LINKING INTERNAL MIGRATION, FLOW OF REMITTANCES AND HOUSEHOLD WELLBEING

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ABSTRACT

Labor migration is usually considered as economically benefiting the household family members who are left behind through remittances. The extent of migration and remittances have shown significant growth however the empirical evidence on the casual impact of migration on economic status and wellbeing of those who are left behind is not well documented at the regional level in Pakistan. The study aimed to assess the impact of regional remittance flow on household economic status and wellbeing by using propensity score matching (PSM) technique. The first approach is to develop Multidimensional Poverty Index and second to show how pattern of inter and intra-provincial and regional remittances flow decreases the probability of poverty and affects the household wellbeing. For the analysis, the study utilized the nationally representative Pakistan Household Income and Expenditure Survey (HIES) 2013–2014. The results of the analysis lead to the conclusion that internal labor mobility occurs because of poverty, instead of benefitting the households who are left behind further had dragged them into risk of poverty. The poor individuals moving to urban or other areas in search of job opportunities had not been able to support themselves in new areas but also had failed to support their family back at home.

Contribution/Originality: The intention of the study is to examine role of internal flow of migration and remittances and their impacts on multidimensional poverty across regions of Pakistan.

1. INTRODUCTION

The role of the inflow of workers' remittances in the development of a country by creating growth and reducing poverty is well documented. On the other hand, remittances, particularly the remittances coming from regional migration (i.e., migration within the country) and its influence on the economic status of the household or the wellbeing of the household, are not well documented. In this study, the trends of the flows of domestic remittances within and among provinces are explained and then an attempt is made to explore the impact of interregional and intraregional flows of remittances on household wellbeing. Specifically, the study will first examine the trend of workers' domestic remittances, and using the Multidimensional Poverty Index, the study attempts to identify the relationship between workers' domestic remittances and household wellbeing.

Many researchers have empirically examined the impact of workers' remittances from international migration but they did not take into account the effects of interregional migration of the workers. For instance, Malik, Sarwar, and Siddiqui (1993) empirically assessed the effect of remittance on household consumption. Alderman (1996) explained that remittances are used for investment in buildings and lands. Using the life cycle approach, Ilahi and

Jafarey (1999) concluded that as the migration cost increases the financing demand for extended families increases, whereas it diminishes if the family has pre-migration capital means. Siddiqui and Kemal (2002) concluded that the major factor that has increased poverty in Pakistan is the reduction in remittances. Amjad and Arif (2014) examined the effect of worker mobility and remittances in the Khyber Pakhtunkhwa region of Pakistan. Anwar and Mughal (2012) reached conclusions regarding the geographic, demographic and economic attributes of households in Pakistan receiving remittances from abroad. Awan, Khan, and Khan (2013) concluded that consumption constitutes 51% of the total income of the remittance-receiving households in Pakistan. Studies in Pakistan in this context have focused largely on the impact of remittances inflows from other countries, but the dynamics of internal labor force migration remains understudied and under measured. Thus, causes and consequences of internal migration, which is considered to be an essential driver of economic efficiency, are unknown.

In the Pakistani context, a few studies have contributed to explaining the driving forces of internal labor migration. Ahmad, Akram, and Hussain (2013) investigated the behavior of internal migration in Pakistan by utilizing the labor force survey data from 2010–2011. They found education to be the key factor that motivates both males and females to move within the country. The potential positive and significant effect of education on migration within country substantiates the human capital theory that predicts that educated people are more likely to migrate compared to those without education. Mahmud, Musaddiq, Said, and Sabir (2010) studied the factors that affect internal migration between districts in Pakistan. The study revealed the unemployment rate in the destination district as the main driving force of migration. The districts with a low rate of unemployment are those with the highest levels of immigration. The study also highlighted the contribution of urbanization to migration. The authors concluded that immigrants are highly responsive to the socioeconomic conditions of any area within Pakistan. By analyzing the utilization patterns of foreign remittances in Peshawar, KPK Pakistan, Amjad and Arif (2014) showed a significant positive impact of foreign remittances on emigrant households. The recipient households increased their consumption of food, housing, transport, education, and health by more than 50%. The other half of the income was spent on the repayment of loans and generating new sources of income and accumulation of assets and wealth. They concluded an improvement in socioeconomic conditions at the household and community levels.

The economic literature as highlighted above has paid attention to two categories. The first category considered the impact of international migrant remittances inflow, and the second category considered the socioeconomic determinants of internal migration. Almost no studies have explicitly examined the influence of domestic remittances generated from internal migration on households' wellbeing. While some studies have focused on income or the consumption effect of foreign remittances on household wellbeing, few studied have contributed to evaluating the positive impact of international remittance inflow on socioeconomic variables, for instance, living standards, education, and health. What is missing from the existing literature, specifically in the context of Pakistan, is the explicit role of the internal flow of migration and remittance in alleviating poverty. Precisely, the purpose of the current exercise is to broaden the framework of internal migration by exploring the flow of migrant workers and remittances and their impact on Multidimensional Poverty Index (MPI) across regions in Pakistan.

To provide a detailed analysis of the regional mobility of the workers, the study uses nationally representative data at the household level, i.e., Pakistan's Household Income and Expenditure Survey (HIES) 2013–2014. To analyze the impact of workers' domestic remittances on household wellbeing, the study uses the Multidimensional Poverty Index proposed by the United Nations Development Programme (UNDP) to develop an index of household wellbeing and explore the relationship between workers' domestic remittances and household wellbeing in Pakistan.

The paper is organized as follows: Section 2 highlights the theoretical foundations to identify the linkages between household wellbeing and remittances; Section 3 explains the methodology adopted and the estimation

technique used to evaluate the linkages between household wellbeing and domestic remittances; Section 4 presents the study results; and the last section contains the conclusion.

