

**THE IMPACT OF REMITTANCE VERSUS PARENTAL ABSENCE ON CHILDREN'S
WELL-BEING IN RURAL PUNJAB**



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ABSTRACT

This study aims to look at how migration impacts children back home in terms of schooling and child labor by quantifying both aspects of migration, i.e. remittance and parental absence. This paper particularly focuses on the case where the father is the migrant. A Panel Analysis is done using the Panel created by the “Multiple Indicator Cluster Survey (MICS)” 2007 and “Privatization in Education Research Initiative (PERI)” 2011. 820 households were used in the Analysis with the children falling within the age bracket of 5-14years.

We use Instrumental Variable Approach along with Household Fixed Effects and Random Effects to deal with possible endogeneity. We use exogenous variation in the parental absence and remittances sent by the migrants in a Household's Kinship Network as an instrumental variable to identify the effect. A 1,000 rupees (\$10) remittance increases the probability of being enrolled in school by 13 percentage points. Whereas, the absence of the father increases the probability of a child being engaged in child labor by 25 percentage points. We conclude that remittance does benefit but does not completely substitute for the absent father. This effect is particularly seen for children who already lacked a mother as well due to death or divorce. However, if the mother is present, she can fully compensate for the father's absence. Moreover, father's absence has more adverse consequences for girls in terms of increased child labor. Even the money coming in through remittance is spent favoring boys.

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LIST OF SYMBOLS

OLS	Ordinary Least Squares
IV	Instrumental Variable
FE	Fixed Effect
RE	Random Effect
HH	House Hold
LATE	Local Average Treatment Effect
LPM	Linear Probability Model

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INTRODUCTION

This paper focuses on how migration affects child's well-being i.e. child labor and education in rural Punjab¹. While most of the studies look at the impact of remittance and migrant absence separately, we focus on the joint impact of migration i.e. the impact of remittance and migrant absence on the child.

In an article written about child labor in Pakistan, Groot (2007) mentions the story of Ali, who is 10 year old and is a school dropout. He left his school so that he could work and feed his family. Ali wants to go back to school and wants to become a teacher in the future but he cannot go due to his unfortunate situation where there is nothing to eat at home, for which he needs to make the arrangement. His elder brother, Amir, is 13 years old. He is also a school dropout and now drives truck with his father. While both could not complete their education and seem hopeless about it, they hope that their younger sister would be "the lucky one" to complete her school once she reaches her school going age. This is not a rare case in Pakistan. Many children in Pakistan leave school to work or in many cases do not even go to school.

According to World Bank, as of 2012, 22.3% of the people in Pakistan still live below the poverty line, while Pakistan is ranked amongst one of the world's lowest spenders on education (around 2% of its GDP). National Net Enrollment Rate for Pakistan is also quite low and is around 56%. Looking at the Provincial Net Enrollment Rate, Punjab ranks highest at 62%, followed by Sindh at 54%, Khyber Pakhtunkhwa at 52% and lastly Baluchistan at 44% (PES, 2011). According to ILO estimates, over 200 million children in the world are engaged in child labor, while over 8 million are involved in hazardous work. 3.8 million children in Pakistan between the age group of 5-14 years are economically active and 1/3rd of these children have never even entered school, at least once in their life time (ILO, 2009).

¹ We use the definition of child's well-being as provided by the UNICEF in terms of increased schooling and reduced child labor.

According to the Pakistan Social and Living Standard Measurement 2008-2009, the educational attainment situation is worse in the rural areas than in the urban areas.

Table 1 Literacy Rate in Punjab

Area/Sex	Both Sexes %	Male %	Female %
Total	59	69	50
Urban	76	82	71
Rural	51	63	39

Source: Pakistan Standard and Living Measurement Survey (PSLM) 2008-09²

In Pakistan, a large number of children perform child labor mainly to financially support their families. Children between the ages of 5 to 14 years work in various business activities in Pakistan. Some help their parents in housekeeping, selling goods on roads, doing work on farm, while others work in the formal and informal market sectors. According to Milligan & Bohara (2007) poor households use child labor and school reduction as a way to face the socioeconomic shocks. Child labor tends to displace education in most of the cases; the future returns for the children can be lowered for their entire lifetime, negativity impacting the individual child, the household, and ultimately the entire society. In the situation where income from child labor helps fulfill the basic subsistence needs of the family, a ban on child labor might not be enough to address its root causes but may only exacerbate and worsen the child's and the families already unfortunate situation (Delap, 2010).

This paper focuses on whether migration can help in such a depressing situation. We focus on the case where father is the migrant, hence looking at the net impact of remittance and of father absence on the child. This study includes both types of migration, international and domestic since from the perspective of the child, in both cases the father is absent from the home. The paper suspects the impact of migration to be actually a joint impact of the positive benefit from remittance money and the negative affect of parental absence. Assessing the

² Retrieved from : <http://www.pbs.gov.pk>

impact of remittance alone or that of parental absence alone focuses only on one aspect of migration whereas the child is effected by both- something which much of the existing literature has ignored.

While the money helps ease the financial constraints the poor people face, absence of a family member particularly of the father, may lead excess work burden along with emotional consequences, making the children worse-off. Thus, while remittance may ease the budget constraint leading to a decrease in child labor and an increase in schooling, parental absence may reduce its impact.

Therefore, the question which this paper addresses is to what extent is the effect of migration decomposed into the monetary benefit of remittance and the loss due to migration of the father. Our study separates these two effects. The paper assess how migration effects the well-being of children by looking at the impact of migration on schooling status and child labor involvement of the children in the area of origin. Formally, we do a Panel Analysis using the Instrumental Variable Approach combined with Household Fixed Effects and Instrumental Variable Approach Combined with Random Effects, where we focus on the children between the age group of 5-14 years old belonging to Rural Punjab. This paper explicitly deals with the problem of the endogeneity of remittance and father absence by using separate Kinship group IV's for both. Where, for the father absent, the Kinship network refers to the fraction of households belonging to a given kinship group, in a given district, who have a migrant, excluding household j . Similarly, for remittance, the Kinship network refers to the fraction of households belonging to a given kinship group, in a given district, who receive remittance, excluding household j . The instruments help in exploiting the variation over time in the migrant network to which a particular household belongs to. Hence, this leads to exogenous variations in the likelihood of migrating as well as the amount of money being sent back. Combining the Instrumental Variable Approach with Random Effects

and Household Fixed Effects further increases the reliability of our results. HH FE doesn't rely on differences between Kinships; it relies on changes in the pool of migrants over the second round of the panel. All fixed HH characteristics like the kinship, social status, wealth, education level etc. are netted out, hence increasing the reliability of our results.

Our results indicate that the inflow of remittance is particularly beneficial for the school enrollment of the child. After controlling for household time invariant factors, an increase in the annual remittance of 1,000 rupees (or \$10) increases the probability of being enrolled in school by 13 percentage point. Money coming in through remittance also reduces child labor by lowering the opportunity cost of schooling as it decreases the marginal utility of income. In this context, our result indicates that in developing countries like Pakistan, remittance is might not be only spent on consumption goods but also on productive investments like human capital development. While on the other hand, the impact of the absence of the father is felt strongly on child labor. The absence of the father increases the probability of a child being engaged in child labor by 25 percentage points. However, the money coming in from remittance does not completely offset the negative impact a child might face due to the absence of the father mainly because of the increased work burden left on the shoulders of the child as well as due to the lack of monitoring being done with the father gone.

Even though the money coming in cannot completely eliminate the impact of the absence of the father, our results indicate that if the mother is present at home, she can however, completely eliminate the impact of the absent father by sharing the work load as well as by monitoring the child.

Further, a gender differential does exist when we look at how the money coming in from remittance is spent, favoring the boys as compared to the girls in terms of schooling. For every Rs 1,000 (or \$10) remittance coming in, the probability of boys being enrolled in

school increases by 6 percentage points, while the results come out to be insignificant for girls. Even remittance favors boys rather than girls in terms of reducing child labor. The results suggest that with more money coming in, the boys are being substituted away from child labor towards schooling. This can mainly be because of the fact that boys are considered to be the future bread earners of the family. However, when it comes to the impact of the father being absent, both genders are hurt by reduced schooling. In terms of child labor, the absence of the father hurts the girls more and causes them to work more within the house while on the other hand; both the genders are forced to work more outside the home, particularly in the case where the mother is not present at home.

Rest of the paper is organized as the follows: Section 2 gives a brief review on the existing literature. Section 3 describes the theoretical model on which this paper is built. Section 4 describes the data used. Section 5 gives some descriptive stats. Section 6 and 7 describe the methodology used in the paper followed by the results and their discussion respectively. Section 8 presents the robustness checks. Section 9 describes the over id test to check instrumental validity while section 10 concludes.

LITERATURE REVIEW

On the applied side, various interesting research has been done to assess the impact of migration on household of origin, particularly on the children left behind by the migrant. Most of the work focuses on the impact of migration through remittance or parental absence alone. The impact of remittance and parental absentee found in these studies is quite mixed. While lots of work shows consistency with the idea that remittance relaxes the financial constraint of the household, hence improving situation for children back home, increasing their schooling and reducing child labor, many studies conclude that remittance increases child labor as it provides money to the households giving them an opportunity to start off a new business. Similarly, some studies conclude that parental absence leads to excess work burden on the children back home along with lack of monitoring making the children worse off, while, on the other hand, some studies conclude that with the parent or parents migrating, a sense of awareness arises in the parents regarding the importance of education, hence parental migration has positive impacts on schooling.

Hanson and Woodruff (2003) examine the impact of remittance on educational attainment in Mexico. The paper accesses the impact of remittance on accumulated schooling and examines whether children with an external migrant at home complete more year of schooling than do other children of the same age. They use a cross sectional data from Mexico Census of Population and Housing 2000, treating household migration behavior as endogenous. Using the interaction between historical state migration pattern and household characteristics as an IV, they conclude that remittance does increase schooling for children at home, but only for households in which parents are not highly educated. Another study on Mexico by Bayot (2007) looks at whether remittances reduce the probability of child labor back home, using the Mexican Migration Project data set. Remittance and child labor

decision are simultaneously determined if the belief that the migrant sends money due to altruistic nature holds, causing remittance to be a function of household welfare which includes child labor, which leads to the problem of simultaneity bias. This is corrected for using the Full Information Likelihood Method (FIML). The paper concludes that remittance helps uplift the quality of life for the household, hence giving them the opportunity to send their children to school rather than to work, and hence significantly reduces the probability of their children being involved in child labor.

Many papers have aimed to take this step further and detangle the impact of remittance on youth on gender bases. Mansour et.al (2011) in a study on Jordan, after controlling for socio-economic determinants of schooling, conclude that remittance does improve educational attainment and attendance, where this result holds strongly for males as compared to females, since they are the bread earners in most of the developing countries, so parents invest more in them. A similar conclusion is reached by Vogel & Korinek (2012) who in their study on Nepal, conclude that money coming from abroad is spent disproportionately in Nepal, favoring boys. The girls only benefit if they belong to a higher income household. However, Amuedo-Dorantes & Pozo (2010) in their study on Dominican Republic reach the opposite conclusion and state that remittance increases the school attendance for girls. It also increases school attendance for children who are in the secondary school age. Mansuri (2006) in her work on rural Pakistan used migration network as an IV to control for simultaneity bias. Her work shows that remittance reduces gender inequalities between girls and boys in access to schooling, as her results show that remittance has greater and significant impact on girls schooling.

Alcaraz, Chiquair & Salcedo (2012) employ a difference in difference strategy to look at how a decline in remittance for a Mexican household due to US financial crisis in 2007-2008 can impact the tradeoff between schooling and child labor. As an IV they use membership into the remittance recipient group to control for endogeneity. They conclude that a negative

shock to remittance has adverse result on school attendance and hence, increases child labor. A similar result holds even if we look at the impact of internal migration on children. In a study on India by Mueller & Shariff (2011), in order to find the impact of remittance from internal migration, they use propensity score matching to control for the selectivity bias. They conclude that remittance from internal migration increase school attendance for children back home and this effect is seen greater for families belonging to a lower cast. The impact on schooling was found to be stronger for male teens.

Milligan & Bohara (2007) use Heckman two step analyses to control for the selectivity bias into the remittance receiving households, to assess the impact of remittance on hours spent working by the child and years of schooling. The paper concludes that remittance contributes positively and significantly in enhancing child's welfare in Nepal. This result is in line with the Stackelberg-type model developed by Gonzale-Koning & Wodon (2007) where the family members remaining at home develops a sense of gratitude towards the migrant when they receive remittance and hence, they reciprocate by investing it in education that will benefit the migrant upon his/her return. The model suggests that in repeated games the effect of remittance received is at least as large as the effect of an increase in any other source of income if not larger. Acquiring of education becomes more important in rural areas where there are no social security systems for the parents when they become old; hence, they choose to invest more in education which is treated as a public good as it will benefit the parent migrant upon his/her return.

Another branch of literature focuses on the negative side of migration and concludes that the positive effect of remittance is, in many cases offset by the negative effect of the absence of the migrant, especially if the migrant is one or both of the parents of the child (Grogger & Ronan, 1995 ; Lang & Zagorsky, 2001) . In a study carried out on Sri Lanka, where lots of mothers have migrated to earn a better livelihood for their family, and although children do realize that

their mothers have left for their better educational attainment and livelihood, even there, parental absence, especially of the mother, has generated a sense of loneliness and abandonment amongst the children. When migrated, parents bring gifts home, a sense of joy does prevail, but in the long term a sense of family disunity and lack of communication between children and mother makes the child feel trapped in an emotional trauma which may than have adverse consequences on their educational performance (Ukwatta, 2010). Even in the case of a migrant father, children will have no male role model to look up to. Having a missing family figure head may have adverse emotional consequences leading to social, cultural as well as psychological pressure. In a study on Swaziland, Booth (1995) finds out that the mothers of children whose fathers had migrated complained how their children did not listen to them regarding their studies and other matters. Further, with one parent, in most cases, the father, gone abroad, the work load for the mother increases at home, leaving less time for her to spend with her children, leading to “mother unavailability” for the child. Giorguli Saucedo (2006) in his study finds evidence that children who live with both their parents enter the labor force market late in Mexico, and have greater opportunity to attend school. Another study by Nobles (2006) on Mexico looks at how the effect of the absence of a father by migration is offset by other adults at home. However, he consider household members over the age of 14 to be an adult, and hence, talks about how the presence of siblings and other members at home offsets the negative effect of father absence. While the presence of adults does help in balancing the negative impact of father absence, presence of biological parents has a greater impact which is not completely offset by other household members.

Halper-Manners (2011) in his study on the impact of migration on the youth of Mexico controls for the selectivity bias using an endogenous switching regression method. The paper concludes that migration has significant and negative impacts on educational attainment of children. Even though it relaxes financial constraints, it leads to a trans-nationalized opinion

about the opportunity set, increasing children's expectation about foreign markets and mobility in future, increasing their chances of getting a job even if they are not much educated. With migration, they already expect to earn more than in their home place, hence, they might not opt to study more since migration would put them in a better place anyways as compared to their present situation. Moreover, according to Milligan & Bohara (2007) remittance may create "moral hazard problems" in the sense that families who receive remittance might invest them in risky business projects, causing children to work rather than to study because of the absence of the migrant. McKenzie & Rapoport (2011), using a similar approach conclude that migration imparts disincentive effects on the children back home and particularly lowers schooling for boys between 16-18 years of age.

Migration of the father can have emotional consequences for the child also. "Transitional families"³ are created where the migrant, usually the parent is absent at the time the child is growing up and this may lead to many emotional consequences as well, impacting the child mentally and hence discouraging the prospect of child to develop his/her future. Family disruption arises when the father leaves the household to work outside for an extended time period. Even though the child may appreciate the sacrifices that their father is making for the family and not for his personal interest, however, despite these efforts of the father to communicate with their children, children might still feel the missing communication with their father leading to psychological health problems including loneliness which might have a negative effect on the schooling attitude of the child. Problems of moodiness and disobedience are often reported as well. Migration of the parent, according to Nobles (2006) has the same effect on children's well-being as divorce or separation of the family when we look in the context of duration of time spent apart from either parent. The children of the

³ These are families which have their household members located in at least two different locations which might cause the household heads to change. In many cases the children of these households might be living under the supervision of their grandparents or youth while their parents are away from home (UNFPA 2006, p. 15).

migrant father miss the benefits of their daily interaction with their father and also miss out the presence of a role model and authoritative person at home.

The study closest to our approach is the one by Amuedo-Dornates & Pozo (2010) in which they assess both the impact of remittance and migrant absence on the children left behind in Dominican Republic. The study focuses on the migration from Dominican Republic to USA alone. Initially, they divide their data into migrant and non-migrant households. Their data is such, that most of the children in the entire sample and most of the remittance recipient children belong to the non-migrant household. This means that most of these children belong to households which were receiving remittance from their uncle, aunt and so on, whom they did not consider to be a part of their immediate family living within their house. They do the first half of their analysis with the non-migrant household to assess the impact of remittance, which allows them to isolate the impact of remittance from migrant absence. Further, to assess the impact of migrant absence, they repeat the analysis the second time including children who reside in the migrant household and compare their results. Using US 1999-2000 unemployment rates in USA along with average real earnings in areas from USA where the Dominicans have formed communities as their IV, they conclude that remittance positively impacts schooling but after taking into account the negative impact of migration, a decline in schooling and an increase child labor is seen. The child may engage in market activities to support the migration expenses of the migrant, leaving less time for schooling or the child may be attending household chores in the absence of an adult family member. Moreover, if the children themselves believe that they will migrate in the future, they may drop out if they wish to migrate to a place which has fewer rewards for education.

