

Foreign Remittances and Poverty Alleviation in Pakistan

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ABSTRACT

We estimate the role of remittances in poverty alleviation in Pakistan. We use methods that improve on those deployed in previous studies, resulting in a more rigorous attribution of causality to the remittance channel. We find that remittances make a large contribution to reducing poverty for those households that send out migrants. The effect is much larger for remittances from overseas than from domestic migrants. However, the link between remittances and global oil prices may introduce a new source of income volatility to low-income households.

1. INTRODUCTION

Remittances from workers abroad are an important source of income in many developing countries. At the beginning of this century about 175 million people – almost 3% of world population – were living and working abroad (United Nations, 2002). Remittance flows to developing countries increased from US\$400 million in 1970 about \$436 billion, sent by over 250 million workers, in 2014 (Ratha et al. 2015).

Foreign remittances improve the welfare of recipient households and also strengthen the home country's macroeconomy by serving as a source of foreign currency and thus contributing to a surplus on the balance of payments. However, there is conflicting evidence on the relationship between remittances and growth. Some studies find a positive relationship with growth (Faini 2002 and 2003; Adelman and Taylor 1990; Durand et al. 1996; Ekanayake et al. 2008). But other studies have found either no relationship (Spatafora 2005) or even a negative one (Chami *et al* 2005). There is, however, a greater consensus that remittances reduce poverty, whether the estimates are derived from cross-country data (Adam and Page 2003 and 2005; Acosta et al. 2007; Banga and Sahu 2010; Gupta *et al.* 2009; Jongwanich 2007; Ratha and Mohapatra 2009; Le Goff 2010; Serino and Kim 2011; United Nations 2011), cross-sectional data (Adams 1991;

Gustafsson & Makonnen 1993; Adams 2004; Adams 2006; Adams et al. 2008; Acosta et. al. 2007; Jemenez et al. 2008; Gubert et al 2010; Biyase 2012; Kibikyo and Ismail 2012; Adam and Cuecuecha 2013; Waheed et al. 2013; Devkota 2014) or panel data (López-Cordova 2005; Pernia 2010; Ismai et al. 2012).

There have recently been a number of time-series studies of the remittances-poverty link in Pakistan (Siddique and Kemal 2006; Kalim and Shahbaz 2008; Mughal and Diawara 2010; Javid et al. 2012; Shafique et al. 2012; Faridi and Mehmood 2014, and Pervaiz and Rizvi 2014). These studies estimate the long run relationship between poverty and remittances (along with other variables) using the time series data from 1963/1973 to 2005-06/2010-11. They show a positive relationship between remittances and poverty alleviation. However, there are some reservations about this use of poverty data. Pakistan's poverty data series are incomplete, so a time-series approach requires interpolation for missing years. Further, the data are not strictly comparable across years because the data collection methods and questionnaires have changed over time (PBS, 1999).

There are also two cross-sectional studies using Pakistan data (Mughal and Diawara 2010, and Cheema and Sial 2012). These studies estimate the relationship between poverty and remittances for the years 2001 and 2005-06 and 2005-06 respectively. However, these studies use models that assume remittances to be exogenous. It is more correct to regard remittance income as a potential substitute for earnings that individuals could have generated had they not chosen to migrate (Adams 1989; Barham and Boucher 1998; Acosta et al, 2007). Whether remittances are taken as exogenous, or as potential substitute for domestic earnings, is an important distinction. In the former case, the question is how the remittances affect poverty, in total or on the margin in the receiving country. But in the latter case the question is how the observed poverty compares to a counterfactual scenario without remittances but incorporating an imputation for domestic earnings of the migrants had they not migrated. This latter treatment is more rigorous, and also more interesting, as it compares poverty without and with remittances in the country.

Figure 1 shows the trend of foreign remittances to Pakistan. There was little growth in these between 1991-92 and 2000-01, but after this they rose sharply in almost every year. The value of remittances from all sources rose from \$2.3 billion in 2001-02 to \$15.83 billion in 2013-14. One driver of remittances growth was a huge increase in migrants to the Gulf states, especially the

Kingdom of Saudi Arabia (KSA) and the United Arab Emirates (UAE). This is evident from country data shown in figure 2.¹ As far as the contributions of different countries are concerned, USA was the biggest source of remittances to Pakistan from 2001-02 to 2008-09. Between 2009-10 and 2010-11 UAE and KSA were the biggest sources. Subsequently, KSA has emerged as the dominant source, followed by UAE.

