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Remittances and Child Labor in Pakistan: A Tale of Complementarities

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Abstract: We investigate the impact of remittance income on the household decision to send a child to work. Using data from a Multiple Indicators Cluster Survey conducted in the Punjab province of Pakistan in 2014, we isolate the causal impact of remittance income by employing statistical matching to construct counterfactuals that allow us to compare the occurrence in child labor in comparable households that differ solely in their access to remittances. We find that remittances have in general failed to mitigate household reliance on child labor in Punjab. However, the impact depends critically on whether remittances originate from within Pakistan or outside, the age and gender of the child, and on the nature of employment. Specifically, internal remittances increase the labor force participation of the youngest children in the 5-11 age group, with girls being more likely to work in household production and boys being additionally more likely to work as wage labor in nonhazardous occupations. By contrast, international remittances impact the oldest children in the 14-17 age group. While girls in this age group participate more in household and nonhazardous market production, boys are additionally more likely to participate in hazardous activity.

Keywords: Remittances, Migration, Child Labor, Gender

JEL Classification Codes: F24, F22, R23, J13

1. Introduction

Despite a history of judicial commitment to the protection of children dating back to the pre-independence period (ILO, 2021) and despite the constitution of Pakistan explicitly prohibiting the employment of any child below the age of fourteen,¹ the employment of child labor remains rampant in the country. Indeed, a recent report by the Bureau of International Labor Affairs (ILAB, 2020) of the United States Department of Labor estimates that as much as 9.8 percent of all children between the ages of ten and fourteen may be considered as child labor, by far the greatest proportion (69.4 percent) of whom are employed in the agricultural sector.

Given the sheer magnitude of the problem, it is not surprising that considerable scholarly effort has been directed at investigating economic determinants of child labor in Pakistan, such as household income and wealth (Lima, Mesquita, & Wannamaker, 2015); wages and employment opportunities available to adults in the household (Fatima, 2017); wages of working children (Bhalotra, 2007); availability of health (Frölich & Landmann, 2018) and other forms of social insurance (Landmann & Frölich, 2015); the price of dietary staples such as wheat (Hou, Song, & Scott, 2016); and unconditional transfer policies such as the Benazir Income Support Program (Churchill et al., 2021).²

To the best of our knowledge, however, there is a dearth of studies exploring the impact of remittance income on the household decision to utilize child labor in Pakistan,³ though the remittance share of gross domestic product (GDP) which stood at approximately 8.9 percent in 2020 placed the country twelfth in the list of top remittance destinations in the world. The object of the current study is to help fill this void.

¹ Article 11 adopted in 1973.

² For more information, see <https://www.bisp.gov.pk/>

³ See Mansuri (2006) as an exception, though this paper focuses on temporary migration and explores its effects on both labor force participation and schooling.

Based on household data from the province of Punjab in Pakistan, we investigate whether the access to remittance income affects the likelihood that a household will put a child to work. Using statistical matching to account for the selection bias inherent in household access to remittances, we identify the causal impact of the latter by comparing the usage of child labor in matched pairs of households, which are similar in every attribute other than the access to remittance income.

Our results indicate that in general, remittances increase household reliance on child labor. Consistent with the literature, however, the nature and magnitude of the impact depend critically on whether remittances originate from within Pakistan or outside (Binci & Giannelli, 2018; Aguayo-Téllez, García-Andrés, & Martinez, 2020), the age and sex of the child (Bargain & Boutin, 2015; Hou et al., 2016; Burrone & Giannelli, 2020), and on the type of work being required (Ali, 2019), which may well differ according to sex (Acosta, 2011).

More explicitly, we find the following: while access to remittances sent from within Pakistan robustly increases household reliance on child labor, the result is driven primarily by the impact on the youngest children in the 5-11 age group. Consistent with the occupational gender division of child labor observed in Pakistan (Acosta, 2011; Hou, Hong, & Scott, 2016), domestic remittances increase the participation of the youngest girl children in both household production and nonhazardous market labor, while the increased participation of boy children in the same age group is restricted to household production alone.

By contrast, the receipt of international remittances does not affect the household decision to use child labor when we do not disaggregate by age and sex, though a closer look reveals a strong positive impact on children in the 14-17 age group. As in the case of domestic remittances, there is a marked gender difference: while girls aged 14-17 in households receiving international remittances participate more in both household and nonhazardous market production, boys in this

age group are additionally more likely to participate in hazardous activity. Interestingly, we find no evidence that remittances of either kind reduce household use of child labor in any age, sex, or task category.

Our results contribute to the literature in the following aspects: first, they reinforce the insight that while the access to remittance income may help to overcome the binding credit, liquidity and insurance constraints that lead to the persistence of poverty; it may not be able to prevent household reliance on child labor, which requires more direct policy intervention, including policies intended to redress imperfections in credit and labor markets typically accessed by the poor.

