



## Workers' Remittances and Children's Education: The Case of Pakistan

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### ABSTRACT

*The study's goal is to discover how remittances affect Pakistani children's access to a quality education. To answer the issue, the paper analyzes data latest (2018-2019) version of the Pakistan Social Living Standard Measurement Survey (PSLM). The results of the logit and probit models show that remittance-receiving families are more likely than non-receiving families to have educated children. Furthermore, remittances show that changing the pattern of monthly transfer amount increases the chance of children enrolling in school by 0.15 percent. Furthermore, urban families have greater marginal impacts than rural families. Thus, there should be a balance where job possibilities for educated individuals are created within the nation. Low-skilled workers, on the other hand, are prepared to work abroad and support their home economies through remittances.*

## 1 Introduction

The labor market has become more accessible as a result of globalization, enabling people to temporarily relocate outside of national borders in search of better possibilities. Due to high rates of domestic unemployment, out-migration is often a widespread issue in various poor countries. Remittances, a type of capital influx, are a result of migration. Remittances are expected by inhabitants of nations who reside abroad and send money to family members back home. As a result, migration has increase over time, especially in developing countries. Migration may take place locally or globally, but it affects the socioeconomic condition of households. One of the most significant sources of external funding for developing countries has proven to be the sizeable influx of remittances from member countries to home countries. Opportunities for lifelong learning were stressed in the 2030 Agenda for "sustainable development". Opportunities for lifelong learning were emphasized in the 2030 Agenda for "sustainable development." Education is one of the main objectives of the "Sustainable Development Goal (SDG; 4)" as well (Ownes, 2017, Benhamou, & Cassin, L. (2021). Macro-level remittances supported a balanced budget and increased domestic GDP (GNP). They ease the financial burden on the poor and increase access to healthcare at the micro level by encouraging trade, investment, and increased private consumption. Domestic workers are encouraged to invest in intellectual capital thanks to remittances (Ahmad, and Jaha 2010). Remittances are crucial because they support household economic recovery and lay the groundwork for foreign exchange revenues in emerging economies.

Remittances from abroad help Third World countries develop their human capital and fight poverty (Khan, 2016). The International Organization for Migration estimates that 272 million people, or 3.5% of the global population, are migrants. Males made up 52% of the global migrant population. Of all overseas migrants, 48% were women, and 74% were between the ages of 20 and 64 who were employed. According to the World Bank (2020), during pandemics when the global economy is in crisis, Pakistan's remittances surged by 9%. Using a legal technique, it was determined that domestic HHs received 24 billion dollars in remittances. The state bank (2021) said that laborers' remittances to Pakistan totaled two billion dollars in February, helping to stabilize or support the country's currency rate. Formally, 450 billion dollars in remittances are sent to developing countries each year, according to the International Monetary Fund (IMF, 2020). Additionally, in 2013, 4 million people – or 2.3% of the total population of Pakistan – lived abroad. Additionally, there was a rise in remittances and labor migration. According to World Bank in 2012, the main recipient of remittances was Pakistan. Remittances replace foreign direct investment (FDI) and have a favorable effect on poor nations' reserves (World Bank, 2015).

At both the local and macro levels, the function of remittances has been well studied. How remittances impact children's education in their native countries is a crucial subject that has to be addressed. The research that looked at how remittances affected “children's schooling includes (Khan and Khan 2016; Gul et al 2021; Arif and Chaudhary, 2015; Chaaban and Mansour 2012). Remittances can have a beneficial or detrimental impact on children's education, as demonstrated by the prior research, therefore every outcome was unique. Remittances have a favorable impact on domestic household budget restrictions by reducing other financial constraints like mortgage payments and encouraging HHs to invest in the education of their children. Remittances help young children who can't go to school, in addition to supporting enrolled pupils who stay in school. Lessen the responsibility of HHS enrolling their kids in school because they weren't. Furthermore, highly skilled and educated employees have a strong probability of benefiting from emigration, and their families' chances of attending college are greater. Children's education is benefited by remittances (McKenzie& report; 2006).

The migrating family may impose restrictions on their children's education in a variety of ways if there are unfavorable repercussions. The children's social obligations rise in the first place as a result of the migration of an older member of the HHs. In order to fill the labor shortage, immigrant children devote more time to household duties (Hason and Woodruff, 2003). Second, loss of parental supervision causes the children's academic performance to suffer when parents are not there. Due to the loss of parental social dominance, migration has a detrimental effect on children's educational outcomes, increasing the dropout rate. The education of children is also impacted by migration. This is due to the fact that increased migration from a home country diminishes the labor pool and lowers the rate of wage growth in such nations. The economic growth of domestic labor has had negative effects on children's education (Nasir et al., 2011). According to Chaaban and Mansour (2012), migration and remittances may have a direct and inverse impact on education. When the output (of migrants) exceeds the output of education, a negative consequence emerges. It has a harmful impact on children's schooling. Through two primary avenues, emigrant remittances have a direct influence on children's educational performance. To begin, remittances are paid back to migrant HHs, removing liquidity constraints and inspiring HHs seniors to spend on their children's education. Second, attaining a high level of education is often closely related to profits.

Thus, obtaining a higher degree education may increase the likelihood of acquiring larger wages through migrating and obtaining a more-profiled post in a local nation. Askarova and Doucouliagos (2020) examined the meta-regression assessment technique and investigated the association between education and investment. The results supported the notion that financial resources play a significant role in deciding on a course of study, with domestic immigration remittances having a stronger impact on educational spending than remittances from abroad.