2. THEORETICAL FOUNDATION

The variables in Equation 1 are based on literature and the availability in the data. The econometric model applied to estimate the link between domestic remittances and household wellbeing is:

$$MPI_i = \beta_0 + \beta_1 Age\_head_i + \beta_2 Edu\_head_i + \beta_3 Gender\_head_i + \beta_4 Child\_adult\_ratio_i + \beta_5 Earn\_age_i + \beta_6 Earn\_Edu_i + \beta_7 PC\_Income_i + \beta_8 Agri\_Emp_i + \beta_9 Manf\_Emp_i + \beta_{10} Unemp_i + \beta_{11} District_i + \beta_{12} Treat + \mu_i \ (1)$$

In the above model, variables such as age, education and gender of the individuals who contribute economically are assumed to influence household wellbeing and decision making in the family. Thus, it is anticipated that the derivative of $\frac{\partial MPI}{\partial Earn\_Edu} > 0$ and $\frac{\partial MPI}{\partial Earn\_Age} > 0$ should have a positive association with earners' attributes and the wellbeing of households. The study uses age as a proxy of experience and education of the highest earner of the family to analyze the impact as it is generally observed that the highest earner has a greater influence on family decisions.

One of the variables that is considered to have an inverse association with household wellbeing is the ratio of the number of children versus the number of adults, i.e., $\frac{\partial MPI}{\partial Child\_Adult\_Ratio} < 0$. This is due to the fact that the high dependency ratio shows a relatively high economic burden in the workforce in supporting the young and elderly in the family resulting in lower household wellbeing. On the other hand, income per capita is assumed to have positive impact on household wellbeing. Therefore, $\frac{\partial MPI}{\partial PC\_Income} > 0$ reflects that a higher per capita income would ensure a greater wellbeing within the household. This suggests that higher income causes household consumption expenditure to rise leading to higher household wellbeing.

According to the household theory of labor migration, decisions to migrate are made collectively by the family with consideration of household needs and maximizing economic gains. They do so with the prospect that the migrants would remit significant shares of their earnings back to their families. To explain this dynamic, we used unemployment data to examine how the impact of unemployment affects household migration and wellbeing. Migrants tend to leave regions with high unemployment for regions with lower unemployment leading to higher remittances and higher wellbeing. Moreover, the higher unemployment rate also means lower household income and therefore lower household wellbeing. In the present model, the unemployment rate is measured as the ratio of the unemployed labor force to the total labor force in an area controlled by Primary Sampling Unit (PSU) codes (i.e., Enumeration Block/Village Code) allocated in the Household Income and Expenditure Survey (HIES). Hence, the impact of $\frac{\partial MPI}{\partial Unemp}$ may be positive or negative. The employment structure for internal migrants is highly correlated to the labor market. Thus, in order to develop a better understanding of internal labor migration, the effect of the size of agriculture and manufacturing sectors in close neighborhood, which are two of the main drivers of migration that appear to be common in many Asian countries, are also included in the model. The size of the agriculture sector is measured as the ratio of the number of labor force employed in agriculture to the total labor force (Employed in Agriculture/Total Labor Force). Similarly, the size of the manufacturing sector is measured by the ratio of the total labor force employed in the sector to the total number of labor force (Employed in Manufacturing/Total Labor Force) in a PSU. It is assumed that larger agriculture and manufacturing sectors provide greater employment opportunities for people in the surrounding areas, resulting in less willingness to move. The conventional effect of willingness to move results in a negative relationship between income at home and

migration. If income at home is higher, people will be less willing to migrate. This will likely result in a lower inflow of remittances and hence lower wellbeing. On the other hand, higher employment opportunity means higher income at home which means higher wellbeing. There is also a countervailing effect of higher income at home. If the income is higher, the migrants are more likely to be able to finance the move and due to this, if the willingness to move dominates, the migration inflows increase causing greater wellbeing. Therefore, the impact of $\frac{\partial \text{MPI}}{\partial \text{Manf\_Emp}}$ and $\frac{\partial \text{MPI}}{\partial \text{Agri\_Emp}}$ may be positive or negative. Furthermore, to control the regional variations, the dummy variables for districts are also included in the model. Districts in Pakistan vary in terms of cultural and socioeconomic backgrounds.

Finally, to explore the relationship of remittances on the wellbeing of households, "Treat" is used, which is binary. Remittances provide the basis for upholding family consumption and increasing savings, which turn into investments and support for household in managing future difficulties. Therefore, remittances play a significant role in improving the wellbeing of households. Consequently, it is expected that it has a positive impact on household welfare and is expressed as $\frac{\partial MPI}{\partial Treat} > 0$.

3. METHODOLOGY

The methodology adopted to assess the study objectives comprises two parts. The first part debates the development of the Multidimensional Poverty Index (MPI), and the second part estimates the model in which the role of remittances is regressed on the poverty index. The existence of a sizeable positive correlation is hypothesized between sending remittances and migrants' wellbeing.

3.1. Measuring Multidimensional Poverty

Poverty has many different dimensions and manifestations. Unidimensional measures of poverty based on income or consumption potentially lacks the broad scopes that can fully explain households' experiences of deprivation in addition to low income.

Many countries have made substantial advances in this area by implementing and using composite indices to measure the real wellbeing of people and thus the poverty status, which is an indicator of insufficient wellbeing. Examples of such comprising attributes are the availability of food, households' living conditions, access to public services, provision of clothing, education, and health.

One such example of a Multidimensional Poverty Index developed by the United Nations Development Programme (UNDP) is the Human Poverty Index manifested in terms of deprivations in the living standards of a population. This aggregate method of the poverty index is measured based on three basic dimensions of life: a long and healthy life, being knowledgeable, and a decent standard of living.