Second, they are consistent with the idea that poverty may not be the most important determinant of child labor (Ali, 2019). If this were so, then the partial mitigation of household income and wealth constraints by remittance transfers would be expected to reduce the usage of child labor, however marginally. However, we do not observe this for any age group, gender, or type of employment.

Third, the fact that remittances actually increase the participation of children of certain ages in both hazardous and nonhazardous market activity implies that there is a need to investigate how initiatives intended to increase the flow of remittances such as the Pakistan Remittance Initiative (PRI)⁴ interact with and perhaps impede policies designed to eradicate child labor such as The Punjab Restriction on Employment of Children Act of 2016.⁵

We conclude the introduction with a brief roadmap of what follows: Section 2 provides a brief account of the existing literature on the topic, emphasizing the causal mechanisms at play. Section 3 introduces the data, outlines the econometric challenges to implementing our study, and justifies

⁴ For more information, see <https://www.worldremit.com/en/pakistan/faq/pri>

⁵ See <http://punjablaws.gov.pk/laws/2668.html> for the full text of the Act.

our responses to these challenges. Section 4 describes our results and Section 5 concludes the paper by noting the policy implications of our analysis.

2. Theoretical Foundations

It has been argued that child labor is essentially part of the household response to adverse income or expenditure shocks necessitated by the absence or imperfection of credit and insurance markets, in addition to binding liquidity constraints (Fors, 2012). In so far as remittance income helps to alleviate these constraints and constitutes an additional means of smoothing consumption, it is not difficult to contend that household access to remittances should reduce the reliance on child labor. Indeed, this is precisely what is observed by Yang (2008) in the Philippines, Alcaraz, Chiquiar, & Salcedo (2012) in Mexico, and Cuadros-Menaca & Gaduh (2020) in the metropolitan areas of Colombia, for example.

There are, however, a number of caveats to the argument: first, the magnitude of remittances received by the average migrant household may simply be insufficient to prevent the use of children for income generation following an adverse shock to household income. In this case, remittances may have no perceptible impact on child labor, which is what Calero, Bedi, & Sparrow (2009) find in Ecuador and Apsara Nepal (2016) documents in the context of Nepal.

Second and more relevant to our context, since remittances help to finance investment in land and physical capital; it is logical to expect that access to such transfers would increase household demand for the complementary input of labor (Bhalotra & Heady, 2003; Dumas, 2007; 2013). Given the presence of imperfect labor and credit markets which limit the ability to hire paid labor and the desire to economize on monitoring costs, this should translate into increased usage of

family labor, including labor from children.⁶ Indeed, Bhalotra & Heady (2003) find that agricultural households in Pakistan and Ghana with relatively larger land holdings are more likely to put girl children to work on the family farm than households with relatively smaller land holdings, though the corresponding impact on boys is statistically insignificant for both countries.⁷ In the case of Pakistan, these findings were confirmed more recently by Lima, Mesquita, & Wanamaker (2015), though this study does not account for a gendered impact of household wealth.

It is worth pointing out that evidence on the impact of productive asset transfers to households in general finds such transfers to increase household usage of child labor in the short run, the study by Edmonds & Theoharides (2020) tracing the impact of a productive asset grant in the Philippines being a case in point. Evidence on the impact of unconditional cash transfer (UCT) programs also reveals a similar impact: de Hoop, Groppo, & Handa (2020), for example, find that both the Social Cash Transfer Program in Malawi and the Multiple Category Targeted Program in Zambia actually increased the hours worked by children in recipient households as also their exposure to hazardous activity, via facilitating an increase in household entrepreneurial activity.

More directly related to our context, Churchill et al (2021) find that the Benazir Income Support Program (BISP), which is the largest social safety net program in Pakistan, has actually increased the labor contribution of girl children in the short run, while having no perceptible impact on boys. In the long run, however, BISP has reduced child labor from children of both genders.

The gendered impact of UCT programs on the household usage of child labor brings us to our third and last argument against any mitigating impact of remittances on the decision to put a child to work. Even if the access to remittance income does reduce child labor, it may not do so

⁶ It should be acknowledged that the impact of household wealth or asset holdings on the usage of child labor may well be nonlinear (Basu, Das, & Dutta, 2010).

⁷ In contrast to Bhalotra & Heady (2003), Bandara, Deheija, & Gatti (2015) find that household assets actually reduce working hours of girls in Tanzania. The impact on boys is again statistically insignificant.

uniformly for all age, gender, and task categories, given the well-documented heterogeneity of the child labor decision with respect to the age and sex of the children and on the nature of work in question (Edmonds, 2007).

Children in different age groups are at best imperfect substitutes in production and typically perform different tasks. In addition, they may be subject to different social norms. Bargain & Boutin (2015), for example, find that remittances reduce the labor supply of children below the age of ten significantly more than that of older children in Burkina Faso, a result consistent with the idea that while children are gradually integrated into work, prevailing social norms expect older children to make an economic contribution to the household.