Asian nations like India, Pakistan, and Bangladesh receive about 20% of all international remittances, “according to the World Bank (2016). Remittances” are closely related to and have a significant impact on the development of human capital, claim Azam and Raza (2016). Furthermore, the results reveal that the entire monetary administration factors have a direct substantial influence on schooling. Remittances have an effect on HHs' quality of life, as was found by Admas and Cuecuecha (2013). When there is a positive relationship, international remittances have a significant impact on HHS health and education. Many studies on the topic of migration, as well as the impact of migration and remittances on children's education, have been carried out in Pakistan (Mansuri, 2006; Arif 2004; Nasir et al., 2011; Arif and Chaudhry, 2015; Hassan & Mehmood 2013). These studies have yielded a different result, some of which are favorable to children's education and others of which are not. These analyses put a lot of emphasis on how many children are enrolled in school. Some are constrained by time, have a small sample size, or only apply to a specific region (limited to rural regions or a particular neighborhood within a rural area)”. Table 1 displays the top contributor countries' shares of remittances (in millions of dollars).

The study's goal is to examine how remittances affect children's educational outcomes. Additionally, it assesses how remittances affect children's education on a provincial level. The most recent data round (PSLM) for this research was from 2018 to 2019. In contrast to other previous research, this one concentrates on remittances, recipient and the HHs which are non-beneficiaries, and their impact on the schooling of children (Arif 2004, Mansur, 2012, Hassan & Mehmood 2013, Arif and Chaudhary, 2015, Mansuri, 2006) that had remittances as its exclusive objective. Because remittances aid in alleviating financial restrictions, this study sheds light on their relevance. Remittances are also the most significant foreign financing source for impoverished nations, according to some academics, while others focused on the interaction between remittances, FDI, and other variables.

Some studies largely concentrate on the remittance strategy to reducing poverty. Allocation of funds for education, investments, and material wealth was critical, even though some of them are limited by sampling, time or geography (limited to rural regions or a particular neighborhood within a rural area). This study, which looks at how remittances affect children's education in Pakistan, aims to fill in the gaps left by earlier studies. This study made use of the most recent Pakistan Social Standard of Living Measurement (PSLM) survey, which was carried out in 2018–2019. The specific objective of this study is to provide insightful information on the impact of remittances on Pakistani children's educational outcomes. It enables policymakers in the Pakistani government to develop fresh strategies to improve the education of children in this country.

## 2 Literature Review

The benefits of remittances on children's education are particularly interesting because human capital accumulation, where significant labor returns to education have been discovered, may prevent the transmission of poverty from one generation to the next (Bertoli et al. 2011). Most of the research points to the possibility of possibly conflicting impacts “of migration and remittances on schooling. (Amuedo-Dorantes et al. 2010; Hu 2012; Koska et al. 2013; Bargain and Boutin 2015). According to several research studies, the existence of migration increases the chance of education and remittances (Alcaraz et al. 2012; Calero et al. 2009). The increased income, migrant workers' better wages, the “contribution to household capital accumulation, and migrant families' stronger propensities to invest in education”, according to their argument, may be the primary causes of the beneficial benefits. In Morocco, children are less likely to skip school and put off entering the workforce with the help of remittances, according to the findings of Bouoiyour and Miftah (2015). Girls are more at risk for these improvements. Coon (2016) discovers that Bolivian youngsters work less hours when they get more money from remittances, which might boost their human capital. Salas (2014) discovers that remittances make it more likely for people to invest in sending their kids to private schools, even if the schools are of lower quality. On the other hand, although some believe that migration may

increase parental ambitions for their children's academic success (Böhme 2015), others believe that migration has a negative impact on education (McKenzie and Rapoport 2006; Bouoiyour and Miftah 2015). These studies contend that the unfavorable outcome may be caused by children having to make up for the absent parent, by entering the workforce, or by taking up household duties. Research on the impact of remittances on education has continued to show that there are some situations in which they have no discernible impact on education (Bargain and Boutin 2015; Pilarova and Kandakov 2017), or even in which they may prevent children from attending school because households undervalue the importance of education required to succeed abroad (Davis and Brazil 2016).

An investigation by Köllner (2013) offers an alternative viewpoint on the use of remittances for educational achievement. Remittances are used in part as educational investments as long as education is required. Higher educational results are shown in people from remittance-receiving households than in people from non-remittance-receiving households (Köllner 2013).

The literature mentioned above included both macro and micro level studies. Remittances have a good effect on kids' academic performance, according to several research. Studies have found that remittances have a detrimental impact on children's academic performance. Results from the two levels of analysis are distinct. The following research examined the impact of international remittances on children's education in Moldova and found a favorable connection (Matano and Ramos 2013). Malik (2015) examines the connection between education and remittances received. The relationship between the received remittances and the household distribution pattern is discussed by Hines and Simpson (2019). The socioeconomic impacts of international remittances on Kosovo's left-behind households are examined by Alishani and Nushi (2012). They confirm that remittances raise household income and their capacity to access services for health and education. Additionally, some studies (Acosta, 2006; Bryant, 2005; Curran, et al. 2004; Stark & Taylor, 1987) have found a positive correlation between remittances and the education of the children. In contrast, other studies have found a negative correlation between remittances and the education of the children (Dharmadasa et al., 2019, Parinduri and Thangavelu, 2011, Perera and Wijeratne, 2017).

After migrating, a person's income swiftly doubles, frequently by a factor of ten, and the economic gains are shared with family and friends back home via remittances. These remittances are used to buy food, housing, and health care for the family, as well as for children's education and business ventures. Receiving migrant remittances from overseas may have negative effects on people's well-being, according to a growing body of research. For instance, remittance receipt is positively correlated with life satisfaction, probably due to increased financial stability (Cárdenas et al. 2009). According to Borraz et al. (2010), remittances make up for the suffering of separation and the disturbance of family life for migrant families, who find that their levels of happiness are comparable to non-migrant households'.

