CREB Working Paper No. 03-15

The Impact of Remittances and Parental Absence on Children's Wellbeing in Rural Punjab

Nida Jamil

Centre for Research in Economics and Business
Lahore School of Economics

Centre for Research in Economics and Business (CREB)

Lahore School of Economics

Intersection Main Boulevard Phase VI, DHA and Burki Road
Lahore 53200, Pakistan
Tel: 042-36561230; 042-36560936
Email: creb@lahoreschool.edu.pk

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Nida Jamil
Teaching Fellow, Lahore School of Economics

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Lahore School of Economics
Intersection of Main Boulevard, Phase VI, DHA, and Burki Road
Lahore 53200, Pakistan
Tel.: +92 42 3656 1230
www.creb.org.pk
creb@lahoreschool.edu.pk

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Preface

The Centre for Research in Economics and Business (CREB) was established in 2007 to conduct policy-oriented research with a rigorous academic perspective on key development issues facing Pakistan. In addition, CREB (i) facilitates and coordinates research by faculty at the Lahore School of Economics, (ii) hosts visiting international scholars undertaking research on Pakistan, and (iii) administers the Lahore School's postgraduate program leading to the MPhil and PhD degrees.

An important goal of CREB is to promote public debate on policy issues through conferences, seminars, and publications. In this connection, CREB organizes the Lahore School's Annual Conference on the Management of the Pakistan Economy, the proceedings of which are published in a special issue of the *Lahore Journal of Economics*.

The CREB Working Paper Series was initiated in 2008 to bring to a wider audience the research being carried out at the Centre. It is hoped that these papers will promote discussion on the subject and contribute to a better understanding of economic and business processes and development issues in Pakistan. Comments and feedback on these papers are welcome.

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Abstract

This study examines the impact of migration on children left behind in terms of schooling and child labor by quantifying both aspects of migration, i.e., remittances and parental absence. In particular, it focuses on cases where the father is the migrant. The study is based on a panel analysis of data drawn from the Multiple Indicator Cluster Survey for 2007 and the Privatization in Education Research Initiative survey for 2011. The sample comprises 820 households with children aged 5–14 years.

The study uses the instrumental variable approach as well as household fixed effects and random effects to resolve any possible endogeneity. Exogenous variations in parental absence and remittances sent by migrants from a given kinship network are employed as instrumental variables. The study finds that (i) an increase in remittances of PRs 1,000 ($10) raises the probability of being enrolled in school by 13 percentage points, and (ii) the absence of the father increases the probability of a child engaging in labor by 25 percentage points.

Remittances, while benefiting the household, emerge as an incomplete substitute for the absent father. This effect is particularly strong for children who already lack a mother due to death or divorce. The mother's presence, however, compensates fully for the father's absence. Moreover, the father's absence has worse consequences for girls in terms of increased child labor, where even the money coming in through remittances is more likely to be spent on boys.

The Impact of Remittances and Parental Absence on Children's Wellbeing in Rural Punjab

1. Introduction

This paper examines the impact of migration on children's wellbeing from the perspective of child labor and education in rural Punjab. While most other studies focus on the impact of remittances and migrant-parental absence as separate aspects, this study choses to combine the two with respect to their collective effect on children left behind.

The World Bank reports that, as of 2012, 22.3 percent of Pakistan's population still lives below the poverty line; the country is also ranked among one of the world's lowest spenders on education (around 2 percent of its GDP).[1] According to International Labour Organization (ILO) estimates, over 200 million children in the world are engaged in child labor, while over 8 million are involved in hazardous work. In Pakistan, 3.8 million children aged 5–14 years are economically active and a third of them have never enrolled in school even once during their lives.[2]

In most cases, such children engage in child labor to help support their families. This can include domestic labor, street vending, farm labor, and other work in the formal and informal sectors. Milligan and Bohara (2007) note that poor households resort to child labor and reduced schooling as a way of facing socioeconomic shocks. In such cases, child labor displaces education, thereby lowering future returns for children over their lifespan. Ultimately, this has a negative impact not only on the individual child, but also on the household and on society in general.

This paper asks whether migration can help in such a bleak situation. It focuses on cases where the father has migrated for work, thus looking at the net impact of remittances and the father's absence on the child. Migration in this context includes both international and domestic migration, both of which imply, from the child's perspective, that the father is absent. The impact of migration is likely the twofold impact of

[1] http://info.worldbank.org/etools/docs/library/237384/toolkitfr/pdf/facts.pdf
[2] http://www.ilo.org/islamabad/areasofwork/child-labour/lang--en/index.htm

the positive benefits associated with remittances and the negative effect of parental absence.

Assessing the impact of either component separately—which is what much of the existing literature does—fails to provide a holistic picture of the impact of migration on children. While remittances help ease the financial constraints of poor households, the absence of a family member (particularly the father) may create an excess burden of work along with emotional consequences, leaving children worse off overall. Thus, while remittances ease the budget constraint, leading to a decrease in child labor and an increase in schooling, parental absence may reduce the overall positive impact.

This paper asks to what extent the effect of migration can be decomposed into the monetary benefit of remittances and the loss resulting from the father's absence. Formally, a panel analysis is carried out using the instrumental variable (IV) approach, combined with household fixed effects (HFE) and with random effects (RE), focusing on children aged 5–14 years in rural Punjab.

The paper deals explicitly with the problem of endogeneity with respect to remittances and the father's absence by using separate kinship group IVs for both. For the latter, the kinship network refers to the fraction of households belonging to a given kinship group, in a given district, that include a migrant, excluding household *j*. Similarly, for remittances, the kinship network refers to the fraction of households belonging to a given kinship group, in a given district, that receive remittances, excluding household *j*. These instruments help exploit the variation over time in the migrant network to which a particular household belongs. This can lead to exogenous variations in the likelihood of migrating as well as the amount of money being remitted. Combining the IV approach with RE and HFE increases the reliability of the study's results.

The results indicate that the inflow of remittances benefits the school enrollment of the child. After controlling for household time-invariant factors, an increase in annual remittances of PRs 1,000 (or $10) increases the probability of being enrolled in school by 13 percentage points. The money coming in through remittances also reduces child labor by lowering the opportunity cost of schooling because it decreases the marginal utility of income.

In this context, the results indicate that, in developing countries such as Pakistan, remittances might be spent not only on consumption goods, but also on productive investments in human capital development. On the other hand, the father's absence has a strong impact on child labor, increasing the probability of the latter by 25 percentage points. The money coming in from remittances does not necessarily offset the negative impact of the father's absence, mainly because the child is now subject to a larger work burden and to less parental monitoring.

Although the inflow of remittances does not completely eliminate the effect of the father's absence, the study's results indicate that the mother's presence can offset this impact when she is there to share the burden of work and monitor the child.

There is also a gender differential when one looks at how the money being remitted is spent: boys' schooling is favored over that of girls. For every PRs 1,000 (or $10) in remittances, the probability of boys being enrolled in school increases by 6 percentage points; the corresponding result for girls is insignificant.

Remittances also tend to favor boys over girls in terms of reducing child labor. The results suggest that, as more money comes in, boys are substituted away from child labor toward schooling—perhaps because they are seen as future breadwinners for their family. However, the father's absence affects both genders in terms of reduced schooling. Girls are more likely to engage in household work, but both genders may be compelled to work outside the home, particularly in cases where the mother is absent.

The paper is organized as follows. Section 2 briefly reviews the existing literature. Section 3 develops the study's theoretical model. Section 4 describes the datasets used. Section 5 presents some descriptive statistics. Sections 6 and 7 describe the methodology used, followed by a discussion of the results obtained. Section 8 concludes the paper.

2. Literature Review

On the applied side, various interesting studies have been carried out to assess the impact of migration on the household of origin, particularly on the children the migrant leaves behind. Most of this work focuses on the impact of migration through remittances or parental absence alone.

The reported impact of remittances and parental absence is fairly mixed. While much of the literature is consistent with the idea that remittances ease the household's financial constraint, thereby improving the situation of left-behind children in terms of increased schooling and reduced child labor, some studies argue that remittances may increase child labor if the money received gives the household a chance to start a new business. Similarly, others conclude that parental absence compels children at home to shoulder an excess work burden; this, along with the lack of monitoring, leaves them worse off. Finally, some studies point out that migrant parents may be more aware of the importance of education and thus encourage their children's schooling.

Hanson and Woodruff (2003) examine the impact of remittances on educational attainment in Mexico in terms of accumulated schooling. They ask whether children with an external migrant at home complete more years of schooling than their peers. Using cross-sectional data from the Mexico Census of Population and Housing for 2000, the authors treat household migration behavior as endogenous and employ the interaction between historical state migration patterns and household characteristics as an IV. They conclude that remittances do increase schooling for left-behind children, but only in households where the parents are not highly educated.

In another study on Mexico, Bayot (2007) looks at whether remittances reduce the probability of child labor back home, using the Mexican Migration Project dataset. Remittances and child labor decisions are determined simultaneously if the belief that the migrant sends money home out of altruism holds. This makes remittances a function of household welfare, which includes child labor and also leads to the problem of simultaneity bias. The author uses the full information likelihood method to correct for this. The study concludes that remittances improve the household's quality of life, giving it the opportunity to send its children to school rather than to work. This significantly reduces the probability of their being involved in child labor.

Many studies have attempted to take this a step further and disentangle the impact of youth remittances by gender. In a study on Jordan, Mansour, Chaaban, and Litchfield (2011), after controlling for the socioeconomic determinants of schooling, conclude that remittances improve educational attainment and attendance. This result holds more strongly

for males than for females, given that, in most developing countries, the former tend to be the household's breadwinners, and parents thus have incentive to invest more in them. Similarly, Vogel and Korinek (2012) conclude that, in Nepal, remittances are spent disproportionally on boys. Girls benefit only if they belong to a higher-income household.

However, Amuedo-Dorantes and Pozo (2010) draw the opposite conclusion in a study on the Dominican Republic, observing that remittances increase school attendance among girls as well as among children of secondary school-going age. Mansuri (2006) uses migration networks as an IV to control for simultaneity bias. Her work on rural Pakistan shows that remittances reduce gender inequalities in access to schooling, and have a greater and significant impact on girls' schooling in particular.

Another branch of the literature focuses on the negative aspect of migration and argues that the positive effect of remittances is, in many cases, offset by the negative effect of the migrant's absence, especially if both or one of the child's parents is a migrant (Grogger & Ronan, 1995; Lang & Zagorsky, 2001). In Sri Lanka, for example, many mothers migrate overseas to earn a better livelihood for their families—a fact of which their children are often aware. However, even in such cases, parental absence, especially of the mother, generates loneliness and abandonment among left-behind children. Parents may bring back gifts on their visits home, but in the long term, a sense of family disunity and lack of communication between child and mother may leave the former psychologically traumatized, with adverse consequences for his or her schooling performance (Ukwatta, 2010).

The absence of a migrant father often means that children have no male role model to look up to. This can also have distressing consequences, leading to social, cultural, as well as psychological pressure. In a study on Swaziland, Booth (1995) finds that the mothers of children whose fathers had migrated overseas complained they could not manage their children's behavior or schooling. Further, with one parent—in most cases, the father—gone abroad, the mother's workload at home increases, leaving her less time to spend with her children and making her more "unavailable" to them.

Halpern-Manners (2011) examines the impact of migration on youth in Mexico, controlling for the selectivity bias using an endogenous switching

regression method. The study concludes that migration has a significant and negative impact on children's educational attainment. Even though it eases financial constraints, it also leads to a trans-nationalized perception of the opportunity set, increasing children's expectations about foreign markets and future mobility, and of their chances of getting a job even if they are not well educated. They may already expect to earn more than they would in their place of residence and decide not to study further on the assumption that migration is bound to improve their present situation.

Milligan and Bohara (2007) point out that remittances can also create a "moral hazard problem" if families who receive remittances choose to invest the money in risky business projects, compelling their children to seek work rather than to study in the migrant's absence.

The study closest to our approach is Amuedo-Dorantes and Pozo (2010), who assess the impact of remittances and migrant absence on children left behind. The authors focus on migration from the Dominican Republic to the US. Initially, they divide their data into migrant and nonmigrant households. The dataset is such that most of the children in the sample—and most children whose families receive remittances—belong to a nonmigrant household, that is, one that receives remittances from a relative who is not considered part of the immediate family.