If child labor in hazardous occupations is fundamentally different from employment in less detrimental activities in that selection into the former is essentially induced by subsistence concerns on the part of the most desperate (Edmonds & Shrestha, 2014), it follows that hazardous child labor should exhibit greater elasticity to a remittance induced increase in household income relative to children in nonhazardous tasks.

Indeed, the study by Ali (2019) finds that greater household income in Egypt is associated with a significantly reduced likelihood of children being put to work if the work in question is hazardous or physically demanding. By contrast, the impact of household income on child labor is minimal if the work being required of the child occurs in more benign environments. We should point out, however, that while our results are consistent with the idea that remittances are likely to affect hazardous and nonhazardous child labor differently, we do not observe any mitigating impact of remittances on child labor in either occupational category, and what we do observe exhibits considerable heterogeneity with respect to the age and gender of the children.

Finally, recall that the need to consider child labor as a gendered phenomenon has typically been motivated by the following arguments: (1) parental preferences with respect to time allocation of a child differ with respect to the gender of the child and (2) the relative rates of return to time allocation in education differs between girl and boy children. While it is not hard to infer that patriarchal norms of traditional Punjabi society with its proscription on women working outside the home would lead to girl children being more likely to participate in domestic production,⁸ the second argument is slightly more nuanced in the context of Pakistan.

It is argued that parents are more likely to invest in schooling for boys and therefore less likely to send them to work than girls since expected labor market returns in most developing societies typically favor boys over girls. However, this may be a questionable assumption for Pakistan since there is reason to believe that women experience significantly greater returns than men for each additional year of schooling in Pakistan, especially at low levels of education (Aslam, 2009) which is most likely to matter for child labor decisions. It is thus likely that the unequal treatment of women and men in the Pakistani labor market and the absence of social security mechanisms that prevent mistreatment of girls (Aslam, 2009; Delavande & Zafar, 2019) may play a greater role in the occupational segregation observed for child labor in Pakistan.

3. Data and Methods

3.1 The Survey

We obtain our data from a Multiple Indicators Cluster Survey (MICS) conducted in the province of Punjab in 2014. Undertaken in collaboration with the United Nations Children's Fund (UNICEF), MICS Punjab 2014 was part of an initiative designed to address the need for reliable

⁸ This, in fact, holds for child labor in general. See Edmonds (2007) on the issue.

subnational data necessitated by the 18th constitutional amendment of 2010 which gave the four provinces of Pakistan autonomy over forty distinct domains of social policy, including child labor.

The survey employed a two-stage stratified cluster sampling strategy to construct the sample from the universe of all households in the 36 districts of Punjab. Each district was stratified into urban and rural areas, with the eight major cities of the province being treated as additional strata within the districts that contain them. The first stage of the sampling process selected a specified number of census enumeration areas from each sampling stratum with probability proportional to size, yielding 2,050 primary sampling units (PSU), of which 774 were urban and 1276 were rural.

In the second stage, 20 households were selected with equal probability from all but three of the PSU, yielding a final sample of 41,413 households, of which 38,405 completed both the household characteristics survey and the household member survey for the head of the household. Out of these, 31,713 also included at least one child living in the household. Within each household with at least one child, the interviewer randomly selected one child as the subject of the child questionnaire. Of the children selected, 8988 of were under 5 years old and did not qualify for the child labor survey, leaving 22,725 children, of which only 15 fall out of the final sample due to missing values for one or more of the controls or matching variables. The 98 percent response rate for the survey makes the sample representative of the province as a whole.⁹

3.2 Identifying Child Labor

Following the criteria proposed by the International Labor Organization (ILO) in Conventions 138 and 182, MICS Punjab defines child labor to include the following: (i) children aged between 5 and 11 years who work more than one hour a week; (ii) children aged between 12 and 14 who

⁹ For further information on the methodology, see Section II of the Final Report published by the Bureau of Statistics Planning and Development Department of the Government of Punjab: https://mics-surveys-prod.s3.amazonaws.com/MICS5/South%20Asia/Pakistan%20%28Punjab%29/2014/Final/Pakistan%20%28Punjab%29%202014%20MICS_English.pdf

work more than 14 hours a week; (iii) juveniles aged between 15 and 17 who work at least 43 hours a week; and (iv) any child or juvenile regardless of age and hours of work who are in a hazardous occupation. Note that given social strictures on girls working outside the home, we have followed the literature (Landmann & Frölich, 2015; Frölich & Landmann, 2018) in identifying work as including both unpaid domestic activity in the form of household chores and paid or unpaid economic activity, either for the family farm or business or outside the household. The outcome variable is thus a binary indicator taking the value one if the child surveyed meets the criteria outlined for child labor and zero otherwise.¹⁰

Remarkably, our data reveals that one out of three children in our sample aged between 5 and 11 performed at least one type of child labor according to the ILO definition. In the full sample, children from non-remittance households worked at slightly higher rates than those from remittance-receiving households, but only by a margin of about one percentage point (34.5% versus 33.5%). However, after we match remittance-receiving households to non-remittance households based on household-level observables this gap reverses and widens to nearly 5 percentage points (28.7% versus 33.4%). The goal of this paper is to determine whether any of these gaps hold up to controlling for characteristics of the children, and to analyze the extent to which age and gender moderate the impact of remittances.