Mansuri (2006) uses the ratio of immigrant households at the village level, along with the number of adult males residing in each home, in the case of Pakistan. Sherpa (2011) makes use of migrant networks and migrant age as a remittance tool. Historical migration rates at the state level interacting with household factors are used by McKenzie and Rapoport (2006), Hanson and Woodruff (2003) for Mexico, and Arif and Chaudhry (2015) for Pakistan as an instrument for present migration. Studies on negative relationships were the focus of several of them. In his 2016 study, Khan looks at the connections between children's education and emigration in the Gujrat area. The findings support a significant adverse effect of overseas remittances on educational spending. The impacts of international migration and remittances from outside on the education of the underprivileged in Tajikistan are examined by Dietz et al. (2015). Meng and Yamauchi (2017) look at how remittances affect the health and education of children who are left behind.

Econometric problems or the chosen empirical models are examples of additional restrictions. Pakistan has the highest global drop-out rate. Due to the fact that 41% of children dropped out of

elementary school. Many students in primary and secondary education leave their programs of study early. The education of many kids begins in elementary school but they never finish it. Parents were able to increase their investments in their children's education because remittances increased HHS's financial income. Parental education is crucial to a child's education, claim Chaaban and Mansour (2012). Parental education is far more likely to give their children's education a higher priority. According to Gyimah and Asiedu (2015), immigration may have a negative effect on children's schooling since the absence of elder families causes adult children to assume parental responsibilities. Second, the absence of parents in the home provides a lack of direction for the children's education. Much research on the influence of remittances on children's education in Pakistan have been conducted (Mansuri, 2006; Arif 2004; Arif and Chaudhary, 2015). As a result of these disparities, some research finds that there were direct impacts on schooling while others found that there were inverse effects. The need for child laborers has an impact on the enrollment of children in school. This main objective is to examine the effect of remittances on education of children in Pakistan considering these constraints.

According to the reviewed research, remittances can have both a good and negative impact on child education. If the income effect of remittances is greater than the other effects of migration, and vice versa, the overall impact will be positive.

### 3 Model and Methodology

The Pakistan statistics bureau's PSLM and HIES, which assess the social quality of living in Pakistan, were employed in the study. The most recent round of (PSLM- HIES) 2018 2019 was employed in the study. The indicators for the Millennium Development Goals are found in PSLM HIES, the eleventh wave of data. Previously, the PSLM survey was carried out independently; however, this round of data was collected in collaboration with HIES.

This round of the survey included 24,809 HHs from the federal capital area, Sindh, Khyber-Pakhtunkhwa, and Punjab. It includes a variety of indicators, including those for communication, technology, housing, water sanitation, and food insecurity. Pakistan's social and living standards may be measured in several ways. "Data about the individual, characteristics of HH, expenditures, resources, sources of income, demographics, occupation, education, and health" are provided by this district-level survey. The age 415 of the children is the primary outcome variable we are interested in.

For the survey, a stratified two-stage sample design has been used. All urban and rural regions in Pakistan's four provinces, except those under military restriction, make up the study's universe. It is important to note that Khyber Pakhtunkhwa now includes portions of the former FATA. For sample selection, the Population & Housing Census 2017 revised sampling Frame was utilized. On average, 200–250 dwellings make up each enumeration block, which has clearly marked borders and maps. Every enumeration block is classified as a PSU in urban settings, while every distinct block within a village is treated as a PSU in rural regions when villages are separated into blocks with well-defined boundaries and maps. Below is a breakdown of the blocks by province according to the sampling frame.

We go over the study's dependent and independent variables in this part. Continuous and desecrated variables make up it. Some of them have vector character, dummy nature and are geographical and demographic character variables.

Children enrollment is used as a dummy variable with a value of 1 indicating that the children are enrolled in a school, and a value of 0 indicating that they are not. Enrollment in schools is the study's outcome variable. In this study, we considered demonstrating the disparities in schools by gender and geography using school enrollment and data by gender and location. Children between the ages of 6 and 15 provided samples for the study.

Remittances (binary variable) is adjusted for 1 if HHs receive remittances and 0 otherwise, is the main independent variable. This variable is being used to examine the relationship between (remittances) and the educational success of the children living at home. It serves as a variable for categories. According to the PSLM 2018-2019 report, remittance-receiving families are given the value 1, while non-remittance-receiving households are given the value 0. Remittances are sums of money that migrants send home from abroad. One important source of foreign cash is the influx of remittances. "With US dollar 21.7 billion, remittances to Pakistan were the second-largest source of foreign money in 2019, while exports topped the list with US dollar 24.3 billion. However, according to the State Bank of Pakistan's Annual Report 2019-2020, remittances surpass all other sources of foreign currency in 2020.

It displays the household's monthly remittances and functions as an explanatory variable. The variable is continuous. According to PSLM statistics (2018–2019), dependency ratio of person(s) at the HHS level is that everyone who is older than 60 years or less than 15 years is regarded as a dependent person by the HHS. According to the World Bank, a person is regarded to be dependent if they are older than 60 but younger than 15.

Maternal is a binary variable in PSLM (2018–2019), which measures mother literacy. If a mother is educated, the answer is 1, and if she is not, the answer is 0. Children of that specific HHs would be more likely to attend school if their mother was educated; otherwise, they would be less likely.

Father literacy is a binary variable. If the father is educated, the value is 1, and if the father is illiterate, the value is 0. Children of that specific HHs were more likely to be enrolled in school if their father was educated than if he wasn't.

Male is the gender variable and dummy in nature of 1 for the male head of the family and 0 for the female head of the household.

The region variable includes both urban and rural households and has a dummy element; if  $P = 1$ , it indicates that an urban household is more likely than a rural one to be present. This variable is used to display the number of children enrolled in school by HH in urban and rural areas. Which region's HHs who get remittances profit the most from them and enroll their kids?