[Figure 1 about here]

[Figure 2 about here]

Figure 1 also reveals that there was again a sharp rise in remittances after 2009-10. The possible reasons are the increase in migrants especially to KSA and UAE (Figure 2) and the establishment in 2009 of the Pakistan Remittance Initiative (PRI), which was designed to facilitate faster, cheaper and more convenient remittance flows and to create investment opportunities in Pakistan for overseas Pakistanis.

The increasing dollar figures are matched by a rising share of remittances in Pakistan's GDP, from 1.5% in 2000 up to about 6.5% in 2014.² Foreign remittances to Pakistan, at almost \$16bn in 2013-14, were equal in value to 2/3 of total merchandise exports, and were about four times greater in value than the largest single merchandise export item, cotton. In other words, Pakistan's biggest export, by far, is labor services. Although there is substantial remittance income from a fairly small number of high-skilled migrants working in wealthy countries, the vast majority of Pakistani workers abroad are blue-collar workers from quite modest backgrounds. Therefore the likelihood that migration and remittances impacts household poverty is high.

In this study we aim to estimate the role of remittances in poverty alleviation in Pakistan. We use methods that improve on those deployed in previous studies, resulting in a more rigorous attribution of causality to the remittance channel. We find, in brief, that overseas remittances make a very large contribution to reducing household poverty, but that given the low pre-

¹ There are some other possible drivers of this rapid increase in measured remittances. These include a better rate of exchange offered in the interbank market as against open market, aggressive marketing by Pakistani banks abroad motivating expatriate workers to remit through bank channels, and a crackdown on the hundi/hawala system of informal remittance transfers in the Middle East and elsewhere (Govt of Pakistan, 2002-03).

² This is by no means a historical high. That was reached in 1980-83, when world oil prices peaked following OPEC-II; at that time, Pakistan's remittance income reached 8-10% of GDP. During the 1990s, when oil prices were historically low, remittances fell from 5% GDP (1990) to a 35-year low at 1.5% (2000). For a historical chart see <https://fred.stlouisfed.org/series/DDOI1PKA156NWDB>.

remittance incomes of migrant-sending households, this strategy is not a panacea for persistent, severe poverty.

The remainder of the paper is structured as follows. Section 2 discusses data and methodology. Section 3 presents and discusses estimation results. A final section draws conclusions and offers some policy implications.

2. DATA

Our study uses data from the Pakistan Social and Living Standards Measurement Survey 2011-12 (hereafter PSLM). The universe of PSLM comprises rural and urban areas of all four provinces of Pakistan. The Pakistan Bureau of Statistics sampling frame divides all urban areas into small compact areas called enumeration block (EBs). Each enumeration block consists of about 200-250 households categorized into low, middle and high income groups, keeping in view the socio-economic status of the majority of households. In rural areas, the sampling frame is based on each village (or equivalent administrative unit) identifiable by its name, or in the case of more scattered populations, by other official identifiers. The urban-rural stratification is as follow: each city with populations of 500,000 or greater is treated as an independent stratum. Each of these cities is then sub-stratified into low, middle and high income groups. The remaining cities/towns within each defunct administrative division are grouped together to constitute an independent stratum. The entire rural domains of the districts of Punjab, Sindh and Khyber Pukhtoon Khwa (KPK) provinces are regarded as independent strata, whereas in Baluchistan province strata are based on the division, a now-defunct administrative unit (PBS 2013).

The survey uses a two-stage stratified sample design. Enumeration blocks in the urban domain, and villages or equivalent units in the rural domain are taken as primary sampling units. In the urban sample the primary sampling units (PSUs) in each stratum are selected by the probability proportional size (PPS) method, using households in each block as a measure of size (MOS). Similarly, in rural areas, the population of each village is taken as a MOS for selection of sample villages using the PPS method. Households within each sample primary sampling unit are considered as secondary sampling units. Between twelve and sixteen households are selected from each sample enumeration block and village respectively by systematic sampling scheme

from a random start (PBS, 2013). The population surveyed in different provinces, along with rural-urban breakdown, is shown in Table 1.

[Table 1 about here]

Figure 3 shows poverty rates from the recent rounds of PSLM. These reveal a continuously decreasing trend from a headcount ratio of over 35% in 2001-02 to just 15% in 2010-11. This decline in the headcount ratio coincides with increasing remittances as shown in Figure 1. The question we seek to address is whether remittance income plays any role in reducing household poverty.