The MPI introduced by Alkire and Santos (2010) constitutes the first implementation measure of poverty for specific regions and divisions in an internationally comparable way. The MPI method makes an in-depth direct assessment of individuals' experience of acute poverty; that is the ratio of people who experience various types of deprivation and the magnitude of such deprivations. Given the strength of the MPI, this study included the development of the multidimensional poverty indicator defined by the AF method. The dimensions and indicators with weights are highlighted in Table 1.

Table 1. List of indicators with weights – Pakistan's National MPI

Dimension	Indicator	Deprivation Cut-Off	Weight
Education	Year of schooling	Deprived if no man OR woman in the household above 10 years of age has completed five years of schooling	1/6 = 16.67%
	Child's school attendance	Deprived if any school-aged child (between 6 and 11 years of age) is not attending school	1/8 = 12.5%
	School quality	Deprived if any child is not going to school because of quality issues in schools	1/24 = 4.17%
Health	Access to health facilities/Govt. Dispensary/Hospital/ Basic health units (BHU)/RHC	Deprived if health facilities are not used at all, or are only used once in a while, because of access constraints (too far away, too costly, unsuitable, lack of equipment/staff, not enough facilities)	1/6 = 16.67%
	Immunization	Deprived if any child under the age of five is not fully immunized according to the vaccination calendar (households with no children under the age of five are considered non-deprived)	1/8 = 5.56%
	Antenatal care	Deprived if any woman in the household who has given birth in the last three years did not receive antenatal check-ups (households with no women who have given birth are considered non-deprived)	1/8 = 5.56%
	Assisted delivery	Deprived if any woman in the household who has given birth in the last three years was tended to by untrained personnel (family member, friend, traditional birth attendant, etc.) or in an inappropriate facility (home, other) (households with no women who have given birth are considered non-deprived)	1/8 = 5.56%
Standard of living	Water	Deprived if household has no access to an improved source of water according to the Millennium Development Goals (MDGs).	1/21 = 4.76%
	Sanitation	Deprived if household has no access to adequate sanitation according to the MDGs' flush standard	1/21 = 4.76%
	Overcrowding	Deprived if the household is overcrowded (four or more people per room)	1/42 = 2.38%
	Electricity	Deprived if household has no access to electricity	1/21 = 4.76%
	Cooking fuels	Deprived if household uses solid cooking fuels for cooking (wood, dung cakes, crop residue, coal/charcoal, other)	1/21 = 4.76%
	Assets	Deprived if household does not have more than two small assets (radio, fan, sewing machine, video cassette player, air cooler, bicycle) OR no large assets	1/21 = 4.76%

Source: Pakistan's Multidimensional Poverty Report, UNDP.

3.2. Measuring the Linkage between the Multidimensional Poverty Index and Remittances

3.2.1. MPI

After computing the MPI, the study carried out an assessment of the effects of domestic remittances on wellbeing as measured by the MPI of households using a micro-level household survey. To achieve this aim, the study employs the Propensity Score Matching technique.

a) Propensity Score Matching Technique (PSM)

Because of the lack of randomization, as the sample for the study contains both migrant and non-migrant households, the simple ordinary least squares analysis will provide biased results. Further, to compare both groups, randomization is essential because the results will become biased and inconsistent if the investigator cannot manage randomly allocated treatments. Therefore, for these situations, the Propensity Score Matching (PSM) technique provides a more precise estimate of the influences.

For the above reasons, the PSM technique has been used to assess the influences of domestic remittances on the wellbeing of households in Pakistan. To perform the analysis, the households that have received remittances are considered as the "Treatment" group, whereas the households that have not received domestic remittances are considered as the "Counterfactual" or "Control" group. The treatment variable is binary in nature and contains a value equal to one if the household has received remittances and zero if the household has not received remittances. Hence, there are two potential outcomes for every observation denoted as Y_0 for treatment and Y_1 for control expressed as:

$TE = Y_1 - Y_0$

To estimate the propensity scores, the impact of being treated or untreated in the experiment is unobservable; therefore, the researchers have often relied on estimating average treatment effects. The average impact is estimated as:

$ATE = E(Y_1) - (Y_0)$

The treatment variable, the migration status of the household, is denoted by 'D' so that D = 1 if the household has received remittances and 0 otherwise.

$ATE = E(Y_1 | X, D = 1) - (Y_0 | X, D = 1)$

For each household, the vector of the controlled variable is expressed by X, which quantifies the average effect the migration status on wellbeing.

Since $E(Y_0 | X, D = 1)$ is not observable, the propensity score matching (PSM) technique enables us to estimate the control group or counterfactual by letting $P(X) = Pr(D = 1 | X)$ and develop a comparison group harmonizing the observations that have the identical value of $P(X)$ of receivers of remittances to the non-receivers of remittances. The PSM is based on the following two assumptions:

$E(Y_0 | X, D = 1) = E(Y_0 | X, D = 0)$ acknowledges the conditional mean independence and specifies that the average outcome is similar for those who have received remittances in the situation if they have not received it and non-receivers after controlling for X, whereas $0 < P(X) < 1$ declare suitable and valid matches by simply assuming that $P(X)$ is well defined for all values of X.

4. RESULTS

This section provides the study results obtained from the household survey data analysis. In the preliminary section, the various measures of wellbeing and multidimensional poverty were presented based on migration status. The following section explains the impact of remittances from domestic migration on the MPI in the study area using econometric model results.

4.1. Wellbeing Indicators and Dimensions

The dimensions and indicators of wellbeing used in the study are listed in Table 2. The wellbeing estimates are based on five dimensions: empowerment, education, health, assets, and public utilities. The table gives a picture of the proportion of households across the provinces and regions of Pakistan that are either well-off or poor. The findings of the study reflect that the MPI is higher among the households receiving remittances in KPK and Punjab compared to Sindh and Balochistan, emphasizing that poverty-driven internal labor mobility has led households into the poverty trap instead of pulling them out of poverty. This implies that poor individuals migrating to urban or other areas in search of employment failed to support themselves in the new areas and have not been able to provide for their family members back home.