This paper aims to build up on the present literature in two important ways. Firstly, it builds on the literature of migration by identifying the total effect of migration i.e. we look at the impact of remittance and parental absence both. We separate these two effects quantitatively

which most of the studies do not. Our study will be different from Amuedo-Dornates & Pozo (2010) in the sense that in our sample, all the remittance recipient households have a migrant from within their household. Moreover, they just use one IV for both the samples to look at the impact of migration, but the differences between samples can be endogenous. Hence, we provide a stronger case by presenting two separate IV's in our paper for remittance and father absence. Further, in their study the migrant can be anyone from the household while we specifically focus upon the father of the child to capture the impact of parental absence. Secondly, the study looks at both dimensions of children's well-being i.e. the impact on child labor and schooling status. In doing so, the study explicitly deals with the issue of endogeneity of remittance and father absence mentioned in the literature above. We build our panel analysis using an Instrumental variable approach combined with Household Fixed Effects, which has not been done in literature; at least to our knowledge. We use Kinship Networks as our Instrument since knowledge; due to great association amongst these Kinship groups about someone from amongst them migrating or remitting may encourage others too. Combining this with Household Fixed Effects and Random Effects increases the reliability of our results. Further, specifically for the case of Pakistan, this study is the first to identify together, the impact of remittance and parental absence in a quantitative manner.

THEORETICAL MODEL

The theoretical relationship between remittance, parental absence, child labor and schooling can be seen by the model below. It is a unitary household model where households maximize their utility. This approach has been followed by many including Baland & Robinson (2000), Ebeke (2009), and Wolff (2006).

To begin with, we assume that there are N numbers of identical households which exist in the economy. Each household has two members, an adult and a child. This is an inter-generational model with two time periods, $t = 1$ and $t = 2$. Both the parents and the child live for two time periods. The parents' lives for $t=0$ and 1 while the children live for $t=1$ and $t = 2$. β is the rate of discount taking the values of $0 < \beta \leq 1$. The parent works in $t=1$ only and hence supplies 1 unit of labor which is denoted as $P1$. The households might have any initial wealth which is represented as $P0$. Thus, in $t=1$, parental income is the aggregate of any wage or income they earn and that from inheritance, i.e. $A = P0 + P1$. R represents the remittances which is a wage premium for migrating. Thus, in time 1 , the parent works at home and earns A , or migrates and earns $A+R$. We assume that R is the adjusted for the expense the parents may incur from migration and living away from home.

In the first period, the children can work as well. The time which the children do not spend working is spent in school, since child labor and schooling are simultaneous decisions. Assuming that a child is endowed with 1 unit of time, the parents when $t=1$ need to divide a child's time between labor i.e. l which he/she will do and the amount of time spent on schooling i.e. $1-l$. It is further assumed that the only cost of schooling is the forgone wage or the opportunity cost. Also, it is assumed for simplicity that the child's wage is 1 if he works in period 1 .

In the second period where $t=2$, these children grow up and play the role of their adults as in $t=1$. They now in $t=2$ supply 1 unit of labor, where they earn w , which is a function of the amount of schooling they have i.e. $w [1 - l]$. Following Baland & Robinson (2000), $w [1 - l]$ is concave. The parents do not work in the second period as we assume that they die after $t=1$.

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

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

Two cases are distinguished to show the impact of remittance on child labor and schooling. The first is the one where the credit market works and the second is the one where the credit market does not work. It must be noted that the household decision in this model is unitary and the decision to migrate is treated as exogenous.

The credit market case

In this case, the households are allowed borrowing and lending freely in the credit market. Parents, hence decide how to optimally allocate amount of time children will do child labor (l) as well as the amount of time they will spent while acquiring schooling ($1-l$). The parents must also decide the optimal amount of saving (s) for $t=2$:

$$\text{Max } U(c_1) + \beta U(c_2)$$

$$\text{Where } c_1 = (A + R) + l - s$$

and

$$c_2 = w [1 - l] + s$$

The FOC 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, the utility maximizing time allocation of children between child labor and time amount of time spent in school is given as:

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

It is important to note that R does not come into this equation. As the credit market is present, the households borrow money from the future earnings of the child to finance the child's education. The household maximizes by choosing a level of education $1 - l$, which sets the marginal return of education in period 2 equal to marginal return of period 1 labor. This result suggests that the first period budget constraint does not bind; so the parents can invest the optimal amount, borrowing from the child's future earnings to finance the current education. Hence the total budget available from the parents' income source does not make a difference.

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

The No credit market case

Now, the household needs to maximize its utility again.

$$\text{Max } U(c_1) + \beta U(c_2)$$

$$\text{Where } c_1 = (A + R) + l$$

and

$$c_2 = w [1 - l]$$

FOC:

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

Hence,

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

Note that an increase in R increases 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 assume w to be concave as well, $1 - l$ must increase. Thus, in the absence of a credit market, an increase in remittance causes an increase in schooling. This case is particularly applicable to our study since our study focuses on rural Punjab, where the credit market is not developed to a great extent. In other words, 1st period budget constraint is binding on the education decision, and the remittances helps loosening it.

The model depicts that the utility of the child depends upon his consumption in both periods, along with the schooling and labor decision. Also it predicts that child labor, l decreases with remittance hence increasing schooling i.e. $1-l$. When the results of no credit market are compared to the results of the case where the credit market exists, it can be seen that remittances play an important role in reducing child labor and increasing schooling in the absence of credit market.

We further add the negative impact of migration to this model. The positive impact of remittances can be decreased by parental absence. Hanson & Woodruff (2003) note that a possible impact of migration in the form of disrupted family life by removing parental supervision and monitoring may cause a decline in schooling. E.g. a father might be sending remittance to his child, leading the child to be enrolled in school rather than do child labor. However, this positive impact may be cancelled simply if the child is not studying due to lack

of father's monitoring. The lack of monitoring for the child may cause the child to show a non-serious attitude towards schooling and he/she may end up wasting his/her time. Alternatively, the children may also be forced to take the responsibility of household work or younger siblings in the absence of parents, hence, having less time to devote towards schooling. Parental absence may not only influence the consumption but also the mental and psychological wellbeing of the children, if they are closely attached to their parents. Parental absentee may also induce negative labor market shocks and may cause children to fulfill the role of their parents by working at chores causing the positive effect of remittance to be offset by the negative effect of migration. We take this model and further incorporate parental absence in the model presenting the third case as a step towards our addition and contribution in literature. We combine this with the above results which suggest that remittance affects schooling levels by affecting the credit constraints. Hence, we present the model below with both the channels of migration incorporated.

The case with Parental Absentee Incorporated

Let D be the distance which negatively affects the return to education as the parents are not there to supervise and to ensure that the child is actually studying and not wasting his/her time. We assume that the parents realize that the further they are from their children, i.e. the higher the D , the less monitoring they will be able to do, hence less check and balance on their children. Children may also suffer in education if their parent had helped them in their studies in the past, like in their homework, but has now migrated and over here a higher D means that the parent revisits the home less frequently. We take a situation where there are no credit markets. Let returns to education be $w(\frac{1-l}{1+D})$. Thus, the problem is:

$$\text{Max } U(c_1) + \beta U(c_2)$$

$$\text{Where } c_1 = (A + R) + l$$

and

$$c2 = w \left(\frac{1-l}{1+D} \right)$$

Then the FOC yield:

$$U'(c1) - \beta U'(c2) w' (1-l) \left(\frac{1}{1+D} \right) = 0 \quad (6)$$

$$w' [1-l] = \frac{(1+D)U'(c1)}{\beta U'(c2)} \quad (7)$$

Thus, if the parent migrates, R increases, which has the same effect as above in (5), i.e. a decrease in the right hand side is balanced by a decrease in left hand side, therefore increasing $1-l$. However, migration, now also increases D , which increases the right hand side, causing left hand side to increase which only increases when $1-l$ i.e. schooling decreases. Thus, while remittance increases schooling, the introduction of the impact of parental migration reduces schooling. Thus, the net effect is ambiguous as the direction of bias remains uncertain.

We go ahead to with this model and make the migration decision as a choice variable rather than treating it as exogenous.

The model with Migration as a choice variable

In this case we have same utility maximization problem i.e.

$$\text{Max } U(c1) + \beta U(c2)$$

$$\text{Where } c1 = A + R * M + l$$

and

$$c2 = \frac{w [1-l]}{(1+yM)}$$

Where, M is a dummy variable if the parent migrates and 0 otherwise. γ is a parameter. A higher γ would mean a higher impact of migration in the form of excess work burden and psychological welfare of the child and hence on human capital development. Since now migration is a choice variable, the parent only migrates if the utility derived from migration is greater than the utility from not migrating. In other words, the parent migrates if:

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

Hence,

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

Rearranging gives us,

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

Hence, the parents are more likely to migrate if R (financial returns to migration) increase or the γ (negative effect of migration on child) decreases to hold this inequality. The parents assess the positive and the negative consequences of migration and hence, will only migrate if the benefits exceed the cost.

The FOC yield:

$$U'(c1) = \frac{\beta U'(c2)}{1+\gamma M} \quad (11)$$

Again as the cases presented above, when R increases $c1$ increases which causes $U'(c1)$ to decrease. To balance this, the right hand side variable should decrease which only decreases when $c2$ increases or in other words when l decreases. Hence, increase in remittance causes child labor to decrease and increases schooling. Similarly, the greater the negative impact of migration (greater the γ) would mean the smaller is the right hand side. To balance this, left

hand side must decrease, which decreases when l increases. Hence, migration increases child labor and reduces schooling.

The effect of migration is ambiguous when we incorporate both remittance and parental absence in the model. This paper builds on the existing literature by quantifying both the effects empirically.

It must be noted that the above model can be extended by making it into an overlapping generation model in which these children become parents and so on. This however is beyond the scope of our research.

DATA

Two data sets are used for this analysis to create a panel. The first one is taken from Punjab Government's "Multiple Indicator Cluster Survey (MICS)". It has been conducted at a tehsil and district level for the year 2007. The second data set used to create a panel is a survey funded by the Open Society Institute's "Privatization in Education Research Initiative (PERI)". It has been conducted by the Lahore School of Economics in collaboration with the Punjab Bureau of Statistics in eight rural tehsils of Punjab in 2011. It is based on seven districts, namely Bahawalpur, Faisalabad, Jhang, Hafizabad, Nankana Sahib, Khanewal and Chakwal. The PERI data set is based on 1024 households, which were a part of MICS survey as well⁴.

For our analysis, the age of the child considered is between 5 to 14 years. After cleaning the data and taking account of missing information and incomplete surveys, we are left with a panel of 820 households. For our analysis, we construct the panel on a household level where the same households overlap in MICS and PERI. However, the same children within the household might not overlap since we do not construct individual level panel but rather at a household level, hence, it's not necessary for one child to be in our analysis for both rounds. So if any child at the time of the survey was in the age bracket of 5-14 years, we include that child in our sample for that particular year. In our analysis, 1382 children fall within the 5-14 years old age bracket in 2007 and 1581 children fall within this age bracket in 2011 from amongst these 820 households. 52% of these children overlap, hence they were part of both the rounds while the remaining were just part of either MICS or PERI.

⁴ More information about PERI (2011) is available at : <http://www.creb.org.pk/Data%20PERI>

DESCRIPTIVE STATS

Figure 1 below shows the households which had a migrant for the years 2007 and 2011 respectively. This shows that migration has increased between these years.

Figure 1: Percentage of Migrant and Non-migrant HH in 2007 and 2011 respectively

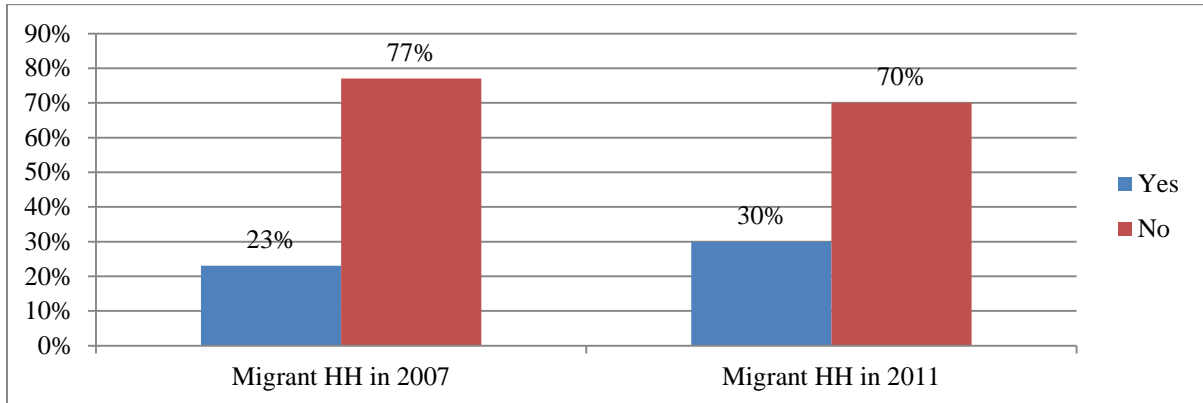


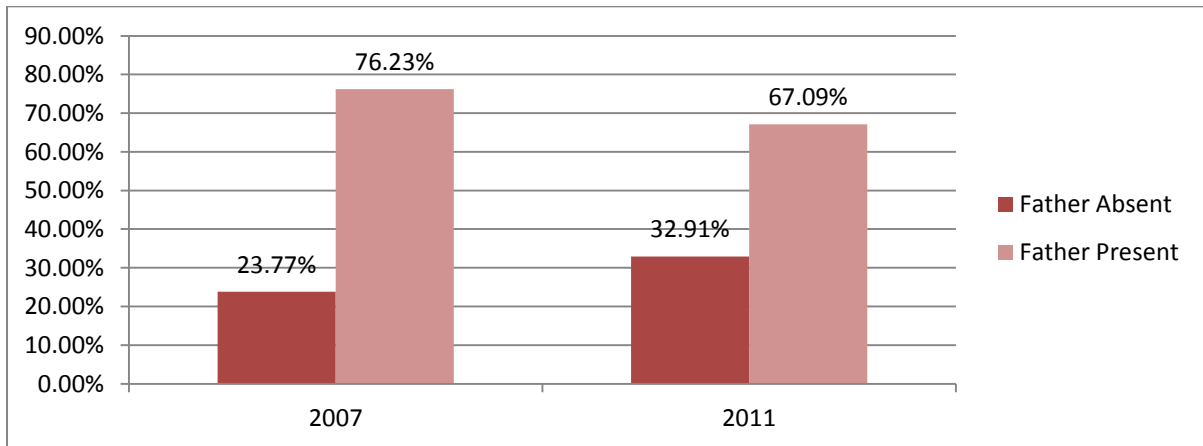
Figure 2 below shows the distribution of the children in our sample who belong to a migrant and a non-migrant household in the years 2007 and 2011 respectively.

Figure 2: Children belonging to a Migrant and a Non Migrant Household



When we further scrutinize the data to look at the percentage of children for whom the father is present specifically, we get the following results summarized in the figure below:

Figure 3: Children according to the Presence of Father



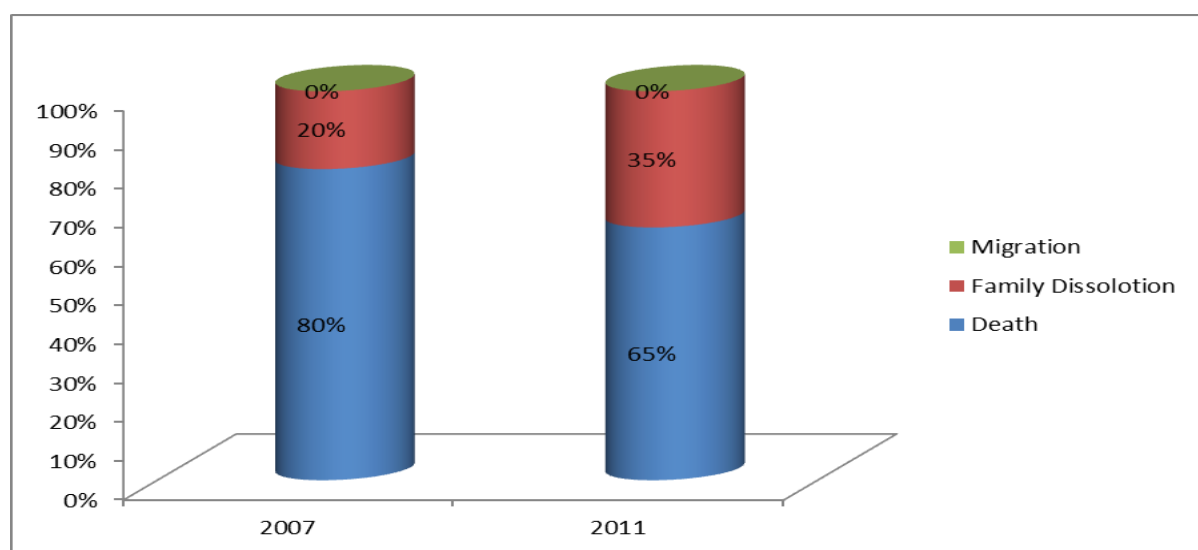
The father was absent due to three reasons; migration, family dissolution due to separation or divorce and death. Further, besides father absence, we look at the status of the mother of the child, whether she is present at home or not.

Figure 4: Children according to the Presence of the Mother



For the mothers who are not present, we look at the reasons for it. None of the mothers in both the years is missing due to the reason of migration. Death, divorce or separation is the only reason making her absent in the household as shown below:

Figure 5: Reasons for the Mother being Absent as a Percentage of Children for whom the Mother is Absent



Of the mothers not present, majority have died while others don't live with their child due to divorce or separation.

Further in our analysis, we present the percentage of household which receive remittance and the distribution of remittance between domestic and international remittance.

Table 2: Households according to the Receipt of Remittance

Sources of Remittance	Percentage of Households	
	2007	2011
No Remittance	84%	81%
Remittance	16%	19%

Distribution of Remittance Receiving HH according to the type of remittance

	2007	2011
Domestic Remittance Only	75%	73.68%
International Remittance Only	18.75%	21.05%
International and Domestic Remittance	6.25%	5.27%

The table indicates an increase in the number of households receiving remittance. However, major chunk of remittance is coming from within Pakistan. Remittance coming in from International sources forms a small portion.

