged approach to triangulate our findings, lending credence to our conclusions and lowering the possibility that our results are spurious.

We will use fixed effect models to control for macro-level characteristics that do not change over time. But because of the incredible detail available in these data we will also be able to estimate models that include a thorough set of household and neighborhood control measures that are time varying along with random household and neighborhood effects. These latter models will reveal information about the specific process through which macro-level characteristics influence the relationship between FLFP and child outcomes (something not possible in fixed effect models).

## **Results**

We begin with the results from the simple multilevel hazard models of dropping out of school (Table 2) Panel A presents the results from the base models. Looking first at whether the mother was engaged in any paid work last year we see a slight positive relationship with children dropping out (column 1). That is, children whose mother's worked last year had a higher odds of dropping out of school. However, moving across columns we see that this relationship highly depends on the type of work mothers are



doing. Having a mother engaged in wage labor (column 2) was associated with a higher odds of dropping out, but having a mother engaged in non-wage labor (column 3), specifically owning a business (column 5) , was associated with a lower odds of dropping out of school.

In Panel B we add in controls for the other household members' employment and continue to see a strong association between mother's engagement in wage labor (column 2) and a higher odds of dropping out of school. We also now see a similar relationship with salaried employment (column 3). Father's employment has a similar pattern of relationship to dropping out as mothers—wage and salary labor are both associated with a higher odds of dropping out whereas owning a business is associated with a lower odds. On the other hand, having another household member engaged in wage labor is associated with a lower odds of dropping out. It appears then that parental work is more often detrimental to children's education, but having additional household members contributing to the household economy is protective of children's education. This may be because when parents are working children are needed in the household to perform other tasks but in sufficiently large households when other members are available the children are able to continue in school.

Of course, selection may be causing this observed relationship. Poorer and more disadvantaged households are more likely to be engaged in wage labor and those children are also more likely to drop out. While we control for a range of household wealth and status factors that may be insufficient. We see evidence of this when we look at the relationship between mother's employment and dropping out separately by ethnicity and gender. We look at three separate ethnic groups defined by their relative disadvantage in Nepalese society.

Table 3 shows the results from the simple, multilevel hazard models separately by ethnicity. In all three panels we see that mother's wage labor is associated with a higher odds of dropping out of school. However, in Panel B we see that among the middle status group work, particularly owning a business, is associated with a lower odds of dropping out.

Table 4 shows the results from the simple, multilevel hazard models separately by gender and ethnicity. Panel A presents the results for all girls, Panels B-D are for girls by ethnicity, Panel E presents all boys, and Panels F-H are for all boys by ethnicity. In general, we do not see differences by gender when considering all boys and girls (Panels A and E)—mother’s work is associated with a higher odds of dropping out for both. However, when we look by gender and ethnicity we see that the negative effect on education is concentrated among high status boys (Panel F) and low status girls (Panel D). This too may be due to selection. Low status families where mothers are working are likely extremely disadvantaged and daughters are likely necessary to complete household tasks and maybe even to work for pay to further contribute to the household finances. Similarly, high status groups where mothers are working may also be the most disadvantaged within the high status and the boys may also be needed to work. To further address our concerns about selection we employ an instrumental variables approach. We use mother’s exposure to an employer during childhood as an instrument for mother’s work status. Table 5 shows the results from these models for the pooled sample (Panel A) and by ethnicity (Panels B-D). Looking first at the pooled sample we see that mother’s childhood exposure is a satisfactory instrument for current work status (test statistic significant at the .01 level or better across types of work). And, we see that findings from the simple hazard models, particularly those involving wage labor, were due to selection. Using an instrument for current work we see that mother’s work is related to a *lower* odds of dropping out for all types of work. That is, once we account for the deeply embedded social processes that influence whether women work, work is, in fact, beneficial to children’s education. When we break the analysis down by gender and ethnicity (Table 6) we see that this benefit is concentrated among low status girls (Panel D) and particularly for wage labor (Column 2). Our instrument for mother’s work is only an appropriate measure for this group and it is the only group where the instrumented measure is statistically significantly related to the hazard of dropping out. Interestingly though, for low status girls mother’s salaried labor is related to a higher odds of dropping

out.