The explanatory variable PSLM (2018-2019) (KP) is employed; it has a dummy nature. KP is the case if  $P=1$  and  $P=0$  otherwise. Our research focuses on how the volume of remittances affects the likelihood that KP-affiliated people and households will educate their children.

Accordingly, Sindh (s) PSLM 2018-2019 If  $p=1$ , the Sindh dichotomous variable Unless Sindh,  $p=0$ . In our investigation, we employed the regional character variable Sind as a vector variable. Punjab (P) Pslm in accordance with 2018–2019 If  $p=1$ , the Punjab dichotomous variable Unless Sindh,  $p=0$ . In our study, Punjab serves as a regional character variable vector variable. The reference variable for our analysis is Baluchistan.

When a variable's value falls between 1 and 0 (i.e., when it is dummy or the outcome variable is in yes-or-no type), a logging analysis is utilized (Katchova, 2016).

Since study's outcome variable is dummy, we employed the logit model. Because some of HH's schools were enrolled in our data sample while others were not. According to this approach, children's attendance in school is equal to 1, and everything else is equal to 0. In keeping with the fact that many independent variables may be continuous or categorical, a logit analysis was used to examine the likelihood that HHs would fall into two groups, such as being enrolled in school or not. In econometrics, the cumulative logit model is used.

**1 if yes{Y = {0 if No}**

Y shows the outcome variables and the probability of occurrence.

$$P_i = E(Y = 1 | X_i) = \frac{e^{-(\partial_0 + \sum \partial_i x_i)}}{1 + e^{-\dots}} \quad (1)$$

In equation I pi represents the likelihood that a household will enroll in school if it does not already do so, given that Xi: Y = 1. Additionally, xi represents i<sup>th</sup> explanatory variable of remittances. And 0 and I represent the regression coefficients. Moreover, e represents the natural logarithm. The following is a possible form of the equation I.

$$p_i = \frac{1}{1 + e^{-z_i}} = 1 - \frac{1}{1 + e^{z_i}} \quad (2)$$

Where  $z_i = (\partial_0 + \sum \partial_i x_i)$ . The logistic distribution function, or equation (ii), is commutative. If  $p_i = (1)$  is the likelihood that a household will send a child to school, then  $(1-P) = 0$  is the likelihood that the household will not send a child. Equation (3.2) can be expressed as

$$p_i = \frac{1}{1 + e^{-z_i}} \quad (3)$$

$P_i/1-p_i$  is referred to as the probability, or odds, of a household enrolling in school compared to an unenrolled household. If equation (3)'s natural log is used, then  $(L_i)$  displays the odds-ratio log and is also known as logit or logistic. After adding the disturbance term to equation (3) above, the logit model for the regression analysis of children's education will look like this:

$$L_i = \ln\left(\frac{p_i}{1-p_i}\right) = z_i = \partial_0 + X_1 \partial_1 + \dots + \partial_n X_n \quad (4)$$

The parameter  $\partial_0$  and  $\partial_1, \partial_2, \dots, \partial_n$  "in the above model are estimated by using the maximum likelihood (ML) method".

$$L_i = \partial_0 + \sum_{n=1} \partial_n X_i + u_i \quad (5)$$

The estimation of the marginal effect for a particular X value because the marginal effect, represented by  $dy/dx$ , depends on x. (usually the means). Because  $p(x) = 0$ , the marginal effect or  $dy/dx$  has the same signs.

The marginal effect is  $dy/dx$  and it is a function of X. Therefore, it is important to estimate the marginal impact for a specific X value for example mean. Because  $p(x) = 0$ , the marginal impact or  $dy/dx$  has the same signs.

$$\frac{\partial p}{\partial x_j} = p(1-p) \partial_j = \frac{e^{-z_i}}{(1 + e^{-z_i})^2} \partial_j \quad (6)$$

To understand the causal relationship between explanatory and outcome variables, we used the probit and logit models for data analysis. The (probit) analysis is an alternative for the (logit model) that used a normal distribution. Probit analysis was used because of the kind of the categorical variable, which had a limited likelihood between 1 and 0. In probit analysis,  $F(x'\varphi)$  is the cumulative normal distribution (CDF). It is a useful technique because the economic variable had a normal distribution

$$Y_i = X_i \alpha + \epsilon_i \quad (7)$$

$$f(x' \delta_1) = \phi(x') = \frac{1}{\sigma} e^{-\frac{1}{2} \left(\frac{x' \delta_1}{\sigma}\right)^2} \quad (8)$$

We presume that the model has the following structure: where X is a vector of regressors, stands for probability, and represents the Cumulative Distribution Function (CDF) of the standard normal distribution. Based on the maximum probability, the parameters are estimated. An analysis of latent variables makes up the validity model. Assume that Y is employed to assess whether this latent variable is positive or negative in the presence of a second random variable:

The likelihood 1 and 0 were anticipated by this analysis and followed. If  $f(x' \delta_1) = 1$  there is a higher chance that the child will enroll in school, while  $f(x' \delta_1) = 0$  indicates the opposite. X= Displays the explanatory variable that was used to determine the nature of the binary relationship. If X is equal to 1 for HHs who received remittances, then X = 0 for HHs who did not. As a result of the function's characteristics, the logit and probit analysis coefficients differed. Coefficients vary between models

(katchova, 2016). Remittances are included in the base category  $x=0$  because the independent dummy variables have a negligible effect on the base category. We are concerned about our statistical model to assess how much of an impact remittance had on children's education. Two enrollment models for children were created by the researcher. Remittances and education were modeled using the first model and remittance amount and education were modeled using second model.