Table 3: Children according to their activities

Child Activities	2007		2011	
	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%

Table 3 above shows that there is an increase in the number of children going to school only. Work over here includes both domestic and outside work. School and work, as well as work only declines for both genders.

We further look at the type of work being done. Figure 6 below shows, that of the total number of children working, 11% were doing outside child labor in 2007 while this declined to 7% in 2011. Figure 7 shows the total number of children as a percentage of the total number of children working in the sample who do inside child labor i.e. work for more than 10 hours per day on household chores.

Figure 6: Children working outside as a Percentage of the total number of Working Children

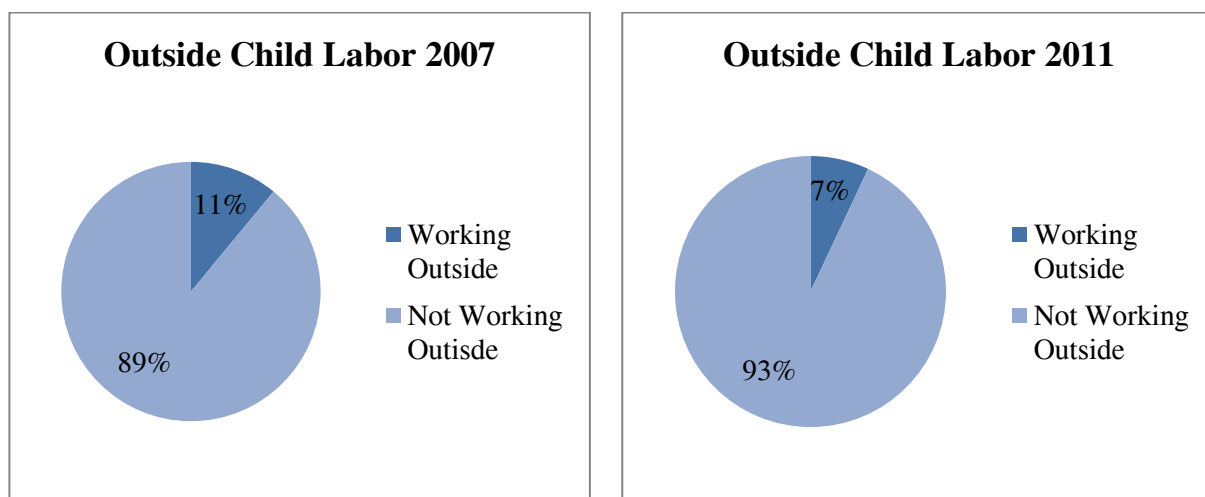
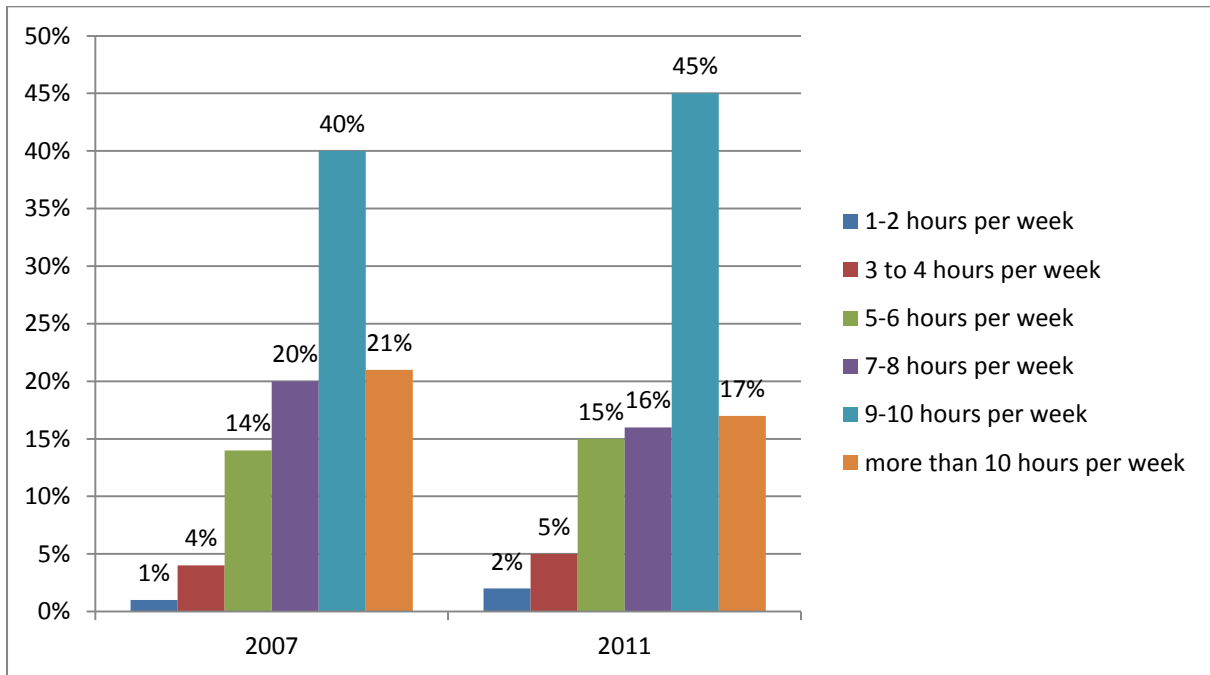


Figure 7: Percentage of children working within the household according to the hours worked in the last week



METHODOLOGY

We begin with a simple model to look at impact of Remittance and Father Absence on child's welfare. Since our dependent variables are binary, we use Linear Probability Model (LPM) in estimating the specifications mentioned below. LPM not only allows the coefficients to be compared across groups and models, it also allows for intuitive interactions. Further, LPM has an advantage of giving results of coefficients that are very close to their discrete counterparts for the cases where we have dummy variables. LPM works fine in cases where we want to estimate the average effect of a variable on any outcome of interest (Angrist J. D., 2001).

The main issue with LP model is that the predicted values might not be between the interval of 0 and 1. The reason why we don't use Probit Model or Logit Model instead of LPM in our analysis is that Probit doesn't allow us to use Household Fixed Effects, while Logit doesn't allow us to use the IV approach. Therefore, using Probit or Logit does not allow us to use the identification strategy used in this paper i.e. we combine the instrumental variable approach with the household fixed effects. A combination of both of these together, besides being our contribution in the methodology section towards the literature on migration, increases the reliability of our results as compared to the results we would get by using just one of these techniques under the Logit or Probit Model.

1. Main Specification

Based on the theoretical model, this specification will test the first hypothesis where we expect remittance to bring about a positive impact on children's welfare, reducing child labor and increasing school enrollment by relaxing the financial constraint. While on the other hand, father absence is expected to have a negative impact on children's welfare, increasing child labor and reducing school enrollment due to lack of monitoring and excessive work load on child's shoulder.

$$Y_{iht} = \beta_0 + \beta_1 X_{iht} + \beta_2 Z_{ht} + \beta_3 W_{ht} + \beta_4 \text{Remittance}_{iht} + \beta_5 \text{FatherAbsent}_{iht} + \varepsilon_{iht} \quad (1)$$

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

1. **Schooling_{iht}**: It is a dummy variable for the child i belonging to household h if he/she is currently enrolled in school at time t . Hence, if the child was “attending school” at the time of the survey, we take it as 1 and 0 otherwise.

2. **Over all Child Labor_{iht}**: It is a dummy taking the value of 1 if child i has been indulged in any kind of domestic and non-domestic work during the past week and 0 otherwise at time t . We follow the definition of child labor as adopted by Binci & Giannelli (2012) where we consider a child as being engaged in labor if they answered ‘yes’ to at least one question related to past 7 days work of the child. According to this if the child i worked for outside for someone who is not a member of this household, or helped with household chores or did some family work like selling goods on streets in the past week, we take it as 1 and 0 otherwise⁵. Refer to Table 3 in the descriptive stats section, where work is the Overall child labor being done which includes both domestic and non-domestic work. Variation in this variable comes from the fact that many people answered that their child was going to “school only”, indicating that his/her child was not involved in any kind of work inside or outside of the household. One possible reason for this could be that people usually tend to consider something as child labor if the child does that specific work for a great span of time. Helping for some time, be it inside or outside the household might be considered different than child labor and if the child works for few hours only, in that case the parent might not consider it as labor. Figure 7 in the descriptive stats section shows for the majority of the children who are reported to be involved in household work

⁵ UNICEF also includes work done inside the household as a part of child labor.

usually report hours greater than 6 hours per week. Only few report working for less than 5 hours per week, hence supporting our argument.

3. ***Domestic or Inside Child Labor*** $_{iht}$: It is a dummy taking the value of 1 if the child has been indulged in any kind of household chores for more than 10 hours in the last week and 0 otherwise⁶.
4. ***Non domestic or Outside Child Labor*** $_{iht}$: It is a dummy taking the value of 1 if the child i has been indulged in any kind of non-domestic work or in other words, if the child did some work for someone who is not a member of the household during the past week, we take it as 1 and 0 otherwise at time t .

Schooling and child labor decisions are a function of household and individual characteristics. X_{iht} is a vector of child's characteristics at a particular point in time t belonging 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 Baradari characteristics of a given household h at a particular point in time t .

Remittance is the monetary value (1000's of rupees) of the amount of remittance received in the past year at a particular point in time t . It includes both the domestic as well as international remittance being received by the household h . We use remittance amounts rather than logs since around 80% of the households in our sample don't receive remittance or their remittance value is 0 and log of 0 is not defined. Taking log on this would mean that we drop out a major portion of our sample⁷. *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 could be absent due to any kind of migration, international or domestic. For our study we cannot identify the exact location as to where the father migrated but since majority of the migrants

⁶ This is as defined in the Global Estimates of Child Labor by International Labor Organization (ILO, 2009).

⁷ Later in the paper we do use the log of income plus remittance as a robustness check.

migrated domestically, we only know that most of these fathers have migrated within Pakistan. Their distance from home and hence their frequency of revisits is something we can't measure.

We have consider both effects of migration in order to assess its effect on the child, as the theoretical model presented predicts that the positive effect of remittance is canceled out by the negative effect of migration due to parental absence. However, in our study we are looking at the parental absentee in the form of the father being absent. This is simply because in our sample, it is only the fathers who have migrated, while the no mother is absent due to the reason of migration⁸. ε_{iht} is the time varying or idiosyncratic error term that represents unobservable effecting the dependent variable.⁹

Specification issues

A simple OLS will give us biased estimates. The error term and the explanatory variables can be correlated due to problem of omitted variables and selection bias as well as due to reverse causality. Following are the problems and the solutions to each problem which we adopt in this paper:

Endogeneity for the Remittance and Father Absent variable and Selection Bias

Ideally, we would want to have unbiased estimates by looking at the causal impact of remittance between households receiving remittances and their outcomes in the counterfactual scenario when these same households do not receive remittance. However, since households who receive remittance or have a parent absent due to migration, are actually “Self-Selected” based on their unobservable characteristics, therefore, households without migrants or households who do not receive any remittance will not be a good counterfactual for them.

⁸ See Figure 5 in Descriptive Stats Section.

⁹ See Appendix 1 for the detailed discussion on controls and their summary stats.

Remittance relaxes financial constraint increasing school and reducing child labor back home. However, there can also be a situation, where parents or the migrant values education and hence migrates, so that they can earn and send their children to school. In this case it is schooling which is causing the inflow of remittance. E.g. a father might be remitting home to reward his child who has been promoted to a next grade and is doing well in studies. In this case, schooling is determining remittance sent. This creates simultaneity bias in our estimates.

Hanson & Woodruff (2003) give an example of a father who loses his job due to bad economic conditions in resident area and may decide to migrate in order to seek of better employment. These adverse conditions may also force children back home to quit school and compensate for the absent father in terms of household chores. They also argue that a poor household will be less likely to send someone from their household abroad and at the same time would be less likely to send their child to school. Hence, this will create bias in a simple OLS estimation.

Further, household's opportunities and connections may bias our estimates as well. Even unobservable like child's ability and parent's perception about schooling and the motivation they provide to their children effects the left hand side variables creating endogeneity in our estimates.

Even though we add relevant controls but still adding controls will still not solve our problem completely as unobservables will remain an issue. Hence, using an OLS with observables added as controls will still give us biased estimates¹⁰.

Since adding controls does not address all issues, we do an IV approach along with Random Effects and an IV approach with Household Fixed Effects. We instrument the endogenous variables and present two set of results, the first one being the IV along with Random Effects

¹⁰ See Appendix 1 for detailed discussion on the controls added.

and the second one being the IV along with Household Fixed Effects. The following section explains in detail how these approaches help us get better estimates as compared to the OLS.

Instrumental Variable Approach with Random Effects and Household Fixed Effects

To correct for the endogeneity issue, we use the Instrumental Variable Approach. We use kinship network (commonly known as Baradari network in Pakistan) as our instrument. We instrument both remittance and father absent by creating separate IV's for both. The kinship network variable created is the fraction of households belonging to a given kinship group in a given district who receive remittance, excluding the household j at a given point in time t i.e.

Remittance Kinship or Baradari IV=

Number of Households belonging to Baradari B from District D who receive remittances at time t, excluding household j

Number of Households belonging to Baradari B from District D at time t

Where Baradari B refers to various types of Baradari or the type of Kinships and District D refers to various Districts. Thus, for remittance, the kinship network refers to the fraction of households belonging to a given kinship group in a given district who receive remittances, excluding the household j . While for the father absent, the kinship network refers to the fraction of households belonging to a given kinship group, in a given district, who have a migrant, excluding household j . The instruments help in exploiting the variation over time in the migrant network to which a particular household belongs to. Hence, this leads to exogenous variations in the likelihood of migrating as well as the amount of money being sent back. The father can be absent due to various reasons but since we use the Migrant Baradari IV, it captures the migration effect of the father being absent or the LATE effect. Hence, we will have the following first stages:

$$\begin{aligned} \text{Remittance}_{iht} = & \mu_0 + \mu_1 X_{iht} + \mu_2 Z_{ht} + \mu_3 W_{ht} + \mu_4 \text{Remittance Baradari IV}_{ht} + \mu_5 \text{Migrant} \\ & \text{Baradari IV}_{ht} + \varepsilon_{iht} \end{aligned} \quad (2)$$

$$\begin{aligned}
\text{FatherAbsent}_{iht} = & \mu_6 + \mu_7 X_{iht} + \mu_8 Z_{ht} + \mu_9 W_{ht} + \mu_{10} \text{Remittance Baradari IV}_{ht} + \mu \\
& \text{Migrant Baradari IV}_{ht} + \varepsilon_{iht}
\end{aligned} \tag{3}$$

We will then use the predicted values of remittance and father absent from the first stage in the original specification. Hence, our second stage becomes:

$$Y_{iht} = \beta_0 + \beta_1 X_{iht} + \beta_2 Z_{ht} + \beta_3 W_{ht} + \beta_4 \widehat{\text{Remittance}}_{iht} + \beta_5 \widehat{\text{FatherAbsent}}_{iht} + \varepsilon_{iht} \tag{4}$$

The intuition behind constructing kinship network variables is that since people who belong to the same Baradari and live in the same district, have a lot of association amongst themselves, the presence and knowledge about anyone from amongst their network migrating may motivate people to migrate and send remittances to family and friends back home. They may even provide the potential migrant with information about how to access a job and if the potential migrant migrates to the same place as someone from their kinship group has already migrated, they may provide the migrant with a shelter and perhaps a job, hence encouraging migration. It may also encourage remittance inflows. If a household belonging to the same Baradari in the same District receives remittance, it may even encourage other households to receive remittance if they already have a migrant but who is not remitting back home, once they see the benefits driven out of remittance. It can also be the social pressure which may increase remittance inflows.

We combine the IV estimates with Household fixed effects and separately with Random effects and compare these two results side by side. Doing this helps us check the robustness of our results.

Random effects are used when we believe there is no omitted variable problem in our specification or in cases where we believe that the omitted variables are uncorrelated with our model. Random effects produce unbiased estimates and the smallest standard errors if we use

all the data available (William, 2010). For this, we add a set of relevant controls when estimating the specification with random effects.

The major issues with using Random Effects is that it will estimate the effects of time invariant variables but will produce biased results since we do not control for omitted variable bias. Hence we only present the results from Random Effects as robustness checks to support our argument, while we mainly conclude our results from Household Fixed Effects and hence, base our discussion on it.

Fixed effects works when omitted variable bias is a problem. In this case, the subject is the control group themselves. Like in the case of household fixed effects, the household j is the control group itself. The main idea is that there will be some time invariant factors affecting the household at one time and they will continue to effect the household in the same way at later point in time i.e. the effect remains constant or fixed. Using Household Fixed Effects controls for unobservable which are time invariant within a household.

Validity of the IV

Using Household Fixed Effects along with the IV makes our argument more valid in the sense that the IV deals with the variation over time in the network - i.e. it is quasi-random variation in which someone might migrate to a particular destination, and then send money to their co-baradari members. For example, there can be a village in which most of the migrants migrate to a place with good economic opportunities (like Norway) because one person from their network did hence, others followed. On the other hand there can be some networks in which the majority of the migrants go to poorer places (like Karachi) where there are not much economic opportunities hence earn less which can be sent in remittances. That is the kind of quasi-random change are being exploited by the change in fraction of Baradari networks.

In reality, Baradaris differ from one another in the form of entrepreneurial skills, ability, and connectivity and so on. Since Baradari is something that remains the same for a household over a period of time, using Household Fixed Effects controls for the different dimensions of the Baradari that do not change over time since we are using a panel data, the numerator for our IV will be different for both time periods for a single household h as the receipt of remittances and migration changes over time, hence changing our IV for a single household for the two time periods, allowing us to use the HH FE strategy. Hence, the net change is exogenous as variations in characteristics between Baradaris don't drive our results.