Finally, we turn to our last methodological approach—individual-level fixed effects models (Table 7). These models assess whether a change in mother’s work status is associated with a change in child’s enrollment. In the base models (Panel A) we see evidence similar to our simple hazard models—mother’s appears harmful to children’s education as children whose mothers started working were more likely to drop out of school. However, once we account for the employment status of other household members the effect of mother’s work becomes insignificant (Panel B).

When we estimate the models separately by ethnicity we again see a complex story that merges the findings from the previous two approaches. Among high status families, children whose mother’s started work are more likely to drop out of school (Panel C). But, among low status families mother’s starting work was associated with a decreased likelihood of dropping out (Panel E). That is, among low status families maternal work appears to be protective of children’s education whereas among high status families it is detrimental. We note, these results are similar for boys and girls.

### **Conclusion**

Altogether these many results actually paint a fairly clear story. Selection is a huge factor when studying the implications of mother’s labor force participation for their children. Women work for a variety of reasons. Low status women, those particularly disadvantaged, are more likely to be working out of financial necessity—something that also negatively effects children’s educational attainment. However, once we account for this underlying disadvantage and women’s need to go to work, work is in fact beneficial to children. This is even more apparent when we consider girls’ education. This may be because women’s earnings are particularly helpful in keeping children enrolled in school.

On the other hand, high status women may be working for other reasons, perhaps for personal fulfillment. In this case, we find evidence that their participation in the paid labor market is detrimental to their children’s schooling. This may be because they are less present to supervise and support

children's educational experiences. They may also be experiencing work-family stress and conflict.

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**Table 1. Descriptive statistics. Child level. Last person-year contributed to analysis.**

	All children, N=7673				High ethnic status, N=4145		Moderate ethnic status (Hill janajati), N=1245		Low ethnic status, N=2283	
	MIN	MAX	MEAN	STD	MEAN	STD	MEAN	STD	MEAN	STD
<b>Child level variables</b>										
Child dropped out of school early	0	1	0.16		0.10		0.21		0.24	
Years child was enrolled in school (1yr lag)	0	16	7.54	3.47	8.14	3.39	7.18	3.56	6.65	3.35
Age child started school	0	16	5.18	1.45	5.02	1.35	5.13	1.55	5.49	1.52
Male child	0	1	0.48		0.50		0.47		0.46	
<b>Mother level variables</b>										
Mother's work (time varying, 1yr lag)										
Any work	0	1	0.49		0.40		0.44		0.67	
Wage labor	0	1	0.35		0.22		0.32		0.61	
Non-wage labor	0	1	0.15		0.19		0.14		0.10	
Salaried job	0	1	0.03		0.03		0.03		0.02	
Any business	0	1	0.13		0.16		0.11		0.08	
In home business	0	1	0.11		0.13		0.10		0.06	
Out of home business	0	1	0.02		0.03		0.01		0.02	
Years of education (time varying, 1yr lag)	0	29	3.65	5.34	4.95	5.92	2.92	4.67	1.71	3.64
Living in neighborhood (time varying, 1yr lag)	0	1	0.89		0.89		0.87		0.90	
Media exposure index (time varying, 1yr lag)	0	3	2.53	0.80	2.59	0.74	2.50	0.83	2.42	0.86
Ever participated in women's club or group (time varying, 1yr lag)	0	1	0.34		0.39		0.26		0.29	
Had employer within 1 hours walk before age 12	0	1	0.53		0.61		0.37		0.46	
Index of access to community organizations before age 12	0	5	3.11	1.75	3.32	1.72	2.45	1.76	3.07	1.70
Number of children ever born	0	12	3.27	2.10	3.12	1.99	3.12	2.09	3.62	2.27
Birth cohort										
Born after 1962	0	1	0.25		0.24		0.26		0.27	
Born 1952-1961	0	1	0.28		0.26		0.28		0.33	
Born 1942-1951	0	1	0.25		0.27		0.21		0.23	
Born before 1941	0	1	0.22		0.23		0.26		0.18	
<b>Father variables</b>										
Father's work (time varying, 1yr lag)										
Any work	0	1	0.68		0.64		0.58		0.80	
Wage labor	0	1	0.24		0.14		0.22		0.45	
Non-wage labor	0	1	0.47		0.53		0.39		0.41	
Salaried job	0	1	0.35		0.36		0.33		0.33	
Any business	0	1	0.16		0.21		0.09		0.10	
In home business	0	1	0.11		0.14		0.06		0.07	
Out of home business	0	1	0.05		0.07		0.03		0.03	