The first part of the analysis deals with nonmigrant households, which allows the authors to isolate the impact of remittances from that of migrant absence. The analysis is then repeated to include children living in migrant households and the results compared. As an IV, the study uses US unemployment rates for 1999/2000 along with average real earnings for those areas (in the US) where Dominican migrants have settled. They conclude that remittances have a positive impact on schooling, but observe that this declines on taking into account the negative impact of migration; child labor also increases concomitantly. Children may engage in market activities to support migration expenses, leaving them less time for school. They may also have to assume responsibility for household chores in the absence of an adult family member. Moreover, if children believe they too will migrate in the future, they may drop out of school on the assumption that they will end up migrating to a place that offers fewer rewards for education.

This paper aims to build on the present literature in two important ways. First, it seeks to identify the total effect of migration, i.e., the collective

impact of remittances and parental absence. It separates these two effects quantitatively, which most other studies do not. Unlike Amuedo-Dorantes and Pozo (2010), all the recipient households in our sample include a migrant member. Moreover, the authors use one IV for both samples, although differences between samples can be endogenous. The present study makes a stronger case by using two separate IVs: one for remittances and one for the father's absence. Amuedo-Dorantes and Pozo do not distinguish between migrant household members, whereas we focus on migrant fathers per se to capture the impact of parental absence.

Second, the study looks at both dimensions of children's wellbeing: child labor status and schooling status. In doing so, it deals explicitly with the issue of endogeneity with respect to remittances and the father's absence. The study builds a panel analysis using an IV approach combined with HFE, which, to the best of the author's knowledge, has not been done.

Finally, the study uses kinship networks as an instrument on the assumption that the close association among kinship groups (which can include migrants) is likely to serve as a source of knowledge concerning migration and remittances: this, in turn, may encourage prospective migrants. Combining this with HFE and RE increases the reliability of the results. Specifically for the case of Pakistan, this study is the first to identify the joint impact of remittances and parental absence in a quantitative sense.

3. Theoretical Model

This section develops a model to illustrate the theoretical relationship between remittances, parental absence, child labor, and schooling. Following Baland and Robinson (2000), Ebeke (2009), and Wolff (2006), the study constructs a unitary household model in which households are assumed to maximize their utility.

3.1. The Basic Model

To begin with, we assume that the economy comprises N identical households, each of which has two members, an adult and a child. This is an inter-generational model with two time periods, $t = 1$ and $t = 2$. Both parent and child live for two time periods: the parent for $t = 0$ and 1, and the child for $t = 1$ and 2. β is the rate of discount, which takes the values of $0 < \beta \leq 1$. The parent works in $t = 1$ only, thus supplying one

unit of labor, denoted by P_1. Any initial household wealth is represented by P_0. Thus, in $t = 1$, parental income is the aggregate of any wage or income earned and any wealth inherited, i.e., $A = P_0 + P_1$. R represents remittances, which is the wage premium for migrating. Thus, in $t = 1$, the parent works at home and earns A, or migrates and earns $A + R$. We assume that R is adjusted for any expenses incurred by migration and living away from home.

In the first period, the child can work as well. Any time not spent working is spent in school since child labor and schooling are simultaneous decisions. Assuming that the child is endowed with one unit of time, the parent needs to divide the child's time between labor (l) and schooling ($1 - l$). We further assume that the only cost of schooling is the forgone wage or the opportunity cost. For simplicity's sake, the child's wage is 1 if she works in period 1.

In the second period, $t = 2$, the child grows up and assumes the same role as the adult in $t = 1$; she supplies one unit of labor and earns w, which is a function of the amount of schooling attained, i.e., $w[1 - l]$. Following Baland and Robinson (2000), $w[1 - l]$ is concave. The parent does not work in the second period as we assume that they die after $t = 1$.

Using c_1 and c_2 to represent the household's consumption in $t = 1$ and $t = 2$, respectively, its utility function is as follows:

$$U(c_1, c_2) = U(c_1) + \beta U(c_2)$$

We distinguish between two types of cases in determining the impact of remittances on child labor and schooling. In the first case, we assume a functioning credit market; in the second, we do not. Note that the household decision in this model is unitary and the decision to migrate is treated as exogenous.

3.2. The Credit Market Case

In this case, the household can borrow and lend freely in the credit market. The parent decides how best to allocate the child's time between child labor (l) and schooling ($1 - l$) as well as the optimal level of saving (s) for $t = 2$:

$$Max\ U(c_1) + \beta U(c_2)$$

where $c_1 = (A + R) + l - s$ and $c_2 = w[1 - l] + s$

The first-order conditions (FOCs) with respect to l and s are, respectively:

$$U'(c_1) = \beta w'[1 - l]\, U'(c_2) \quad (1)$$

$$U'(c_1) = \beta U'(c_2) \quad (2)$$

Simplifying this, equation (3) allocates the child's time between child labor and schooling such that her utility is maximized:

$$w'[1 - l] = 1 \quad (3)$$

It is important to note that R is not part of this equation. In the presence of a credit market, the household can borrow against the child's future earnings to finance her education. The household maximizes by choosing a level of education $1 - l$, which sets the marginal return on education in period 2 equal to the marginal return on labor in period 1. This suggests that the first-period budget constraint is not binding: the parent can invest the optimal amount, borrowing from the child's future earnings to finance her current education. Thus, the total budget available from the parent's income source does not make a difference.

There is no β in this condition because borrowing occurs at a zero interest rate. Thus, a utility-maximizing household can always borrow from its income in period 2 and spend it all if the β term is very low.

3.3. The No-Credit-Market Case

Again, the household seeks to maximize its utility:

$$Max\ U(c_1) + \beta U(c_2)$$

where $c_1 = (A + R) + l$ and $c_2 = w[1 - l]$

The FOC is:

$$\beta U'(c_2)\, w'[1 - l] = U'(c_1) \quad (4)$$

Hence,

$$\frac{U'(c_1)}{\beta U'(c_2)} = w'[1 - l] \quad (5)$$

Note that an increase in R raises c_1, which decreases $U'c_1$ as U is assumed to be concave. Therefore, the left-hand side must decrease as well. Since we also assume w to be concave, $1 - l$ must increase. In the absence of a credit market, an increase in remittances leads to an increase in schooling. This case is particularly applicable here as the study focuses on rural Punjab, which does not have a well-developed credit market. In other words, the first-period budget constraint is binding on the schooling decision, but is eased by the remittances received.

The model shows that the child's utility depends on her consumption in both periods, along with the schooling and labor decision. It also predicts that child labor l decreases with remittances, thus increasing schooling $1 - l$. When the results of the no-credit-market case are compared to those of the credit market case, we see that remittances play an important role in reducing child labor and increasing schooling in the absence of a credit market.

The next section incorporates parental absence into the model and combines it with the results above to determine the impact of both channels of migration.

3.4. The Case Incorporating Parental Absence

Let D be the distance that negatively affects the return on education, that is, when the parent is not there to supervise the child's schoolwork. We assume that the parent realizes that the farther he is from the child (the higher D), the less effectively he can monitor her performance.

The child's schooling may also suffer if the parent had helped her with this in the past but, having migrated, can do so no longer. Here, a higher D means that the parent visits home less frequently. Assuming there is no credit market, let the return on education be $w\left(\frac{1-l}{1+D}\right)$. Thus, the problem is:

$Max\ U\ (c_1)\ +\ \beta U\ (c_2)$

where $c_1 = (A + R) + l$ and $c_2 = w\left(\frac{1-l}{1+D}\right)$

The FOC then yields:

$$U'(c_1) - \beta U'(c_2)w'(1-l)\left(\frac{1}{1+D}\right) = 0 \quad (6)$$

$$w'[1-l] = \frac{(1+D)U'(c_1)}{\beta U'(c_2)} \quad (7)$$

Thus, if the parent migrates, R increases, which has the same effect as above in equation (5): a decrease in the right-hand side is balanced by a decrease in the left-hand side, therefore increasing $1 - l$. However, migration will now also raise D, in turn increasing the right-hand side and causing the left-hand side to increase, which will do so only when $1 - l$ (schooling) decreases. Thus, while remittances increase schooling, introducing the impact of parental migration reduces schooling. The net effect is ambiguous because the direction of bias remains uncertain.

Next, we apply this model where the migration decision is treated as a choice variable rather than exogenous.

3.5. Migration as a Choice Variable

In this case, we have the same utility maximization problem:

$Max\ U\ (c_1)\ +\ \beta U\ (c_2)$

where $c_1 = A + R*M + l$ and $c_2 = \frac{w[1-l]}{(1+\gamma M)}$

M is a dummy variable if the parent migrates and 0 otherwise; γ is a parameter. A higher γ would mean that migration has a larger impact in terms of placing an excess burden of work on the child and affecting her psychological welfare (and thereby her human capital development). Since migration is now a choice variable, the parent will migrate only if the utility derived from migrating is greater than that from *not* migrating. In other words, the parent migrates if

$$U\ (M = 1) > U\ (M = 0) \quad (8)$$

Hence,

$$U(A + R + l) + \beta U\left(\frac{w[1-l]}{(1+\gamma M)}\right) > U(A + l) + \beta U(w[1-l]) \quad (9)$$

Rearranging gives us

$$U(A+R+l)-U(A+l)>\beta U(w[1-l])-\beta U\left(\frac{w[1-l]}{(1+\gamma M)}\right) \quad (10)$$

The parent is thus more likely to migrate if R (the financial return on migration) increases or if the γ (the negative effect of migration on the child) decreases to hold this inequality. The parent will assess both the positive and negative consequences of migration and migrate only if the benefits exceed the cost.

The FOC yields

$$U'(c_1)=\frac{\beta U'(c_2)}{1+\gamma M} \quad (11)$$

Again, as with the cases presented above, when R increases, so does c_1, which causes $U'(c_1)$ to decrease. To balance this out, the right-hand-side variable should decrease, which will happen only when c_2 increases or, in other words, when l decreases. Thus, an increase in remittances will cause child labor to fall and schooling to rise. Similarly, the greater the negative impact of migration (the greater is γ), the smaller will be the right-hand side. To balance this out, the left-hand side must decrease, which happens when l increases. Hence, migration increases child labor and reduces schooling.

The effect of migration is ambiguous when we incorporate both remittances and parental absence in the model. This paper builds on the existing literature by quantifying both effects empirically. Note that the above model can be extended by making it an overlapping-generation model in which the child becomes a parent in turn and so on. This is, however, beyond the scope of the study.

4. Data

Two datasets were used to create a panel. The first was taken from the Punjab government's Multiple Indicator Cluster Survey (MICS), which was conducted at the tehsil and district level in 2007. The second dataset was from a survey funded by the Open Society Institute's Privatization in Education Research Initiative (PERI). Conducted in 2011 by the Lahore School of Economics in collaboration with the Punjab Bureau of Statistics,

the PERI survey sampled eight rural tehsils of the province in seven districts. The dataset includes 1,024 households, which were also part of the MICS.[3]

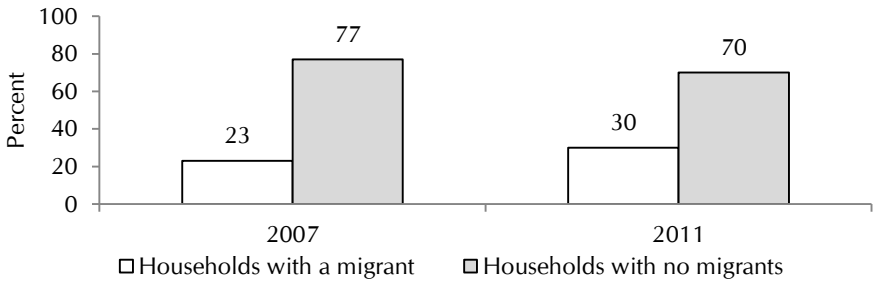
For the study's purposes, children fall within the 5–14-year age bracket. After cleaning the data and taking into account any missing information and incomplete surveys, a panel of 820 households remained. The panel was constructed at the household level, allowing MICS households to overlap with those from the PERI dataset.

However, the same children within the household may not overlap because the panel was not constructed at the individual level. Thus, it was not necessary for one child to remain part of the analysis in both rounds. Any child that fell within the 5–14-year age bracket at the time of the survey was included in the sample for that particular year. In our analysis, 1,382 children fell within this age bracket in 2007 and 1,581 children fell within the age bracket in 2011 (based on 820 households). About 52 percent of these children overlapped and were thus part of both rounds; the remaining children were part of either the MICS or PERI datasets.

5. Descriptive Statistics

Figure 1 shows what proportion of households included a migrant in 2007 and 2011. Clearly, migration increased between these years.