3.3 Modelling Remittances

The measurement of remittance income in a developing country like Pakistan is particularly challenging because both rural and urban poor are apprehensive about revealing household income due to a deep-rooted distrust of the state. Hence, considering the rupee value of remittances would both lead to a significant reduction of our sample and leave us open to an obvious source of

¹⁰ The survey selects one child in all households with children under the age of 17 to administer the child labor module of the questionnaire.

measurement error as households tend to misreport the magnitude of these transfers (Mitra, Bang, & Abbas, 2021). Further, the poorest households sometimes receive part of their ‘remittance income’ in the form of durable goods brought back to the family by return migrants. Considering the monetary value of remittance income would again fail to capture this.

Consistent with current practice (Adams & Cuecuecha, 2013; Bang, Mitra, & Wunnava, 2016; Mitra, Bang, & Abbas, 2021), therefore, remittance income is modelled as a binary indicator taking the value one if the household under observation received any such transfers and zero if it did not (or if the respondent did not know). Thus, what we are modeling is the marginal impact of receiving any remittance income whatsoever as opposed to the effect of receiving an additional rupee of remittances.

We subsequently explore whether the household decision to put a child to work responds differently to domestic and international remittances. Since the two types of transfers are neither mutually exclusive nor nested, we are unable to account for them in a single model. As such, we estimate two separate models, respectively comparing households receiving domestic remittances to those that do not and households receiving international remittances to those without such access.

3.4 The Selection Problem and Matching Methods

Ideally, we would estimate the causal impact of remittances on child labor by comparing the utilization of child labor in households receiving remittance income to the counterfactual scenario where the same households do not receive remittances. The key methodological challenge to constructing the counterfactual is that the access to migration and hence, remittance income, is not randomly distributed over the population. Any inquiry intended to identify the causal impact of

remittances on an outcome variable thus needs to purge the data of selection bias.¹¹ Following current praxis (Chen, Kosec, & Mueller, 2019; Mitra, Bang, & Abbas, 2021), we do so by using statistical matching.

We focus on the subsample of 22,725 households who meet the criteria for utilizing child labor. The 2,377 households in this sample that received remittances form the treatment group, which we match with households that did not receive remittances, based on a number of characteristics of the household and of its head that the literature identifies as influencing the decision to migrate.

For any of the 2,377 households receiving remittances, its match is a household without access to remittance income that is closest to the former with respect to all of these characteristics within a pre-determined caliper, or maximum tolerable distance to still consider it a match. We have restricted the algorithm to considering matches that contain the full set of observations on all variables included in the regression model described in the next section. Out of the households that received remittances, 288 failed to achieve a match on the criteria we considered, leaving a total of 2,089 matched households in the treatment group, and 2,089 in the control group. We devote the remainder of this subsection to a description of the matching procedure.

The set of matching variables includes: (1) household size as a distance-matched variable;¹² (2) an indicator for whether any member of the household owns a mobile telephone and zero otherwise;¹³ (3) an indicator for whether the head of the household is female;¹⁴ (4) age of the household head, measured in ten year intervals;¹⁵ (5) the highest level of education *attended* by

¹¹ See Adams (2011) on the importance of and available responses to the selection problem in the empirical literature on remittances.

¹² Item HL2 in the household questionnaire.

¹³ Bang, Mitra, & Wunnava, 2016 document the role of mobile technology in alleviating informational limitations that have typically constrained economic migration and sending remittance (item HC9b).

¹⁴ Item hl4.

¹⁵ Iacus, King, & Porro (2012) propose coarsened exact matching when sensible in order to improve the overall quality of the matches. We construct intervals for under-25, 25-34, 35-44, 45-54, 55-64, and over-65 years old based on item HL5.

the household head;¹⁶ and (6) the quintile of the wealth score distribution containing the household head.¹⁷ We report the descriptive statistics for the matching variables for the full sample and the matched sample, sorted by the household's remittance status in Table 1.

Recall that for any household which is a candidate for selection into the treatment group, its match is a household without access to remittances but using child labor which has the least distance or dissimilarity with the former in terms of the six variables described above.¹⁸ Of these variables, the categorical characteristics (2), (3), (4), (5), and (6) lend themselves to an exact match. In the case of household size, even coarsened exact matching poses a challenge since the distribution of household sizes is overdispersed.¹⁹ To account for this, we select the matched control for each remittance-receiving household to minimize the Euclidian distance between the two observations.²⁰ For example, a match for a household that owns a mobile phone, headed by a male aged above 65 with post-matriculate education in the top quintile of the wealth distribution is one that shares *all* of these characteristics exactly and shares a similar household size.