**Table 1. Descriptive statistics. Child level. Last person-year contributed to analysis.**

	All children, N=7673				High ethnic status, N=4145		Moderate ethnic status (Hill janajati), N=1245		Low ethnic status, N=2283	
	MIN	MAX	MEAN	STD	MEAN	STD	MEAN	STD	MEAN	STD
Years of education (time varying, 1yr lag)	0	34	6.99	6.35	8.57	6.75	6.34	5.55	4.48	5.00
Living in neighborhood (time varying, 1yr lag)	0	1	0.78		0.77		0.77		0.82	
Media exposure index (time varying, 1yr lag)	0	3	2.62	0.77	2.65	0.73	2.60	0.81	2.58	0.81
Household level variables										
Work, any household members engaged in (time varying, 1 yr lag)										
Any work	0	1	0.50		0.48		0.49		0.56	
Wage labor	0	1	0.32		0.24		0.32		0.46	
Non-wage labor	0	1	0.36		0.37		0.34		0.34	
Salaried job	0	1	0.30		0.30		0.29		0.30	
Ethnicity										
High status										
Brahmin-Chhetri	0	1	0.47		0.88					
Newar	0	1	0.07		0.12					
Moderate status: Hill janajati	0	1	0.16				1.00			
Lower status										
Dalit, etc	0	1	0.11						0.37	
Terai janajati	0	1	0.19						0.63	
Wealth										
Index of consumer durables	0	9	6.10	2.21	6.92	1.78	5.91	2.28	4.70	2.16
Number of livestock owned	0	26	3.99	3.44	4.18	3.41	4.00	3.69	3.64	3.33
Household owns plot where house is	0	1	0.89		0.92		0.83		0.86	
Number of stories in the house	1	5	1.47	0.58	1.54	0.62	1.37	0.56	1.40	0.50
Any household members living elsewhere	0	13	1.46	1.72	1.59	1.80	1.52	1.60	1.18	1.61
Total number of household members	1	21	5.67	2.92	5.75	2.74	5.59	2.74	5.59	3.32
Neighborhood level variables										
Index of access to community organizations	0	4	1.81	1.43	1.84	1.47	1.89	1.40	1.72	1.38

**Table 2. Results from child level hazard models of dropping out of school. Multilevel logit models (mother level random effect).**

	Any work	Wage labor	Any nonwage	Salary	Any business	In home business	Out of home business
	1	2	3	4	5	6	7
Panel A. Base models:							
Mother's work (last year, time varying)	0.16 + (1.75)	0.43 *** (4.71)	-0.83 *** (-5.05)	-0.15 (-0.47)	-0.96 *** (-5.18)	-0.95 *** (-4.79)	-0.92 + (-1.95)
Panel B. Full models:							
Mother's work (last year, time varying)	0.22 * (2.30)	0.26 ** (2.65)	-0.09 (-0.53)	0.79 * (2.29)	-0.22 (-1.09)	-0.27 (-1.26)	0.06 (0.12)

+ 0.10 \* 0.05 \*\* 0.01 \*\*\* 0.001; two-tailed tests

Table shows effect estimates with t-statistics in parentheses.

All models include all controls shown in Table 1.