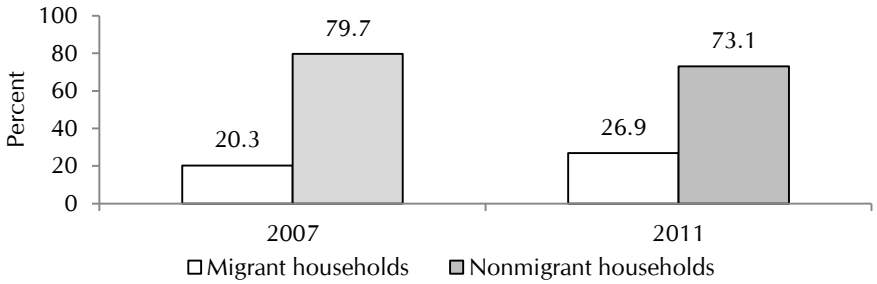
Figure 1: Migrant and nonmigrant households, 2007 and 2011



[3] See http://www.creb.org.pk/Data%20PERI. The districts covered include Bahawalpur, Faisalabad, Jhang, Hafizabad, Nankana Sahib, Khanewal, and Chakwal.

Figure 2 gives the distribution of children who belonged to a migrant or nonmigrant household in 2007 and 2011.

Figure 2: Children from migrant and nonmigrant households



Scrutinizing the data to find the percentage of children whose fathers were present yields the results given in Figure 3. The father's absence is explained by (i) migration, (ii) the dissolution of the family unit as a result of separation or divorce, and (iii) death.

Figure 3: Distribution of children by the father's presence

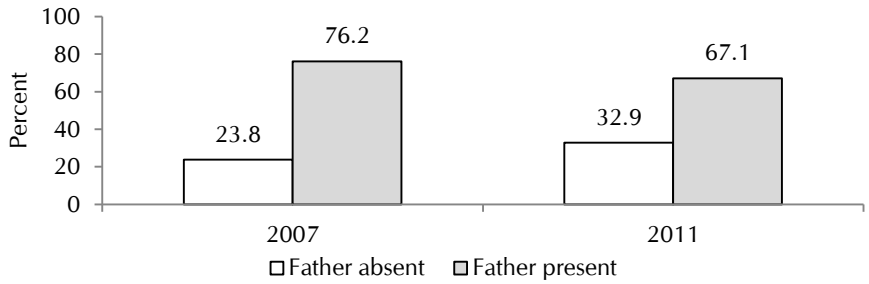


Figure 4 gives the distribution of children by their mothers' status.

Figure 4: Distribution of children by the mother's presence

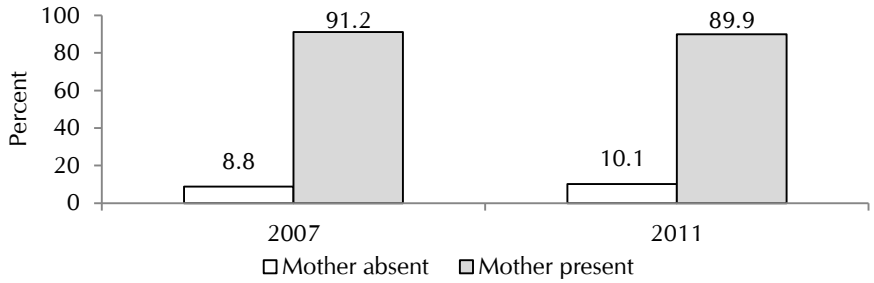


Figure 5 shows that migration does not account for the mother's absence in either year, which leaves either death (applicable in most cases) or divorce/separation.

Figure 5: Reasons for the mother's absence as a percentage of children whose mother is absent

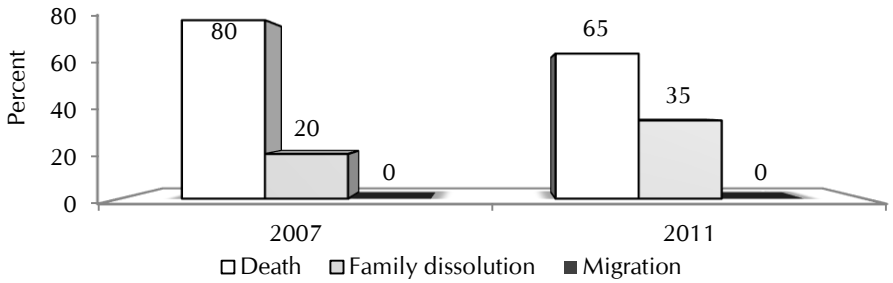


Table 1 gives the percentage of recipient households and the distribution of remittances between domestic and international sources. The table indicates an increase in the number of households receiving remittances, the bulk of which originate within Pakistan.

Table 1: Distribution of households by receipt and type of remittances

	Percentage of households	
Remittances received	**2007**	**2011**
No	84.00	81.00
Yes	16.00	19.00
Type of remittances		
Domestic remittances only	75.00	73.68
International remittances only	18.75	21.05
International and domestic remittances	6.25	5.27

Source: Author's calculations.

Table 2 shows that, between 2000 and 2011, the number of children only going to school increased. "Work" includes any labor carried out at home as well as outside. The "work and school" and "work only" categories register a decline for both genders.

Table 2: Distribution of children by activity (percentage)

	2007		2011	
Activity	**Boys**	**Girls**	**Boys**	**Girls**
School only	65	25	70	29
Work and school	23	65	20	62
Work only	8	10	6	8
Neither	4	0	4	1

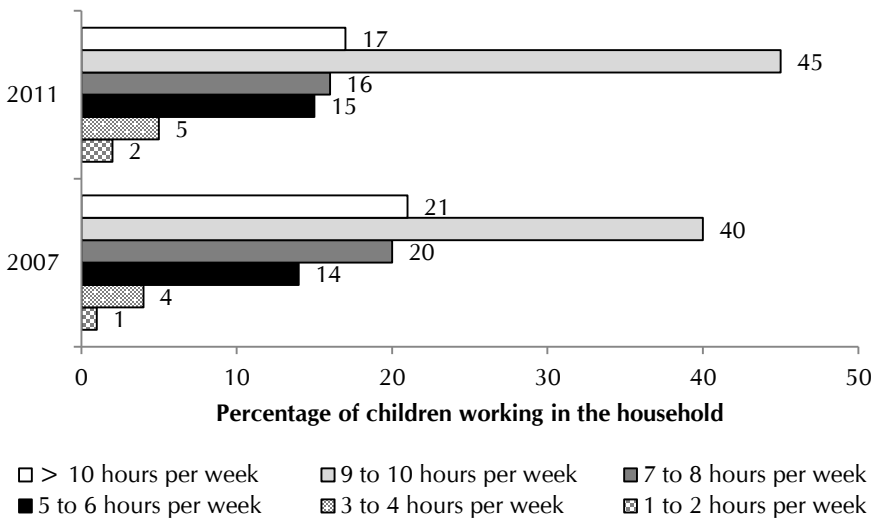
Source: Author's calculations.

Figure 6 shows that, of the total number of children working, 11 percent were engaged in work outside the home (whether paid or unpaid) in 2007; this declined to 7 percent in 2011.

Figure 6: Children engaged in labor outside the home as a percentage of the total number of working children

Figure 7 shows the percentage of children engaged in household work (i.e., those spending more than 10 hours a day carrying out household chores).

Figure 7: Percentage of children engaged in labor within the home by hours worked in the last week



6. Methodology

We begin with a simple model looking at the impact of remittances and father's absence on child welfare. Since the dependent variables are binary, we use a linear probability model (LPM) to estimate the

specifications below. An LPM not only allows the coefficients to be compared across groups and models, but it also enables intuitive interactions. Further, it has the advantage of giving coefficient results that are very close to their discrete counterparts where dummy variables are concerned. The LPM also works well in cases where one wants to estimate the average effect of a variable on any outcome of interest (Angrist, 1999).

The main issue in using the LPM is that the predicted values might not fall between 0 and 1. However, the reason for not using a probit or logit model instead of the LPM is that the probit does not allow one to use HFE while the logit does not allow one to use the IV approach. This implies that one cannot use the identification strategy of combining the IV approach with HFE. The study has already established that this combination represents an important contribution to the literature on migration and increases the reliability of the results compared to what one would obtain if only one of these techniques was used with either a logit or probit model.

6.1. Main Specification

Based on the theoretical model, this specification will test the first hypothesis, which expects remittances to have a positive impact on child welfare, that is, by reducing child labor and increasing school enrollment once the household's financial constraint is eased. On the other hand, the father's absence is expected to have a negative impact on child welfare by increasing child labor (placing an excess burden of work on the child) and reducing school enrollment (due to the lack of monitoring).

$$Y_{iht} = \beta_0 + \beta_1 X_{iht} + \beta_2 Z_{ht} + \beta_3 W_{ht} + \beta_4 remittances_{iht} + \beta_5 father\ absent_{iht} + \varepsilon_{iht} \quad (1)$$

where the child is denoted by the subscript *i*, the household by *h*, and time by *t*. Y_{iht} is the dependent variable and takes four forms:

1. $Schooling_{iht}$ is a dummy variable for child *i* belonging to household *h* if she is currently enrolled in school at time *t*. Hence, if the child was "attending school" at the time of the survey, the variable equals 1 and 0 otherwise.
2. $Overall\ child\ labor_{iht}$ is a dummy taking the value of 1 if child *i* has engaged in any kind of work, whether within or outside the home, in

the past week, and 0 otherwise at time *t*. We follow the definition of child labor adopted by Binci and Giannelli (2012) where a child is deemed to have engaged in labor if she answers "yes" to at least one question relating to the past seven days' work. Thus, if child *i* has worked outside her home for someone who is not a household member or helped with household chores or engaged in any family business (such as selling goods on the street) in the last week, the dummy equals 1 and 0 otherwise.[4]

Table 2 shows that overall child labor includes both household and nonhousehold work. The variation in this variable stems from the fact that many respondents reported that their child was going to "school only," indicating that she was not involved in any kind of work within or outside the household.

This may be because people tend to perceive child labor as a form of work that spans a substantial period of time. Helping an adult with any form of work inside or outside the household may not be seen as child labor if the child works for only a few hours. As Figure 7 shows, most children reportedly engaged in household work usually cited more than six hours per week. Only a few reported working less than five hours a week, thus supporting this argument.

3. *Household child labor*$_{iht}$ is a dummy taking the value of 1 if the child has engaged in any kind of household chore for more than 10 hours in the last week and 0 otherwise.[5]
4. *Nonhousehold child labor*$_{iht}$ is a dummy taking the value of 1 if the child has engaged in any kind of work outside the home—that is, worked for someone who is not a member of the household—in the last week and 0 otherwise.

Schooling and child labor decisions are a function of household and individual characteristics. X_{iht} is a vector of the child's characteristics at a particular point in time *t* where child *i* belongs to household *h*. Z_{ht} are the household characteristics of a given household *h* at a particular point in time *t*. W_{ht} are the *biraderi* (clan) characteristics of a given household *h* at a particular point in time *t*.

[4] UNICEF considers any work done inside the household to be a part of child labor.
[5] This is as defined in the ILO's global estimates of child labor (see footnote 2).

Remittances is the monetary value (in PRs '000) of the amount of remittances received in the past year at time *t*. This includes both domestic as well as international remittances received by household *h*. We use remittance amounts rather than logs because around 80 percent of the households in the sample do not receive remittances, i.e., their remittance value is 0 and the log of 0 is not defined. Taking logs would mean dropping a major portion of the sample.

Father absent is a dummy taking the value of 1 if the father of child *i* is absent at time *t* and 0 otherwise. For this study, the father may be absent either as an international or domestic migrant. We cannot identify each migrant's exact location, but most fathers are likely to have migrated within Pakistan. Their distance from home and hence the frequency of their visits is something we cannot measure.

The study considers both effects of migration to assess its overall impact on the child. The theoretical model presented predicts that the positive effect of remittances is canceled out by the negative effect of migration due to parental absence, which we take to mean the father's absence. This is simply because the sample includes only male migrants (fathers) and not female migrants (see Figure 5).

Finally, ε_{iht} is the time-varying or idiosyncratic error term that represents unobservables that might affect the dependent variable (see Appendix 1 for a detailed discussion of the controls and their summary statistics).

6.2. Specification Issues

Simple ordinary least squares (OLS) will yield biased estimates. The error term and explanatory variables may be correlated as a result of omitted variables and selection bias as well as reverse causality. This is discussed below.