Investigating how remittances affect a household's children's education is the main goal of this study. We utilize the model that was previously utilized by researchers like (Mansuri 2006; Sherpa, 2011). Children's education is the output variable and remittances are the targeted explanatory variable. The main variable in regression is remittance inflow. The sum of money received from abroad is indicated by remittances.

$$\mathbf{chE}_i = \boldsymbol{\theta} + \boldsymbol{\theta}_1 R_{ih} + x_{ih}(\boldsymbol{\theta}_2 C_{ih} + \boldsymbol{\theta}_3 H_{ih} + \boldsymbol{\theta}_4 u_{ih}) + \boldsymbol{\mu}_{ih} \quad (9)$$

In the aforementioned model,  $\mathbf{chE}_i$  is the focused output variable. It also shows how educated and enrolled the children are.  $R_{ih}$  stands for remittance, which serves as the model's main explanatory factor. It clarified if HHs receive remittances.  $x_{ih}$  Vector variables that include demographic and geographic information are then presented. Children have a variety of characteristics, including (age and gender).  $H_{ih}$  also adheres to the HHs' age, gender, mother literacy, and father literacy vector characteristics. A binary variable was used by  $u_{ih}$  to assign  $x=1$  for urban  $=0$  otherwise for regional differences that were only allowed to be between 0 and 1.

$$\mathbf{chE}_i = \boldsymbol{\theta} + \boldsymbol{\theta}_1 LRA_{ih} + \boldsymbol{\theta}_2 X_{ih} + \boldsymbol{\mu}_{ih} \quad (10)$$

This model shows the total amount of remittances that households get and influences how well children do in school. Additionally, this model considered characteristics unique to a given household, such as geographic and demographic factors. Children's education enrollment in any school ( $\mathbf{chE}$ ) displays the model's intercept, and the parameters ( $1 = 1, 2, 3...$ ) and ( $1LR_{Aih}$ ) display the natural log of the HHs' monthly remittances in the amount they received after accounting for dummy nature. 0 for the opposite and 1 for the amount of remittances received.

#### 4 Data Analyses and Results

The researcher assesses the descriptive summary of the data to characterize the variables and their features. The data set consists of province-by-province observations, with 24809 households in each province making up a total sample of 124045. Table 2 provides a summary of the major factors affecting both households that receive and don't receive remittances. The outcome variable, enrollment, has a dummy nature and is equal to 1 if remittances are received, otherwise it is equal to 0. In the entire sample, the average percentage of students enrolled in school between the ages of 4 and 15 is 78%, or 78% of children. 0.0 to 100% is the range of probabilities. The average number of children attending school for HHs who receive remittances is higher than the average number for HHs who do not.

The average monthly remittance income for HHs is shown by the mean value of the (amount) of remittances, which is 29948. Male heads of HHs are fifty-one, as the male average is fifty-one percent. 32 percent of the population, or thirty-two million people, live in urban areas. The 0.71 remittances received by HHs were explained by the fact that the mean value of remittances is 0.71%. Mother Literacy is defined as the value of 0.88% and further explains that in each sample, 0.88% of mothers are literate.

Summary statistics for the explanatory and outcome variables are shown in Table 3. The enrollment means value is 0.74%, which indicates that households in the given sample received 0.74% of remittances. According to a regional urban variable, 29% of households are in urban regions. Remittances are equivalent to 51%, which means that 51% of HHS received remittances. 56 males are the heads of households, according to the male median value of 56%. KP, a regional variable, indicates that 56% of HHs are from Khyber Pakhtunkhwa. 39% of HHs are from Punjab. Baluchistan has 0.14



and Sindh has 0.026% of the population. Father literacy rates in HHs are 0.94 and 0.98, respectively. The dependency rate is 5%, meaning that 5% of HHs are dependent, and the average HH income is \$665975.

The explanatory and outcome variables' statistical analysis is presented in table 4. It showed remittances in households that were not recipients. 4 to 15-year-old children enrolled in school at a rate of 1.696 %. 32% of HHS is urban, according to the urban mean value. Remittances have been sent to 0 recipients, and 0 have been received overall. Males make up 51% of the head of HHs according to the data. KPK is home to 0.20 percent of the HHs, 0.40% of the population, 0.25 percent of the population in Sindh, and 0.14 percent of the population in Baluchistan. 0.87% of parents are educated, according to data on parental literacy. The HHS has a 4.23 average dependency. For HHs, the median salary is \$396171.

After the logit analysis, marginal effects are utilized to identify the kind and relationship between the explanatory and outcome variables (table 5). The level of school enrollment was empirically examined using a logit regression. In this study, we estimated the effects of remittances on children's educational outcomes using a variety of explanatory and demographic variables. We used the coefficient estimation and probability value of the logit model to analyze the effect of school enrollment. Coefficients for marginal effects are interpreted in terms of likelihood and sign. The logit model's coefficients are unable to determine whether a change in children's enrollment in school is a result of a change in the independent variables. According to earlier research, different regions experienced different effects of remittances on children's school enrollment (Sherpa, 2011; Mansuri, 2006).

Table 6 below illustrates the goodness of fit of the model, where the log-likelihood value of -10432 indicates the model is statistically well fit. The more negative the log-likelihood number, the better the model tends to fit the data. The model is significant and provides evidence to reject H0 where the crucial area of Ch2 and the log-likelihood ratio (LR Ch2) value are higher. This value is 1160. The null hypothesis that the model is not significant is supported by the Ch2 p-value being less than 0.05.

Both the number of remittances received by HHS and the number of remittances received by households are examined in this study, which has an impact on children's education from the ages of 4 to 15 years old. Remittances receiver household is shown in columns 1 and 2 of table 7. The findings show a correlation between urban areas and the households that receive remittances enrolling their children in school. In comparison to rural households, urban households are more likely to have children enrolled in school. It's because urban areas offer more opportunities for education than rural ones. Urban's coefficient value is statistically significant and positive.