[Figure 3 about here]

The PSLM data were not collected for the purpose of estimating the relationship between remittances and poverty, but questions asked in the survey can help with investigating this relationship. The survey contains information on income, expenditure, age, education, value of remittances income received, number of family members and property, and other economic variables. However, it has much less information about migrants working abroad or about the nature or timing of remittances. For example, there is no information about the number of migrants from any household, or about their characteristics such as age, education etc. On remittances, only the following information is solicited in the survey (PSB 2013):

- (i) Remittances received (in cash) from outside Pakistan which will not be repaid;
- (ii) The main means by which remittances are received from outside Pakistan:
 - (a) amount received through banks
 - (b) amount received through informal transfer systems³
 - (c) amount received through mobile banking
 - (d) amount received from other sources;
- (iii) The relationship to the household head of the person from whom the major part of the remittances is received.

The questionnaire records information only about remittances received as money, so we are unable to include in-kind gifts. If the questionnaire records that a household is receiving internal or foreign remittances, then that household is considered a remittance-receiving household and

³ Called *hundi* in Pakistan; known more widely as *hawala*.

the value of internal or foreign remittance income received is recorded. On the other hand, if a household reports having a migrant or migrants but they do not send back money or goods, it is classified as a remittance-non receiving household. The questionnaire does not record the number or sex of migrants from a household. So following Rodriguez (1998) and Acosta et al, (2007), we assume that the amount received by the household has been sent by only one migrant.

Table 2 shows the distribution of survey households receiving foreign remittances. About five percent of households are recorded as receiving foreign remittances in 2011-12. The provincial breakdown shows that percentage of the households receiving foreign remittances is highest in KPK (11%), followed by Punjab (6%) and Baluchistan (1.2%), and is lowest in Sindh (0.62%). The receipt of remittances is at about the same rate in urban areas (5.3%) and in rural areas (5.5%).

[Table 2 about here]

Table 3 summarizes the distribution of foreign remittances and the stock of Pakistani workers abroad by host country. About 50% of Pakistani workers abroad are in KSA and 17% are in UAE, with an additional 13.6% in other Gulf states or oil-producing North African countries. In total, employment in oil-exporting countries accounts for over 80% of all Pakistani workers abroad. The main source of remittances is the Kingdom of Saudi Arabia (40%), followed by Dubai (18%) and other oil exporters (13.2%). Over 82% of total foreign remittance receipts come from these countries.

[Table 3 about here]

3. ESTIMATING POVERTY EFFECTS OF REMITTANCES

In this section we first report on our methods for the estimation of household poverty. We then present methods for estimating the relationship of remittances to poverty.

3.1. Calculating real income and the poverty line

We use consumption expenditure as a welfare indicator. Consumption is considered a more direct indicator of achievement and fulfillment of basic needs, and is more easily observable and measurable than income, especially in developing countries. According to life cycle theory,

individuals seek to smooth consumption across periods of low and high income through borrowing and saving. So consumption is also less volatile than income.

To estimate the poverty line we draw on methods and results reported in Cheema and Sial (2014). The poverty line is determined using a calorie-based approach based on data from the Household Income and Expenditure Survey for 1998-99. Caloric requirements are not the same for the children and adults, or even for females and males. This is addressed by applying nutrient-based equivalent scales (1985) prepared by the Planning Commission of the Government of Pakistan (2002). Price differences between different areas are accommodated using a Paasche price index estimated at the primary sampling unit level. The expenditures of children and adults are not the same. So following World Bank (2002) and Federal Bureau of Statistics (2001), we adjust for these differences by using weights (1 for adults aged 18 and above, and 0.8 for children less than 18), and in this way estimate real per adult equivalent expenditure rather than per capita.

The poverty line is estimated by running a log-log ordinary least squares regression on the first three expenditure quintiles using 2,350 calories per adult equivalent, again following the Planning Commission method. To get the poverty line for other years we follow World Bank (2001), using a composite price index (a combination of consumer price index (CPI) for non-food and non-fuel items and Tornqvist price index (TPI) for food and fuel items). With these methods we can estimate an absolute poverty line for 2011-12 that is constant and consistent across regions and over time.

With expenditure data and the poverty line estimates in hand, we calculate the three Foster, Greer and Thornback poverty measures using the standard formula:

$$P_{\alpha} = \frac{1}{n} \sum_{i=1}^q \left[\frac{z - y_i}{z} \right]^{\alpha},$$

where z denotes the poverty line and y is our consumption-based welfare measure. In this expression, if $\alpha=0$ we obtain a headcount ratio: if $\alpha=1$, we obtain the poverty gap, and if $\alpha=2$, we obtained the squared poverty gap.