6.2.1. Endogeneity of the Remittances and Father Absent Variables and Selection Bias

Ideally, one would want to generate unbiased estimates by looking at the causal impact of remittances between recipient households and their outcomes in the counterfactual scenario when the same households do not receive remittances. However, since the households that receive remittances or have a parent absent due to migration are "self-selected"

(based on their unobservable characteristics), households without migrants or those that do not receive remittances do not represent a suitable counterfactual.

Remittances are expected to ease the household's financial constraint, increasing schooling and reducing child labor back home. However, in situations where the migrant parent values education to the extent that he has chosen to migrate in order to provide better schooling for his child, it may be schooling that causes the inflow of remittances (e.g., a father might remit money home to reward a child who is doing well at school). In this case, schooling determines remittances, which creates a simultaneity bias in the estimates.

Hanson and Woodruff (2003) give the example of a father who has lost his job due to poor economic conditions and decided to migrate to seek better employment. Such adverse conditions may also force children back home to drop out of school and compensate for the father's absence by taking on extra household chores. They also argue that poorer households may be less likely to send a member abroad and, at the same time, less likely to send their children to school. Hence, this creates bias in a simple OLS estimation.

The household's opportunities and connections can also bias estimates. Even unobservable characteristics such as the child's inherent ability, parents' perception of schooling, and the motivation they provide their children can affect the left-hand-side variables, creating endogeneity in the estimates. Adding the relevant controls does not solve the problem entirely because the unobservable variables will remain a concern. Thus, using OLS with observables added as controls will still yield biased estimates (see Appendix 1).

Given that adding controls does not address all the issues, we combine the IV approach with both RE and HFE, instrumenting the endogenous variables to present two sets of results. The following section explains in detail how these approaches enable better estimates than simple OLS.

6.2.2. IV Approach with RE and HFE

In this case, kinship (or biraderi) networks serve as the instrument. We create separate IVs both for remittances and the father's absence. The kinship network variable represents the fraction of households belonging

to a given kinship group in a given district that receive remittances (excluding household *j*) at a given point in time, t_0:

Remittances kinship or biraderi IV =

$$\frac{\text{Number of households belonging to biraderi } B \text{ from district } D \text{ that receive remittances at time } t, \text{ excluding household } j}{\text{Number of households belonging to biraderi } B \text{ from district } D \text{ at time } t}$$

Biraderi *B* refers to the various types of kinship and district *D* refers to the various districts. Thus, for *remittances*, the kinship network IV refers to the fraction of households belonging to a given kinship group in a given district that receive remittances, excluding household *j*. For the *father absent* variable, the kinship network IV refers to the fraction of households belonging to a given kinship group in a given district that include a migrant member, excluding household *j*.

These instruments help exploit the variation over time in the migrant network to which a particular household belongs. This leads to exogenous variations in the likelihood of migrating as well as the amount of money being remitted. Although the father may be absent for several reasons, one uses the migrant biraderi IV to capture specifically the migration effect of his absence or the late average treatment effect (LATE). This entails the following first stage:

$$Remittances_{iht} = \mu_0 + \mu_1 X_{iht} + \mu_2 Z_{ht} + \mu_3 W_{ht} + \mu_4 remittances\ biraderi\ IV_{ht} + \mu_5 migrant\ biraderi\ IV_{ht} + \varepsilon_{iht} \quad (2)$$

$$Father\ absent_{iht} = \mu_6 + \mu_7 X_{iht} + \mu_8 Z_{ht} + \mu_9 W_{ht} + \mu_{10} remittances\ biraderi\ IV_{ht} + \mu_{11} migrant\ biraderi\ IV_{ht} + \varepsilon_{iht} \quad (3)$$

Next, we use the predicted values of *remittances* and *father absent* from the first stage in the original specification. Hence, the second stage becomes:

$$Y_{iht} = \beta_0 + \beta_1 X_{iht} + \beta_2 Z_{ht} + \beta_3 W_{ht} + \beta_4 remittâncs_{iht} + \beta_5 father\ âbsent_{iht} + \varepsilon_{iht} \quad (4)$$

The intuition behind constructing kinship network variables is that people who belong to the same biraderi and live in the same district are likely to associate closely with each other—thus, the presence of migrants in this

network might motivate others to migrate and send remittances to their family and friends back home. Current migrants often prove to be a source of information and help (providing accommodation or job seeking assistance) for prospective migrants. Kinship association may also encourage remittance inflows when households belonging to the same biraderi in the same district see others receiving remittances and urge their own migrant members to do the same.

The study combines the IV estimates in turn with HFE and with RE and compare the results to determine their robustness. RE is used when there is no omitted variable problem in the specification or when the omitted variables are believed to be uncorrelated with the model. This produces unbiased estimates and the smallest possible standard errors if all the data available is used (Williams, n.d.). To this, one adds a set of relevant controls when estimating the specification.

The key concern with using RE is that it will estimate the effects of time-invariant variables, but yield biased results if one does not control for omitted variable bias. Hence, the study only presents these results as a robustness check to support the main argument, while basing the discussion and results on HFE.

HFE is appropriate when omitted variable bias presents a problem. In this case, the subject is the control group itself, that is, household *j*. Certain time-invariant factors may affect the household at one time or another and will continue to affect it in the same way at later points (i.e., the effect remains constant). Using HFE controls for time-invariant unobservable characteristics within a household.

6.2.3. Validity of the IV

Using HFE along with the IV strengthens the validity of the argument in that the IV deals with variations over time in the kinship network. These are quasi-random variations: someone might migrate to a particular overseas destination that offers good economic opportunities and send money to his kinsmen, in turn encouraging others to follow suit. Alternatively, in other networks, the majority of migrants may be located in poorer areas where they earn less and can only send smaller amounts home. Such changes are exploited by the change in the fraction of biraderi networks.

Although biraderis will likely differ from one another in terms of entrepreneurial skills, ability, and connectivity, the biraderi itself remains constant over time for a given household. Using HFE controls for the different dimensions of the biraderi that do not change over time. Since we are using a panel dataset, the numerator of the IV will be different in both periods for a single household *h* because the receipt of remittances and migration will change over time. The net change will be exogenous because variations in characteristics between biraderis do not drive the results.

It is thus perfectly reasonable to conceive that such changes in kinship networks are correlated with the receipt of remittances and migration for the reasons explained above. This renders the IV informative, but not with respect to household-level labor market decisions. An individual's knowledge of a migrant kinsman will in no way affect the schooling or child labor decision of child *i*. This indicates that the instrument will only affect schooling and child labor decisions through the remittances and migration channel, not through any other channel.[6]

ε_{iht} is decomposed into α_h and v_{iht} and we rewrite specification (1) as follows:

$$Y_{iht} = \beta_0 + \beta_1 X_{iht} + \beta_2 Z_{ht} + \beta_3 W_{ht} + \beta_4 remittances_{iht} + \beta_5 father\ absent_{iht} + \alpha_h + v_{iht} \quad (5)$$

α_h denotes unobservable time-invariant household characteristics while v_{iht} refers to unobservable characteristics that may change over time. Using HFE factors out the α_h component of the unobservable, which would otherwise have biased the estimates.

6.3. Extending the Main Specification

This section extends the main specification to find out whether the impact of *remittances* and *father absent* differs for girls and boys. It also looks at the extent to which the mother's presence might compensate for the father's absence.

[6] We also test the validity of the instruments by using the over-identification test (the results are available from the author on request).

6.3.1. Impact of Gender

The *remittances* and *father absent* variables interact with dummies denoting male and female children, such that:

$$Y_{iht} = \beta_0 + \beta_1 X_{iht} + \beta_2 Z_{ht} + \beta_3 W_{ht} + \beta_4 remittances_{iht} * male_{iht} + \beta_5 remittances_{iht} * female_{iht} + \beta_6 father\ absent_{iht} * male_{iht} + \beta_7 father\ absent_{iht} * female_{iht} + \beta_8 male_{iht} + \beta_9 female_{iht} + \varepsilon_{iht} \quad (6)$$

$Male_{iht}$ is a dummy variable equal to 1 if child *i* is male and 0 if female. $Female_{iht}$ is a dummy variable equal to 1 if child *i* is female and 0 if male. Both are part of X_{iht} but are given separately in the regression to indicate that we are controlling for the gender of the child.

Since $remittances_{iht}$ and $father\ absent_{iht}$ are endogenous, their interaction terms will also be endogenous. We instrument for these by constructing the following IVs:

Endogenous variable	**Instrument**
Remittances * male	Remittances biraderi IV_{ht} * male
Remittances * female	Remittances biraderi IV_{ht} * female
Father absent * male	Migrant biraderi IV_{ht} * male
Father absent * female	Migrant biraderi IV_{ht} * female

This yields four endogenous variables:

$$K_{iht} = \mu_{12} + \mu_{13} X_{iht} + \mu_{14} Z_{ht} + \mu_{15} W_{ht} + \mu_{16} remittances\ biraderi\ IV_{ht} * male_{iht} + \mu_{17} remittances\ biraderi\ IV_{ht} * female_{iht} + \mu_{18} migrant\ biraderi\ IV_{ht} * male_{iht} + \mu_{19} migrant\ biraderi\ IV_{ht} * female_{iht} + \mu_{20} male_{iht} + \mu_{21} female_{iht} + \varepsilon_{iht} \quad (7)$$

The four endogenous variables entail four first-stages where K_{iht} is as follows:

- $Remittances_{iht} * male_{iht}$
- $Remittances_{iht} * female_{iht}$
- $Father\ absent_{iht} * male_{iht}$
- $Father\ absent_{iht} * female_{iht}$

Hence, the second stage becomes:

$$Y_{iht} = \beta_0 + \beta_1 X_{iht} + \beta_2 Z_{ht} + \beta_3 W_{ht} + \beta_4 remittances_{iht} * male_{iht} + \beta_5 remittances_{iht} * female_{iht} + \beta_6 father\ absent_{iht} * male_{iht} + \beta_7 father\ absent_{iht} * female_{iht} + \beta_8 male_{iht} + \beta_9 female_{iht} + \alpha_h + \nu_{iht} \quad (8)$$

Since we have already controlled for the child's gender, the interaction terms involving *remittances* and *father absent* in both cases (male and female) will allow us to look directly at which gender is affected more by remittances and by the father's absence. We compare the impact of remittances on boys and girls by comparing the coefficients β_4 and β_5, and the impact of the father's absence on boys and girls by comparing the coefficients β_6 and β_7.

The interaction terms reflect the differential effect of gender and not the impact of gender itself. The IV interacting with gender shows which levels of migration are influenced by a change in biraderi networks for boys and girls. Following Angrist and Pischke (2009), the β_8 term captures the main effect of being male; the interaction between $remittances_{iht}$ and $male_{iht}$ shows how the effect of remittances differs by gender for boys (captured by β_4), while the $father\ absent_{iht} * male_{iht}$ term shows how they are affected by the father's absence (captured by β_6). The same applies in the case of the interaction terms incorporating the *female* term.

6.3.2. *Impact of the Mother's Presence*

We hypothesize that the negative impact of the father's absence is, to a certain extent, offset by the presence of the mother, who will presumably prevent the excess burden of work (associated with the father's absence) from falling solely on the child's shoulders and will also monitor the child's performance at school.

$$Y_{iht} = \beta_0 + \beta_1 X_{iht} + \beta_2 Z_{ht} + \beta_3 W_{ht} + \beta_4 remittances_{iht} + \beta_5 father\ absent_{iht} + \beta_6 mother\ present_{iht} + \beta_7 mother\ present_{iht} * father\ absent_{iht} + \alpha_i + \varepsilon_{iht} \quad (9)$$

Mother present is a dummy variable equal to 1 if the mother of child *i* in household *h* is at home at time *t* and 0 otherwise. This specification is identical to the main specification with the difference that it includes an interaction term comprising *mother present* and *father absent*. The

coefficient β_7 shows to what extent the presence of the mother offsets the impact of the father's absence on child *i*.

The problem of endogeneity arises once again and thus we instrument for *remittances*, *father absent*, and *mother present * father absent*. This is done by creating an instrument for the term *mother present * father absent* by enabling *mother present* to interact with the migrant biraderi IV.