According to the findings, urban areas have a 0.28% higher likelihood of having children attend school than rural areas. Our finding that there were more opportunities for children to enroll in school in urban areas was supported by Samarraï and Reilly (2008), but not by Miluka and Dabalen (2008). Remittances and enrollment in schools have an important and favorable relationship. Remittance is a categorical variable that has the values  $p=1$  for remittances receiver households and  $p=0$  for no receiving households. In households that receive remittances compared to households that do not, there is a 0.015% greater likelihood of a child enrolling in school, according to the marginal effects. Money transfers have a positive coefficient sign.

The marginal effects demonstrate that the likelihood of enrolling in school is higher. HHS, the recipient of remittances, wants to enroll more of their children in school, from 4 to 15 years old. The findings of earlier studies (Arif and Chaudhry 2015; Bouoiyour and Mifthah 2016) that remittances helped to lessen the issues of income constraints and enable the poor to enroll their children in school were supported by our findings. Although remittances increased, household income also increased. Households' living standards improve and their need for tighter budgets decreases. Remittances have the effect of increasing education spending.

Some studies, such as Miluka and Dabalén's (2008) report, which contradict our findings, claim that migration has a negative impact on Albania's capacity to complete high school. Remittances are found by Acosta, Fajnzylber, and Lopez (2008) to have a negative impact on children's school attendance in some Latin American nations. Several studies highlight the detrimental effects of migration and remittances. If a family member moves abroad, it may have a negative impact on the child's education (Booth & Tamura, 2009; Fajnzylber, and Lopez 2008; Sarma, & Parinduri 2016; Khan & Khan, 2016). Remittances may also have a negative impact on a child's education if they are used to fund a family business rather than educational investments.

Nasir et al., 2011 claim in their research that the absence of the father in a community that mostly depends on the father would have an enormous effect on education than in a community that depends on both parents equally.

The household head's gender is a crucial control variable. The findings show that the male head of the household has a positive but insignificant coefficient value. Male heads and enrollment in schools have a positive relationship. Male heads are more likely to enroll their children in school. The marginal effects indicate that a male household head is more likely than a female household head to enroll his children in school.

For the male heads of HHS, the 0.003% likelihood that a child will attend school is unnerving. Gul et al.(2021) 's research on gender revealed that gender bias in favor of men due to remittances also exists. Although the impact of (per capita income) and remittances was kept constant, male children enrolled 5% more than female children. This finding conflicts with those of earlier studies, which found that, given equal circumstances, women were more likely than men to use remittances to care for their children (Berloff, G., & Giunti, S, 2019; Imran et al 2019). Male-headed households are less likely to invest in their children's human capital than are female-headed households (Handa, 1996).

Similar to this, Mansuri (2006) demonstrates that migration increases school enrollment and decreases the gender gap in school enrollment. The average education level of women is lower than that of men, and women are more likely to experience wage discrimination because, on average, women are paid less in the labor market, so Kadozi 2019 anticipate that women-headed households will have fewer financial resources. In addition, we want to show how women make decisions about their children's education.

As vector variables, demographic factors are used, such as parental education. Parents who are literate have a higher likelihood of enrolling their children in school. The father education coefficient is significant and positive. Additionally, parental education is a more comprehensive strategy for producing more educated children than just the direct relationship between it and children's education. This discovery is confirmed by (Hampsari, 2019) when compared to an illiterate father, the marginal effects show that the coefficient value of the literate father is 0.012%, indicating a higher likelihood of children attending school.

The likelihood that a child will attend school is higher because educated parents are more likely to want to send their kids to school, are more aware of the benefits of education, and place a higher value on their education. According to Holmes (2003), a parent's educational background also serves as a predictor of the parent's potential market earnings, which could be used to fund the sibling's education. The findings show that a mother's education has a positive coefficient sign, which indicates a higher likelihood of her children enrolling in school. The education of parents is important for children's education. The likelihood that a mother is literate is significantly correlated with the child's academic success. Compared to mothers who are illiterate, literate fathers have higher enrollment probabilities. et al. (2011) looked at the rising mother literacy rate and school enrollment. Mothers who are literate have a greater impact on their children's education.

Dependency's negative coefficient sign, which has a statistically significant negative impact on a child's academic performance, is revealed by the marginal effect results. The coefficient values of

dependency (-0.014%) show that there is a likelihood of a child attending school. Our findings also indicate that KPK has a (0.024%) higher likelihood of having children enrolled in school than Baluchistan. In comparison to Baluchistan, Sindh has a higher likelihood of enrolling students in school, as indicated by the coefficient value of 0.0089%. At 1%, it is significant. The marginal effects demonstrate Punjab's positive and significant coefficient value. In Punjab compared to Baluchistan, the likelihood of a child attending school is higher.

According to study by Busquet, alert, Bocquire, and De Breyer (2013) using gender as a categorical variable, gender plays a significant role in African cities. They established that men are more likely than women to pursue higher education, and that men are more likely to do so overall. The findings indicate that households receiving more remittances from men are more likely to enroll their children in school. Compared to female households, male households have a 28% higher chance of enrolling their child in school. Households in urban and rural areas are region character variables. Our findings indicate that these urban households are more likely than female households to enroll their children in school. The most important factor in a child's education is parental literacy. If literate parents knew more about the range of education, they would be more likely to send their kids to school. They place more value on the education of their children (Bhalotrrand Heady, 2003). Both the father's education and the mother's education have significant and positive coefficient signs. The likelihood of a child enrolling in school is higher than that of parents who lack literacy. The findings indicate that the dependency sign is negative and significant, and that it is inversely related to school enrollments. Compared to low dependent households, the likelihood of more dependent households enrolling their children in school is lower.

Due to their inability to enroll their child in school, the household's dependent members are more likely to spend money on other pursuits. The findings also indicate that a household's income is positive and significant. This indicates that households receiving income are more likely to have children enrolled in school than households not receiving income. KPK in column 3 has a positive coefficient value, but it is not significant. The probability of enrolling children in school is higher than in Baluchistan by the coefficient value of 24%. Additionally, a column 4 result reveals a statistically significant positive relationship between school enrollment and KP and a higher likelihood of enrollment in Baluchistan than elsewhere.