Finally, note that not only does the matching procedure described above allow us to 'balance' or equate the characteristics of the treated and control groups on the average, as would be the case

¹⁶ Item ED4a asks the highest level attended between pre-primary or none, primary school, middle school, secondary, matriculation, and post-matriculate.

¹⁷ The wealth score is constructed via principle components analysis from information on ownership of consumer goods (items HC8 and HC9), dwelling characteristics (items HC2 – HC7), the type of water and sanitation facilities accessed by the household (items WS1 – WS11), and the nature of assets owned (items HC10 – HC14). The index is centered and scaled over the population of respondents giving it a mean slightly higher than zero for the subsample of household heads and a standard deviation of one. The rescaled index is then used to calculate the quintile the household head falls in. See page 15 of the Final Report of MICS2014 and references therein for specifics of the methodology.

¹⁸ We say candidate for selection into the treatment group because not every household receiving remittances and using child labor will have a match.

¹⁹ While the mean and median household both include about 7 members and 95% of the households include 12 members or fewer, the largest households reach as many as 30-40 members, making the decision on which intervals to coarsen the values difficult and highly irregular.

²⁰ A common generalization of Euclidian distance is Mahalanobis distance, given by $D_{ij} = \sqrt{(x_i - x_j)' \Sigma^{-1} (x_i - x_j)}$, where Σ^{-1} is the variance-covariance matrix attributes. In our context, x is unidimensional. So the above formula reduces to the Euclidean distance divided by the pooled standard deviation, the two being ordinaly equivalent.

in a randomized control trial (RCT) where households were assigned access to remittance income at random; but it further allows a pairwise comparison of demographically comparable households differing solely with respect to the receipt of remittances. Under the Conditional Independence Assumption (CIA) or the assumption that all variables which influence the decision to migrate and hence, selection into the treatment group of households receiving remittances, are perfectly observable; regression estimates obtained from the sample purged of selection bias should capture the causal impact of remittances.²¹

3.5 Main Specification and Controls

Once households receiving remittances are matched with demographically similar households without access to such transfers, we have removed selection bias from the sample. The average treatment effect of remittances on the household decision to put a child to work is now estimated in a logit model, which controls for a set of child and household characteristics documented in the literature as influencing the usage of child labor.

With respect to the former, recall that MICS 2014 selects a child at random from each household with children under 17 years to administer the child labor module of the main household questionnaire. As such, we include the age of the sampled child as a categorical variable, which takes the 5-11 age group as the reference category and distinguishes between adolescents in the 14-17 age group and younger children aged 12 or 13 years. We further include the gender of the sampled child; their birth rank (item SL3 in the child labor module); a binary indicator equal to one if the mother of the child is alive and zero otherwise (item HL12 in the household questionnaire); a corresponding indicator for the father (item HL13); and a categorical variable

²¹ This is not a particularly untenable assumption given the richness of the data.

capturing the educational attainment of the child constructed analogous to the corresponding measure for the household head described previously (items ED3, ED4A, and ED4B).

The set of household characteristics includes the number of children aged between 5 and 17 years who may be expected to contribute to household income generation (item SL1); the number of children aged under five who are expected not to contribute; and the total size of the household including adults and children (item HL2). We further control for the wealth of the household in the form of the wealth score.

Finally, we consider whether the household received any social safety benefits over the previous year (items SN1 – SN7), distinguishing between Zakat benefits and other cash and in kind transfers such as dearness allowances, health subsidies, educational subsidies, and marriage grants from government programs like Bait-ul-Mal, BISP, and the Watan Card, in addition to the access to subsidized food through the Sasta Ration program. Descriptive statistics for all variables are reported in Table 2.

4. Results and Discussion

4.1 The Effect of Receiving Remittances

We present the main results of our analysis in Table 3 where we have followed current praxis in reporting the causal impact of the explanatory variables in the form of average marginal effects (AME) on the probability of the selected child participating in activities classified by the ILO as child labor. For the purpose of comparison, the results reported in column 1 are based on the full unmatched sample, which does not account for the treatment-selection inherent in receiving remittances. By contrast, column 2 presents the analogous effect estimated for the matched sample. We then distinguish between remittances sent from outside Pakistan (column 3) and those sent

from within the country (column 4), for which we conduct separate matching procedures with the comparison group defined as households that received no remittances of either kind.

When we consider the unmatched association of remittances with child labor, we see from column 1 that households receiving remittances are approximately 4% more likely to put a child to work than households not receiving remittances, the impact being significant at the 1% level. However, once we balance the samples, column 2 reveals the coefficient on the remittance variable shrinks considerably and only achieves significance at the 10% level. As such, we cannot infer anything conclusive about the aggregate impact of remittances on the household usage of child labor.