Endogenous variable	**Instrument**
Remittances	Remittances biraderi IV_{ht}
Father absent	Migrant biraderi IV_{ht}
Mother present * father absent	Migrant biraderi IV_{ht} * mother present

Hence, the additional first stage of this specification is:

$$\textit{Father absent}_{iht} * \textit{mother present}_{ht} = \mu_{22} + \mu_{23}X_{iht} + \mu_{24}Z_{ht} + \mu_{25}W_{ht} + \mu_{26}\textit{remittances biraderi IV}_{ht} + \mu_{27}\textit{migrant biraderi IV}_{ht} + \mu_{28}\textit{migrant biraderi IV}_{ht} * \textit{mother present}_{ht} + \varepsilon_{iht} \quad (10)$$

The second stage becomes:

$$Y_{iht} = \beta_0 + \beta_1 X_{iht} + \beta_2 Z_{ht} + \beta_3 W_{ht} + \beta_4 \textit{remittânces}_{iht} + \beta_5 \textit{father âbsent}_{iht} + \beta_6 \textit{mother present}_{iht} + \beta_7 \textit{mothêr present}_{iht} * \textit{father absent}_{iht} + \alpha_h + \nu_{iht} \quad (11)$$

6.3.3. Mother Present as an Exogenous Variable

Mother present would have been endogenous had any mother in the sample been absent as a result of migration. In this case, as in the case of *father absent*, unobservable characteristics could have led to the problem of endogeneity where factors such as motivation would have affected both the right-hand-side variable (*mother present*) and the left-hand-side variable, yielding biased estimates.

However, in this case, we argue that *mother present* is exogenous because the sample does not contain any migrant mothers (see Figures 4 and 5). Mothers for whom this variable takes the value of 0 are absent either because they have died or because they are separated or divorced. The survey asked respondents to account for a person's presence or absence in terms of the following options: "(i) yes, present, (ii) no, moved because of marriage, (iii) no, extended family has broken into multiple

households, (iv) no, immigrated, (v) moved due to divorce or separation, (vi) no, has died, and (vii) others." None chose option (iv) to account for the mother's absence in any household.

This is not surprising, given that most rural women in Pakistan have restricted mobility both as a result of social norms and domestic responsibilities. Thus, women are more likely to migrate as part of a migrant family than on their own. Since none of the surveyed households include any migrant mothers, we can safely assume that *mother present* is not endogenous.

7. Results and Discussion

We begin by presenting the results of the main specification, which has been applied to the pooled data using simple OLS and without controlling for any omitted variable bias. This provides a baseline for comparison with the results obtained when we re-estimate the specification using an IV with RE and with HFE. We build on this model by incorporating in turn interaction terms for gender and the mother's presence.

Appendixes 2 to 5 present the estimation results. The instruments appear to be significant in explaining the endogenous parameters. Below each appendix table are given the IV diagnostics to further support the IV. As a rule of thumb, an F-value for the excluded instruments that is greater than 10 indicates that the instrument is informative.

7.1. OLS Results of Main Specification Using Pooled Data

The results of the simple OLS estimation (see Appendix 2) suggest two things. First, the inflow of remittances is correlated with the child's schooling decision. For every PRs 1,000 ($10) being remitted home, the likelihood of a child being enrolled in school increases by 16 percentage points. The absence of the father does not seem to have any significant correlation with schooling. This indicates that, for children in rural Punjab, the father's migration yields an overall benefit in the shape of remittances: schooling is determined by the household's financial state and the money it receives reduces the binding constraint, giving children a greater opportunity to enroll in school.

Second, the father's absence is significantly correlated with child labor, while remittances only seem to affect child labor outside the home. The

father's migration increases the probability of the child engaging in overall child labor by 22 percentage points. This suggests that, in the father's absence, the child is left to assume additional responsibilities both inside and outside the home.

The volume of remittances is not significant with respect to child labor within the household, suggesting that this money does not necessarily reduce the amount of work the child has to do at home. It does, however, free the child from engaging in paid labor outside the home because the money relaxes the household's financial constraint.

As mentioned above, the OLS estimates are subject to omitted variable bias and selectivity, for which we correct by using an IV with RE and an IV with HFE. The results are presented in the following section.

7.2. LPM Results from Main Specification

The results of this specification are given in Appendix 3 and indicate that the inflow of remittances has a positive impact by increasing the probability of the child being enrolled in school. This suggests that money is an important component of the schooling decision and remittances are, to some extent, part of this. For schooling, the coefficient of remittances with HFE is significant and larger than the coefficient obtained with RE. Thus, the impact of remittances increases after we control for all time-invariant heterogeneity between households.

This implies that, to a certain extent, remittances ease the household's financial constraint and allow it to meet the cost of sending the child to school. After controlling for household time-invariant factors, an increase in annual remittances of PRs 1,000 ($10) increases the probability of the child being enrolled in school by 13 percentage points.

This result contradicts the body of literature suggesting that, in developing countries such as Pakistan, remittances only increase consumption levels or expenditure on durable goods instead of promoting investment in human capital (such as education) (Amuedo-Dorantes & Mundra, 2007). Remittances are thus used rationally by households to make productive investments and not used solely to meet consumption or basic subsistence needs. This helps households that choose to invest in human capital by enabling their children to go to school and in turn gain long-term benefits in the shape of poverty reduction measures.

Our results are in line with González-König and Wodon (2007). A child whose schooling is financed by remittances may develop a greater sense of responsibility and seek to recompense the father by working harder to earn higher returns on schooling.

Table A3.2 (Appendix 3) shows that, while remittances are significant in reducing overall child labor in the RE model (column 1), the variable loses its significance with HFE (column 3). This may be because the HFE estimates have less explanatory power although their signs and the magnitude of the coefficients are comparable, if not larger.

A similar trend emerges for remittances when we look at child labor inside and outside the home. This indicates that the money remitted benefits the household by increasing school enrollment as well as by reducing child labor. When the inflow of remittances eases the household's financial constraint, this reduces the need for the child to seek work outside the home and lessens her responsibility for household work (if, for example, the household can now afford to hire help to carry out domestic chores or for childcare).

Additionally, the money coming in may be used to purchase labor-saving appliances, which free the child from having to carry out certain tasks; the installation of a gas stove, for instance, would reduce the need to collect firewood, a task that might otherwise have been assigned to the child. Households receiving remittances are able to compensate for the foregone income, thus lowering the opportunity cost of attending school. Remittances provide an alternative source of income, thus reducing the prevalence of child labor both inside and outside the home.

Our results suggest that remittances reduce the household's labor supply, particularly of children, by increasing the reservation wage of the remaining household members (see Danziger, Haveman, & Plotnick, 1981). The father's absence, on the other hand, seems to significantly affect child labor both inside and outside the home, overall leaving children worse off.

Next, we carry out a Wald test to determine the null hypothesis that remittances completely offset the effect of the father's absence on the child. That is, we verify whether the monetary benefit of remittances outweighs any psychological pressure and increased workload associated with the father's absence.

H_0 = the effect of an absent father is completely offset by the money coming in through remittance (*remittances* * (*average remittances*) + *father absent* = 0)

Variable	Chi sq. (1)	Prob. > chi sq.
Schooling	4.18	0.0410
Overall child labor	5.21	0.0224
Child labor within the home	9.08	0.0026
Child labor outside the home	4.67	0.0307

Note: The Wald test is applied only to the post-estimates from HFE, i.e., columns (2), (4), (6), and (8) of Table A3.2 (Appendix 3).

Since the P-value is less than 5 percent (level of significance) for all chi-square values, we reject the null, confirming that the inflow of remittances does not fully compensate for the father's absence in all cases.

There are several reasons for this. First, the father's absence implies that he cannot monitor the child's activities, which may encourage negative behavior on the child's part. Second, the increase in household and social responsibilities may compel the child to assume some of the workload (both inside and outside the home) in the father's absence.

Third, if the child had relied on the father for help with her schoolwork, his absence now may adversely affect her schooling performance, leading to poorer educational outcomes. This, in turn, may persuade the parents to substitute the child's time away from schooling and toward child labor. Fourth, the father's absence in the context of a role model and authority figure may have emotional consequences for the child, which cannot be mitigated by the household's improved finances.

As a robustness check, we take the log of total income (including remittances) as the variable of interest rather than the value of remittances alone and reapply this specification. This yields similar results, which are not shown here but are available from the author.

7.3. LPM Results of Main Specification with Gender Interactions

This specification aims to determine whether the impact of remittances and the father's absence differs between girls and boys. For this, the

gender terms *male* and *female* interact with both *remittances* and *father absent*. The results are given in Appendix 4.

Looking solely at the (*remittances * male*) term indicates that remittances benefit boys' schooling, that is, parents are more likely to use the additional money from remittances to send their sons—rather than their daughters—to school.

H_0: remittances increase schooling for boys and girls equally (*remittances * male = remittances * female*)

Variable	**Chi sq. (1)**	**Prob. > chi sq.**
Schooling	10.39	0.0013

Note: This test is applied to the post-estimates in column (1) of Table A4.2 (Appendix 4).

Since the P-value is less than 1 percent (level of significance), we reject the null. Thus, remittances lead to a far larger increase in schooling for boys than for girls. For every PRs 1,000 (or $10) received in remittances, the probability of boys being enrolled in school increases by 6 percentage points. For girls, this value is insignificant and has a coefficient of about only 0.7 percentage points (see column (1) of Table A4.2 in Appendix 4).

One possible reason for this could be the LATE captured by the IV since these results do not necessarily imply that remittances improve children's schooling for everyone—only for those for who the instrument induces a change (i.e., for families where the kinship network affected the father's decision to migrate). Richer households, for example, may have chosen to migrate regardless of kinship network and now send back money that is spent on their daughters' schooling; the effect will not be captured because the IV captures only the LATE.

Columns (3), (5), and (7) of Table A4.2 show that remittances reduce child labor to a larger degree among boys than among girls: the money coming in leads to a substitution away from child labor to school for boys. Although these results are significant with RE, they lose their significance with HFE mainly due to the decrease in power. The magnitude and sign remain the same.

One possible explanation for this may be that boys are considered the household's future breadwinners: any money spent on their schooling (as

opposed to putting them to work) is assumed to increase the future returns on their education. Moreover, in rural households, parents are far more likely to live with their sons than their daughters. Most girls in rural Punjab marry after a certain age and move away; parents may accord less value to investing in their schooling if they perceive smaller future returns.

These results contradict the "moral hazard problem" presented by Milligan and Bohara (2007), who suggest that the money coming in through remittances may increase child labor if households decide to start a new business in which their children are expected to take part. Parents appear to value education and tend to invest in it when they have the money to do so.

The father's absence appears to have a negative impact on schooling among boys as well as girls, based on the negative coefficients of *father absent * male* and *father absent * female* in column (2) of Table A4.2. Carrying out the Wald test determines if this absence affects schooling for both genders in the same way:

H_0: the father's absence decreases schooling for boys and girls equally (*father absent * male = father absent * female*)

Variable	**Chi sq. (1)**	**Prob. > chi sq.**
Schooling	1.93	0.1643

Note: This test is applied to the post-estimates in column (2) of Table A4.2.

Since the P-value is greater than 5 percent (level of significance), we do not reject the null, thus concluding that the father's absence affects both genders equally in the form of reduced schooling.

The term *father absent * female* with respect to child labor inside the home is positive and significant, indicating that the father's absence is likely to increase girls' workload within the household. However, where child labor outside the home is concerned, the father's absence appears to increase the likelihood of both genders working outside the home. The Wald test determines whether this impact is the same for both genders:

H_0: the father's absence increases child labor for boys and girls equally (*father absent * male = father absent * female*)

Variable	Chi sq. (1)	Prob. > chi sq.
Overall child labor	4.49	0.0340
Child labor within the home	4.09	0.0433
Child labor outside the home	0.01	0.9306

Note: This test is applied to columns (4), (6), and (8) of Table A4.2.

The results indicate that, as far as work within the household is concerned, we can reject H_0 at a 5 percent level of significance. This implies that the father's absence leaves girls worse off in terms of greater household responsibilities than boys.

However, we do not reject H_0 for child labor outside the home because the absence of the father leaves both genders with a greater burden of nonhousehold work. Girls are compelled to work more both inside and outside the household, as opposed to boys whose burden of work increases only with respect to labor outside the home. Accordingly, we do not reject the P-value for overall child labor at a 5 percent level of significance, indicating that, overall, girls are worse off than boys in terms of increased work both inside and outside the household.

7.4. LPM Results of Main Specification with Mother Present Interaction

This specification divides the effect of parental presence into two parts: (i) the father's absence and (ii) the interaction between the father's absence and mother's presence to determine how far the latter offsets the impact of the former. The results are given in Appendix 5. Looking at the key variables of interest first in Table A5.2, *remittances* and *father absent*, the results are in line with those in Table A3.2 (Appendix 3), i.e., remittances benefit the child while the father's absence leaves the child worse off.