Table 7 displays the probit model's statistical analyses. It displays the small effect an explanatory variable has on children's education. When there is a change in remittance, the marginal effect demonstrates how much more likely it is that a child will enroll in school. The dependent variable's variation as a result of independent variables was explained by the Pesdo R2 of 0.29%. The log-likelihood is -104363 and negative, meaning the more negative, the more significant the model.

In comparison to Baluchistan, Khyber Pakhtunkhwa (KP) has 16% higher chances of enrolling children in school. With school enrollment and significance at 1%, the coefficient sign of KPK is positive and positively correlated. The coefficient value and significance at 1% for Sindh and Punjab are both positive, and enrollment in school (16, 29) is more likely in these two provinces than it is in Baluchistan. Same outcomes can be obtained by (Shair and Anwar 2021). In addition, we anticipate that the sign of the coefficient of mother and father literacy is positive, as observed by Bhalotra and Heady in their 2003 study on male household heads and parental literacy.

Education of the parents has a significant and positive impact on the enrollment of the children in school. Samarrai and Reilly (2008) made the case that highly educated fathers could use unofficial networks to help their children's siblings land better-paying jobs. The findings indicate that fathers who are literate are more likely to enroll their children in school than fathers who are illiterate. When compared to an illiterate child, a child in school has a 77% higher chance of being educated.

Compared to illiterate mothers, the mother's literacy is more likely to increase the likelihood that her child will enroll in any educational institution. The results of the log of household income showed

that households with income had a higher likelihood of enrolling their children in school than households without income. Positive and significant indications point to HH's income.

The dependency indicator is negative, which means that as dependency increases, the likelihood that a household's children will attend school diminishes when compared to low dependent households. Children who are experiencing financial hardship forego their education. The household income constraint would lessen and there would be a greater chance that the kids would go to school if they received multiple remittances.

## 5 Conclusion and Policy Implications

Remittances are a major source of financial inflows in developing countries. Remittances are the key source of revenue collection. It has been a key source of foreign exchange earnings and has been an instrumental role in the socioeconomic development of Pakistan including education and poverty reduction. It is the most reliable and well-known private source of foreign reserves in Pakistan. Even though development experts and policymakers recognize the importance of remittances for development, the impact of remittances on education in Pakistan has received little attention. The primary goal of this research was to investigate the impact of remittances on child education in Pakistan. We have utilized PSLM data over 2018 and 2019 rounds while applying both logit and probit models. The issue was investigated using the most recent round of the Pakistan Social and Living Standard Measurement Survey (PSLM) 2018/2019. The findings in the case of both approaches show that remittances have been key indicators of increasing children's enrollment in schools. With the exception of the dependency ratio, almost all indicators tend to have a significant impact on the enrollment rate. According to the research, parents who are educated are more likely to have children who will also pursue higher education. HH heads who are male are also more likely to enroll in school than HH heads who are female. Additionally, it is evident from the results that children in urban HHs are more likely to attend school than those in rural HHs. According to the findings of this study, policymakers should educate the public about the value of remittances. The government must encourage the growth of international remittances for household welfare and children's education. Similar to this, institutions of technical and vocational education should offer technical training programs to enhance the abilities and skills of incoming immigrants. Finally, the federal government should work to reduce the cost of immigration by helping immigrants. These policies must be put into effect by both government and non-government organizations.

It is also crucial to note that, while remittances are useful for supporting education and economic growth in a nation, brain drain immigration may have a negative impact on Pakistan's economy. Thus, there must be a balance where job possibilities for educated individuals are created within the nation while low-skilled employees are trained to get chances in foreign countries and contribute to the economy through remittances. These policies must be put into effect by both government and non-government organizations. It also needs to adopt programs to raise awareness of the benefits.

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## Appendix

**Table 1**

### Major Shares of Remittances

Countries	2020	2021	%Δ	2020	2021	%Δ
Saudi Arabia	556.7	690.4	24.0	4,775.7	5,731.8	20.0
UAE	511.0	589.7	15.4	4,2119.1	4,526.3	7.3
USA	142.9	283.3	98.2	1,246.5	1,901.8	52.6
UK	180.5	372.2	105.7	1,793.2	2,900.5	61.8
EU Countries	132.6	234.6	76.9	1,303.5	1,941.6	49.0
Others	380.9	555.7	45.1	3,6703.5	4,467.8	21.7
Total	1904.7	2724.9	43.1	17008.7	21467	26.2

Source: State Bank of Pakistan

**Table 2**

### Basic Sample Statistics

Variable	Obvs	Mean	Standard error
Enroll =	46,826	.7844922	0.3641
Urban	47,045	.3214794	0.4670
Rem	46,862	.0710384	0.2568
Male	51,270	.5164424	0.49973
Kpk	47,045	.226294	0.41843
Punjab	47,045	.4020831	0.49032
Sindh	47,045	.2398129	0.42697
Baloch	47,04	.13181	0.33828
Falite	41,809	.8775383	0.32782
Depend-HHs	47,045	4.29661	2.5600
Hhincome	46,871	415469.5	394519.8
Remitta	3,329	31982.83	29948.04
Mothlite	45,925	.889472	0.3135502

Source: Calculated by author



**Table 3**  
**Descriptive Statistics**

Stander error	Remittances	Observation	Mean
Enroll	3,326	.74905	0.38127
Urban	3,329	.2973866	0.55717
Rem	3,329	1	0
Male	3,329	.5160709	0.4998
Kpk	3,329	.5635326	0.4960
Punjab	3,329	.3953139	0.4889
Sindh	3,329	.0264344	0.16044
Baloch	3,329	.0147191	0.1204
Falite	1,824	.9473684	0.2233
Depend-HHs	3,329	5.162511	3.7001
Hhincome	3,329	665975.3	578382.8
Remitta	3,329	31982.83	29948.04
Mothlite	3,261	.9803741	0.1387