Table 2. Remittances and headcount ratio.

Region	Province	Non-Poor		Poor	
		With Remittances	Without Remittances	With Remittances	Without Remittances
Urban	KPK	30.9%	21.8%	41.9%	24.4%
	Punjab	60.0%	49.7%	41.5%	23.8%
	Sindh	7.8%	21.2%	2.3%	22.2%
	Balochistan	1.4%	7.3%	14.3%	29.7%
Rural	KPK	34.5%	19.1%	58.3%	15.6%
	Punjab	61.9%	45.9%	31.9%	17.0%
	Sindh	2.1%	25.9%	3.9%	46.6%
	Balochistan	1.5%	9.0%	5.9%	20.8%

4.1.1. Primary Schooling

The percentage distribution of the population deprived of primary schooling in the urban and rural regions with and without remittances are presented in Table 3. The results show that, compared to other regions, the rural regions from the province of Punjab had the highest deprivation in terms of primary schooling facilities irrespective of receiving remittances (56.3%) or no remittances (37.7%).

Interestingly, the deprivation in educational facilities was found to be higher in urban areas. Similarly, the proportion of the population deprived of basic education facilities in rural and urban regions of KPK province without remittances are 17.4% and 27.9%, respectively.

The proportion of deprivation was found to be higher in regions with no remittance-receiving households, that is, 47.7% and 34.5%. The deprivation of education facilities is also apparent in the province of Sindh; however, unlike KPK and Punjab, the rural areas have shown worse conditions in educational facilities than urban regions. In fact, the educational facilities in rural Sindh with no remittances in comparison to other provinces reflect a worse condition in term of primary education. Baluchistan has shown a surprising result among the households without remittances as the deprivation in this area is highest, while among the households with remittances, the deprivation is lowest. The results are also shown graphically in Figure 1.

Table 3. Households deprived if no male or female above 10 years of age has completed five years of schooling.

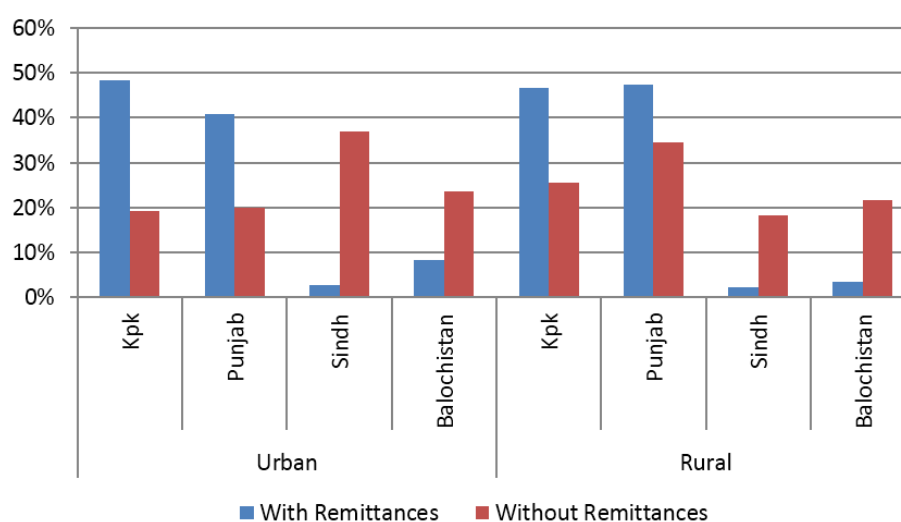| Region	Province	Non-Deprived		Deprived	
		With Remittances	Without Remittances	With Remittances	Without Remittances
Urban	KPK	29.4%	18.1%	34.5%	27.9%
	Punjab	60.4%	53.7%	56.3%	37.7%
	Sindh	9.0%	22.4%	5.4%	19.7%
	Balochistan	1.2%	5.8%	3.8%	14.8%
Rural	KPK	29.4%	17.9%	47.7%	17.4%
	Punjab	67.8%	49.2%	45.4%	27.0%
	Sindh	2.2%	25.8%	2.9%	38.7%
	Balochistan	0.6%	7.1%	3.9%	17.0%

Figure 1. Deprived of primary schooling by region.

4.1.2. Child Schooling Quality

Tables 4 and 4.1 and Figure 2 show that the areas where no children aged 6 to 11 attend school, the highest deprivation is found among the households receiving remittances in KPK and Punjab, while for households without remittances, deprivation is higher in Sindh followed by Balochistan.

Regarding the quality of schooling, among the households without remittances, deprivation is high in Sindh followed by Balochistan, while for households with remittances, deprivation is high in KPK and Punjab.

Table 4. Households deprived if no child (aged 6 to 11) attends school.

Region	Province	Non–Deprived		Deprived	
		With Remittances	Without Remittances	With Remittances	Without Remittances
Rural	KPK	38.4%	18.6%	57.4%	15.3%
	Punjab	57.0%	40.7%	33.0%	16.4%
	Sindh	2.3%	30.5%	4.0%	45.2%
	Balochistan	2.3%	10.2%	5.5%	23.0%
Urban	KPK	31.1%	21.7%	38.7%	25.0%
	Punjab	59.9%	50.4%	43.8%	23.2%
	Sindh	7.5%	20.6%	5.8%	26.9%
	Balochistan	1.5%	7.4%	11.6%	24.9%

Table 4.1. Households deprived if any child is not going to school because of a quality issue.