The interaction of the *father absent* variable with *mother present*, i.e., *mother present * father absent*, shows that the mother's presence compensates, to some extent, for the father's absence in households in which the father has migrated. In the second-stage results table, the variable *father absent* has a negative sign in column (2); its interaction with *mother present* changes the sign to positive for schooling. This suggests that, to some extent, the lack of monitoring on the absent father's part is offset by the mother's role in ensuring that the child concentrates on school.

Even if the father's migration increases the child's household responsibilities, the mother is likely to share in the overall workload. Thus, her role as the primary parental figure responsible for looking after the child on a daily basis and assuming some of the father's household responsibilities in his absence will benefit the child.

While the father's absence increases the probability of overall child labor by about 70 percentage points in column (4), the presence of the mother reduces this probability by 50 percentage points. To some extent, her presence may even offset the rise in child labor inside and outside the home.

The idea of "unavailable mothers"—who may be unable to give their children enough time in view of the increased workload they must bear in their spouse's absence—does not seem to hold in rural Punjab. The presence of extended family members, such as older siblings and grandparents, means there are also other adults in the household who are liable to assume part of the workload. In many cases in rural Pakistan, this extends to neighbors—women who share their additional workload with each other, giving them more time to spend with their children.

Another explanation for this result is that, as the mother's responsibility for her children and household increases in the father's absence, so too does her level of empowerment, especially if she is the one receiving the remittances. She may then engage in intra-household bargaining with other family members to protect her children's interests. This redistribution of power enables the mother to determine intra-household allocations. Her concern for her children's wellbeing may lead her to spend more on education and reduce the burden of child labor (Antman, 2012). Moreover, to some extent, the mother's presence is likely to compensate for the father's absence at a psychological level, alleviating the child's loneliness.

The Wald test formally determines the null hypothesis that the mother's presence completely offsets the negative effect of the father's absence:

H_0: the father's absence is completely offset by the mother's presence (*father absent* + *mother present* * *father absent* = 0)

Variable	Chi sq. (1)	Prob. > chi sq.
Schooling	0.65	0.4187
Overall child labor	1.21	0.2717
Child labor within the home	0.97	0.3256
Child labor outside the home	2.69	0.1008

Note: This test is applied to columns (2), (4), (6), and (8) of Table A5.2 (Appendix 5).

Since the P-value is greater than 5 percent (level of significance), we cannot reject the null. This implies that the mother's presence fully compensates for the father's absence for the reasons explained above,[7] thus counterbalancing any adverse impact on the child.

The Wald test determines the net effect of migration in this case:

H_0: the net effect of migration on the child is zero (*remittance* * (*average remittance*) + *father absent* + *mother present* = 0)

Variable	Chi sq. (1)	Prob. > chi sq.
Schooling	6.47	0.0110
Overall child labor	4.86	0.0274
Child labor within the home	4.67	0.0307
Child labor outside the home	5.02	0.0250

Note: This test is applied to columns (2), (4), (6), and (8) of Table A5.2 (Appendix 5).

In all cases above, we reject H_0 at the 5 percent level of significance. This implies that the net impact of migration is positive in terms of increasing the child's schooling and negative in terms of reducing the propensity for child labor both inside and outside the home.

8. Conclusion and Recommendations

This paper has decomposed the impact of migration into two components: the effect of remittances and the effect of the migrant father's absence on children left behind. While most other studies have looked at one or other of these effects, this paper examines both countervailing channels affecting child labor and schooling. We deal explicitly with the

[7] Two households belonging to the same biraderi will still be different from each other if one has a mother present and the other does not. In this case, the decision to migrate may be based on other, more important considerations than the biraderi network.

issue of endogeneity with respect to remittances and the father's absence by using kinship networks as an IV along with HFE and RE. The paper concludes that remittances enhance children's wellbeing by increasing their likelihood of being enrolled in school than being engaged in child labor.

On the other hand, the migrant father's absence is likely to increase the overall household workload, part of which may fall on the child at the expense of her schooling. The financial benefit of remittances from migration does not completely offset the effect of the father's absence in this context.

Given this, we then introduce the effect of the mother's presence, assuming that she is likely to shoulder the additional workload in the father's absence, monitor the child's schooling, and provide the emotional support needed to redress the disruption associated with the father's migration. This eliminates the negative effect of the father's absence. When we retain the positive effect of remittances along with the mother's presence, the net effect of migration is positive.

A gender difference emerges when we look at how the money received through remittances is spent: every PRs 1,000 ($10) coming in increases the probability of a boy being enrolled in school by 6 percent, while the father's absence compels girls to spend more time working at home, increasing their labor by around 50 percent. However, the father's absence increases the workload for both boys and girls where child labor outside the home is concerned.

Unlike Mansuri (2006), who finds that remittances favor girls in rural Pakistan, we conclude that they favor boys when taking both aspects of migration (remittances and the father's absence) into account. Moreover, while Mansuri considers only international remittances, we look at both, where the bulk of remittances are domestic (see Table 1). The LATE may also be quite different in this case. Finally, this study focuses on rural Punjab while Mansuri's study is at the national level.

From a policy perspective, migration should be just one of the ways in which households attempt to escape the poverty trap. The government must focus on creating jobs and economic opportunities that allow workers to live with their families while earning enough to support them. Where migration is the better option, the government should facilitate the transfer

of remittances, for example, through tax-free inflows and quicker, more efficient modes of transfer. The spread of better, more accessible means of communication would help migrants remain in touch with their families and offset the impact of their absence.

The study has three main limitations. First, we could not identify how far migrants had moved from their households, only whether they had migrated to another village, district, or country. Having this information would give one a better idea of how long the father's absence was likely to be: domestic migrants may be able to visit their households more frequently than overseas migrants, implying that they are "less absent" than the latter.

Second, based on our definition of child labor and the data available, we have looked at children's employment status over the last seven days at the time of the survey. This result may be subject to a seasonality component. For example, more parents may have reported their children being engaged in labor if it was the harvest season.

Finally, measuring schooling through enrollment is a debatable choice: being enrolled does not guarantee that the child is actually attending school. However, given the data constraint and limited information, this was the closest measure of schooling available. The survey did not include information such as school attendance and test scores, which may have proven better measures of schooling.

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Appendix 1: Discussion of Controls

We add various household characteristics, such as the total number of household members, to the model as controls. Among these, parental education is important in determining schooling and child labor decisions. Better-educated parents are likely to invest more money in their children's education and thus discourage child labor. They may even serve to inspire their children to study. Hence, we add both the father and mother's education as controls.

Since we are considering a rural context and, in many cases, it is the household head that makes decisions, we control for his or her level of education. The gender of the household head is also thought to be an important determinant of schooling: women are more likely to spend money on their children's wellbeing than men (Baland & Robinson, 2000).

Household income is a strong determinant of schooling and child labor. In most cases, it is financial problems that force children to leave school (see Section 3) and thus there is a tradeoff between schooling and child labor. Since household income is usually volatile, we construct a wealth index for each household.

We also add child-specific controls such as the child's age and gender. Remittances may lead parents to make less selective decisions when it comes to the gender of the child and, in many cases, may even help close the gender gap between boys and girls by increasing the latter's educational opportunities (Stark & Taylor, 1991; Chen, 2006). Even unobservable characteristics such as the child's ability and motivation with respect to schooling versus labor are important when deciding whether to send him or her to school.

Finally, we add the average biraderi head's education and average biraderi wealth in a given district as biraderi controls.

Table A1.1: Definition of variables

Variable	Definition
Dependent variables	
Schooling	Dummy = 1 if the child is currently enrolled in school and 0 otherwise
Overall child labor	Dummy = 1 if the child has engaged in any one of the following in the last seven days and 0 otherwise: • Has worked for someone outside the household • Has helped in household chores such as shopping or cleaning • Has engaged in any kind of family work such as selling goods on the street
Child labor within the home	Dummy = 1 if the child has engaged in any kind of household chore for more than 10 hours on the last day of the week and 0 otherwise
Child labor outside the home	Dummy = 1 if the child has worked for someone who is not a household member in the last seven days and 0 otherwise
Independent variables	
Remittances	Monetary value of remittances received by the household in the last year at time *t* (measured in '000)
Father absent	Dummy = 1 if the father of child *i* is absent at time *t* and 0 otherwise
Child's age	Age of child *i* on his/her last birthday (in completed years)
Child's age squared	Square of the age of child *i* on his/her last birthday (in completed years)
Male	Dummy = 1 if the child is male and 0 if female
Head's age	Age of the household head of child *i* on his/her last birthday (in completed years)
Head's age squared	Square of the age of the household head of child *i* on his/her last birthday (in completed years)
Head's gender	Dummy = 1 if the household head is male and 0 if female
Head's education	The highest level of schooling completed by the household head
Father's education	The highest level of schooling completed by the father of child *i*
Mother's education	The highest level of schooling completed by the mother of child *i*
Mother present	Dummy = 1 if the mother of child *i* is present at time *t* and 0 otherwise

Variable	Definition
Wealth	Wealth index constructed using principal component analysis, which assigns a weight to each household asset and generates wealth scores. The assets used in the calculations are: number of rooms for sleeping per member, material used to construct floor, roof, and wall of dwelling, type of cooking fuel, electricity, gas, radio, television, cable television, mobile and landline telephone, computer, Internet access, refrigerator, air conditioner, washing machine, cooler, microwave, sewing machine, iron, water filter, motorized pump, watch, bicycle, motorcycle/scooter, animal-drawn cart, car or truck, source of drinking water and type of sanitation facility.
Size of household	Number of household members
Average biraderi wealth	Average wealth score for a particular household from a given biraderi *B* in a given district *D*
Average biraderi head's education	Average level of schooling completed by the household head for a particular household from a given biraderi *B* in a given district *D*
Time	Dummy = 1 for the year 2011 and 0 for the year 2007
District dummies	District dummies added for Faisalabad, Jhang, Hafizabad, Nankana Sahib, Khanewal, and Chakwal. Bahawalpur is the base category.

Source: Author's calculations.

Table A1.2: Summary statistics

	2007				
Dependent variables	**Obs.**	**Mean**	**SD**	**Min.**	**Max.**
Schooling	1,382	0.6295302	0.4830927	0	1
Overall child labor	1,382	0.3564155	0.4791026	0	1
Child labor (household)	1,382	0.0672098	0.2504700	0	1
Child labor (nonhousehold)	1,382	0.3475900	0.4763667	0	1
Independent variables					
Remittances ('000)	1,382	10.936	11.9812	0	200
Father absent	1,382	0.1031908	0.3043112	0	1
Child's age	1,382	9.509844	2.866375	5	14
Child's age sq.	1,382	98.64766	55.28826	25	196
Male	1,382	0.65111	0.62333	0	1
Head's age	1,382	47.14528	13.10189	28	97
Head's age sq.	1,382	2,394.221	1,395.06	784	9,409
Head's gender	1,382	0.9653768	0.1828856	0	1
Head's education	1,382	4.025798	6.289859	0	14
Father's education	1,382	7.847929	9.725818	0	16
Mother's education	1,382	3.053632	8.35737	0	8
Mother present	1,382	110.788	115.999	0	1
Wealth	1,382	-0.5053948	0.6967798	-1.922548	1.411889
Size of household	1,382	8.177189	2.90272	2	19
Average biraderi wealth	1,382	-0.4442767	0.4870134	-1.772393	1.163118
Average biraderi head's educ.	1,382	6.975	5.8299465	0	9

	2011				
Dependent variables	**Obs.**	**Mean**	**SD**	**Min.**	**Max.**
Schooling	1,581	0.7338764	0.4420797	0	1
Overall child labor	1,581	0.1187919	0.3236522	0	1
Child labor (household)	1,581	0.0147651	0.1206518	0	1
Child labor (nonhousehold)	1,581	0.1187919	0.3236522	0	1
Independent variables					
Remittances ('000)	1,581	16.3471	31.8723	0	360
Father absent	1,581	0.2590604	0.4382659	0	1
Child's age	1,581	9.303356	2.831617	5	14
Child's age sq.	1,581	94.5651	53.72988	25	196
Male	1,581	0.5100671	0.5000665	0	1
Head's age	1,581	51.29262	45.11037	30	90
Head's age sq.	1,581	4,646.07	44,662.72	900	8,100
Head's gender	1,581	0.9449664	0.2310476	0	1
Head's education	1,581	9.24094	7.372889	0	16
Father's education	1,581	7.879195	9.065459	0	16
Mother's education	1,581	0.9463087	0.6492775	0	8
Mother present	1,581	158.223	169.987	0	1
Wealth	1,581	-0.2941263	2.226549	-4.975732	6.835896
Size of household	1,581	8.085235	3.877591	4	20
Average biraderi wealth	1,581	-0.137295	1.499456	-4.976151	6.544868
Average biraderi head's educ.	1,581	7.038033	6.720147	0	12

Source: Author's calculations.