Note: Calculated by author

**Table 4**  
**Non-Recipient Remittances**

Variables	Observation	Mean	Standard error
Enroll	43,488	0.6964	0.2628
Urban	43,533	0.32129	0.4669
Rem	43,533	0	0
Male	43,533	0.5178	0.4996
Kpk	43,533	0.2013	0.4010
Punjab	43,533	0.4025	0.4904
Sindh	43,533	0.2549	0.4358
Baloch	43,533	0.1410	0.3480
Falite	39,973	0.8743	0.3314
Depend-HHs	43,533	4.23	2.439
Hhincome	43,488	396171.	369798.
Remitta	43,533	0	0
Mothlite	43,533	0.8824909	0.3220

Note: Calculated by author.

**Table 5**  
**Logit Model (Odds Ratios)**

Enroll	odds ratio	Stdev	P-value
Urban	2.7998	.0342506	0.000
Rem	3.339	0.122	0.001
Male	1.9467	.0362	0.154
Kpk	1.7706	.0518	0.000
Punjab	1.6122	.0374	0.000
Sindh	1.7502	.0476	0.000
Falite	1.8612	.15031	0.092
Depend ant	.7381	.0076	0.000
Lhhincome	1.552	.0526	0.000
Mothlite	1.383	.2504	0.073
Lremittance	1.282	.1594	0.046
<b>Goodness of fit</b>			
Number of Obs	41, 34	LR chi2 (10)	1142.27
Log likelihood	-10294.165	Prob > chi2	0.0000
Pseudo R <sup>2</sup>	0.0252		

Note: \*, \*\*, \*\*\* denote 1 %, 5% and 10% level of significance, respectively.

Enrollments	“Binary variable 1 for enroll 0 otherwise”
HHs Gender	“categorical variable 1 for male 0 for otherwise”
Mother-literacy	“A binary variable, 1 coded mother literate otherwise 0”
Father-literacy	“A binary variable, 1 coded father literate otherwise 0”
Remittance	“1 for remittances received HHs 0 for otherwise”
“Amount (Ln-Remittances) dummy variable 1 for the amount of remittances received otherwise 0”	
HHs- income	“ the monthly income of HHS It is a continuous variable”
HHs-Dependent	“number of a person who is less than 15 and greater than 63” (WDI)
Punjab	“ if a person from Punjab 1 and 0 otherwise”
KPK	“if a person from KPK=1, 0 otherwise”
Sindh and Baloch	“ if a person from Sindh and Baluchistan=1 0 otherwise”

Table 6  
Logit Model

Variables	1	2	3	4
Enroll	dy'dx	dy'dx	dy'dx	dy'dx
Urban	0 .0228* (0.0023)	0.2286** (00219)	.02814** (001105)	.02156* (.00863)
Male	0 .0031 (0.006)	.00314 (.0020)	.0029*** (.0107)	0.0031*** (.00827)
Kpk	0.0245** (0.0034)	.02592* (.0032)	02451 (.03585)	04836*** (.0285)
Punjab	0.0383* (0.0032)	.0385* (.0031)	.03832 (.02936)	.0555* .02321
Sindh	0 .0089* (0.0022)	.01592** (.0031)	.00894** (.0378)	.01337 *
Father Edu	.01204* (.0032)		.0120* .02104	
Mother edu		.01592** (.0034)		.00723* .02863
Dependant	-.01460* (.0005)	-.01826* (.0004)	-.0146* (.00051)	-.01645 * .00153
Lhhincome	0.0069* (0.0033)	0.0252* (.0018)	01188**	02517* .00864
Remittance receipt	.0156** (.0066)	.0090** (0044)		
Lremittance (amount)			.01623* (.01188)	0.1533** .00635
Pseudo-R <sup>2</sup>	0.25			
Observation	41,75			
LR Chi2 (9)	1160.			
Prob > chi2	0.0000			
Log Likelihood	-10432			

Note: \*, \*\*, \*\*\* denote 1 %, 5% and 10% level of significance

Table 7  
Probit Model

Variables	(1)	(2)	(3)	(4)
Enroll	dy'dx marginal effects	dy'dx marginal effects	dy'dx marginal effects	dy'dx marginal effects
Urban	0.031* (0.0025)	0.0136* (0.0024)	0.033 ** (0.012)	0.354 ** (0.0095)
Male	0.0377** (0.0023)	0.0037 (0.002)	0.0056 ** (0.0118)	0.0045 (0.009)
Kpk	0.0152* (0.0037)	0.0183 (0.035)	0.0403 (0.0118)	0.0686 (0.0338)
Punjab	0.0298* (0.035)	0.0323 (0.0034)	0.0553 (0.333)	0.065 (0.375)
Father Edu	0.0077 ** (0.003)		0.0167 (0.022)	
Mother edu		.0217** (.00365)		0.0082 (0.031)
Dependant	-0.0171* (.0055)	-0.017 (0.005)	-0.0168* .00185	-0.0158 * .00165
Lhhincome	0.0394* (0.0021)	0.0296 (.0020) *	.00103 * (.01332)	.02912** (0.0096)
Remittance receipt	0.2107** (0.0071)	0.00921** (0.004)		
Lremittance			0.0645 (0.0085)	0.0371 (0.0096)
pesdo -R2	0.29	0.18	0.23	0.5
Log likelihood	-104363.	-11533	-501.	-906.
Observation	41,753	45,862	1824	2558

Note: \*, \*\*, \*\*\* denote 1 %, 5% and 10% level of significance, respectively.