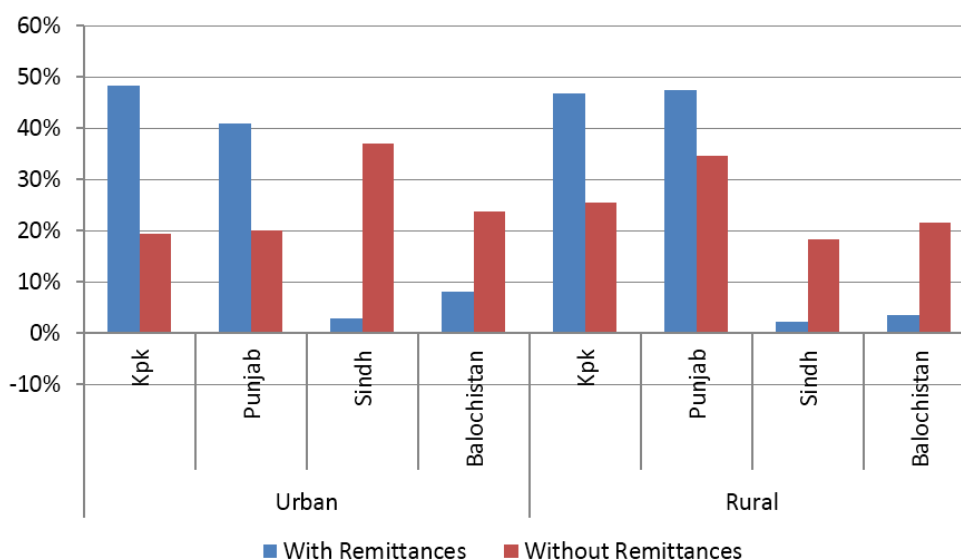| Region	Province	Non–Deprived		Deprived	
		With Remittances	Without Remittances	With Remittances	Without Remittances
Rural	KPK	40.3%	18.6%	56.0%	13.7%
	Punjab	54.7%	36.0%	33.8%	20.0%
	Sindh	2.5%	33.1%	3.8%	44.1%
	Balochistan	2.5%	12.4%	6.4%	22.2%
Urban	KPK	31.3%	22.4%	38.0%	17.3%
	Punjab	58.5%	47.4%	59.0%	44.1%
	Sindh	7.7%	21.4%	3.1%	20.1%
	Balochistan	2.6%	8.8%	0.001%	18.5%

Figure 2. Percentage of population deprived of good quality schooling.
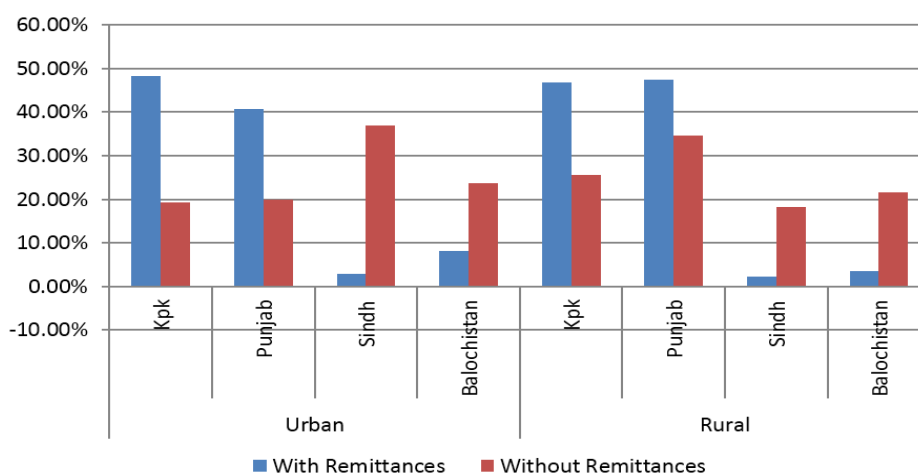

Figure 3. Percentage of population deprived if no child attends school.

4.1.3. Child Vaccination Situation

Table 5 and Figure 4 depict that among the households with remittances, households in Punjab and KPK are more deprived. Among the households without remittances, Sindh is more deprived in the case of rural areas followed by Balochistan, Punjab, and KPK, while in case of urban areas Punjab, is more deprived followed by KPK, Balochistan, and Sindh.

Table 5. Households deprived of vaccination.

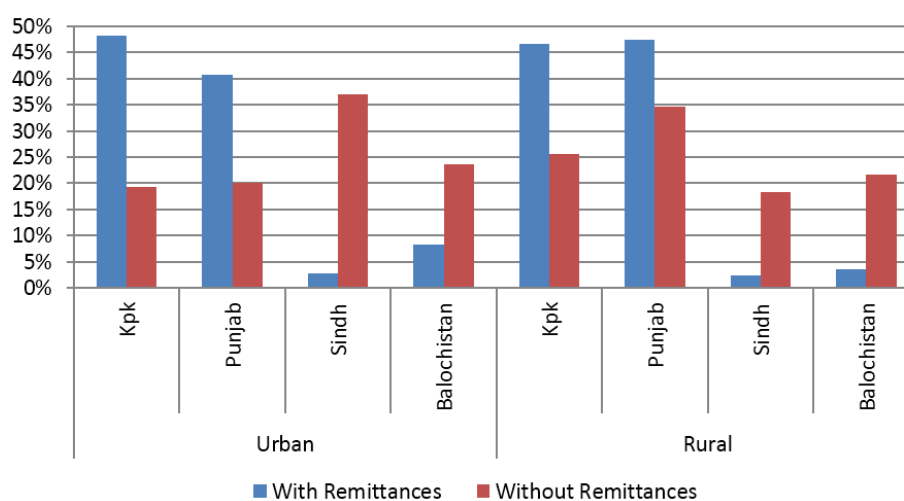| Region	Province	Non–Deprived		Deprived	
		With Remittances	Without Remittances	With Remittances	Without Remittances
Rural	KPK	41.8%	17.3%	48.3%	19.3%
	Punjab	53.1%	34.1%	40.8%	20.0%
	Sindh	2.7%	35.3%	2.8%	37.0%
	Balochistan	2.4%	13.4%	8.2%	23.7%
Urban	KPK	30.5%	21.8%	46.7%	25.5%
	Punjab	59.5%	48.0%	47.5%	34.6%
	Sindh	7.8%	21.5%	2.3%	18.3%
	Balochistan	2.3%	8.7%	3.5%	21.6%

Figure 4. Vaccination deprivation.