Hence, it's perfectly legitimate and reasonable to conceive that such changes in kinship networks are correlated with the receipt of remittances and migration for reasons explained above making the IV informative, but not with household level labor market decisions at home. Knowledge about someone from your Baradari migrating and remitting in no way effects the schooling or child labor decision of child i , thus, indicating that it only affects schooling and child labor decisions through remittance and migration not through any other channel, hence being logically valid¹¹

The ε_{iht} is actually being decomposed into two components; α_h and v_{iht} . Hence we may rewrite specification 1 as follows:

$$Y_{iht} = \beta_0 + \beta_1 X_{iht} + \beta_2 Z_{ht} + \beta_3 W_{ht} + \beta_4 \text{Remittance}_{iht} + \beta_5 \text{FatherAbsent}_{iht} + \alpha_h + v_{iht} \quad (5)$$

α_h are the time invariant household characteristics which are unobservable and do not change over time while v_{iht} are the characteristics which are unobservable and may change over time. Hence using Household Fixed Effects will factor out the α_h part of the unobservable which were biasing our estimates.

¹¹ We test the validity of the instruments by using the overid test as well, which is given in a section 8 later in the paper.

2. Extending the Main Specification to look at Gender Impact

In this part, we take the main specification further and check whether the impact of remittance and father absence differs for girls and boys. Hence, we interact remittance and father absent with dummies created for *Male* and *Female*.

$$Y_{iht} = \beta_0 + \beta_1 X_{iht} + \beta_2 Z_{ht} + \beta_3 W_{ht} + \beta_4 \text{Remittance}_{iht} * \text{Male}_{iht} + \beta_5 \text{Remittance}_{iht} * \text{Female}_{iht} + \beta_6 \text{FatherAbsent}_{iht} * \text{Male}_{iht} + \beta_7 \text{FatherAbsent}_{iht} * \text{Female}_{iht} + \beta_8 \text{Male}_{iht} + \beta_9 \text{Female}_{iht} + \varepsilon_{iht} \quad (6)$$

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

Since *Remittance_{iht}* and *FatherAbsent_{iht}* are endogenous, their interaction terms will also be endogenous, so we need to instrument for these. We construct IV's for them as follows:

Endogenous Variable	Instrument
<i>Remittance_{iht} * Male_{iht}</i>	<i>Remittance Baradari IV_{ht} * Male_{iht}</i>
<i>Remittance_{iht} * Female_{iht}</i>	<i>Remittance Baradari IV_{ht} * Female_{iht}</i>
<i>FatherAbsent_{iht} * Male_{iht}</i>	<i>Migrant Baradari IV_{ht} * Male_{iht}</i>
<i>FatherAbsent_{iht} * Female_{iht}</i>	<i>Migrant Baradari IV_{ht} * Female_{iht}</i>

Thus, we will have four endogenous variables; we will have four first stages which would be as follows:

$$K_{iht} = \mu_{12} + \mu_{13} X_{iht} + \mu_{14} Z_{ht} + \mu_{15} W_{ht} + \mu_{16} \text{Remittance Baradari IV}_{ht} * \text{Male}_{iht} + \mu_{17} \text{Remittance Baradari IV}_{ht} * \text{Female}_{iht} + \mu_{18} \text{Migrant Baradari IV}_{ht} * \text{Male}_{iht} + \mu_{19} \text{Migrant Baradari IV}_{ht} * \text{Female}_{iht} + \mu_{20} \text{Male}_{iht} + \mu_{21} \text{Female}_{iht} + \varepsilon_{iht} \quad (7)$$

Since we have 4 endogenous variables, we have 4 first stages where *K_{iht}* is as follows:

1. *Remittance_{iht} * Male_{iht}*

2. $Remittance_{iht} * Female_{iht}$
3. $FatherAbsent_{iht} * Male_{iht}$
4. $FatherAbsent_{iht} * Female_{iht}$

Hence, the second stage becomes:

$$Y_{iht} = \beta_0 + \beta_1 X_{iht} + \beta_2 Z_{ht} + \beta_3 W_{ht} + \beta_4 Remittance_{iht} \wedge * Male_{iht} + \beta_5 Remittance_{iht} \wedge * Female_{iht} + \beta_6 FatherAbsent_{iht} \wedge * Male_{iht} + \beta_7 FatherAbsent_{iht} \wedge * Female_{iht} + \beta_8 Male_{iht} + \beta_9 Female_{iht} + \alpha_h + v_{iht} \quad (8)$$

Since we have already controlled for the gender of the child, the gender interaction terms with remittance and father absent for both male and female will allow us to look directly as to which gender is affected by remittance and father absence more. We can compare the impact of remittance on males and females by comparing the coefficients β_4 and β_5 , while we can compare the impact of father absent for males and females 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 interacted with the gender shows the differential levels of migration influenced from change in baradari networks for male and female children. Following Angrist & Pischke (2009) explanation, the main effect of being a Male is captured by the β_8 term while the interaction between $Remittance_{iht} * Male_{iht}$ will tell how the effect of remittance differs by gender for males which is captured by β_4 , while $FatherAbsent_{iht} * Male_{iht}$ will tell us how the father absence effect differs by gender for males which is captured by β_6 . Same will be the case for the interaction terms with female.

3. Extending the Main Specification to look at the impact of the Mother being Present

In this part, we look at the extent to which the absence of a father may be compensated by the presence of the mother. We hypothesize that the negative impact of fathers absence to a

certain extent be offset by the presence of the mother as she will not only prevent the entire work burden, due to the absence of the father, being felt on the children's shoulder but will also be there to monitor them.

$$Y_{iht} = \beta_0 + \beta_1 X_{iht} + \beta_2 Z_{ht} + \beta_3 W_{ht} + \beta_4 \text{Remittance}_{iht} + \beta_5 \text{FatherAbsent}_{iht} + \beta_6 \text{Motherpresent}_{iht} + \beta_7 \text{Motherpresent}_{iht} * \text{FatherAbsent}_{iht} + \alpha_i + \varepsilon_{iht} \quad (9)$$

Mother present is a dummy variable taking the value of 1 if the mother of child *i* belonging to household *h* is present at home at time *t* and 0 otherwise. This specification is the same as the main specification with the only difference being the inclusion of an interaction term between the mother present and father absent. β_7 is the coefficient of interest here as it helps us show that to what extent is the presence of the mother of the child offsetting the impact of the father being absent¹².

Again the problem of endogeneity arises over here, so we instrument for *Remittance*, *Father Absent* and *MotherPresent* Fatherabsent*. We create an instrument for the term *MotherPresent* Fatherabsent* by interacting Mother present with the Migrant Baradari IV.

Endogenous Variable	Instrument
<i>Remittance_{ht}</i>	<i>Remittance Baradari IV_{ht}</i>
<i>Father Absent_{iht}</i>	<i>Migrant Baradari IV_{ht}</i>
<i>MotherPresent_{iht}* Fatherabsent_{iht}</i>	<i>Migrant Baradari IV_{ht}*Motherpresent_{ht}</i>

Hence, our additional first stage in this specification is:

¹² Table in appendix 2 attached at the end shows the collinearity test between father absent and the motherpresent*fatherabsent interaction term. We test for the collinearity between the two since the number of mother's absent in our sample is small when the father is absent, so we suspect the terms father absent and motherpresent*fatherabsent to be collinear. When we formally test for it, we pass this test indicating that collinearity is not problematic in our model.

$$\begin{aligned}
& \mathbf{FatherAbsent}_{iht} * \mathbf{Motherpresent}_{ht} = \mu_{22} + \mu_{23} X_{iht} + \mu_{24} Z_{ht} + \mu_{25} W_{ht} + \mu_{26} \mathbf{Remittance} \\
& \mathbf{Baradari IV}_{ht} + \mu_{27} \mathbf{Migrant Baradari IV}_{ht} + \mu_{28} \mathbf{Migrant Baradari IV}_{ht} * \mathbf{Motherpresent}_{ht} + \\
& \varepsilon_{iht} \tag{10}
\end{aligned}$$

Hence, the second stage becomes:

$$\begin{aligned}
Y_{iht} = & \beta_0 + \beta_1 X_{iht} + \beta_2 Z_{ht} + \beta_3 W_{ht} + \beta_4 \mathbf{Remittance}^{iht} + \beta_5 \mathbf{Father}^{Absent}_{iht} + \\
& \beta_6 \mathbf{Motherpresent}_{iht} + \beta_7 \mathbf{Motherpresent}^{iht} * \mathbf{FatherAbsent}_{iht} + \alpha_h + v_{iht} \tag{11}
\end{aligned}$$

Mother present as an Exogenous Variable

Mother present would also have been endogenous if any mother in our sample was not present because she had migrated. In that case, as in the case of *Father Absent*, unobservable could have lead the problem of endogeneity, where factors likes motivation and enthusiasm would have effected both the right hand side variable i.e. *Mother present* and the left hand side variable making our estimates biased. However, in our case we can argue that this variable *Mother present* is exogenous. This is because in our sample if any mother is not present, that is not because she has migrated. In simpler words, no mother in our sample is absent due to migration¹³. Thus, for the mothers, for whom this variable takes a value of 0, it's because the mother has either died or the family is separated or divorced. None of the mothers is absent due to migration in our sample. The survey asks question about the presence of the person and has the following options: “(a) yes, present (b) no, moved because of marriage (c) no, extended family broke into multiple households (d) no, emigrated (e) moved due to divorce/ separation (f) no died (g) others”. For the mothers of the children who were not present, none of the household members answering this question on their behalf chose option (d).

¹³ See Descriptive Stats Section, Figure 4 and Figure 5.

This is something which might not be surprising as in Pakistani culture, belonging to rural areas the norms regarding female travelling and responsibility towards household and children restricts female mobility. Females usually tend to migrate if the entire household migrates. These households are not a part of our sample. Hence, we may not worry about *Mother present* being endogenous.

7. Results and Discussion

We begin by presenting the results of the main specification on pooled data using a simple OLS technique without controlling for any omitted variable problem to provide a baseline of results for comparison. We then estimate the main specification using IV along with Random Effects and IV along with Household Fixed Effect, followed by its discussion. We further build on our model by presenting the results with gender interaction and mother present respectively. Our results indicate that while remittance is beneficial for the child, it does not compensate fully for the absent father. The increased work load and mental trauma is only balanced completely if the mother of the child is present at home and not through the money coming in. As far as the impact of remittance and father absence is concerned on gender differential bases, a gap does exist where the absence of the father favors the boys instead of girls when it comes to working inside the house. Even this gap exists and favors the boys when it comes to increased schooling in terms of the remittance coming in. However, this gap doesn't exist when it comes to working outside the house, where the absence of the father causes both the genders to work more outside.

We move in the order of presenting the first stage results first. Our instruments come out to be significant in explaining the endogenous parameters, hence being informative. Below every table we present the IV diagnostics to further support the IV. As a rule of thumb, we get the F value of excluded instruments to be greater than 10, hence showing our instruments to be informative.

OLS results of Main Specification using Pooled Data

Table 4:

Y_{it}	SCHOOLING	OVER ALL CHILD LABOR	INSIDE CHILD LABOR	OUTSIDE CHILD LABOR
	(1)	(2)	(3)	(4)
Remittance Value (1,000's)	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)
<p>Variables included but not shown in the table: Childs age, Childs age2, Male, Heads age, Heads age2, Heads gender, Heads education, Fathers education, Mother present, Mothers education, Wealth, Size of HH, Average Baradari wealth, Average Baradari heads education, Time, District Dummies, Constant¹⁴</p> <p>Number of observations=2963 Std. Err. clustered at district level; 7 districts * p<0.10, ** p<0.05, *** p<0.01</p>				

¹⁴ Appendix 3 shows the complete table.

The results from a simple OLS estimation suggest two things. Firstly, remittance coming in is correlated with the schooling decision of the child. For every 1000 rupees (\$10) remittance coming in, 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 migration of a father is beneficial mainly through the remittance he sends back. Schooling is actually being determined by the finances at home and money coming in through remittance reduces the binding constraint, hence giving children the opportunity to be enrolled in school.

While, as far as child labor is concerned; only father absence is significantly correlated with it. Remittance only seems to matter when it comes to working outside the household. The migration of the father increases the probability of child being engaged in overall child labor by 22 percentage points, making the child work more both inside and outside the home. This result suggests that with the father migrating, the child is left with additional responsibilities inside and outside home which he must deal with in absence of his/her father, hence increasing child labor. The amount of remittance coming in does not come out to be significant for child labor inside the home, suggesting that with the migration of the father, the amount of money coming in may not be beneficial in reducing child labor at home, however it does seem to substitute for the work child needs to do outside the house in the sense of relaxing the financial constraint hence freeing him/her of work done outside, which is mainly the paid labor.

However, as mentioned above, the estimates from OLS are biased due to the problem of omitted variable bias and selectivity issue; we may not trust these estimates. We correct for this problem by using IV along with Random Effects and IV along with Household Fixed Effects with results presented below. Since Household Fixed Effects are much more reliable than Random Effects for the reasons mentioned above, we rely on the results with Household Fixed Effects, presenting results from Random Fixed Effects as robustness checks.

LPM Results from Main Specification
First Stage Results

Table 5:

	RANDOM EFFECTS		HOUSEHOLD FIXED EFFECTS	
	<i>REMITTANCES</i>	<i>FATHER ABSENT</i>	<i>REMITTANCES</i>	<i>FATHER ABSENT</i>
	(1)	(2)	(3)	(4)
Remittance Baradari IV	527.7553**	-0.0801	439.6886***	-0.0790
	(145.1137)	(0.1331)	(87.6270)	(0.1166)
Migrant Baradari IV	-100.3875	1.0408***	92.8280	1.0696***
	(92.9682)	(0.0544)	(49.6866)	(0.0467)

Variables included but not shown in the table: Childs age, Childs age2, Male, Heads age, Heads age2, Heads gender, Heads education, Fathers education, Mother present, Mothers education, Wealth, Size of HH, Average Baradari wealth, Average Baradari heads education, Time, District Dummies, Constant¹⁵

Number of observations=2963

Number of groups=820

Std. Err. clustered at district level; 7 districts

* p<0.10, ** p<0.05, *** p<0.01

First Stage F value of Excluded Instruments

Random Effects

Remittance 13.23

Father Absent 365.79

Household Fixed Effects

Remittance 25.18

Father Absent 523.45

¹⁵ Appendix 4 shows the complete table.

Second Stage Results

Table 6:

Y_{it}	SCHOOLING		OVER ALL CHILD LABOR		INSIDE CHILD LABOR		OUTSIDE CHILD LABOR	
	<i>RANDOM EFFECTS</i>	<i>HOUSEHOLD FIXED EFFECTS</i>	<i>RANDOM EFFECTS</i>	<i>HOUSEHOLD FIXED EFFECTS</i>	<i>RANDOM EFFECTS</i>	<i>HOUSEHOLD FIXED EFFECTS</i>	<i>RANDOM EFFECTS</i>	<i>HOUSEHOLD FIXED EFFECTS</i>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Remittance value (1,000's)	2.0001 (2.0111)	13.3211* (8.4000)	-3.0001** (1.1000)	-1.0800 (0.7000)	-2.0896** (1.2953)	-0.9761 (0.6224)	-2.0001** (1.1000)	-4.1414 (3.0000)
Father absent	-0.0821 (0.0559)	-0.0090 (0.1298)	0.2942*** (0.0502)	0.2561** (0.1122)	0.2942*** (0.0502)	0.2304* (0.1059)	0.0549** (0.0264)	0.1079** (0.0500)

Variables included but not shown in the table: Childs age, Childs age2, Male, Heads age, Heads age2, Heads gender, Heads education, Fathers education, Mother present, Mothers education, Wealth, Size of HH, Average Baradari wealth, Average Baradari heads education, Time, District Dummies, Constant¹⁶

Number of observations=2963
 Number of groups=820
 Std. Err. clustered at district level; 7 districts
 * p<0.10, ** p<0.05, *** p<0.01
 Instrumented: Remittance Value, Father Absent

¹⁶ Appendix 4 shows the complete table.

The results from Table 6 indicate that the inflow of money in the form of remittance has a positive impact on increasing the probability of child being enrolled in school. This result suggests that money is an important component towards enrolling child in school and to certain extent remittance helps in that. For schooling, the coefficient for remittance in household fixed effects comes out to be larger and significant as compared to random effects indicating that the impact of remittance increases after we control for all time invariant heterogeneity between household. This result suggests that to certain extent remittance leads to a relaxation of financial constraint and fee expense which can lead to a positive enrollment of the child in school. After controlling for household time invariant factors, an increase in the annual remittance of 1,000 rupees (or \$10) increases the probability of being enrolled in school by 13 percentage points.

Our result opposes the strand of literature suggesting that remittance only increases the consumption level or durable goods expenditure in developing countries like Pakistan instead of promoting investment activities like education (Amuedo-Dorantes & Mundra, 2007). Our results suggest that remittances are used rationally by households in productive investments and not only on consumption or for basic subsistence needs. Remittances are actually providing assistance to the family who needs to invest in human capital. Households receiving remittances spend it in the form of productive investments, investing their remittances in their children to gain long term benefits from it ultimately channeling the money from remittance towards a poverty reduction measure for the long term.

Our results are in line with the one found by Gonzale-Koning & Wodon (2007). The children might develop gratitude or sense of responsibility towards their father and may want to return him back when he gets back home, hence opting to attend school and get higher returns.

Even though remittances are significant in reducing overall child labor in Random Effects i.e. column (3), it loses its significance in Household Fixed Effects i.e. column (4). This could be due to reduced power in Household Fixed Effects estimates as compared to Random Effects, since sign &

magnitude of coefficient are similar – in fact magnitude is actually larger in Household Fixed effects. Similar trend follows for remittance when we look at inside and outside child labor.

This result indicates that money coming in from remittance is not only beneficial to increase school enrollment but also helps in reducing child labor. Inflow of money coming in through remittances reduces the financial constraint of the household, hence freeing the child from child labor. Inflow of money in the form of remittance may not only ease the financial constraint hence discouraging child not to work, it also reduces the responsibilities on the part of child when it comes to household work. More money allows the household to hire extra labor from outside ultimately freeing the children of the household work like cooking, or taking care of younger siblings and so on. Also the money coming in can be used on labor saving devices e.g. on installing gas stoves rather than collecting of firewood and so on, hence freeing the child from labor. Households receiving remittance are able to compensate for the forgone income, lowering the opportunity cost of attending school. Remittance provides an alternate source of money, hence reducing the prevalence of child labor both inside and outside home.