As a final note, we can confirm that the control variables generally exhibit impacts consistent with theory: the usage of child labor decreases in household wealth increases in both the total number of children in the household and the number of older children in the 14-17 age group. Interestingly, access to social protection does not influence the decision to put a child to work once we account for selection bias in our data, though the coefficient on non-Zakat benefits becomes statistically significant once we distinguish between remittances sent from within Pakistan and abroad.²²

4.2 Origin of Remittances

Columns 3 and 4 in Table 2 reveal that the lack of clarity in the observed impact of remittances may result from the fact that remittances influence the household decision to put a child to work differently depending on where they originate: while households receiving remittances sent from within Pakistan are approximately 5 percentage points more likely to rely on child labor than households that lack access to remittances, the corresponding marginal effect for international

²² We gladly make the full results with respect to the controls available by request.

remittances drops below 2 percent and fails to attain statistical significance. This heterogeneity aligns with the literature, which documents differing impacts of remittances on outcomes including child labor (Binci & Giannelli, 2018) depending on the origin of these transfers.

4.3 Ages of the Children

Next, we ask if children in various age groups experience different likelihoods of participating in child labor conditional on the receipt of remittances. Column 1 of Table 4 shows that when we do not distinguish between the origin of remittances, only the oldest children (aged between 14 and 17) experience an increase in labor force participation due to remittances, being about 4.5 percentage points more likely to work than their counterparts in households which do not receive remittances.

However, disaggregating remittance flows by origin reveals that the aggregate impact observed in column 1 is driven entirely by international remittances: while the access to remittances sent from outside Pakistan does not affect household usage of child labor at the aggregate level as seen in Table 3, it nevertheless increases the labor supply of children in the 14-17 age group. These children are about 6 percentage points more likely to work than children in households lacking access to remittances. By contrast, internal remittances solely affect the labor force participation of the youngest children in the 5-11 age group. Indeed, these children are about 8 percentage points more likely to work than children in households receiving no remittances at all.

While we are unable to test directly for reasons underlying the differential impact of internal and international remittances on child labor, our results are consistent with the idea that poorer households are more likely to contain members who have migrated within Pakistan than abroad. Relative to international remittances, therefore, a greater share of internal remittances accrue to poorer households, where older children and juveniles are perhaps already working. As such, any

increase in the household usage of child labor induced by remittances is likely to occur by putting younger children to work.

4.4 Gender and Nature of Work

The results presented in Table 5 separate the effects of remittances according to both age and gender of the children. Interestingly, while international and internal remittances exhibit considerable differences in terms of the age group of children affected, both types of remittances are primarily seen to impact boys. While the average marginal effect of internal remittances on the labor supply of girls in the 5-11 age group is substantial and at par with the impact on boys in the same age group, it fails to reach statistical significance at a 5% level or better.

This does not mean that household access to remittances leaves girl children unaffected. Given the gender based occupational segregation observed in Pakistan, our final exercise follows current praxis in distinguishing between three distinct work categories, namely, nonhazardous market labor, hazardous market labor, and domestic production or chores.

The results presented in Table 6 reveal a more nuanced picture: international remittances significantly increases supply of both nonhazardous and hazardous market labor from boys in the 14-17 age group by about 9 percentage points. Meanwhile, international remittances increases participation in chores by about 15 percentage points for 12-13 year-old boys. However, international remittances increase the burden of chores for girls in *all three* age groups, and by about 18.5 percentage points for the middle age group. Girls in remittance-receiving households from the oldest age group participated in nonhazardous market work more.

Access to internal remittances, on the other hand, significantly increases participation in nonhazardous market labor by 10 percentage points for girls aged 14 to 17 years and increases participation in chores by about 16 percentage points for girls aged 5-11. Meanwhile, increased

participation in chores (by about 9 percentage points) almost entirely explains the previously observed effect of internal transfers on boys in the 5-11 age group.

5. Concluding Observations

The empirical analysis presented in the last section reveals that household access to remittance income in Punjab has failed to mitigate the usage of child labor in any age, gender, or employment category. Rather, it has generally increased household reliance on child labor. Specifically, remittances sent from within Pakistan have increased the labor force participation of children in the 5-11 age group, with both boys and girls being more likely to participate in household chores. In addition, domestic remittances have also increased participation in nonhazardous wage labor for girls aged 14-17. By contrast, international remittances have mostly affected older juveniles in the 14-17 age group. While girls in this age group are more likely to participate in chores and nonhazardous market labor when their families receive remittances, boys are more likely to participate in both hazardous and nonhazardous market activities. International remittances additionally increase the propensity for early adolescent boys (ages 12-13) to perform household chores.

As previously noted, our results support the hypothesis that remittances increase household demand for labor by enhancing the availability of investable capital, which serves as a complementary input for family businesses or farms. Given the labor and credit market imperfections that limit the ability to hire wage labor in emerging economies like Pakistan (Dumas, 2007; 2020), households are compelled to rely on labor contributions of family members, including children.