Appendix 2

Table A2.1: OLS results for main specification

		Child labor		
Variable	Schooling (1)	Overall (2)	Household (3)	Nonhousehold (4)
Remittances ('000)	16.1021***	-0.6866	0.9348	-4.8483***
	(3.7303)	(3.4664)	(3.4540)	(1.7284)
Father absent	0.0087	0.2164***	0.2079***	0.0366***
	(0.0289)	(0.0268)	(0.0267)	(0.0134)
Child's age	0.2080***	-0.0001	0.0033	0.0083
	(0.0208)	(0.0193)	(0.0192)	(0.0096)
Child's age sq.	-0.0107***	0.0000	-0.0001	-0.0004
	(0.0011)	(0.0010)	(0.0010)	(0.0005)
Child's gender	0.0735***	-0.0070	-0.0076	-0.0058
	(0.0218)	(0.0202)	(0.0202)	(0.0101)
Head's age	-0.0002	-0.0008	-0.0007	0.0002
	(0.0007)	(0.0006)	(0.0006)	(0.0003)
Head's age sq.	0.0000	0.0000	0.0000	-0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Head's gender	-0.0788*	-0.1068**	-0.1108**	0.0170
	(0.0392)	(0.0365)	(0.0363)	(0.0182)
Head's education	0.0280***	-0.0059	-0.0050	0.0040
	(0.0072)	(0.0067)	(0.0066)	(0.0033)
Father's education	0.0211***	-0.0049	-0.0045	-0.0030
	(0.0052)	(0.0049)	(0.0048)	(0.0024)
Mother present	0.3516***	-0.0203	-0.0224	0.0180
	(0.0299)	(0.0278)	(0.0277)	(0.0139)
Mother's education	0.0055	0.0244*	0.0249**	-0.0122*
	(0.0104)	(0.0096)	(0.0096)	(0.0048)
Wealth	0.0569***	0.0047	0.0042	-0.0056
	(0.0064)	(0.0059)	(0.0059)	(0.0030)
Size of household	-0.0016	0.0058**	0.0060**	-0.0007
	(0.0024)	(0.0022)	(0.0022)	(0.0011)
Av. biraderi wealth	-0.0260**	-0.0117	-0.0136	0.0123**
	(0.0101)	(0.0094)	(0.0093)	(0.0047)
Av. biraderi head's ed.	0.0386**	0.0076	0.0100	-0.0094
	(0.0128)	(0.0119)	(0.0118)	(0.0059)
Time	-0.1518***	-0.2480***	-0.2379***	-0.0575***
	(0.0291)	(0.0270)	(0.0269)	(0.0135)
Constant	-0.5290***	0.6836***	0.6251***	0.1152*
	(0.1205)	(0.1120)	(0.1116)	(0.0558)

Note: Number of observations = 2,963; standard errors clustered at district level (7 districts); * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.
Source: Author's calculations.

Appendix 3

Table A3.1: First-stage results for main specification

	RE		HFE	
	Remittances	**Father absent**	**Remittances**	**Father absent**
Variable	**(1)**	**(2)**	**(3)**	**(4)**
Remittances biraderi IV	527.7553**	-0.0801	439.6886***	-0.0790
	(145.1137)	(0.1331)	(87.6270)	(0.1166)
Migrant biraderi IV	-100.3875	1.0408***	92.8280	1.0696***
	(92.9682)	(0.0544)	(49.6866)	(0.0467)
Child's age	13.6625	0.0018	7.9295	-0.0009
	(21.7635)	(0.0157)	(20.0158)	(0.0176)
Child's age sq.	-0.7120	0.0000	-0.3183	0.0002
	(1.1568)	(0.0008)	(1.0248)	(0.0009)
Child's gender (male)	43.6790	-0.0194	35.5682	-0.0205
	(51.8920)	(0.0211)	(47.4296)	(0.0213)
Head's age	3.7789	0.0020		
	(2.8211)	(0.0013)		
Head's age sq.	-0.0036	-0.0000		
	(0.0026)	(0.0000)		
Head's gender	-187.9694*	-0.2334*		
	(66.1162)	(0.0763)		
Head's education	13.6652	0.0061		
	(27.8819)	(0.0095)		
Father's education	-8.8352	0.0117	-19.9684	0.0059
	(8.8506)	(0.0077)	(11.7875)	(0.0073)
Mother present	-120.3160	-0.0728*	-137.2667	-0.0733
	(88.4975)	(0.0286)	(104.0271)	(0.0365)
Mother's education	-1.2761	-0.0022	-1.2316	-0.0004
	(2.6270)	(0.0044)	(4.8995)	(0.0046)
Wealth	44.0446	0.0101		
	(27.4710)	(0.0182)		
Size of household	11.9665	0.0054		
	(9.3202)	(0.0044)		
Av. biraderi wealth	-21.6407	-0.0136		
	(11.8014)	(0.0227)		
Av. biraderi head's educ.	0.6688	-0.0013		
	(14.3108)	(0.0104)		
Time	3.5691	-0.0250	34.2249	-0.0011
	(37.2456)	(0.0244)	(25.8320)	(0.0123)

	RE		HFE	
	Remittances	**Father absent**	**Remittances**	**Father absent**
Variable	**(1)**	**(2)**	**(3)**	**(4)**
District dummies	Yes	Yes	No	No
Constant	-34.2600	0.1352	88.1713	0.0441
	(204.4698)	(0.0998)	(60.5695)	(0.1065)
First-stage F-value of excluded instruments				
	13.23	365.79	25.18	523.45

Note: RE = random effects, HFE = household fixed effects.
Number of observations = 2,963, number of groups = 829; standard errors clustered at district level (7 districts); * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.
Source: Author's calculations.

Table A3.2: Second-stage results for main specification

	Schooling		Child labor		Household child labor		Nonhousehold child labor	
	RE	HFE	RE	HFE	RE	HFE	RE	HFE
Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Remittances ('000)	2.0001	13.3211*	-3.0001**	-1.0800	-2.0896**	-0.9761	-2.0001**	-4.1414
	(2.0111)	(8.4000)	(1.1000)	(0.7000)	(1.2953)	(0.6224)	(1.1000)	(3.0000)
Father absent	-0.0821	-0.0090	0.2942***	0.2561**	0.2942***	0.2304*	0.0549**	0.1079**
	(0.0559)	(0.1298)	(0.0502)	(0.1122)	(0.0502)	(0.1059)	(0.0264)	(0.0500)
Child's age	0.2100***	0.1929***	0.0039	0.0185	0.0039	0.0213	0.0107	0.0115
	(0.0202)	(0.0379)	(0.0210)	(0.0327)	(0.0210)	(0.0309)	(0.0105)	(0.0146)
Child's age sq.	-0.0108***	-0.0102***	-0.0002	-0.0007	-0.0002	-0.0008	-0.0005	-0.0005
	(0.0011)	(0.0020)	(0.0011)	(0.0017)	(0.0011)	(0.0016)	(0.0005)	(0.0008)
Child's gender	0.0655***	0.0425	0.0063	0.0244	0.0063	0.0216	0.0015	0.0108
	(0.0221)	(0.0437)	(0.0227)	(0.0378)	(0.0227)	(0.0357)	(0.0114)	(0.0168)
Mother present	0.3362***	0.3123***	-0.0505	0.0200	-0.0505	0.0286	0.0035	-0.0003
	(0.0366)	(0.0733)	(0.0335)	(0.0633)	(0.0335)	(0.0598)	(0.0175)	(0.0282)
Father's education	0.0244***	0.0452***	-0.0083	-0.0151	-0.0083	-0.0148	-0.0056**	-0.0116**
	(0.0060)	(0.0153)	(0.0055)	(0.0132)	(0.0055)	(0.0125)	(0.0028)	(0.0059)
Mother's education	0.0075	0.0004	0.0236**	0.0338**	0.0236*	0.0352*	-0.0136***	-0.0159**
	(0.0101)	(0.0194)	(0.0104)	(0.0167)	(0.0104)	(0.0158)	(0.0052)	(0.0075)
Time	-0.1758***	-0.2442***	-0.2553***	-0.2069***	-0.2553***	-0.1994***	-0.0575***	-0.0224
	(0.0316)	(0.0600)	(0.0295)	(0.0518)	(0.0295)	(0.0489)	(0.0152)	(0.0231)
Head's age	-0.0011		0.0001		0.0001		0.0006	
	(0.0010)		(0.0008)		(0.0008)		(0.0004)	
Head's age sq.	0.0000		0.0000		0.0000		-0.0000	
	(0.0000)		(0.0000)		(0.0000)		(0.0000)	
Head's gender	-0.0390		-0.1416***		-0.1416**		0.0070	
	(0.0496)		(0.0452)		(0.0452)		(0.0237)	

	Schooling		Child labor		Household child labor		Nonhousehold child labor	
	RE	HFE	RE	HFE	RE	HFE	RE	HFE
Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Head's education	0.0277***		-0.0030		-0.0030		0.0058	
	(0.0091)		(0.0074)		(0.0074)		(0.0040)	
Wealth	0.0389***		0.0171**		0.0171*		0.0007	
	(0.0105)		(0.0085)		(0.0085)		(0.0046)	
Size of household	0.0018		0.0088***		0.0088**		0.0009	
	(0.0032)		(0.0028)		(0.0028)		(0.0015)	
Av. biraderi wealth	-0.0223		-0.0205*		-0.0205		0.0098	
	(0.0124)		(0.0108)		(0.0108)		(0.0057)	
Av. biraderi head's ed.	0.0254		0.0080		0.0080		-0.0101	
	(0.0157)		(0.0129)		(0.0129)		(0.0069)	
District dummies	Yes	No	Yes	No	Yes	No	Yes	No
Constant	-0.5196***	-0.2789	0.6751***	0.4651**	0.6751***	0.4237**	0.1031	0.0682
	(0.1268)	(0.1926)	(0.1219)	(0.1665)	(0.1219)	(0.1571)	(0.0621)	(0.0741)

Note: RE = random effects, HFE = household fixed effects.
Number of observations = 2,963, number of groups = 820; standard errors clustered at district level (7 districts).
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; instrumented: *remittances* and *father absent*.
Source: Author's calculations.