Our results suggest that remittance reduces labor supply, particularly of the children by increasing the reservation wage of the remaining household members (Danziger, Haveman, & Plotnick, 1981).

Father absence on the other hand seems to significantly affect child labor both inside and outside the household. The results suggest that when the father migrates he makes the children worse off.

We do a Wald test the Null that the remittance coming in completely offsets the father absence for the child. Put in other words, we check whether the monetary benefit coming in from remittance is enough to outweigh any psychological pressure and increased work load due to father's absence.

H0: The effect of an absent father is completely offset by the money coming in through remittance

$(\text{Remittance} * (\text{average remittance}) + \text{Father Absent} = 0)$

Schooling	chi2(1) = 4.18 Prob > chi2 = 0.0410
Overall Child Labor	chi2(1) = 5.21 Prob > chi2 = 0.0224
Inside Child Labor	chi2(1) = 9.08 Prob > chi2 = 0.0026
Outside Child Labor	chi2(1) = 4.67 Prob > chi2 = 0.0307
We do this Wald Test only on the post estimates from Household Fixed Effects i.e. column (2), (4), (6) and (8) of Table 6.	

Since, P value is less than 5% Level of Significance for all, we reject the null, and hence remittance does not fully compensate for father's absence in all the cases.

Two obvious reasons for it are that firstly, there will be lack on monitoring done on the part of the father towards his child which may cause the child to indulge in unwanted activities. Secondly, with the father gone there is an increase in the household and social responsibilities for the child. The child is therefore forced to substitute in the role of his father when it comes to work, hence, leading the absence of the father to increase work load both inside and outside home. Secondly, it can be the case that the father might have helped the child in his/her school work. Once the father is gone the child might suffer from poor educational outcomes which may lead the parents to decide to substitute the child's time from schooling towards child labor. Further, the absence of the father might lead to emotional consequences, which cannot be fulfilled in by money. The children of the migrant father miss the benefits of their daily interaction with their father and also miss out the presence of a role model and authoritative person at home.

LPM results of Main Specification with Gender Interactions
First Stage Results

Table 7:

	RANDOM EFFECTS				HOUSEHOLD FIXED EFFECTS			
	<i>Remittance *Male</i>	<i>Remittance*F emale</i>	<i>FatherAbsent* Male</i>	<i>FatherAbsent*F emale</i>	<i>Remittance *Male</i>	<i>Remittance*F emale</i>	<i>FatherAbsent* Male</i>	<i>FatherAbsent*F emale</i>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Remittance Baradari 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)
Remittance Baradari 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 Baradari 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 Baradari 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)
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)
<p>Variables included but not shown in the table: Childs age, Childs age2, Heads age, Heads age2, Heads gender, Heads education, Fathers education, Mother present, Mothers education, Wealth, Size of HH, Average Baradari wealth, Average Baradari heads education, Time, District Dummies, Constant¹⁷</p> <p>Number of observations=2963 Number of groups=820 Std. Err. clustered at district level; 7 districts</p>								

¹⁷ Appendix 6 shows the complete table.

* p<0.10, ** p<0.05, *** p<0.01

First Stage F Value of Excluded Instruments

Random Effects

Remittance*Male	14.68
Remittance*Female	33.69
Father Absent* Male	378.46
Father Absent* Female	187.71

Household Fixed Effects

Remittance*Male	12.05
Remittance*Female	29.69
Father Absent* Male	398.02
Father Absent* Female	196.16

Second Stage Results

Table 8:

Y_{it}	SCHOOLING		OVER ALL CHILD LABOR		INSIDE CHILD LABOR		OUTSIDE CHILD LABOR	
	<i>RANDOM EFFECTS</i>	<i>HOUSEHOLD FIXED EFFECTS</i>	<i>RANDOM EFFECTS</i>	<i>HOUSEHOLD FIXED EFFECTS</i>	<i>RANDOM EFFECTS</i>	<i>HOUSEHOLD FIXED EFFECTS</i>	<i>RANDOM EFFECTS</i>	<i>HOUSEHOLD FIXED EFFECTS</i>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Remittance*Male	0.0545*	0.0684	-0.0657**	-0.0663	-0.0569*	-0.0569	-0.0212**	-0.0297
	(0.0324)	(0.0470)	(0.0255)	(0.0441)	(0.0252)	(0.0440)	(0.0096)	(0.0188)
Remittance* Female	0.0070	0.0484	0.0511	0.0320	0.0538	0.0396	-0.0021	-0.0080
	(0.0257)	(0.0422)	(0.0333)	(0.0492)	(0.0328)	(0.0492)	(0.0126)	(0.0208)
Fatherabsent*Male	-0.3174*	-0.5114**	0.1976	0.2196	0.1901	0.1907	0.0963	0.1890*
	(0.1685)	(0.2476)	(0.1770)	(0.2590)	(0.1744)	(0.2591)	(0.0673)	(0.1099)
Fatherabsent*Female	-0.1425	-0.3533*	0.5075***	0.4957**	0.4629**	0.4673*	0.0897	0.1828**
	(0.1461)	(0.2035)	(0.1557)	(0.2128)	(0.1533)	(0.2129)	(0.0595)	(0.0903)
Male	0.0497	0.0752	-0.0539	-0.0433	-0.0590	-0.0434	-0.0233	-0.0236
	(0.0383)	(0.0414)	(0.0437)	(0.0433)	(0.0430)	(0.0433)	(0.0172)	(0.0184)
Female	0.3389*	0.4396*s	-0.0901	-0.1843	-0.0946	-0.1806	-0.0318	-0.0951
	(0.1415)	(0.1963)	(0.1479)	(0.2054)	(0.1458)	(0.2054)	(0.0562)	(0.0871)

Variables included but not shown in the table: Childs age, Childs age2, Male, Heads age, Heads age2, Heads gender, Heads education, Fathers education, Mother present, Mothers education, Wealth, Size of HH, Average Baradari wealth, Average Baradari heads education, Time, District Dummies, Constant¹⁸

Number of observations=2963
 Number of groups=820
 Std. Err. clustered at district level; 7 districts
 * p<0.10, ** p<0.05, *** p<0.01
 Instrumented: Remittance*Male, Remittance*Female, Father Absent*Male, Father Absent*Female

¹⁸ Appendix 6 shows complete table.

This specification aims to answer the question of how the impact of remittance and father absence may differ between girls and boys. For this we interact the gender *Male* and *Female* with both remittance and father absent.

Looking at just the *Remittance*Male* term indicates that remittance is helping males when it comes to schooling, hence parents use money coming in from remittance to support schooling for boy as compared to the girls.

H0 : Remittance increases schooling for boys and girls equally (Remittance*Male=Remittance*Female)	
Schooling	$\text{chi2}(1) = 10.39$ $\text{Prob} > \text{chi2} = 0.0013$ <p>We do this test on the post estimates from column (1) in Table 8.</p>

Since the P Value is less than 1% Level of Significance, we reject the null, hence remittance helps increasing schooling for boys more as compared to girls. For every Rs 1,000 (or \$10) remittance coming in, the probability of boys being enrolled in school increases by 6 percentage points, while for girls its insignificant and shows a coefficient of about only 0.7 percentage points according to column (1). One possible reason for this could be the LATE effect being captured by the IV since these results do not necessarily imply that remittances improve children's education for anyone, but just for those for whom the instrument induces a change i.e. for families where the network made a difference to the father's migration decision. It can be the case that richer households migrate abroad without the network mattering at all and send back money which is used for daughter's education but it won't be captured here because the IV captures the LATE.

Columns (3), (5) and (7) shows that money coming in through remittance is used to reduce child labor more boys as compared to females. It like the money coming in through remittance is leading to a substitution from child labor to school for boys. Even though they are significant for our results in

Random Effects, they lose their significance in Household Fixed Effects mainly due to the decrease in power. Else the magnitude and sign remain the same. One possible explanation for this could be that since boys are considered to be the future bread earners of the family, any money coming in through remittance is being spent more on boys by freeing them from child labor and putting them in school to increase their future returns through acquiring higher education, since ultimately in a rural setup parents are much more likely to live with their son than their daughter. The daughters in rural Punjab are usually likely to be married after a certain age and the parents might view investing in them as less beneficial as ultimately the girls would be moving away and parents would be less likely to enjoy the benefits of investing in her schooling as opposed to the boys.

Our results oppose the idea of “moral hazard problems” idea presented by Milligan & Bohara (2007), which suggested that money coming in through remittance might increase child labor in the sense that families might start their new business and hence cause children to leave their school and take part in the family business. Parents do seem to value education and tend to invest in it when they have money.

Looking at how the absence of the father affects schooling, we see that it hits both the male and female negatively when we look at schooling which can be seen by the negative coefficient of *Fatherabsent*Male* and *FatherAbsent*Female* in column (2). We do a Wald test on this to check if the absence of the father effects schooling in the same way for both girls and boys:

H0 : Father’s absence decreases schooling for boys and girls equally (FatherAbsent*Male=Father Absent*Female)	
Schooling	chi2(1) = 1.93 Prob > chi2 = 0.1643 We do this test on post estimates from column (2) in Table 8.

Since the P Value is greater than 5% Level of Significance, we do not reject the Null, hence concluding that as far as the impact of father's absence is considered, both genders are hurt equally in a negative way by reduced schooling.

The term *FatherAbsent*Female* for child labor inside home is positive and significant indicating that as far as doing household work is considered, absence of the father makes the girl work more within the household. However, when we look at outside child labor, it seems as if the absence of the father is causing both the genders to work more. We do a Wald Test to check if the absence of the father is causing both the genders to work equally.

H0: Father's absence is increasing child labor for boys and girls equally (FatherAbsent*Male=Father Absent*Female)	
Over all Child Labor	chi2(1) = 4.49 Prob > chi2 = 0.0340
Inside Child Labor	chi2(1) = 4.09 Prob > chi2 = 0.0433
Outside Child Labor	chi2(1) = 0.01 Prob > chi2 = 0.9306
We do this test on column (4), (6) and (8) in Table 8.	

Results indicate that as far as work is considered being done within the household, we reject H0 at 5% Level of Significance. Hence we conclude that the absence of the father makes the girls more worse off in terms of greater household responsibilities than compared to boys. However, we do not reject the H0 for outside child labor, indicating that the absence of the father causes both to work more outside irrespective of the gender. Since females are forced to work more, inside and outside the household as opposed to males who are forced more to work more outside only, we do not reject the P Value of overall

child labor at 5% Level of Significance, indicating that over all, it is the girls who are worse off in terms of increased work load both inside and outside the household as compared to the boys.

LPM Results of Main Specification with Mother Present Interaction
First Stage Results

Table 9:

	RANDOM EFFECTS			HOUSEHOLD FIXED EFFECTS		
	<i>REMITTANCE VALUE</i>	<i>FATHER ABSENT</i>	<i>MOTHERPRESENT *FATHER ABSENT</i>	<i>REMITTANCE VALUE</i>	<i>FATHER ABSENT</i>	<i>MOTHERPRESENT *FATHER ABSENT</i>
	(1)	(2)	(3)	(4)	(5)	(6)
Remittance Baradari IV	528.7934** (156.1183)	-0.0791 (0.1387)	-0.0614 (0.1413)	442.4672*** (96.8504)	-0.0757 (0.1214)	-0.0529 (0.1220)
Migrant Baradari IV	180.8901 (152.8197)	1.3167*** (0.0937)	0.0180 (0.0998)	321.8412 (200.4584)	1.3369*** (0.0891)	0.0282 (0.0610)
Motherpresent fatherabsent Baradari IV ¹⁹	-317.3262 (185.2993)	-0.3113* (0.0872)	0.9798*** (0.0606)	-259.7230 (185.1433)	-0.3032** (0.0924)	0.9897*** (0.0298)
Mother present	-45.3192 (65.4254)	0.0007 (0.0165)	-0.0058 (0.0187)	-76.3954 (85.9400)	-0.0023 (0.0231)	-0.0098 (0.0076)

¹⁹ This is actually % migrants in baradari * mother present
% remittances in baradari * father absent

Variables included but not shown in the table: Childs age, Childs age2, Male, Heads age, Heads age2, Heads gender, Heads education, Fathers education, Mothers education, Wealth, Size of HH, Average Baradari wealth, Average Baradari heads education, Time, District Dummies, Constant.²⁰

Number of observations=2963

Number of groups=820

Std. Err. clustered at district level; 7 districts

* p<0.10, ** p<0.05, *** p<0.01

First Stage F Value of Excluded Instruments

Random Effects

Remittance	11.47
Father Absent	197.34
Motherpresent*fatherabsent	261.08

Household Fixed Effects

Remittance	20.87
Father Absent	225.2
Motherpresent*fatherabsent	104.38

²⁰ Appendix 7 shows the complete table.

Second Stage Results

Table 10:

Y_{it}	SCHOOLING		OVER ALL CHILDLABOR		INSIDE CHILD LABOR		OUTSIDE CHILD LABOR	
	<i>RANDOM EFFECTS</i>	<i>HOUSEHOL D FIXED EFFECTS</i>	<i>RANDOM EFFECTS</i>	<i>HOUSEHOL D FIXED EFFECTS</i>	<i>RANDOM EFFECTS</i>	<i>HOUSEHOLD FIXED EFFECTS</i>	<i>RANDOM EFFECTS</i>	<i>HOUSEHOLD FIXED EFFECTS</i>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Remittance value (1,000's)	3.1935 ** (1.1813)	11.293* (6.1210)	-2.1868** (1.1288)	-9.1385* (5.1558)	-2.1438* (1.1258)	-0.8378 (0.5256)	-2.1000** (1.1000)	4.2000 (3.1000)
Father absent	-0.1257 (0.1265)	-0.6373** (0.3117)	0.4156*** (0.1047)	0.6944** (0.2790)	0.3901*** (0.1022)	0.6587** (0.2638)	0.1082* (0.0563)	0.2772** (0.1261)
Motherpresent*FatherAbsent	0.3169** (0.1262)	0.7249** (0.2906)	-0.1421 (0.1061)	-0.5056* (0.2601)	-0.1452 (0.1035)	-0.4941** (0.2460)	-0.0619 (0.0564)	-0.1953* (0.1175)
Mother present	0.2699*** (0.0505)	0.0672 (0.1083)	-0.0093 (0.0427)	-0.1909* (0.0970)	-0.1786** (0.0338)	-0.2446** (0.0535)	-0.0122* (0.0066)	-0.0028 (0.0039)

Variables included but not shown in the table: Childs age, Childs age2, Male, Heads age, Heads age2, Heads gender, Heads education, Fathers education, Mothers education, Wealth, Size of HH, Average Baradari wealth, Average Baradari heads education, Time, District Dummies, Constant²¹.

Number of observations=2963

Number of groups=820

Std. Err. clustered at district level; 7 districts

* p<0.10, ** p<0.05, *** p<0.01

Instrumented: Remittance Value, Father Absent, Father Absent* Mother Present

²¹ Appendix 7 shows the complete table.

In this specification, we break the effect of parental presence in two parts; the absence of the father and the interaction of the father absence and mother presence to see the extent by which the presence of the mother offsets the impact of the missing father.

Looking at the main variables of interest first, *Remittance* and *Father Absent*, the results are in line with that from Table 6 where remittance is beneficial for the child while the absence of the father makes the child worse off.

The interaction of the father absent variable with mother present i.e. *MotherPresent*FatherAbsent* shows that in households in which the father has migrated, if the mother of the child is present, she to some extent can make up for the negative effect of father's absence. In Table 10, since the variable father absent has a negative sign in column (2), its interaction with mother present changes the sign to positive for schooling suggesting that to some extent lack of monitoring by the father is offset by the presence of the mother. On the behalf of the absent father, the mother can make sure that her children are not spoiled and are still concentrating on school rather than being indulged in unwanted activities. Even if the migration of the father increases social responsibilities for the child, the mother can share them reducing the work load of the child. Hence, the two reasons why the presence of the mother while the father is absent is beneficial is because, firstly, the mother in the absence of the father can assist and take care of the daily upbringing of the child and secondly, the mother can give assistance and share the increase in responsibilities on the child due to father absentee. While the absence of father increases the probability of overall child labor by about 70 percentage points column (4), the presence of the mother in this case can reduce its probability by 50 percentage points. The presence of a mother to a certain extent may even offset the inside and outside work of the child, hence reducing both types of child labor. The idea of "unavailable mothers" due to increased work load on her shoulder due to her spouses' absence and hence her giving less time to her children does not seem to hold in a rural setup, since in our sample, besides the mother, there are other adults present in the household as well who may share the

work load. These “other adults” include older siblings, grandparents and extended family of the child. In many cases, in rural Pakistan, the neighboring women may share the work load of each other, hence giving the mother of the child time to spend with her children.

Another possible explanation for this result could be that with the father migrated, the mother’s responsibility towards her children and house increases. This may empower her especially if she is the one who is receiving the remittance. The mother may engage in intra household bargaining with the remaining family members protecting the benefits of her children. With the father migrated, there may be a redistribution of power so that the intra household allocations are decided by the mother. If she cares more about her children’s well-being, she will spend more on education and will reduce the burden of child labor on them (Antmany, 2012).

Moreover, the presence of the mother, while the father is absent to some extent neutralizes the emotional trauma, which the child may face due to the absence of the father. Knowing that the mother is there to communicate with and to help, the sense of loneliness might not prevail in the child whose father has migrated. Nourishing role of the mother may offset the family disruption to some extent.

We also do a Wald Test to formally test the Null if the presence of the mother completely offsets the negative effect from the father being absent.