**Table 3. Results from child level hazard models of dropping out of school, by ethnic group. Multilevel logit models (mother level random effect).**

	Any work	Wage labor	Any nonwage	Salary	Any business	In home business	Out of home business
	1	2	3	4	5	6	7
<b>Panel A. High status (Brahmin-Chhetri, Newar)</b>							
Mother's work (last year, time varying)	0.25 + (1.70)	0.33 * (2.08)	-0.19 (-0.67)	-0.05 (-0.07)	0.03 (0.09)	-0.26 (-0.74)	0.99 + (1.77)
<b>Panel B. Hill janajati</b>							
Mother's work (last year, time varying)	0.16 (0.75)	0.42 + (1.84)	-1.01 * (-2.47)	0.15 (0.20)	-1.05 * (-2.33)	-1.01 * (-2.20)	0.00 (.)
<b>Panel C. Low status (Dalit, Terai janajati)</b>							
Mother's work (last year, time varying)	0.22 + (1.88)	0.25 * (2.06)	-0.06 (-0.27)	1.12 ** (2.69)	-0.39 (-1.49)	-0.29 (-1.08)	-1.63 (-1.39)

+ 0.10 \* 0.05 \*\* 0.01 \*\*\* 0.001; two-tailed tests

Table shows effect estimates with t-statistics in parentheses.

All models include all controls shown in Table 1.

**Table 4. Results from child level hazard models of dropping out of school by gender and ethnicity. Multilevel logit models (mother level random effect).**

	Any work	Wage labor	Any nonwage	Salary	Any business	In home business	Out of home business
	1	2	3	4	5	6	7
Panel A. All girls							
Mother's work (last year, time varying)	0.31 * (2.30)	0.37 ** (2.64)	0.05 (0.20)	0.36 ** (2.59)	1.19 * (2.57)	-0.16 (-0.59)	-0.09 (-0.32)
Panel B. High status girls (Brahmin-Chhetri, Newar)							
Mother's work (last year, time varying)	0.14 (0.63)	0.30 (1.25)	-0.20 (-0.51)	0.29 (1.22)	0.73 (0.97)	-0.29 (-0.59)	-0.27 (-0.54)
Panel C. Hill janajati girls							
Mother's work (last year, time varying)	-0.11 (-0.27)	0.35 (0.86)	-1.57 * (-2.30)	0.36 (0.90)	-0.49 (-0.34)	-1.17 + (-1.77)	-1.09 (-1.62)
Panel D. Low status girls (Dalit, Terai janajati)							
Mother's work (last year, time varying)	0.38 + (1.89)	0.29 (1.50)	0.74 * (2.14)	0.23 (1.20)	2.05 ** (2.94)	0.33 (0.83)	0.57 (1.37)

+ 0.10 \* 0.05 \*\* 0.01 \*\*\* 0.001; two-tailed tests

Table shows effect estimates with t-statistics in parentheses.

All models include all controls shown in Table 1.

**Table 4 continued. Results from child level hazard models of dropping out of school by gender and ethnicity. Multilevel logit models (mother level random effect).**

	Any work	Wage labor	Any nonwage	Salary	Any business	In home business	Out of home business
	1	2	3	4	5	6	7
Panel E. All boys							
Mother's work (last year, time varying)	0.32 ** (2.62)	0.35 ** (2.81)	-0.23 (-0.94)	0.35 ** (2.82)	0.56 (1.10)	-0.31 (-1.06)	-0.50 (-1.57)
Panel F. High status boys (Brahmin-Chhetri, Newar)							
Mother's work (last year, time varying)	0.51 ** (2.77)	0.57 ** (2.96)	-0.20 (-0.53)	0.55 ** (2.83)	-0.79 (-0.66)	0.18 (0.43)	-0.38 (-0.78)
Panel G. Hill janajati boys							
Mother's work (last year, time varying)	0.17 (0.79)	0.22 (0.90)	-0.53 (-1.27)	0.24 (0.97)	-0.02 (-0.02)	-0.69 (-1.41)	-0.65 (-1.29)
Panel H. Low status boys (Dalit, Terai janajati)							
Mother's work (last year, time varying)	0.12 (0.80)	0.15 (0.95)	-0.29 (-0.88)	0.16 (1.02)	0.81 (1.44)	-0.72 + (-1.79)	-0.65 (-1.57)

+ 0.10 \* 0.05 \*\* 0.01 \*\*\* 0.001; two-tailed tests

Table shows effect estimates with t-statistics in parentheses.