4.1.4. Basic Facilities

Deprivation of basic water and sanitation facilities by province are reported in Tables 6 and 6.1. In terms of having basic facilities such as water and sanitation, households in KPK and Punjab with remittances are more deprived than the households without remittances. As far as Sindh and Balochistan are concerned, deprivation is higher among the households without remittances.

Table 6. Households deprived of water.

| Region | Province | Water | | | |
| | | Non-Deprived | | Deprived | |
		With Remittances	Without Remittances	With Remittances	Without Remittances
Rural	KPK	31.9%	13.8%	78.7%	31.1%
	Punjab	63.7%	39.9%	11.0%	5.2%
	Sindh	2.5%	37.3%	3.4%	28.8%
	Balochistan	1.9%	9.0%	6.8%	34.8%
Urban	KPK	32.4%	22.7%	21.3%	15.0%
	Punjab	58.5%	48.1%	59.7%	38.0%
	Sindh	7.7%	21.1%	2.8%	24.1%
	Balochistan	1.5%	8.2%	16.1%	22.9%

Table 6.1. Households deprived of basic sanitation facilities.

| Region | Province | Sanitation | | | |
| | | Non-Deprived | | Deprived | |
		With Remittances	Without Remittances	With Remittances	Without Remittances
Rural	KPK	39.5%	23.6%	49.0%	11.4%
	Punjab	57.8%	47.5%	38.5%	17.7%
	Sindh	2.2%	22.8%	3.9%	48.1%
	Balochistan	0.4%	6.1%	8.6%	22.8%
Urban	KPK	30.8%	21.9%	55.6%	25.2%
	Punjab	60.3%	48.7%	12.7%	16.5%
	Sindh	7.2%	21.8%	11.9%	12.2%
	Balochistan	1.7%	7.6%	19.8%	46.0%

4.2. Propensity Score Matching

To generalize the effect of remittances on household wellbeing, this section employs the PSM approach.

4.2.1. Estimated of ATT of Remittances in 2013–2014

The results of the probit regression are reported in Table 7, which explain the influences on poverty that resulted from the domestic flow of remittances in Pakistan. Specifically, the estimates of the probit model and unbiased estimates of the average treatment effects of domestic remittances are reported in Table 7 and Table 8. The estimates of the probit model explain the change that occurs in Z-scores because of the unit change in each predictor. Parameters are significant and consistent, whereas the likelihood chi-square provides the justification that the model is statistically fit.

Table 7. Estimates of probit model – domestic remittances dummy.

Variables	Coefficient	Z-value
Constant	0.815311	4.67
Age of the Head	0.006796	5.69*
Education of the Head	-0.01371	-2.96*
Gender of the Head – Male	-0.87733	-19.33*
Ratio of Children to Adults	-0.00019	-1.27
Age of the Highest Earner	0.011172	7.39*
Education of the Highest Earner	0.019382	3.53*
Log of Per Capita Income	-0.1363	-18.33*
Unemployment Rate	0.001838	0.69
Employment Rate in Agriculture	0.002025	2.23**
Employment Rate in Manufacturing	0.000792	0.55
District's Dummy (included)	Yes	
Region	-0.11918	-2.57*
No. of Observations	17636	
Pseudo R²	0.2755	
Chi-Square	3541.26	

Note: * and ** represent significance at the 1% and 5% levels, respectively.

To observe the effect of remittances on poverty, two different indices are used for analysis purposes – the MPI and the headcount ratio. The multidimensional poverty index takes into account the diverse elements of deprivation that an individual practices. These elements include health, education and living standard, etc., whereas the percentage of individuals living below a certain income threshold is explained as the headcount poverty index. The average treatment effect of the remittances on multidimensional poverty in Pakistan is reported in Table 8. The statistically significant and positive coefficient indicates that domestic remittances increase poverty in Pakistan.

Table 8. Estimates of the remittances dummy on the Multidimensional Poverty Index for Pakistan.

Sample	Treated	Control	Difference	S.E.	T-stat
Unmatched	0.097302	0.127902	-0.0306	0.004553	-6.72
ATT	0.097302	0.083622	0.013681	0.006935	1.97

The average treatment effect of remittances on headcount poverty in Pakistan is reported in Table 8.1. The statistically significant and positive coefficient once again indicates that domestic remittances increase poverty in Pakistan. These results support the descriptive analysis presented above. The results stress that internal mobility causes poverty instead of pulling households from poverty, further dragging households into poverty as poor individuals moving to urban or other areas in search of jobs fail to support not only themselves in new areas but also fail to support their families back in their home districts.

Table 8.1. Estimates of remittances dummy on the headcount poverty index.

Sample	Treated	Control	Difference	S.E.	T-stat
Unmatched	0.275549	0.333355	-0.05781	0.010908	-5.3
ATT	0.275549	0.223973	0.051576	0.017032	3.03

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Based on the findings of the PSM, it can be concluded that remittances were ineffective in decreasing multidimensional poverty for the period from 2013–2014.

4.2.2. The Quality of the Propensity Score Matching

This segment of the paper is devoted to examining the quality of the propensity score matching using the set protocols explained in literature and to know the before and after matching distributional variance between the control and treated groups.

a) Measures of Quality Check

Different quality assessment checks are performed for cash stipend dummy. Table 9 provides the t-test results of the hypothesis that the mean values of each variable are the same in both the treatment and the control groups. Furthermore, by comparing the percentage bias before and after the matching for both the treatment and the control groups, the table provides a standardized percent bias. For each of the variables, the differences in the bias before and after the matching are then calculated. It can be observed from the statistical t-values that almost all the covariates have the same mean after the matching. The table also highlights that the bias percentage for each of the variables is also reduced significantly after applying matching.