H0: The absence of the Father is completely offset by the presence of the Mother at home (FatherAbsent+MotherPresent*FatherAbsent=0)	
Schooling	chi2(1) = 0.65 Prob > chi2 = 0.4187
Overall Child Labor	chi2(1) = 1.21 Prob > chi2 = 0.2717
Inside Child Labor	chi2(1) = 0.97 Prob > chi2 = 0.3256

<p>Outside Child Labor</p> <p>chi2(1) = 2.69 Prob > chi2 = 0.1008</p> <p>We do this test on column (2), (4), (6) and (8) of Table 10.</p>

The results from the Wald Test indicate that since the P value is greater than the Level of Significance of 5%, we can't reject the null, hence mother's presence fully compensates for father's absence for the reasons mentioned above²². Hence, the adverse consequences which the child faces due to the absence of the father are balanced of by the presence of the mother.

We further do a Wald test to see the net effect of migration in this case.

<p>H0: Net Effect of Migration is zero on the child back home (Remittance*(average remittance) +Fatherabsent + mother present = 0)</p>	
Schooling	<p>chi2(1) = 6.47 Prob > chi2 = 0.0110</p>
Overall Child Labor	<p>chi2(1) = 4.86 Prob > chi2 = 0.0274</p>
Inside Child Labor	<p>chi2(1) = 4.67 Prob > chi2 = 0.0307</p>
Outside Child Labor	<p>chi2(1) = 5.02 Prob > chi2 = 0.0250</p>
<p>We do this test on column (2), (4), (6) and (8) of Table 10.</p>	

For all the cases above, we reject H0 at 5% Level of Significance. For schooling this rejection implies that the net impact of migration is positive on the child in terms of increasing schooling while the

²² It must be noted that two Households who even though belong to the same Baradari might be different from each other if one household has a mother present and the other does not. In that case, the decision to migrate might be based on other more important considerations rather than the Baradari Network.

rejection of the null for all types of labor means that the net effect of migration is negative, hence beneficial for the child in terms of reduced child labor both inside and outside of the home.

8. Robustness Checks

Robustness Checks of Remittance Variable in the Main Specification

Two possible concerns arise with the remittance variable. Firstly we are taking remittance in amounts and not in logs. While using logs might seem more reliable as we would expect school attendance to increase with the percentage increase in income and not with income levels.

Another possible concern with remittance could be that it may crowd out the labor supply or other forms of HH income. For example, if the father has migrated and the mother works at the homeland, if the father starts remitting say Rs 10,000 back home, this may encourage the mother of the child (or any other household member) to leave her job worth Rs 6000. Hence in this case the impact of remittance would be Rs 4000 and not Rs 10,000. Theories link this reduction as the result of receiving income transfers like remittance. Remittance shows a disincentive effect leading to a decline in the labor force participation of remaining household members. This is explained by the income-leisure tradeoff where leisure is a normal good. An increase in income transfer by remittances may lead to an increase in the reservation wage of the remaining household members (Danziger, Haveman, & Plotnick, 1981).

To check if remittance is picking any sort of income effect we run the main specification i.e. equation (5) for IV along with HH FE keeping log of total income (including remittance) as the variable of interest rather than remittance value alone.

Results for it using HH FE and IV are shown in Appendix 5. Since we use Remittance Baradari IV as the instrument, it captures the LATE effect of remittance. The results from this are also in line with the results mentioned above in the main specification discussion.

Robustness check of the Mother Present Specification

It can still be argued that even if a mother is absent due to divorce or separation, that is still likely to be a select sample of women given the cultural taboo of divorce in Pakistan, hence making the term Mother Present endogenous. As robustness checks we do two things separately:

1. We instrument for the Mother Present as well by using Mother Dead as an IV.
2. We repeat this regression excluding children from our sample if their mother is away due to separation or divorce. We only keep children in our sample if their mother is present or has died.

Results for both of these specification on equation (*II*) using IV along with HH FE are shown in Appendix 8. Both of these conclude the same results as discussed in specification 3. The presence of the mother is beneficial for the child in terms of eliminating the negative impact of the absent father on the child.

9. Testing the Validity of Instruments

For robustness checks of our instruments, that there is no correlation between our instruments and the error term we use the over id test, also known as the Hansen Sargan Test. Since for this, the model needs to be over identified, i.e. number of endogenous variables should be less than the number of instruments; we split the Remittance Baradari Instrument in two instruments: Domestic Remittance Baradari Instrument and International Remittance Baradari Instrument²³. Hence, now for our two endogenous variables, Remittance Value and Father Absent, we have three IV's namely, Domestic Remittance Baradari IV, International Remittance Baradari IV and Migrant Baradari IV. Hence our first stage becomes:

$$\begin{aligned} \text{Remittance}_{iht} = & \alpha_0 + \alpha_1 X_{iht} + \alpha_2 Z_{ht} + \alpha_3 W_{ht} + \alpha_4 \text{Domestic Remittance Baradari IV}_{ht} + \alpha_6 \text{International} \\ & \text{Remittance Baradari IV}_{ht} + \alpha_7 \text{Migrant Baradari IV}_{ht} + \alpha_h + v_{iht} \end{aligned} \quad (12)$$

$$\begin{aligned} \text{FatherAbsent}_{iht} = & \alpha_6 + \alpha_7 X_{iht} + \alpha_8 Z_{ht} + \alpha_9 W_{ht} + \alpha_{10} \text{Domestic Remittance Baradari IV}_{ht} + \alpha_{11} \\ & \text{International Remittance Baradari IV}_{ht} + \alpha_{12} \text{Migrant Baradari IV}_{ht} + \alpha_h + v_{iht} \end{aligned} \quad (13)$$

Our second stage then becomes:

$$Y_{iht} = \beta_0 + \beta_1 X_{iht} + \beta_2 Z_{ht} + \beta_3 W_{ht} + \beta_4 \text{Remittance}^{\wedge}_{iht} + \beta_5 \text{Father}^{\wedge}\text{Absent}_{iht} + \alpha_h + v_{iht} \quad (14)$$

We use the IV along with Household Fixed Effects for this specification. The results are presented below.

²³ Note that the construction of instruments is the same as above. We have just split remittance into international and domestic remittance to construct its IV.

First Stage Results

Table 8:

	Remittance Value	Father Absent
	(1)	(2)
Domestic Remittance Baradari IV	324.0344** (93.9262)	-0.0900 (0.1170)
International Remittance Baradari IV	0.9919*** (0.0043)	0.0001 (0.0000)
Migrant Baradari IV	59.1209* (20.7056)	1.0664*** (0.0456)
Childs age	-11.1321 (8.6320)	-0.0027 (0.0180)
Childs age2	0.7690 (0.4756)	0.0003 (0.0009)
Childs gender	-95.9898* (32.5230)	-0.0330 (0.0231)
Mother Present	-36.2741 (25.0604)	-0.0637 (0.0325)
Fathers Education	-10.6401 (5.7122)	0.0068 (0.0073)
Mothers Education	-3.4024 (6.2178)	-0.0006 (0.0046)
Time	39.1449 (27.5995)	-0.0007 (0.0121)
Constant	66.3014 (64.9490)	0.0420 (0.1060)
Number of observations=2963 Number of groups=820 Std. Err. clustered at district level; 7 districts * p<0.10, ** p<0.05, *** p<0.01		
First Stage F value of Excluded Instruments		
Remittance Value	302.13	
Father Absent	546.30	

Second Stage Results

Table 9:

	SCHOOLING	OVER ALL CHILD LABOR	INSIDE CHILD LABOR	OUTSIDE CHILD LABOR
	(1)	(2)	(3)	(4)
Remittance value (10,000's)	0.1211**	-0.0293	-0.0292	0.0109
	(0.0582)	(0.0267)	(0.0266)	(0.0133)
Father Absent	-0.0000	0.1539***	0.1383**	0.0649**
	(0.0000)	(0.0582)	(0.0583)	(0.0291)
Childs age	0.2033***	0.0078	0.0116	0.0070
	(0.0203)	(0.0203)	(0.0203)	(0.0101)
Childs age2	-0.0106***	-0.0002	-0.0004	-0.0003
	(0.0011)	(0.0011)	(0.0011)	(0.0005)
Childs gender	0.0753***	-0.0003	-0.0007	0.0004
	(0.0218)	(0.0218)	(0.0218)	(0.0109)
Mother Present	0.2708***	0.0432	0.0495	0.0095
	(0.0390)	(0.0390)	(0.0390)	(0.0195)
Fathers Education	0.0284***	-0.0023	-0.0032	-0.0062*
	(0.0066)	(0.0066)	(0.0066)	(0.0033)
Mothers Education	0.0103	0.0265***	0.0286**	-0.0190***
	(0.0102)	(0.0102)	(0.0102)	(0.0051)
Time	-0.1779***	-0.2576***	-0.2451***	-0.0438***
	(0.0259)	(0.0259)	(0.0259)	(0.0129)
Constant	-0.2849**	0.4899***	0.4461***	0.0786
	(0.1048)	(0.1048)	(0.1049)	(0.0523)
Number of observations=2963 Number of groups=820 Std. Err. clustered at district level; 7 districts * p<0.10, ** p<0.05, *** p<0.01				
Instrumented: Remittance Value, Father Absent				

Our results from the over id specification are consistent with what we get from Table 3. Below is the result for the over identification test.

H0: As a group the instruments are exogenous	
Schooling	
Sargan statistic (over identification test of all instruments):	0.214
Chi-sq(1) P-val =	0.6434
Over all Child Labor	
Sargan statistic (overidentification test of all instruments):	0.860
Chi-sq(2) P-val =	0.6506
Inside Child Labor	
Sargan statistic (overidentification test of all instruments):	1.966
Chi-sq(2) P-val =	0.3742
Outside Child Labor	
Sargan statistic (overidentification test of all instruments):	2.439
Chi-sq(2) P-val =	0.0889
The Wald Test has been done on column (1), (2), (3) and (4) of Table 9.	

Sargan tests the null that the instruments as a group are exogenous and hence are uncorrelated with the error term. P value is greater than 5% Level of Significance for all the endogenous variables²⁴ ; hence our instruments pass the test of validity.

²⁴P Value for Outside Child Labor it is greater than 5% but we reject it at 10% Level of Significance; one possible reason for this could be that children might go to work for other Baradari members whose family members have migrated; hence the instrument directly affects Y_{iht} other than through the instrument.

10. Conclusion and Recommendations

This paper looks at the detangled effect of migration i.e. the effect of remittance and father absence due to migration on the child left behind. While most of the studies usually look at one of these effects, this paper looks at both the countervailing channels impacting the child labor and schooling status of the child back home. This paper explicitly deals with the issue of endogeneity of remittance and father absence by using an Instrumental Variable Approach. We use Kinship networks as an IV along with Household Fixed Effects and Random Effects. The paper concludes that remittance coming in does help enhance the well-being of the child by increasing the probability to be enrolled in school and helps reduce child labor. While on the other hand, father's absence due to migration has adverse emotional consequences along with increasing the work load on the child hence, negatively impacting the child in terms of schooling and child labor. However, we conclude that the financial benefit of remittance coming in through migration does not completely offset the effect of the father being absent due to migration. This negative effect of the father being absent is offset if the mother of the child is present at home since she does not only share the work burden left on the shoulders of the child but is also there to monitor the child and help them avoid any emotional trauma due to disrupted family life after the migration of the father. Hence with the negative effect of father absent being eliminated and the positive effect of remittance remaining, overall with the presence of the mother the net effect of migration is positive. A gender difference does prevail when we look at how the money received in the form of remittance is being spent favoring the schooling for boys where Rs 1,000 (\$10) remittance coming in increases the probability of a boy being enrolled in school by 6%. Moreover, the absence of the father also causes the girls to work more at home and increases her inside labor by around 50%. However, once we consider the outside child labor, the absence of the father increases work load for both irrespective of the gender. Our results differ from Mansuri (2006) where she concludes that remittance favors girls in rural Pakistan while we conclude that it favors boys mainly because we look at both aspects of migration i.e. remittance and father absence while Mansuri only looks at the remittance. Moreover, Mansuri only considers

international remittance, while we consider both. Major chunk of our remittance are domestic remittance²⁵. The LATE may be quite different in this case. Also, our study only focuses on rural Punjab while Mansuri's study is based on entire Pakistan.

From a policy perspective, we suggest that migration should be just one of the ways in which households could get out of poverty trap. The government should create jobs and economic opportunities so that people can reside with their families and earn a healthy living. Even if migration is the option, than government should ensure that migration that is followed by the inflow of remittance is encouraged. Having policies like tax free inflow of remittance and quick transfers may encourage remittance inflow. As far as the role of a missing parent is considered, communication facilities should be developed more and should be made more cheaper so that the gap of family disunity could be filled to a certain extend.

Limitations

The study has three main limitations. Firstly, we couldn't identify the exact location where the father of the child had migrated. We could only identify if he had migrated to another village, district or country but not the exact location as to how far he went from the household. Having this information would give us a better idea about how much absent a father actually is. If he migrates to place which is near his home, chances of revisiting are much higher as compared to someone who has migrated abroad. Hence he might be "less absent" as compared to someone who has migrated abroad.

Secondly, in our definition for child labor, with the information available, we look at employment over past 7 days. This result could be effected by the seasonality component as to when the survey took place. For example, if this survey was conducted in a harvest period, more parents might have reported their child being involved in child labor as compared to a situation if it had been conducted in a non-harvest period.

²⁵ See Descriptive Stats Section, Table 2.

Moreover, measuring schooling through enrollment is also debatable as being enrolled does not guarantee that the child is actually attending school, but given the data constraint and limited information, this was the closest measure of schooling available for this study. The survey did not have information like school attendance and test score which could have been a better measure.

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Appendices

Appendix 1: Discussion of Controls

We add various household characteristics like the total number of household members as control. Parental education is also important in determining schooling and child labor decision. Highly educated parents will prefer to invest more amounts of money in child's education and will discourage child labor. They may even act as an inspiration for their children playing positive role in encouraging the child to study. Hence we add both father and mother's education as controls. Since this is a rural setup and in many cases it is the household head that makes the decision, we control for household heads education as well. Gender of household head is also thought to be an important determinant of schooling as females are more likely to spend money on child's well-being as opposed to males (Baland & Robinson, 2000).

Household income is also a strong determinant of schooling and child labor. In most cases, it is the financial problem that forces children to leave school, as shown by the model in the theory section, 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 like child's age and gender. Remittance may help lead parents to make less selective decisions when it comes to the gender of the child and in many cases it may even help close the gender gap between males and females, by increasing the educational opportunities for girls (Stark & Taylor 1991; Chen 2006). Even unobservable characteristics like child's ability and motivation towards schooling or working are important when making the decision regarding sending the child to work or school.

We also add the Average Baradari Heads Education and Average Baradari Wealth in a given district as Baradari Controls.

Variable	Definition
Dependent Variables	
Schooling	Dummy taking the value of 1 if the child is currently enrolled in school and 0 otherwise.
Over all Child Labor	Dummy taking the value of 1 if they did any one of the following, and 0 otherwise: <ol style="list-style-type: none"> 1. Worked for someone outside the household in the past seven days 2. Helped in household chores like shopping, cleaning etc. during the past seven day. 3. Did any kind of family work like selling goods on streets etc. during the past seven days?
Domestic or Inside Child Labor	Dummy taking the value of 1 if the child had been indulged in any kind of household chores for more than 10 hours in the last day of the week and 0 otherwise.
Non domestic or Outside Child Labor	Dummy taking the value of 1 if the child did work for someone who is not a member of the household during the past seven days and 0 otherwise.
Independent Variables	
Remittance	Monetary Value of remittance received by the HH in the past year at a particular point in time t . It's measured in 1000's.
Father Absent	Dummy taking the value of 1 if the father of child i is absent at time t and 0 otherwise.
Childs Age	Age of the child i as per the last birthday in completed years
Childs Age ²	Square of the age of the child i as per the last birthday in completed years
Male	Dummy indicating the gender of the child, taking a value of 1 if the child is male and 0 if female.
Heads Age	Age of the HH head of the child i as per the last birthday in completed years
Heads Age ²	Square of the age of the HH head of the child i as per the last birthday in completed years
Heads Gender	Dummy indicating the gender of the HH head, taking a value of 1 if male and 0 if female.
Heads Education	The highest class completed by the HH head.
Fathers Education	The highest class completed by the father of the child i .
Mothers Education	The highest class completed by the mother of the child i .
Mother Present	Dummy taking a value of 1 if mother of child i is present at time t and 0 otherwise.
Wealth	Wealth index has been constructed using the Principal components analysis which uses information about the household goods and assigns weights to each asset and ultimately generates wealth scores. The assets used in the calculations were: number of rooms for sleeping per member; material used for floor, roof and wall of dwelling; type of cooking fuel; electricity; gas; radio; television; cable television; mobile and non-mobile phone; 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 HH	Number of HH members
Average Baradari Wealth	The average wealth score for a particular HH <i>belonging to a given Baradari B in a given district D.</i>
Average Baradari Heads Education	The average HH heads education for a particular HH <i>belonging to a given Baradari B in a given district D</i>
Time	Dummy taking a value of 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 has been kept as the base category.