All models include all controls shown in Table 1.

**Table 5. Results from instrumental variables child level hazard models of dropping out of school. Instrumenting mother's work with mother's childhood exposure to employers. Multilevel logit models (mother level random effect).**

	Any work		Wage		Nonwage		Salary		Any business		In home business		Out of home business		
	1		2		3		4		5		6		7		
	1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage	
	Mother's work		Mother's work		Mother's work		Mother's work		Mother's work		Mother's work		Mother's work		
	IV variable	variable	IV variable	variable	IV variable	variable	IV variable	variable	IV variable	variable	IV variable	work variable	IV variable	variable	
<b>Panel A. Pooled sample</b>															
Mother's work	-0.07 *** (-12.06)	-0.06 * (-2.47)	-0.05 *** (-9.31)	-0.09 * (-2.43)	-0.02 *** (-6.08)	-0.20 * (-2.34)	-0.01 *** (-3.81)	-0.68 * (-2.10)	-0.01 *** (-4.20)	-0.32 * (-2.17)	-0.01 *** (-5.20)	-0.27 * (-2.28)	0.00 * (2.09)	1.38 (1.61)	
Person years, IV test statistic	65539	.00684	65539	.0072	65539	.0115	65539	.011	65539	.0117	65539	.0116	65539	.0113	
<b>Panel B. High status (Brahmin-Chhetri, Newar)</b>															
Mother's work	-0.01 (-1.01)	-0.02 (-0.87)	0.00 (0.14)	-0.02 (-0.87)	-0.02 *** (-4.57)	-0.09 (-0.85)	-0.00 (-0.85)	-0.19 (-0.85)	-0.02 *** (-5.09)	-0.25 (-0.74)	-0.01 *** (-5.79)	0.92 (0.36)	0.00 (0.19)	-0.21 (-0.85)	
Person years, IV test statistic	37778	.289	37778	.258	37778	.383	37778	.38	37778	.381	37778	.379	37778	.371	
<b>Panel C. Hill janajati</b>															
Mother's work	0.08 *** (7.81)	0.66 (0.50)	0.06 *** (6.03)	0.06 (0.79)	0.02 *** (3.57)	-0.07 (-0.80)	0.02 *** (4.88)	-0.13 (-0.80)	0.01 (1.49)	-0.13 (-0.78)	0.01 (1.20)	-0.10 (-0.79)	0.00 (1.39)	0.57 (0.77)	
Person years, IV test statistic	10106	.295	10106	.463	10106	.491	10106	.471	10106	.445	10106	.447	10106	.415	
<b>Panel D. Low status (Dalit, Terai janajati)</b>															
Mother's work	0.10 *** (12.39)	-0.27 + (-1.94)	0.11 *** (13.31)	-0.44 + (-1.69)	0.01 * (2.21)	3.10 (0.61)	-0.00 (-0.32)	1.92 + (1.94)	0.01 * (2.44)	-5.04 (-0.40)	0.00 (0.69)	-0.67 * (-2.02)	0.01 *** (3.92)	0.73 * (2.34)	
Person years, IV test statistic	17256	.0144	17256	.00822	17256	.00934	17256	.0106	17256	.00924	17256	.00859	17256	.00732	

+ 0.10 \* 0.05 \*\* 0.01 \*\*\* 0.001; two-tailed tests

Table shows effect estimates with t-statistics in parentheses.

All models include all controls shown in Table 1.