Table 9. Standardized percentage bias & t-test results for domestic remittances in Pakistan.

Variables	Unmatched/Matched	Mean		% Reduction		t-test
		Treated	Control	% Bias	Bias	T
Age of the Head	U	47.935	45.03	20.2	48.6	9.18
	M	47.935	49.429	-10.4		-3.25
Education of the Head	U	3.5532	4.8497	-26.7	99.7	-11.14
	M	3.5549	3.5516	0.1		0.02
Gender of the Head – Male	U	0.59379	0.94469	-91.6	98.4	-55.4
	M	0.5936	0.59933	-1.5		-0.38
Ratio of Children to Adults	U	118.07	97.787	17.8	19.4	9.08
	M	118.01	101.65	14.3		4.3
Age of the Highest Earner	U	25.269	34.177	-53.6	93.3	-29.43
	M	25.281	24.683	3.6		0.94
Education of the Highest Earner	U	3.1076	4.857	-38.9	99.7	-16.16
	M	3.1091	3.1142	-0.1		-0.04
Log of Per Capita Income	U	6.4359	9.8687	-92.6	92.5	-54.52
	M	6.439	6.1828	6.9		1.71
Unemployment rate	U	3.924	4.534	-9	97.9	-3.62
	M	3.9258	3.9387	-0.2		-0.07
Employment Rate in Agriculture	U	38.713	35.245	11.2	67.6	4.64
	M	38.711	37.587	3.6		1.2
Employment Rate in Manufacturing	U	11.082	13.249	-15.9	88.7	-6.61
	M	11.084	11.329	-1.8		-0.61
Region	U	0.27542	0.35592	-17.4	88.7	-7.29
	M	0.27555	0.28462	-2		-0.65

The absolute percentage bias for the treatment and control groups before and after the matching are presented in Table 10. It can be observed that the absolute mean bias has reduced from 10.5 to 2 for 2013–2014 after performing the PSM. The table also shows that the matching is efficient as the Pseudo R^2 is showing a lower value. Based on the measures presented, it can be concluded the (nearest neighbor) propensity score matching is an

efficient method to construct a similar control group and to estimate the average treatment effect of the cash stipend on the middle school.

Table 10. Average percentage bias for Pakistan.

Group	Pseudo R²	LR Chi-Square	Mean Absolute Bias
Unmatched	0.276	3541.26	10.5
Matched	0.019	109.12	2

To observe the common support of the covariates for the matched and unmatched groups for the 2013–2014 period, a graphical assessment is performed. The assumption of common support or the overlapping of the propensity score for both the treated and untreated groups is described in Figure 5. The upper part in red indicates the treatment group, whereas the lower bars in blue denote the control group. After the matching, the symmetric distribution of the treated and untreated groups explains the overlapping of the covariates and therefore confirms that common support is present.

Similarly, the scatter diagram also depicts the standardized proportion of bias both before and after matching. Figure 6 explains that the bias of covariates before and after the matching has drastically reduced.
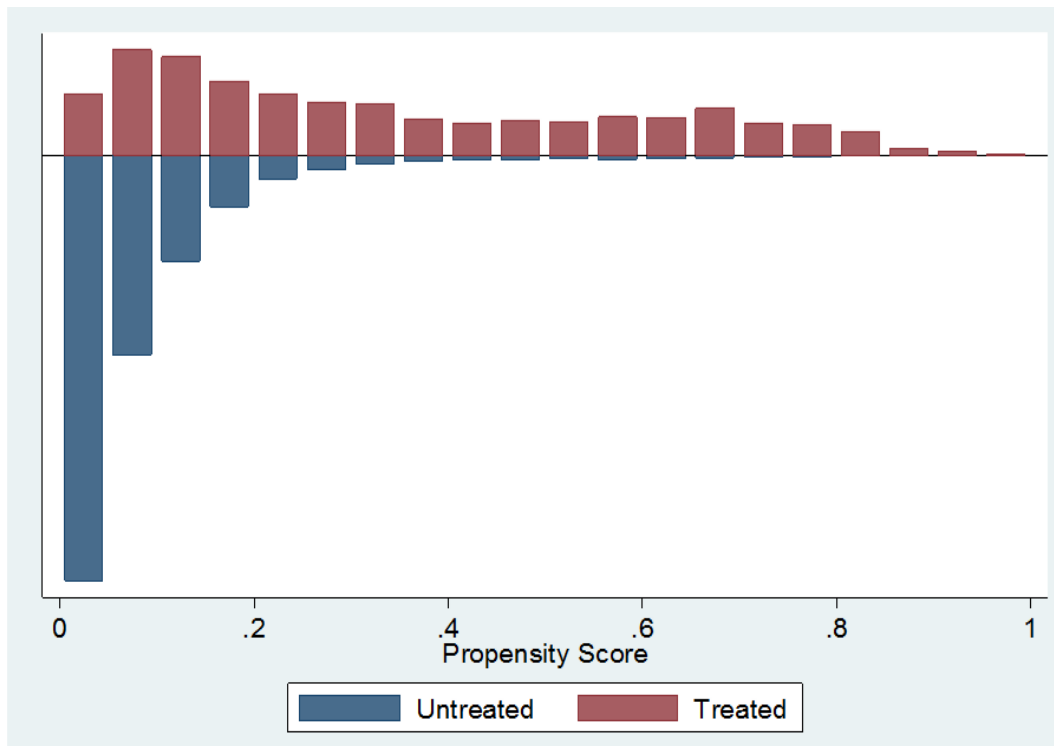

Figure 5. Overlapping of treated and untreated groups for 2013–2014.