If this is indeed correct, our results imply that traditional transfer programs intended to augment the resource endowment of poor households may not be sufficient to eradicate child labor in

Pakistan. Achieving this objective would additionally or perhaps more importantly require policy intervention explicitly designed to mitigate labor, credit, and land market imperfections, especially in the rural economy. While removing market imperfections in their entirety would undoubtedly require structural reform on large scale, introducing reciprocal adult labor programs such as the Ajuda Mútua initiative in Mozambique which encourage households to exchange adult labor among themselves and which have a proven record of success in reducing labor force participation by children (Fumagalli & Martin, 2023) would be a welcome first step.

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Table 1: Descriptive Statistics: Matching Variables

Variable	Full (Unmatched) Sample			Matched Sample	
	All	No Remit	Remit	No Remit	Remit
Total Household Size	6,996 (2.775)	6,991 (2.672)	7,037 (3.533)	7,032 (2.883)	7,253 (3.609)
Head Gender = Female	1,778 (7.829)	869 (4.274)	909 (38.24)	1,432 (68.55)	1,432 (68.55)
Mobile Telephone	21,268 (93.65)	18,985 (93.37)	2,283 (96.05)	2,021 (96.74)	2,021 (96.74)
Head Employment = Self-Employed	8,868 (39.05)	8,167 (40.17)	701 (29.49)	465 (22.26)	465 (22.26)
Head Employment = Unemployed	3,731 (16.43)	2,549 (12.54)	1,182 (49.73)	651 (31.16)	651 (31.16)
Head Education = Preschool	9,120 (40.16)	8,106 (39.87)	1,014 (42.66)	924 (44.23)	924 (44.23)
Head Education = Primary	3,948 (17.39)	3,517 (17.30)	431 (18.13)	353 (16.90)	353 (16.90)
Head Education = Middle	2,932 (12.91)	2,627 (12.92)	305 (12.83)	260 (12.45)	260 (12.45)
Head Education = Matriculation	4,118 (18.13)	3,698 (18.19)	420 (17.67)	367 (17.57)	367 (17.57)
Head Education = Higher	2,576 (11.34)	2,370 (11.66)	206 (8.666)	185 (8.856)	185 (8.856)
Head Age = Under 25	278 (1.224)	228 (1.121)	50 (2.103)	35 (1.675)	35 (1.675)
Head Age = 25-34	2,351 (10.35)	2,113 (10.39)	238 (10.01)	150 (7.180)	150 (7.180)
Head Age = 35-44	6,880 (30.30)	6,318 (31.07)	562 (23.64)	446 (21.35)	446 (21.35)
Head Age = 45-54	7,646 (33.67)	6,980 (34.33)	666 (28.02)	641 (30.68)	641 (30.68)
Head Age = 55-64	3,413 (15.03)	2,942 (14.47)	471 (19.81)	448 (21.45)	448 (21.45)
Wealth Quintile = Second	4,658 (20.51)	4,351 (21.40)	307 (12.92)	275 (13.16)	275 (13.16)
Wealth Quintile = Middle	4,780 (21.05)	4,346 (21.38)	434 (18.26)	382 (18.29)	382 (18.29)
Wealth Quintile = Fourth	4,559 (20.08)	3,905 (19.21)	654 (27.51)	575 (27.53)	575 (27.53)
Wealth Quintile = Top	4,022 (17.71)	3,294 (16.20)	728 (30.63)	623 (29.82)	623 (29.82)
Total Observations	22,709	20,332	2,377	2,089	2,089

Table 2: Descriptive Statistics: Model Variables

Variable	Full (Unmatched) Sample			Matched Sample	
	All	No Remit	Remit	No Remit	Remit
Child Labor (ILO)	7,818 (34.43)	7,022 (34.54)	796 (33.49)	605 (28.96)	703 (33.65)
Child Labor (20 hours)	3,439 (15.14)	3,097 (15.23)	342 (14.39)	203 (9.718)	215 (10.29)
Total Hours ^a	7,806 (12.64)	7,846 (12.80)	7,469 (11.20)	6,820 (11.23)	7,563 (10.63)
Any Remittances	2,377 (10.47)	. .	2,377 (100)	. .	2,089 (100)
International Remittances	1,612 (7.099)	. .	1,612 (67.817)	. .	1,370 (65.582)
Domestic Remittances	916 (4.034)	. .	916 (38.536)	. .	803 (38.439)
Children Under 5	0.586 (0.894)	0.580 (0.878)	0.643 (1.023)	0.536 (0.901)	0.656 (1.054)
Total Children	3.306 (1.806)	3.317 (1.779)	3.215 (2.025)	2.980 (1.760)	3.220 (2.071)
Child Birth Rank	1.967 (1.213)	1.972 (1.210)	1.927 (1.235)	1.848 (1.180)	1.937 (1.254)
Child Education (Years)	3.478 (3.367)	3.412 (3.350)	4.048 (3.455)	4.044 (3.535)	4.066 (3.484)
Child Wealth Score	-0.0199 (0.980)	-0.0701 (0.971)	0.410 (0.948)	0.360 (0.917)	0.389 (0.958)
Child Age 12-13	3,528 (15.54)	3,176 (15.62)	352 (14.81)	277 (13.26)	277 (13.26)
Child Age 14-17	7,542 (33.21)	6,679 (32.85)	863 (36.31)	795 (38.06)	795 (38.06)
Child Gender = Female	10,732 (47.26)	9,599 (47.21)	1,133 (47.67)	990 (47.39)	1,001 (47.92)
Child's Mother Living	22,049 (97.09)	19,737 (97.07)	2,312 (97.27)	2,039 (97.61)	2,029 (97.13)
Child's Mother Deceased	625 (2.752)	564 (2.774)	61 (2.566)	48 (2.298)	57 (2.729)
Child's Father Living	21,452 (94.46)	19,256 (94.71)	2,196 (92.39)	1,571 (75.20)	1,947 (93.20)
Child's Father Deceased	1,214 (5.346)	1,040 (5.115)	174 (7.320)	514 (24.61)	136 (6.510)
Government Benefits	2,113 (9.305)	1,961 (9.645)	152 (6.395)	193 (9.239)	138 (6.606)
Zakat Benefits	291 (1.281)	253 (1.244)	38 (1.599)	74 (3.542)	33 (1.580)
Total Observations	22,709	20,332	2,377	2,089	2,089