**Table 6. Results from instrumental variables child level hazard models of dropping out of school by gender and ethnicity. Instrumenting mother's work with mother's childhood exposure to employers. Multilevel logit models (mother level random effect).**

	Any work		Wage		Nonwage		Salary		Any business		In home business		Out of home business	
	1		2		3		4		5		6		7	
	1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage
	IV variable	Mother's work variable	IV variable	Mother's work variable	IV variable	Mother's work variable	IV variable	Mother's work variable	IV variable	Mother's work variable	IV variable	Mother's work variable	IV variable	Mother's work variable
<b>Panel A. All girls</b>														
Mother's work	0.03 *** (5.09)	-0.04 (-1.23)	0.04 *** (7.45)	-0.05 (-1.20)	-0.01 ** (-2.89)	-0.12 (-1.18)	0.00 (0.15)	-0.55 (-1.07)	-0.01 ** (-3.00)	-0.17 (-1.16)	-0.01 *** (-4.21)	-0.30 (-1.07)	0.00 * (2.38)	-0.42 (-1.14)
Person years, IV test statistic	33927	.15	33927	.165	33927	.216	33927	.217	33927	.221	33927	.221	33927	.226
<b>Panel B. High status girls (Brahmin-Chhetri, Newar)</b>														
Mother's work	-0.02 ** (-3.01)	-0.01 (-0.35)	-0.01 * (-2.05)	-0.01 (-0.34)	-0.02 *** (-5.00)	-0.10 (-0.33)	0.00 (0.25)	-0.18 (-0.33)	-0.03 *** (-5.66)	-6.75 (-0.02)	-0.03 *** (-6.67)	0.06 (0.34)	0.00 (1.39)	-0.07 (-0.34)
Person years, IV test statistic	18875	.68	18875	.652	18875	.735	18875	.729	18875	.734	18875	.726	18875	.736
<b>Panel C. Hill janajati girls</b>														
Mother's work	0.09 *** (6.67)	0.33 (0.75)	0.08 *** (6.24)	0.08 (0.85)	0.01 (0.86)	-0.08 (-0.85)	0.01 * (2.01)	-0.18 (-0.85)	0.00 (0.25)	-0.13 (-0.84)	0.00 (0.61)	-0.11 (-0.85)	-0.00 (-0.94)	0.60 (0.82)
Person years, IV test statistic	5567	.301	5567	.428	5567	.432	5567	.424	5567	.398	5567	.398	5567	.384
<b>Panel D. Low status girls (Dalit, Terai janajati)</b>														
Mother's work	0.07 *** (6.57)	-0.20 + (-1.72)	0.08 *** (7.70)	-0.26 + (-1.70)	0.01 (1.03)	-10.12 (-0.15)	-0.00 (-1.61)	1.65 + (1.66)	0.01 + (1.66)	-1.42 (-1.00)	-0.00 (-0.34)	-2.00 (-0.79)	0.01 *** (4.59)	-8.04 (-0.41)
Person years, IV test statistic	9458	.0435	9458	.0348	9458	.041	9458	.0476	9458	.0405	9458	.04	9458	.0418

+ 0.10 \* 0.05 \*\* 0.01 \*\*\* 0.001; two-tailed tests

Table shows effect estimates with t-statistics in parentheses.

All models include all controls shown in Table 1.

**Table 6 continued. Results from instrumental variables child level hazard models of dropping out of school by gender and ethnicity. Instrumenting mother's work with mother's childhood exposure to employers. Multilevel logit models (mother level random effect).**