Before and after the matching, standardized proportion of bias for all covariates for 2013–2014 is explained by the histogram Figure 7. It is observable that after performing matching, the standardized proportion of bias has significantly declined. The upper portion of the histogram shows the proportion of bias in unmatched, i.e., the non-treated group, whereas the lower portion of the histogram depicts the percentage of bias after performing matching. A comparison of the upper and lower panels in the histogram reveals that the proportion of bias after matching has reduced significantly.
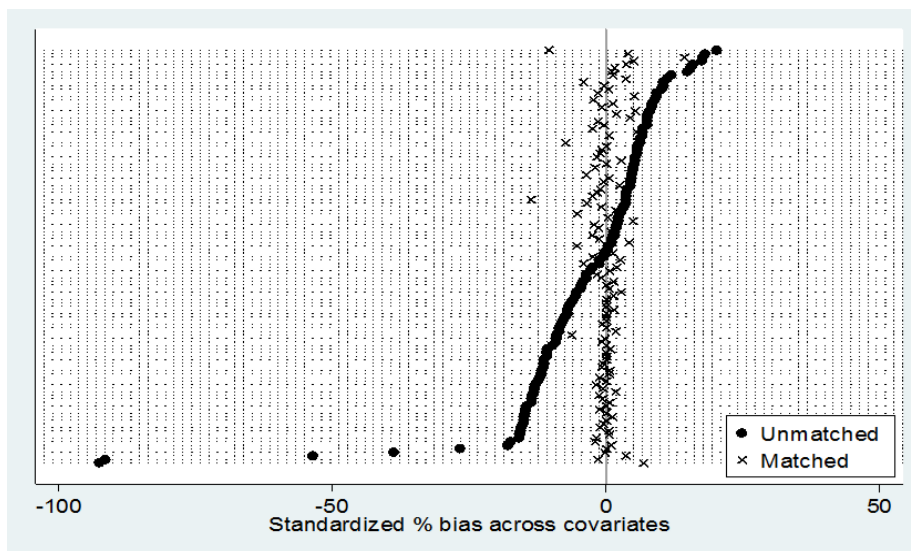
Figure 6. Scatter diagram of differences in matched/unmatched groups for 2013–2014.
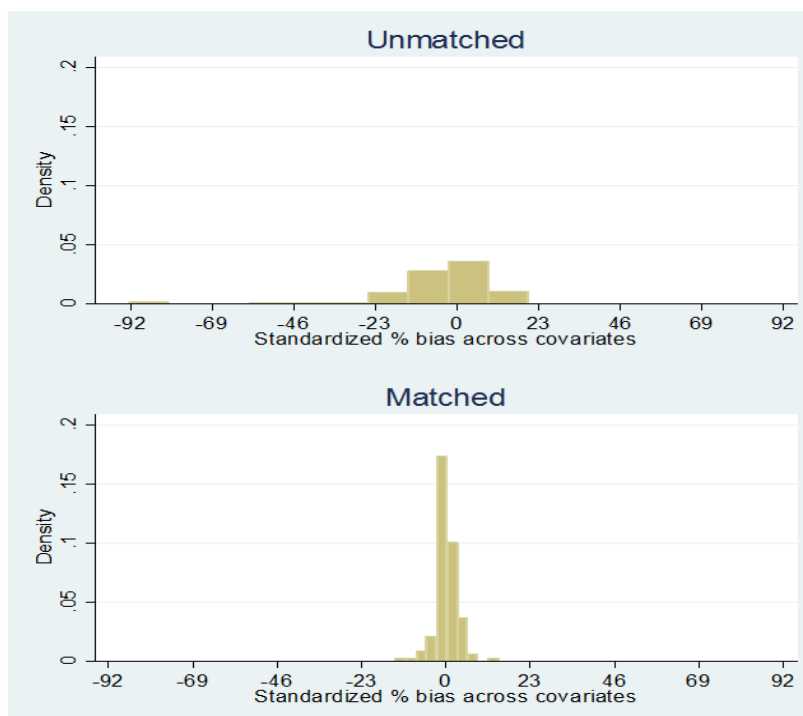

Figure 7. Standardized bias differences in unmatched/matched groups for 2013–2014.

The mean values of each variable, standardized proportion of bias and t-test results are reported in Table 9. It is observable from the table that after performing matching, all the covariates have significant means and t-statistics. Further, it is also depicted in the table that after the matching, the proportion of bias for each covariate has significantly declined.

5. CONCLUSIONS

This study investigates the flow and impact of remittances on the internal mobility of workers in Pakistan and households' wellbeing. Wellbeing is measured using the Multidimensional Poverty Index (MPI) developed by employing the UNDP approach, while the problem of self-selection in the data is addressed by using a matching approach. Specifically, the Propensity Score Matching (PSM) method is applied to estimate the effect on the treated group for the impact of remittances on MPI. For the study purpose, the Household Integrated Economic Survey of Pakistan (HIES) data for 2013–2014 is employed. Estimates suggest that remittances fail to reduce poverty.

However, the evidence suggests that foreign remittances in Pakistan have made a substantial contribution to enhancing the wellbeing of the migrant households, but internal migration was found to enhance poverty instead of reducing it. To conclude, as literature usually sighted that the overseas migration results in employment generation and improves the economic and social status of households, contrary to this contribution of internal migration or domestic remittances is significantly negatively related to poverty reduction. The reason may be that internal migration in Pakistan is because of the unbalanced development strategies of urban and rural areas adopted since independence. Lack of available opportunities in rural and small urban areas has exerted pressure on large cities, which has led to urban danger. Hence, there is a need to implement development strategies in such a way that makes internal migration productive and enhances opportunities for poor migrants.

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