^a Total hours worked reduces the available unbalanced sample to 22,683, with 2,375 receiving remittances; it reduces the balanced sample to 4,174, with 2,087 receiving remittances.

Table 3: Average Marginal Effect (AME) of Remittances on Child Labor

	(1) Unmatched All	(2) Matched All	(3) Matched Abroad	(4) Matched Domestic
Remittances	0.0409*** (0.0109)	0.0300* (0.0157)	0.0179 (0.0187)	0.0497** (0.0251)
Observations	22,710	4,178	2,774	1,652

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

**Table 4: AME of Remittances Moderated by Age
(Matched Samples)**

	(1) All	(2) Abroad	(3) Domestic
Ages 5-11	0.0277 (0.0255)	-0.00837 (0.0309)	0.0817** (0.0388)
Ages 12-13	0.00111 (0.0379)	0.0139 (0.0408)	-0.0428 (0.0661)
Ages 14-17	0.0435** (0.0209)	0.0588** (0.0236)	0.0416 (0.0370)
Observations	4,178	2,774	1,652

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

**Table 5: AME of Remittances Moderated by Age & Gender
(Matched Samples)**

	(1) All	(2) Abroad	(3) Domestic
Male Children			
All	0.0372 (0.0228)	0.0282 (0.0273)	0.0519 (0.0354)
Ages 5-11	0.0418 (0.0331)	0.00575 (0.0416)	0.0963** (0.0476)
Ages 12-13	0.0161 (0.0403)	0.0314 (0.0458)	-0.0434 (0.0682)
Ages 14-17	0.0564** (0.0253)	0.0782*** (0.0298)	0.0430 (0.0425)
Female Children			
All	0.0219 (0.0213)	0.00649 (0.0251)	0.0475 (0.0359)
Ages 5-11	0.00790 (0.0326)	-0.0448 (0.0405)	0.0972* (0.0497)
Ages 12-13	-0.00722 (0.0395)	0.00250 (0.0387)	-0.0446 (0.0745)
Ages 14-17	0.0332 (0.0219)	0.0399* (0.0223)	0.0471 (0.0419)
Observations	4,178	2,774	1,652

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

**Table 6: AME Moderated by Age & Gender, by Source & Work Category
(Matched Samples)**

	(1) Income Abroad	(2) Hazard Abroad	(3) Chores Abroad	(4) Income Domestic	(5) Hazard Domestic	(6) Chores Domestic
Males Ages 5-11	-0.00779 (0.0186)	-0.00126 (0.0114)	0.0190 (0.0373)	0.0305 (0.0277)	0.0109 (0.0189)	0.0941** (0.0463)
Males Ages 12-13	0.0538 (0.0493)	0.0203 (0.0410)	0.153*** (0.0449)	0.00184 (0.0720)	0.0995* (0.0576)	0.0196 (0.0606)
Males Ages 14-17	0.0866** (0.0372)	0.0922*** (0.0325)	0.0442* (0.0247)	0.0612 (0.0531)	0.0645 (0.0472)	-0.0629* (0.0322)
Females Ages 5-11	-0.000716 (0.00913)	-0.00202 (0.00423)	0.0829** (0.0404)	0.0371* (0.0201)	0.0117 (0.0144)	0.164*** (0.0487)
Females Ages 12-13	0.0326 (0.0278)	0.000517 (0.0193)	0.185*** (0.0439)	0.0523 (0.0671)	0.0898* (0.0524)	0.0623 (0.0495)
Females Ages 14-17	0.0602** (0.0284)	0.0270 (0.0207)	0.0752*** (0.0270)	0.0991** (0.0429)	0.0652* (0.0379)	-0.0188 (0.0248)
Observations	2,774	2,774	2,774	1,652	1,652	1,652

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1