	Any work		Wage		Nonwage		Salary		Any business		In home business		Out of home business	
	1		2		3		4		5		6		7	
	1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage
	IV variable	Mother's work variable	IV variable	Mother's work variable	IV variable	Mother's work variable	IV variable	Mother's work variable	IV variable	Mother's work variable	IV variable	Mother's work variable	IV variable	Mother's work variable
<b>Panel E. All boys</b>														
Mother's work	0.05 *** (8.39)	-0.05 (-1.29)	0.05 *** (8.88)	-0.07 (-1.33)	0.00 (0.98)	-0.15 (-1.30)	0.00 (0.37)	-0.40 (-1.26)	0.00 (0.32)	-0.27 (-1.21)	0.00 (0.25)	-0.18 (-1.30)	-0.00 (-0.45)	0.46 (1.26)
Person years, IV test statistic	31265	.147	31265	.137	31265	.178	31265	.174	31265	.177	31265	.18	31265	.176
<b>Panel F. High status boys (Brahmin-Chhetri, Newar)</b>														
Mother's work	0.01 (1.52)	-0.02 (-0.88)	0.01 * (2.15)	-0.03 (-0.91)	-0.01 (-1.33)	-0.10 (-0.88)	-0.00 (-1.60)	-0.21 (-0.89)	-0.01 (-1.38)	-0.24 (-0.80)	-0.01 (-1.33)	-0.47 (-0.63)	-0.00 (-1.15)	-0.49 (-0.79)
Person years, IV test statistic	18903	.275	18903	.24	18903	.364	18903	.369	18903	.36	18903	.363	18903	.353
<b>Panel G. Hill janajati boys</b>														
Mother's work	0.06 *** (4.08)	-0.19 (-0.27)	0.03 * (2.07)	0.03 (0.24)	0.04 *** (3.65)	-0.03 (-0.24)	0.03 *** (4.71)	-0.05 (-0.24)	0.01 (1.15)	-0.07 (-0.24)	0.00 (0.47)	-0.06 (-0.24)	0.01 * (2.37)	0.34 (0.24)
Person years, IV test statistic	4539	.758	4539	.834	4539	.885	4539	.838	4539	.845	4539	.85	4539	.803
<b>Panel H. Low status boys (Dalit, Terai janajati)</b>														
Mother's work	0.13 *** (10.95)	-1.84 (-0.28)	0.13 *** (10.87)	1.59 (0.37)	0.02 ** (2.62)	0.78 (1.13)	0.00 * (2.17)	1.48 (1.35)	0.01 + (1.94)	1.67 (0.69)	0.01 (1.59)	-0.36 (-1.53)	0.00 (0.92)	0.29 (1.63)
Person years, IV test statistic	7798	.137	7798	.0962	7798	.0952	7798	.103	7798	.0942	7798	.0947	7798	.0751

+ 0.10 \* 0.05 \*\* 0.01 \*\*\* 0.001; two-tailed tests

Table shows effect estimates with t-statistics in parentheses.

All models include all controls shown in Table 1.

**Table 7. Results from child level fixed effects models of being out of school by ethnicity. Multilevel logit models (child level fixed effect).**

	Any work	Wage labor	Any nonwage	Salary	Any business	In home business	Out of home business
	1	2	3	4	5	6	7
Panel A. Base model							
Mother's work (last year, time varying)	0.23 * (2.55)	0.19 + (1.95)	0.28 + (1.91)	-0.10 (-0.28)	0.35 * (2.17)	0.03 (0.17)	1.87 *** (4.62)
Panel B. Full models including controls							
Mother's work (last year, time varying)	-0.03 (-0.26)	-0.03 (-0.25)	0.00 (0.00)	-0.35 (-0.98)	-0.03 (-0.19)	-0.22 (-1.23)	1.07 * (2.54)
Panel C. High status (Brahmin-Chhetri, Newar)							
Mother's work (last year, time varying)	0.51 ** (3.10)	0.55 ** (2.87)	0.39 (1.61)	-0.95 (-1.20)	0.51 + (1.92)	0.19 (0.64)	1.65 ** (3.03)
Panel D. Hill janajati							
Mother's work (last year, time varying)	0.10 (0.42)	0.16 (0.60)	0.16 (0.52)	-0.61 (-0.68)	0.17 (0.52)	0.11 (0.33)	1.03 (0.79)
Panel E. Low status (Dalit, Terai janajati)							
Mother's work (last year, time varying)	-0.44 ** (-3.10)	-0.35 * (-2.47)	-0.68 ** (-2.58)	-0.19 (-0.40)	-0.97 ** (-3.06)	-1.06 ** (-3.12)	-0.34 (-0.37)

+ 0.10 \* 0.05 \*\* 0.01 \*\*\* 0.001; two-tailed tests

Table shows effect estimates with t-statistics in parentheses.

All models include all controls shown in Table 1.