Summary Stats										
Dependent Variables										
	2007					2011				
	Obs	Mean	Std. Dev	Min	Max	Obs	Mean	Std. Dev	Min	Max
Schooling	1382	.6295302	.4830927	0	1	1581	.7338764	.4420797	0	1
Overall Child Labor	1382	.3564155	.4791026	0	1	1581	.1187919	.3236522	0	1
Inside Child Labor	1382	.0672098	.25047	0	1	1581	.0147651	.1206518	0	1
Outside Child Labor	1382	.34759	.4763667	0	1	1581	.1187919	.3236522	0	1
Independent Variables										
	2007					2011				
	Obs	Mean	Std. Dev	Min	Max	Obs	Mean	Std. Dev	Min	Max
Remittance (1000's)	1382	10.936	11.9812	0	200	1581	16.3471	31.8723	0	360
Father Absent	1382	.1031908	.3043112	0	1	1581	.2590604	.4382659	0	1
Childs Age	1382	9.509844	2.866375	5	14	1581	9.303356	2.831617	5	14
Childs Age2	1382	98.64766	55.28826	25	196	1581	94.5651	53.72988	25	196
Male	1382	.65111	.62333	0	1	1581	.5100671	.5000665	0	1
Heads Age	1382	47.14528	13.10189	28	97	1581	51.29262	45.11037	30	90
Heads Age2	1382	2394.221	1395.06	784	9409	1581	4646.07	44662.72	900	8100
Heads Gender	1382	.9653768	.1828856	0	1	1581	.9449664	.2310476	0	1
Heads Education	1382	4.025798	6.289859	0	14	1581	9.24094	7.372889	0	16
Fathers Education	1382	7.847929	9.725818	0	16	1581	7.879195	9.065459	0	16
Mothers Education	1382	3.053632	8.35737	0	8	1581	.9463087	.6492775	0	8
Mother Present	1382	110.788	115.999	0	1	1581	158.223	169.987	0	1
Wealth	1382	-.5053948	.6967798	-1.922548	1.411889	1581	-.2941263	2.226549	-4.975732	6.835896
Size of HH	1382	8.177189	2.90272	2	19	1581	8.085235	3.877591	4	20
Average Baradari Wealth	1382	-.4442767	.4870134	-1.772393	1.163118	1581	-.137295	1.499456	-4.976151	6.544868
Average Baradari Heads Education	1382	6.975	5.8299465	0	9	1581	7.038033	6.720147	0	12

Appendix 2

TABLE 1: Testing for collinearity between *FatherAbsent* and *Motherpresent*FatherAbsent* terms

Variable	VIF	SQRT VIF	Tolerance	R-squared
Father absent	6.13	2.48	0.1631	0.8369
Motherpresent* fatherabsent	6.13	2.48	0.1631	0.8369

Mean VIF 6.13

	Eigenval	Cond Index
1	2.2082	1.0000
2	0.7211	1.7500
3	0.0707	5.5888

Condition Number 5.5888

Eigenvalues & Conditional Index computed from scaled raw sscp (w/ intercept)

Det (correlation matrix) 0.1631

Discussion: We test for the collinearity between *FatherAbsent* and *Motherpresent*FatherAbsent* terms. Mainly “Tolerance” and “VIF” are used to detect multicollinearity. Tolerance indicates the percentage of variation in the variable which cannot be accounted for by other variables in the model. A very small tolerance level indicates problems and a value less than 0.10 needs further investigation. VIF on the other hand is the variance inflation factor and is simply 1/tolerance. As a rule of thumb, it should be less than 10. For our estimates, we get tolerance to be greater than 0.10 and VIF to be less than 10, hence indicating that multicollinearity is not problematic for our model. Also, a low level of Condition Index also supports our argument.

Appendix 3

OLS results for Main Specification

	SCHOOLING	OVERALL CHILD LABOR	INSIDE CHILD LABOR	OUTSIDE CHILD LABOR
	(1)	(2)	(3)	(4)
Remittance value (1,000's)	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)
Childs age	0.2080***	-0.0001	0.0033	0.0083
	(0.0208)	(0.0193)	(0.0192)	(0.0096)
Childs age2	-0.0107***	0.0000	-0.0001	-0.0004
	(0.0011)	(0.0010)	(0.0010)	(0.0005)
Childs gender	0.0735***	-0.0070	-0.0076	-0.0058
	(0.0218)	(0.0202)	(0.0202)	(0.0101)
Heads Age	-0.0002	-0.0008	-0.0007	0.0002
	(0.0007)	(0.0006)	(0.0006)	(0.0003)
Heads Age2	0.0000	0.0000	0.0000	-0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Heads Gender	-0.0788*	-0.1068**	-0.1108**	0.0170
	(0.0392)	(0.0365)	(0.0363)	(0.0182)
Heads Education	0.0280***	-0.0059	-0.0050	0.0040
	(0.0072)	(0.0067)	(0.0066)	(0.0033)
Fathers 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)
Mothers 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 HH	-0.0016	0.0058**	0.0060**	-0.0007
	(0.0024)	(0.0022)	(0.0022)	(0.0011)
Average Baradari Wealth	-0.0260**	-0.0117	-0.0136	0.0123**
	(0.0101)	(0.0094)	(0.0093)	(0.0047)
Average Baradari Heads Education	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)

Number of observations=2963
Std. Err. clustered at district level; 7 districts
* p<0.10, ** p<0.05, *** p<0.01



Appendix 4

First Stage Results for Main Specification

	RANDOM EFFECTS		HOUSEHOLD FIXED EFFECTS	
	REMITTANCES	FATHER ABSENT	REMITTANCES	FATHER ABSENT
	(1)	(2)	(3)	(4)
Remittance Baradari IV	527.7553** (145.1137)	-0.0801 (0.1331)	439.6886*** (87.6270)	-0.0790 (0.1166)
Migrant Baradari IV	-100.3875 (92.9682)	1.0408*** (0.0544)	92.8280 (49.6866)	1.0696*** (0.0467)
Childs age	13.6625 (21.7635)	0.0018 (0.0157)	7.9295 (20.0158)	-0.0009 (0.0176)
Childs age2	-0.7120 (1.1568)	0.0000 (0.0008)	-0.3183 (1.0248)	0.0002 (0.0009)
Childs gender (Male)	43.6790 (51.8920)	-0.0194 (0.0211)	35.5682 (47.4296)	-0.0205 (0.0213)
Heads age	3.7789 (2.8211)	0.0020 (0.0013)		
Heads age2	-0.0036 (0.0026)	-0.0000 (0.0000)		
Heads gender	-187.9694* (66.1162)	-0.2334* (0.0763)		
Heads education	13.6652 (27.8819)	0.0061 (0.0095)		
Fathers education	-8.8352 (8.8506)	0.0117 (0.0077)	-19.9684 (11.7875)	0.0059 (0.0073)
Mother present	-120.3160 (88.4975)	-0.0728* (0.0286)	-137.2667 (104.0271)	-0.0733 (0.0365)
Mothers education	-1.2761 (2.6270)	-0.0022 (0.0044)	-1.2316 (4.8995)	-0.0004 (0.0046)
Wealth	44.0446 (27.4710)	0.0101 (0.0182)		
Size of HH	11.9665	0.0054		

	(9.3202)	(0.0044)		
Average Baradari wealth	-21.6407	-0.0136		
	(11.8014)	(0.0227)		
Average Baradari Heads Education	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)
District Dummies	Yes	Yes	No	No
Constant	-34.2600	0.1352	88.1713	0.0441
	(204.4698)	(0.0998)	(60.5695)	(0.1065)

Number of observations=2963

Number of groups=820

Std. Err. clustered at district level; 7 districts

* p<0.10, ** p<0.05, *** p<0.01

First Stage F value of Excluded Instruments

Random Effects

Remittance 13.23

Father Absent 365.79

Household Fixed Effects

Remittance 25.18

Father Absent 523.45

Second Stage Results for Main Specification

Y_{it}	SCHOOLING		CHILD LABOR		INSIDE CHILD LABOR		OUTSIDE CHILD LABOR	
	<i>RANDOM EFFECTS</i>	<i>HOUSEHOLD FIXED EFFECTS</i>	<i>RANDOM EFFECTS</i>	<i>HOUSEHOLD FIXED EFFECTS</i>	<i>RANDOM EFFECTS</i>	<i>HOUSEHOLD FIXED EFFECTS</i>	<i>RANDOM EFFECTS</i>	<i>HOUSEHOLD FIXED EFFECTS</i>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Remittance value (1,000's)	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)
Childs 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)
Childs age2	-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)
Childs 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)
Fathers 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)
Mothers 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)
Heads age	-0.0011		0.0001		0.0001		0.0006	
	(0.0010)		(0.0008)		(0.0008)		(0.0004)	
Heads age2	0.0000		0.0000		0.0000		-0.0000	
	(0.0000)		(0.0000)		(0.0000)		(0.0000)	
Heads gender	-0.0390		-0.1416***		-0.1416**		0.0070	
	(0.0496)		(0.0452)		(0.0452)		(0.0237)	
Heads 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 hh	0.0018		0.0088***		0.0088**		0.0009	
	(0.0032)		(0.0028)		(0.0028)		(0.0015)	
Avg Baradari wealth	-0.0223		-0.0205*		-0.0205		0.0098	
	(0.0124)		(0.0108)		(0.0108)		(0.0057)	
Avg Baradari heads edu	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)

Number of observations=2963

Number of groups=820

Std. Err. clustered at district level; 7 districts

* p<0.10, ** p<0.05, *** p<0.01

Instrumented: Remittance Value, Father Absent

Appendix 5

Robustness Checks of Remittance using Log of Income and Remittance as the independent variable

First Stage Results

	LOG(INCOME+REMITTANCE)	FATHER ABSENT
Remittance Baradari IV	5.2593*** (1.1774)	-0.0790 (0.0524)
Migrant Baradari IV	0.0441 (0.0792)	1.0696*** (0.0417)
Childs age	0.0491 (0.2044)	-0.0009 (0.0159)
Childs age2	-0.0028 (0.0105)	0.0002 (0.0008)
Childs gender	0.0878 (0.2009)	-0.0205 (0.0167)
Mother present	-0.0122 (0.2250)	-0.0733** (0.0226)
Fathers education	-0.1758*** (0.0482)	0.0059 (0.0038)
Mothers education	-0.0887 (0.1249)	-0.0004 (0.0079)
Time	-0.1596 (0.2394)	-0.0011 (0.0182)
Constant	6.5438*** (1.0124)	0.4654 (0.4716)
Number of observations=2963 Number of groups=820 Std. Err. clustered at district level; 7 districts * p<0.10, ** p<0.05, *** p<0.01 <p style="text-align: center;">F value of Excluded Instruments</p> Log (Income+Remittance) 38.06 Father Absent 387.10		

Second Stage Results

	SCHOOLING	OVERALL CHILD LABOR	INSIDE CHILD LABOR	OUTSIDE CHILD LABOR
Log(Income + remittance)	0.1747*	-0.2439	-0.2439	-0.1031
	(0.0752)	(0.3338)	(0.3338)	(0.1051)
Father absent	1.1870	0.2026*	5.2540**	0.0325*
	(0.6799)	(0.0868)	(1.8234)	(0.0147)
Childs age	-0.0015	-0.0362	-0.0362	-0.0010
	(0.0797)	(0.0655)	(0.0655)	(0.0206)
Childs age2	-0.0006	0.0015	0.0015	-0.0001
	(0.0041)	(0.0034)	(0.0034)	(0.0011)
Childs gender	-0.3335	-0.0343	-0.0343	0.0105
	(0.5582)	(0.0713)	(0.0713)	(0.0225)
Mother present	0.5994*	0.2141	0.2141	0.0479
	(0.1785)	(0.1465)	(0.1465)	(0.0462)
Fathers education	0.0615	-0.0230	-0.0230	-0.0000
	(0.0415)	(0.0341)	(0.0341)	(0.0107)
Mothers education	-0.0029	0.0540	0.0540	-0.0120
	(0.0524)	(0.0430)	(0.0430)	(0.0135)
Time	-0.4249**	0.1029	0.1029	-0.0533
	(0.1375)	(0.1129)	(0.1129)	(0.0356)
Constant	-0.3335	2.0336	2.0336	0.4654
	(0.5582)	(1.4971)	(1.4971)	(0.4716)
Number of observations=2963				
Number of groups=820				
Std. Err. clustered at district level; 7 districts				
* p<0.10, ** p<0.05, *** p<0.01				

Appendix 6

First Stage Results for the Main Specification with Gender Interaction

	RANDOM EFFECTS				HOUSEHOLD FIXED EFFECTS			
	REMITTANC E*MALE	REMITTANC E*FEMALE	FATHERAB SENT*MAL E	FATHERAB SENT*FEM ALE	REMITTANC E*MALE	REMITTAN CE*FEMAL E	FATHERAB SENT*MAL E	FATHERABSE NT*FEMALE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Remittance Baradari IV *Male	506.2553*** (132.1336)	82.5863 (109.6576)	0.0054 (0.0529)	-0.0103 (0.0732)	450.4294*** (129.7539)	10.7489 (108.7916)	0.0098 (0.0518)	-0.0008 (0.0725)
Remittance Baradari IV * Female	25.3383 (96.5198)	464.9202*** (80.1016)	0.0004 (0.0386)	-0.1269* (0.0535)	-12.4819 (96.1558)	439.2909*** (80.6214)	-0.0030 (0.0384)	-0.1272* (0.0538)
Migrant Baradari IV* Male	159.2034 (154.9020)	-23.0764 (128.5530)	1.2058*** (0.0620)	0.0563 (0.0858)	243.3649 (150.5944)	56.4905 (126.2652)	1.1983*** (0.0601)	0.0837 (0.0842)
Migrant Baradari IV*Female	108.7217 (154.5955)	114.0468 (128.2986)	0.1944* (0.0619)	1.1734*** (0.0856)	179.4765 (152.9908)	166.7362 (128.2745)	0.1940* (0.0610)	1.1980*** (0.0855)
Childs Age	23.9005 (23.1620)	-10.3518 (19.2221)	0.0015 (0.0093)	0.0001 (0.0128)	20.5672 (23.1912)	-12.7242 (19.4445)	-0.0013 (0.0092)	0.0001 (0.0130)
Childs Age2	-1.3765 (1.2107)	0.6723 (1.0048)	-0.0000 (0.0005)	0.0001 (0.0007)	-1.1794 (1.2117)	0.8690 (1.0159)	0.0002 (0.0005)	0.0001 (0.0007)
Male	70.5940* (34.9859)	-17.4545 (29.0347)	-0.0075 (0.0140)	-0.0001 (0.0194)	65.8942 (34.8338)	-23.9241 (29.2063)	-0.0069 (0.0139)	-0.0026 (0.0195)
Female	-210.3954 (142.5022)	-114.8409 (118.2624)	-0.2123*** (0.0570)	-0.1086 (0.0789)	-178.3163 (142.1261)	-87.6079 (119.1650)	-0.2092*** (0.0567)	-0.1038 (0.0795)
Heads Age	0.9690 (0.7649)	2.7977*** (0.6348)	0.0008** (0.0003)	0.0011** (0.0004)				
Heads Age2	-0.0009 (0.0008)	-0.0027*** (0.0007)	-0.0000** (0.0000)	-0.0000** (0.0000)				
Heads Gender	-28.0470 (42.9651)	-160.1155*** (35.6567)	-0.0420* (0.0172)	-0.1915*** (0.0238)				
Heads Education	11.9347	1.1095	0.0054	0.0000				

	(7.9788)	(6.6216)	(0.0032)	(0.0044)				
Fathers 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)
Mothers 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 HH	3.2630	8.7408***	0.0000	0.0054***				
	(2.6599)	(2.2075)	(0.0011)	(0.0015)				
Average Baradari Wealth	-3.4821	-18.2777	-0.0118*	-0.0018				
	(11.5886)	(9.6174)	(0.0046)	(0.0064)				
Average Baradari Heads Education	-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

Number of observations=2963

Number of groups=820

Std. Err. clustered at district level; 7 districts

* p<0.10, ** p<0.05, *** p<0.01

First Stage F Value of Excluded Instruments

Random Effects

Remittance*Male 14.68
Remittance*Female 33.69
Father Absent* Male 378.46
Father Absent* Female 187.71

Household Fixed Effects

Remittance*Male 12.05
Remittance*Female 29.69

Father Absent* Male 398.02
 Father Absent* Female 196.16

Second Stage Results for the Main Specification with Gender Interaction

Y_{it}	SCHOOLING		OVER ALL CHILD LABOR		INSIDE CHILD LABOR		OUTSIDE CHILD LABOR	
	<i>RANDOM EFFECTS</i>	<i>HOUSEHOLD FIXED EFFECTS</i>	<i>RANDOM EFFECTS</i>	<i>HOUSEHOLD FIXED EFFECTS</i>	<i>RANDOM EFFECTS</i>	<i>HOUSEHOLD FIXED EFFECTS</i>	<i>RANDOM EFFECTS</i>	<i>HOUSEHOLD FIXED EFFECTS</i>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Remittance*Male	0.0545*	0.0684	-0.0657 **	-0.0663	-0.0569 *	-0.0569	-0.0212 **	-0.0297
	(0.0324)	(0.0470)	(0.0255)	(0.0441)	(0.0252)	(0.0440)	(0.0096)	(0.0188)
Remittance* Female	0.0070	0.0484	0.0511	0.0320	0.0538	0.0396	-0.0021	-0.0080
	(0.0257)	(0.0422)	(0.0333)	(0.0492)	(0.0328)	(0.0492)	(0.0126)	(0.0208)
Fatherabsent*Male	-0.3174*	-0.5114**	0.1976	0.2196	0.1901	0.1907	0.0963	0.1890*
	(0.1685)	(0.2476)	(0.1770)	(0.2590)	(0.1744)	(0.2591)	(0.0673)	(0.1099)
Fatherabsent*Female	-0.1425	-0.3533*	0.5075***	0.4957**	0.4629**	0.4673*	0.0897	0.1828**
	(0.1461)	(0.2035)	(0.1557)	(0.2128)	(0.1533)	(0.2129)	(0.0595)	(0.0903)
Childs age	0.2003***	0.2041***	-0.0176	-0.0056	-0.0140	-0.0023	0.0066	0.0059
	(0.0233)	(0.0261)	(0.0265)	(0.0273)	(0.0261)	(0.0273)	(0.0104)	(0.0116)
Childs age2	-0.0102***	-0.0106***	0.0012	0.0007	0.0010	0.0006	-0.0003	-0.0002
	(0.0012)	(0.0014)	(0.0014)	(0.0014)	(0.0014)	(0.0014)	(0.0006)	(0.0006)
Male	0.0497	0.0752	-0.0539	-0.0433	-0.0590	-0.0434	-0.0233	-0.0236
	(0.0383)	(0.0414)	(0.0437)	(0.0433)	(0.0430)	(0.0433)	(0.0172)	(0.0184)
Female	0.3389*	0.4396*s	-0.0901	-0.1843	-0.0946	-0.1806	-0.0318	-0.0951
	(0.1415)	(0.1963)	(0.1479)	(0.2054)	(0.1458)	(0.2054)	(0.0562)	(0.0871)
Heads age	-0.0004		0.0007		0.0007		0.0005	