Appendix 4

Table A4.1: First-stage results for main specification with gender interaction

	Random effects				Household fixed effects			
Variable	Remittances * male (1)	Remittances * female (2)	Father absent * male (3)	Father absent * female (4)	Remittances * male (5)	Remittances * female (6)	Father absent * male (7)	Father absent * female (8)
Remittances biraderi IV * male	506.2553***	82.5863	0.0054	-0.0103	450.4294***	10.7489	0.0098	-0.0008
	(132.1336)	(109.6576)	(0.0529)	(0.0732)	(129.7539)	(108.7916)	(0.0518)	(0.0725)
Remittances biraderi IV * female	25.3383	464.9202***	0.0004	-0.1269*	-12.4819	439.2909***	-0.0030	-0.1272*
	(96.5198)	(80.1016)	(0.0386)	(0.0535)	(96.1558)	(80.6214)	(0.0384)	(0.0538)
Migrant biraderi IV * male	159.2034	-23.0764	1.2058***	0.0563	243.3649	56.4905	1.1983***	0.0837
	(154.9020)	(128.5530)	(0.0620)	(0.0858)	(150.5944)	(126.2652)	(0.0601)	(0.0842)
Migrant biraderi IV * female	108.7217	114.0468	0.1944*	1.1734***	179.4765	166.7362	0.1940*	1.1980***
	(154.5955)	(128.2986)	(0.0619)	(0.0856)	(152.9908)	(128.2745)	(0.0610)	(0.0855)
Child's age	23.9005	-10.3518	0.0015	0.0001	20.5672	-12.7242	-0.0013	0.0001
	(23.1620)	(19.2221)	(0.0093)	(0.0128)	(23.1912)	(19.4445)	(0.0092)	(0.0130)
Child's age sq.	-1.3765	0.6723	-0.0000	0.0001	-1.1794	0.8690	0.0002	0.0001
	(1.2107)	(1.0048)	(0.0005)	(0.0007)	(1.2117)	(1.0159)	(0.0005)	(0.0007)
Male	70.5940*	-17.4545	-0.0075	-0.0001	65.8942	-23.9241	-0.0069	-0.0026
	(34.9859)	(29.0347)	(0.0140)	(0.0194)	(34.8338)	(29.2063)	(0.0139)	(0.0195)
Female	-210.3954	-114.8409	-0.2123***	-0.1086	-178.3163	-87.6079	-0.2092***	-0.1038
	(142.5022)	(118.2624)	(0.0570)	(0.0789)	(142.1261)	(119.1650)	(0.0567)	(0.0795)
Head's age	0.9690	2.7977***	0.0008**	0.0011**				
	(0.7649)	(0.6348)	(0.0003)	(0.0004)				
Head's age sq.	-0.0009	-0.0027***	-0.0000**	-0.0000**				
	(0.0008)	(0.0007)	(0.0000)	(0.0000)				
Head's gender	-28.0470	-160.1155***	-0.0420*	-0.1915***				
	(42.9651)	(35.6567)	(0.0172)	(0.0238)				

	Random effects				Household fixed effects			
Variable	Remittances * male (1)	Remittances * female (2)	Father absent * male (3)	Father absent * female (4)	Remittances * male (5)	Remittances * female (6)	Father absent * male (7)	Father absent * female (8)
Head's education	11.9347	1.1095	0.0054	0.0000				
	(7.9788)	(6.6216)	(0.0032)	(0.0044)				
Father's education	-6.2593	-2.6964	0.0050*	0.0065*	-9.4888	-10.5275*	0.0035	0.0022
	(5.8193)	(4.8294)	(0.0023)	(0.0032)	(5.6036)	(4.6983)	(0.0022)	(0.0031)
Mother present	-46.8180	2.5619	0.0179	-0.0159	-59.4878	-15.9135	0.0135	-0.0146
	(47.2834)	(39.2405)	(0.0189)	(0.0262)	(46.7914)	(39.2320)	(0.0187)	(0.0262)
Mother's education	2.0845	-3.5277	-0.0006	-0.0017	1.4600	-3.0193	0.0002	-0.0009
	(11.5513)	(9.5864)	(0.0046)	(0.0064)	(11.5493)	(9.6835)	(0.0046)	(0.0065)
Wealth	23.8310***	20.7911***	0.0080**	0.0026				
	(7.1027)	(5.8945)	(0.0028)	(0.0039)				
Size of household	3.2630	8.7408***	0.0000	0.0054***				
	(2.6599)	(2.2075)	(0.0011)	(0.0015)				
Average biraderi wealth	-3.4821	-18.2777	-0.0118*	-0.0018				
	(11.5886)	(9.6174)	(0.0046)	(0.0064)				
Av. biraderi heads educ.	-12.9820	14.2058	-0.0024	0.0017				
	(14.2800)	(11.8510)	(0.0057)	(0.0079)				
Time	-25.9400	31.5996	-0.0222	-0.0016	2.0152	34.0215	-0.0104	0.0089
	(33.4240)	(27.7385)	(0.0134)	(0.0185)	(27.1916)	(22.7987)	(0.0108)	(0.0152)
District dummies	Yes	Yes	Yes	Yes	No	No	No	No
First-stage F-value of excluded instruments								
	14.68	33.69	378.46	187.71	12.05	29.69	398.02	196.16

Note: Number of observations = 2,963, number of groups = 820; standard errors clustered at district level (7 districts).
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Source: Author's calculations.

Appendix 5

Table A5.1: First-stage results for main specification with mother present interaction

	Random effects			Household fixed effects		
	Remittances	Father absent	Mother present * father absent	Remittances	Father absent	Mother present * father absent
Variable	(1)	(2)	(3)	(4)	(5)	(6)
Remittances biraderi IV	528.7934**	-0.0791	-0.0614	442.4672***	-0.0757	-0.0529
	(156.1183)	(0.1387)	(0.1413)	(96.8504)	(0.1214)	(0.1220)
Migrant biraderi IV	180.8901	1.3167***	0.0180	321.8412	1.3369***	0.0282
	(152.8197)	(0.0937)	(0.0998)	(200.4584)	(0.0891)	(0.0610)
Mother present * migrant	-317.3262	-0.3113*	0.9798***	-259.7230	-0.3032**	0.9897***
biraderi IV	(185.2993)	(0.0872)	(0.0606)	(185.1433)	(0.0924)	(0.0298)
Child's age	13.9032	0.0020	0.0002	8.0774	-0.0007	-0.0025
	(21.7525)	(0.0156)	(0.0158)	(20.0274)	(0.0175)	(0.0185)
Child's age sq.	-0.7218	0.0000	0.0001	-0.3228	0.0002	0.0003
	(1.1552)	(0.0008)	(0.0008)	(1.0256)	(0.0008)	(0.0009)
Child's gender (male)	41.8156	-0.0212	-0.0220	33.9828	-0.0223	-0.0227
	(51.7865)	(0.0218)	(0.0133)	(47.4886)	(0.0218)	(0.0135)
Head's age	3.7564	0.0019	0.0021*			
	(2.7831)	(0.0013)	(0.0010)			
Head's age sq.	-0.0035	-0.0000	-0.0000*			
	(0.0026)	(0.0000)	(0.0000)			
Head's gender (male)	-188.8334**	-0.2343**	-0.2261**			
	(63.9921)	(0.0745)	(0.0784)			
Head's education	13.0530	0.0055	0.0057			
	(27.6103)	(0.0090)	(0.0085)			
Father's education	-8.7497	0.0118	0.0133*	-19.9135	0.0059	0.0079
	(9.0160)	(0.0081)	(0.0058)	(11.6614)	(0.0076)	(0.0064)
Mother present	-45.3192	0.0007	-0.0058	-76.3954	-0.0023	-0.0098
	(65.4254)	(0.0165)	(0.0187)	(85.9400)	(0.0231)	(0.0076)

	Random effects			Household fixed effects		
	Remittances	Father absent	Mother present * father absent	Remittances	Father absent	Mother present * father absent
Variable	(1)	(2)	(3)	(4)	(5)	(6)
Mother's education	-1.5033	-0.0024	-0.0020	-1.6210	-0.0008	-0.0007
	(2.7048)	(0.0043)	(0.0041)	(4.7684)	(0.0046)	(0.0043)
Wealth	44.6687	0.0107	0.0075			
	(27.6630)	(0.0185)	(0.0176)			
Size of household	12.0399	0.0055	0.0046			
	(9.3761)	(0.0044)	(0.0044)			
Average biraderi wealth	-22.1425	-0.0141	-0.0129			
	(11.7241)	(0.0231)	(0.0210)			
Av. biraderi head's ed.	1.0145	-0.0010	0.0025			
	(14.4362)	(0.0098)	(0.0080)			
Time	9.3617	-0.0193	-0.0149	38.1643	0.0035	0.0049
	(37.4823)	(0.0236)	(0.0173)	(26.8369)	(0.0148)	(0.0119)
District dummies	Yes	Yes	Yes	No	No	No
Constant	-108.8594	0.0620	0.0600	26.4058	-0.0280	-0.0139
	(235.3046)	(0.0939)	(0.1040)	(59.1415)	(0.0982)	(0.0911)
First-stage F-value of excluded instruments						
	11.47	197.34	261.08	20.87	225.2	104.38

Note: Number of observations = 2,963, number of groups = 820; standard errors clustered at district level (7 districts).
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.
Source: Author's calculations.

Table A5.2: Second-stage results for main specification with mother present interaction

	Schooling		Child labor		Household child labor		Nonhousehold child labor	
	RE	HFE	RE	HFE	RE	HFE	RE	HFE
Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Remittances ('000)	3.1935**	11.293*	-2.1868**	-9.1385*	-2.1438*	-0.8378	-2.1000**	4.2000
	(1.1813)	(6.1210)	(1.1288)	(5.1558)	(1.1258)	(0.5256)	(1.1000)	(3.1000)
Father absent	-0.1257	-0.6373**	0.4156***	0.6944**	0.3901***	0.6587**	0.1082*	0.2772**
	(0.1265)	(0.3117)	(0.1047)	(0.2790)	(0.1022)	(0.2638)	(0.0563)	(0.1261)
Mother present * father absent	0.3169**	0.7249**	-0.1421	-0.5056*	-0.1452	-0.4941**	-0.0619	-0.1953*
	(0.1262)	(0.2906)	(0.1061)	(0.2601)	(0.1035)	(0.2460)	(0.0564)	(0.1175)
Child's age	0.2023***	0.1923***	0.0037	0.0189	0.0064	0.0217	0.0106	0.0116
	(0.0226)	(0.0338)	(0.0210)	(0.0302)	(0.0205)	(0.0286)	(0.0104)	(0.0137)
Child's age sq.	-0.0105***	-0.0102***	-0.0002	-0.0007	-0.0003	-0.0009	-0.0005	-0.0005
	(0.0012)	(0.0017)	(0.0011)	(0.0016)	(0.0011)	(0.0015)	(0.0005)	(0.0007)
Child's gender	0.0640***	0.0520	0.0046	0.0178	0.0019	0.0151	0.0010	0.0083
	(0.0245)	(0.0379)	(0.0227)	(0.0340)	(0.0221)	(0.0321)	(0.0113)	(0.0153)
Mother present	0.2699***	0.0672	-0.0093	-0.1909*	-0.1786**	-0.2446**	-0.0122*	-0.0028
	(0.0505)	(0.1083)	(0.0427)	(0.0970)	(0.0338)	(0.0535)	(0.0066)	(0.0039)
Father's education	0.0242***	0.0390***	-0.0078	-0.0108	-0.0066	-0.0106	-0.0055*	-0.0099*
	(0.0063)	(0.0127)	(0.0054)	(0.0114)	(0.0053)	(0.0107)	(0.0028)	(0.0051)
Mother's education	0.0057	0.0035	0.0234**	0.0317*	0.0240*	0.0331*	-0.0140***	-0.0168**
	(0.0113)	(0.0170)	(0.0104)	(0.0153)	(0.0102)	(0.0144)	(0.0052)	(0.0069)
Time	-0.0072	0.1957*	0.0222	0.0657	-0.2401***	-0.1991***	-0.0554***	-0.0223
	(0.0417)	(0.0917)	(0.0227)	(0.0438)	(0.0289)	(0.0453)	(0.0153)	(0.0216)
Head's age	-0.0018*		0.0001		0.0001		0.0006	
	(0.0010)		(0.0008)		(0.0008)		(0.0004)	

	Schooling		Child labor		Household child labor		Nonhousehold child labor	
	RE	HFE	RE	HFE	RE	HFE	RE	HFE
Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Head's age sq.	0.0000**		0.0000		-0.0000		-0.0000	
	(0.0000)		(0.0000)		(0.0000)		(0.0000)	
Head's gender	-0.0175		-0.1452***		-0.1494***		0.0075	
	(0.0531)		(0.0456)		(0.0445)		(0.0240)	
Head's education	0.0205*		-0.0033		-0.0027		0.0055	
	(0.0091)		(0.0074)		0.0149		(0.0040)	
Wealth	0.0353***		0.0171**		(0.0083)		0.0006	
	(0.0105)		(0.0085)		0.0088**		(0.0047)	
Size of household	-0.0026		0.0088**		(0.0027)		0.0008	
	(0.0034)		(0.0028)		-0.0210*		(0.0015)	
Av. biraderi wealth	-0.0272**		-0.0208*		(0.0106)		0.0102	
	(0.0129)		(0.0108)		0.0109		(0.0058)	
Av. biraderi heads ed.	0.0340**		0.0086		(0.0126)		-0.0099	
	(0.0157)		(0.0129)		0.0149		(0.0070)	
District dummies	Yes	No	Yes	No	Yes	No	Yes	No
Constant	-0.3960***	-0.0282	0.6346***	0.2902	0.5823***	0.2528	0.0847	0.0006
	(0.1418)	(0.2051)	(0.1252)	(0.1835)	(0.1222)	(0.1736)	(0.0642)	(0.0829)

Note: RE = random effects, HFE = household fixed effects.
Number of observations = 2,963, number of groups = 820; standard errors clustered at district level (7 districts).
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Instrumented: *remittances, father absent, father absent * mother present*.
Source: Author's calculations.

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Lahore School of Economics
Intersection Main Boulevard Phase VI, DHA and Burki Road
Burki Lahore 53200, Pakistan