	(0.0012)		(0.0012)		(0.0012)		(0.0004)	
Heads age2	0.0000		-0.0000		-0.0000		-0.0000	
	(0.0000)		(0.0000)		(0.0000)		(0.0000)	
Heads gender	-0.0848		-0.1040		-0.1060		0.0190	
	(0.0593)		(0.0636)		(0.0626)		(0.0246)	
Heads education	0.0295**		-0.0111		-0.0100		0.0036	
	(0.0109)		(0.0109)		(0.0107)		(0.0041)	
Fathers education	0.0300***	0.0409***	-0.0053	-0.0040	-0.0045	-0.0039	-0.0056*	-0.0088*
	(0.0072)	(0.0108)	(0.0076)	(0.0113)	(0.0075)	(0.0113)	(0.0029)	(0.0048)
Mother present	0.2727***	0.2212**	0.0902	0.2172**	0.0931	0.2220**	0.0302	0.0604*
	(0.0545)	(0.0731)	(0.0588)	(0.0765)	(0.0579)	(0.0765)	(0.0226)	(0.0325)
Mothers education	0.0044	0.0045	0.0206	0.0249	0.0218	0.0264	-0.0151***	-0.0179***
	(0.0113)	(0.0133)	(0.0128)	(0.0139)	(0.0126)	(0.0139)	(0.0050)	(0.0059)
Wealth	0.0269*		-0.0011		-0.0034		-0.0032	
	(0.0131)		(0.0129)		(0.0127)		(0.0048)	
Size of HH	0.0054		0.0065		0.0061		0.0006	
	(0.0037)		(0.0039)		(0.0039)		(0.0015)	
Average Baradari wealth	-0.0262		-0.0261		-0.0264		0.0110	
	(0.0145)		(0.0151)		(0.0149)		(0.0058)	
Average Baradari heads education	0.0286		0.0330		0.0353		-0.0075	
	(0.0199)		(0.0196)		(0.0193)		(0.0073)	
Time	-0.1911***	-0.2090***	-0.2175***	-0.2503***	-0.2041***	-0.2422***	-0.0482**	-0.0296
	(0.0372)	(0.0413)	(0.0398)	(0.0432)	(0.0392)	(0.0432)	(0.0153)	(0.0183)
District Dummies	Yes	No	Yes	No	Yes	No	Yes	No

Number of observations=2963

Number of groups=820

Std. Err. clustered at district level; 7 districts

* p<0.10, ** p<0.05, *** p<0.01

Instrumented: Remittance*Male, Remittance*Female, Father Absent*Male, Father Absent*Female

Appendix 7

First Stage Results for Main Specification with Mother Present Interaction

	RANDOM EFFECTS			HOUSEHOLD FIXED EFFECTS		
	REMITTANCE VALUE	FATHER ABSENT	MOTHERPRESE NT*FATHER ABSENT	REMITTANCE VALUE	FATHER ABSENT	MOTHERPRESEN T*FATHER ABSENT
	(1)	(2)	(3)	(4)	(5)	(6)
Remittance Baradari IV	528.7934** (156.1183)	-0.0791 (0.1387)	-0.0614 (0.1413)	442.4672*** (96.8504)	-0.0757 (0.1214)	-0.0529 (0.1220)
Migrant Baradari IV	180.8901 (152.8197)	1.3167*** (0.0937)	0.0180 (0.0998)	321.8412 (200.4584)	1.3369*** (0.0891)	0.0282 (0.0610)
Motherpresent*Migrant Baradari IV	-317.3262 (185.2993)	-0.3113* (0.0872)	0.9798*** (0.0606)	-259.7230 (185.1433)	-0.3032** (0.0924)	0.9897*** (0.0298)
Childs age	13.9032 (21.7525)	0.0020 (0.0156)	0.0002 (0.0158)	8.0774 (20.0274)	-0.0007 (0.0175)	-0.0025 (0.0185)
Childs age2	-0.7218 (1.1552)	0.0000 (0.0008)	0.0001 (0.0008)	-0.3228 (1.0256)	0.0002 (0.0008)	0.0003 (0.0009)
Childs gender (Male)	41.8156 (51.7865)	-0.0212 (0.0218)	-0.0220 (0.0133)	33.9828 (47.4886)	-0.0223 (0.0218)	-0.0227 (0.0135)
Headsage	3.7564 (2.7831)	0.0019 (0.0013)	0.0021* (0.0010)			
Heads age2	-0.0035 (0.0026)	-0.0000 (0.0000)	-0.0000* (0.0000)			
Heads gender (Male)	-188.8334** (63.9921)	-0.2343** (0.0745)	-0.2261** (0.0784)			
Heads education	13.0530 (27.6103)	0.0055 (0.0090)	0.0057 (0.0085)			
Fathers education	-8.7497 (9.0160)	0.0118 (0.0081)	0.0133* (0.0058)	-19.9135 (11.6614)	0.0059 (0.0076)	0.0079 (0.0064)
Mother present	-45.3192 (65.4254)	0.0007 (0.0165)	-0.0058 (0.0187)	-76.3954 (85.9400)	-0.0023 (0.0231)	-0.0098 (0.0076)
Mothers 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 HH	12.0399	0.0055	0.0046			
	(9.3761)	(0.0044)	(0.0044)			
Average Baradari wealth	-22.1425	-0.0141	-0.0129			
	(11.7241)	(0.0231)	(0.0210)			
Average Baradari heads edu	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)

Number of observations=2963

Number of groups=820

Std. Err. clustered at district level; 7 districts

* p<0.10, ** p<0.05, *** p<0.01

First Stage F Value of Excluded Instruments

Random Effects

Remittance 11.47
 Father Absent 197.34
 Motherpresent*fatherabsent 261.08

Household Fixed Effects

Remittance 20.87
 Father Absent 225.2
 Motherpresent*fatherabsent 104.38

Second Stage Results for Main Specification with Mother Present Interaction

Y_{it}	SCHOOLING		CHILDLABOR		INSIDE CHILD LABOR		OUTSIDE CHILD LABOR	
	<i>RANDOM EFFECTS</i>	<i>HOUSEHOLD FIXED EFFECTS</i>	<i>RANDOM EFFECTS</i>	<i>HOUSEHOLD FIXED EFFECTS</i>	<i>RANDOM EFFECTS</i>	<i>HOUSEHOLD FIXED EFFECTS</i>	<i>RANDOM EFFECTS</i>	<i>HOUSEHOLD FIXED EFFECTS</i>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Remittance value (1,000's)	3.1935 ** (1.1813)	11.293* (6.1210)	-2.1868** (1.1288)	-9.1385* (5.1558)	-2.1438* (1.1258)	-0.8378 (0.5256)	-2.1000** (1.1000)	4.2000 (3.1000)
Father absent	-0.1257 (0.1265)	-0.6373** (0.3117)	0.4156*** (0.1047)	0.6944** (0.2790)	0.3901*** (0.1022)	0.6587** (0.2638)	0.1082* (0.0563)	0.2772** (0.1261)
MotherPresent*FatherAbsent	0.3169** (0.1262)	0.7249** (0.2906)	-0.1421 (0.1061)	-0.5056* (0.2601)	-0.1452 (0.1035)	-0.4941** (0.2460)	-0.0619 (0.0564)	-0.1953* (0.1175)
Childs age	0.2023*** (0.0226)	0.1923*** (0.0338)	0.0037 (0.0210)	0.0189 (0.0302)	0.0064 (0.0205)	0.0217 (0.0286)	0.0106 (0.0104)	0.0116 (0.0137)
Childs age2	-0.0105*** (0.0012)	-0.0102*** (0.0017)	-0.0002 (0.0011)	-0.0007 (0.0016)	-0.0003 (0.0011)	-0.0009 (0.0015)	-0.0005 (0.0005)	-0.0005 (0.0007)
Childs gender	0.0640*** (0.0245)	0.0520 (0.0379)	0.0046 (0.0227)	0.0178 (0.0340)	0.0019 (0.0221)	0.0151 (0.0321)	0.0010 (0.0113)	0.0083 (0.0153)
Mother present	0.2699*** (0.0505)	0.0672 (0.1083)	-0.0093 (0.0427)	-0.1909* (0.0970)	-0.1786** (0.0338)	-0.2446** (0.0535)	-0.0122* (0.0066)	-0.0028 (0.0039)
Fathers education	0.0242*** (0.0063)	0.0390*** (0.0127)	-0.0078 (0.0054)	-0.0108 (0.0114)	-0.0066 (0.0053)	-0.0106 (0.0107)	-0.0055* (0.0028)	-0.0099* (0.0051)
Mothers education	0.0057 (0.0113)	0.0035 (0.0170)	0.0234** (0.0104)	0.0317* (0.0153)	0.0240* (0.0102)	0.0331* (0.0144)	-0.0140*** (0.0052)	-0.0168** (0.0069)
Time	-0.0072 (0.0417)	0.1957* (0.0917)	0.0222 (0.0227)	0.0657 (0.0438)	-0.2401*** (0.0289)	-0.1991*** (0.0453)	-0.0554*** (0.0153)	-0.0223 (0.0216)
Heads age	-0.0018* (0.0010)		0.0001 (0.0008)		0.0001 (0.0008)		0.0006 (0.0004)	
Heads age2	0.0000** (0.0000)		0.0000 (0.0000)		-0.0000 (0.0000)		-0.0000 (0.0000)	
Heads gender	-0.0175		-0.1452***		-0.1494***		0.0075	

	(0.0531)		(0.0456)		(0.0445)		(0.0240)	
Heads 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 hh	-0.0026		0.0088**		(0.0027)		0.0008	
	(0.0034)		(0.0028)		-0.0210*		(0.0015)	
Avg Baradari wealth	-0.0272**		-0.0208*		(0.0106)		0.0102	
	(0.0129)		(0.0108)		0.0109		(0.0058)	
Avg Baradari heads edu	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)

Number of observations=2963

Number of groups=820

Std. Err. clustered at district level; 7 districts

* p<0.10, ** p<0.05, *** p<0.01

Instrumented: Remittance Value, Father Absent, Father Absent* Mother Present

Appendix 8

Robustness Checks of Mother Present Variable

REGRESSION OF MOTHER PRESENT SPECIFICATION, WHERE MOTHER PRESENT HAS ALSO BEEN INSTRUMENTED BY MOTHER DEAD

FIRST STAGE

	REMITTANCE	FATHER ABSENT	MOTHERPRESENT FATHER ABSENT	MOTHER PRESENT
Remittance Baradari IV	444.1448***	-0.0755	-0.0527	-0.0184*
	(99.4792)	(0.0523)	(0.0496)	(0.0058)
Migrant Baradari IV	354.1431*	1.3528***	0.0300	0.0079*
	(176.8064)	(0.0930)	(0.0882)	(0.0036)
Mother dead IV * Migrant Baradari IV	-296.4509	0.0048	0.9877***	0.0011
	(179.3716)	(0.0183)	(0.0895)	(0.0020)
Mother Dead IV	61.1684	-0.0065	0.0091	-0.9691***
	(60.0191)	(0.0316)	(0.0299)	(0.0035)
Childs age	8.1596	-0.0007	-0.0025	-0.0009
	(30.1976)	(0.0159)	(0.0151)	(0.0018)
Childs age2	-0.3259	0.0002	0.0003	0.0000
	(1.5777)	(0.0008)	(0.0008)	(0.0001)
Childs gender	33.5561	-0.0226	-0.0228	0.0008
	(31.7534)	(0.0167)	(0.0158)	(0.0019)
Fathers education	-20.1589**	0.0058	-0.1190***	0.0000
	(7.2926)	(0.0038)	(0.0103)	(0.0004)
Mothers education	-1.6927	-0.0009	-0.0007	0.0001
	(15.0430)	(0.0079)	(0.0075)	(0.0009)
Time	40.1134	-0.3214**	0.0049	0.1328***
	(34.6925)	(0.0944)	(0.0173)	(0.0105)
Constant	-51.4923	-0.0312	-0.0237	1.0013***
	(141.3517)	(0.0744)	(0.0705)	(0.0082)

Number of observations=2963

Number of groups=820

Std. Err. clustered at district level; 7 districts

* p<0.10, ** p<0.05, *** p<0.01

First Stage F Value of Excluded Instruments

Remittance 20.5

Father Absent 32.6

MotherPresent*FatherAbsent 40.7

Mother Present 20.8

Second Stage Results

	SCHOOLING	OVER ALL CHILD LABOR	INSIDE CHILD LABOR	OUTSIDE CHILD LABOR
Remittance value (1000's)	0.0112*	-0.0103*	-0.0042	-0.0082
	(0.0063)	(0.0061)	(0.0035)	(0.0051)
Father Absent	-0.5962**	0.6578**	0.2649**	0.6250**
	(0.3028)	(0.2707)	(0.1221)	(0.2559)
Motherpresent*fatherabsent	0.6775**	-0.4634*	-0.1811*	-0.0105*
	(0.2817)	(0.2519)	(0.1136)	(0.0108)
Mother present	0.0974	-0.0107	-0.0232	-0.4553
	(0.1053)	(0.0114)	(0.0215)	(0.2381)
Childs age	0.1924***	0.0188	0.0116	0.0216
	(0.0340)	(0.0304)	(0.0137)	(0.0288)
Childs age2	-0.0102***	-0.0007	-0.0005	-0.0009
	(0.0018)	(0.0016)	(0.0007)	(0.0015)
Childs gender	0.0512	0.0185	0.0085	0.0158
	(0.0384)	(0.0343)	(0.0155)	(0.0324)
Fathers education	1.0497	0.1641	-0.0099	0.1710
	(2.1182)	(0.0942)	(0.0052)	(0.0890)
Mothers education	0.0033	0.0319*	-0.0167*	0.0333*
	(0.0172)	(0.0154)	(0.0069)	(0.0145)
time	-0.2415***	-0.2094***	0.0567	-0.2016***
	(0.0533)	(0.0477)	(0.0425)	(0.0450)
Constant	-0.0615	0.3199	0.0106	0.2802
	(0.2026)	(0.1812)	(0.0817)	(0.1712)
Number of observations=2963 Number of groups=820 Std. Err. clustered at district level; 7 districts * p<0.10, ** p<0.05, *** p<0.01 Instrumented: Remittance, Father Absent, MotherPresent*FatherAbsent, MotherPresent				

REGRESSION OF MOTHER PRESENT SPECIFICATION INCLUDING ONLY THOSE CHILDREN WHO HAVE THEIR MOTHER PRESENT OR DEAD

	REMITTANCE	FATHER ABSENT	FATHER ABSENT * MOTHER PRESENT
Remittance Baradari IV	470.0815*** (86.1018)	-0.0546 (0.0550)	-0.0546 (0.0550)
Migrant Baradari IV	5341.9716 (3314.5631)	5.7272** (2.1185)	-0.0312 (2.1185)
Motherpresent*Migrant Baradari IV	-5297.6179 (3314.0422)	-4.7087* (2.1182)	0.0389** (0.0128)
Mother present	1698.3008 (1407.7257)	1.6142 (0.8997)	-0.0435 (0.8997)
Childs age	0.3950 (25.7351)	-0.0028 (0.0164)	-0.0028 (0.0164)
Childs age2	0.0796 (1.3433)	0.0003 (0.0009)	0.0003 (0.0009)
Childs gender	3.3236 (28.0915)	-0.0262 (0.0180)	-0.0262 (0.0180)
Fathers education	-14.1827* (6.1930)	0.0083* (0.0040)	0.0083* (0.0040)
Mothers education	-4.7327 (12.7185)	-0.0007 (0.0081)	-0.0007 (0.0081)
Time	45.4146 (29.5139)	0.0058 (0.0189)	0.0058 (0.0189)
Constant	-1725.7580 (1415.0956)	-1.6392 (0.9045)	0.0186 (0.9045)
Number of observations=2900 Number of groups=820 Std. Err. clustered at district level; 7 districts * p<0.10, ** p<0.05, *** p<0.01 <p align="center">First Stage F Value of Excluded Instruments</p> Remittance 19.5 Father Absent 27.8 MotherPresent*FatherAbsent 54.5			

Second Stage Results

	SCHOOLING	OVER ALL CHILD LABOR	INSIDE CHILD LABOR	OUTSIDE CHILD LABOR
Remittance value (1000's)	0.0061*	-0.0101*	-0.0031	-0.0069
	(0.0041)	(0.0051)	(0.0021)	(0.0068)
Father absent	-0.1884**	0.0307*	0.0222*	0.0325*
	(0.0431)	(0.0153)	(0.0099)	(0.0147)
Motherpresent*fatherabsent	0.0587*	-0.0166*	-0.0107*	-0.0091*
	(0.0280)	(0.0120)	(0.0048)	(0.0042)
Mother present	0.2377	0.0063	-0.0139	0.0115
	(0.6127)	(0.7430)	(0.3005)	(0.7132)
Childs age	0.2211***	0.0123	0.0127	0.0153
	(0.0256)	(0.0310)	(0.0125)	(0.0298)
Childs age2	-0.0116***	-0.0003	-0.0006	-0.0004
	(0.0013)	(0.0016)	(0.0006)	(0.0015)
Childs gender	0.0587*	-0.0016	0.0060	-0.0017
	(0.0280)	(0.0340)	(0.0137)	(0.0326)
Fathers education	-0.0949	0.6905	0.1804	-0.0165
	(0.3655)	(0.9061)	(0.3665)	(0.0115)
Mothers education	0.0067	-0.4727	-0.0179**	-0.4426
	(0.0126)	(0.9036)	(0.0062)	(0.8672)
Time	0.4496	-0.1846***	-0.0259	-0.1772***
	(0.7450)	(0.0523)	(0.0211)	(0.0502)
Constant	-0.3335	0.4634	0.0714	0.4260
	(0.6280)	(0.7617)	(0.3081)	(0.7311)
Number of observations=2900 Number of groups=820 Std. Err. clustered at district level; 7 districts * p<0.10, ** p<0.05, *** p<0.01 Instrumented: Remittance, Father Absent, MotherPresent*FatherAbsent				