3.2. Migration, remittances and income

Evaluating the impacts of remittances on poverty is complicated by the endogeneity of the migration decision, as a result of which simple comparisons of welfare across subgroups of households with and without remittance income are inconsistent. Domestic and foreign migrants are not included in the household survey data, so it is not known what any individual households' income would have been had those workers remained at home. More specifically, comparisons among the three groups of households—those receiving no remittances, and those receiving remittances from either domestic or foreign sources—are misleading without taking into account the earnings that migrants would have generated at home. Correcting for foregone earnings is important even for households in areas with high unemployment and low average earnings, because migrant workers are typically positively selected on ability or other productivity-related traits. Therefore, a household that sends out a migrant worker is often losing one of its most productive members.

This problem can be overcome by constructing counterfactual earnings without migration and remittances. These include an imputation for the earnings of migrant workers had they remained and worked at home. The counterfactual can be constructed by first dividing all households into three groups, as mentioned in the previous paragraph. By treating the first group as a random draw from the population, a mean regression of per-adult equivalent expenditure is estimated for such households, and then the resulting parameter estimates can be used to predict expenditures for households belonging to second and third groups. But this approach is valid only if the households that are receiving and not receiving remittances do not differ systematically in their unobservable characteristics. Violation of this assumption results in regression results that are biased (Mckenzie and Sasin 2007; Adams 2011; Chukwuone et al. 2012; Devkota 2014). To resolve this selection bias problem, we follow Adams (2006) and make use of a multinomial logit selection model.

To paraphrase Adams, the multinomial logit selection model is based on two equations, a choice equation which captures migration and receipt of remittances, and an income equation which estimates the determination of income conditional on receipt of remittances. Define an indicator variable $r \in \{1,2,3\}$ taking a value of 1 if households receive no remittances, 2 if they receive

domestic remittances, or 3 if they receive foreign remittances. Income can then be explained as follows:

$$Y_r^* = m_r \alpha_r + \varepsilon_r \quad (1)$$

$$Y_r = n_r \beta_r + \sigma_r \mu_r \quad (2)$$

where m_r and n_r are matrices of independent variables for households in group r , α_r and β_r are group-specific coefficients, and where errors are assumed to be independent of all the components of m and n for all $j, j=1, \dots, R$ and $\mu_r \sim N(0,1)$. Equation (1) is estimated across all observations and indicates the households' choice decision about migration and receiving remittances. A household i selects the strategy that generates the highest income, that is, it chooses option r if and only if

$$Y_{ri}^* > \text{Max}(Y_{ji}^*) \quad j \neq r \quad (3) .$$

In reality Y_{ri}^* is not observable; the surveys tell us only which choice has been made, or the value of r , by each household. This is modeled as household specific explanatory variables estimated as multinomial logit and considering the same variables across all households.

The second equation applies to only those households selected as belonging to group r (separate equations apply to households selecting into other groups). This equation estimates the income of the household as a function of relevant explanatory variables. In this case the dependent variable (real per adult equivalent expenditure) is both observable and continuous. Because of the likelihood of selectivity bias, however, both equations must be considered together. They can be jointly estimated by a two-stage procedure such as the Heckman method. Such estimates include a selectivity term (the Inverse Mills Ratio, IMR), derived from the multinomial model estimation, and included in the second equation. In this situation the second equation can be estimated by OLS and will yield consistent estimates.

To operationalize such a two stage procedure, it is essential to identify variables that are distinct for migration and the receipt of remittances in the first stage equation. The model is identifiable if there is at least one independent variable in the first stage choice function that is not included in the second stage income function. Factors that affect migration and receipt of remittances in

the choice function, but which do not affect income of household in the income function, then identify the model.

The first-stage multinomial logit model to be estimated is as follows. Let the dependent variable Y take a value of 1 if a household sends out a migrant worker and receives remittance income, and a value of 0 otherwise. The equation to be estimated is:

$$\text{Prob}(Y) = f(\text{agehh}, \text{agehhsq}, \text{hhsiz}, \text{hhsizesq}, \text{livestock}, \text{prim}, \text{middle}, \text{matric}, \text{college}, \text{higher}, \text{migdensity}, \text{dowry dependency ratio}, \text{landhav}, \text{Punjab}, \text{Sindh}, \text{KPK}, \text{rural})$$

(4)

where agehh is age of household head and agehhsq is its square, hhsiz is household size, hhsizesq is household size square. Livestock is owning livestock. Prim , middle , matric , college and higher are, respectively, the number of individuals with 5, 8, 10, 12-14, and 16 years of education. Migdensity is the number of migrants divided by total population in a stratum*adults in a household. $\text{Dowry dependency ratio}$ is the ratio of number of unmarried girls to all adults in a household. Landhav is land having. The remaining variables are provincial and rural dummies.

We use household head age and its square to capture the intuition that the older is the household head, the greater the chance that his or her children will be migrants because the offspring of older household heads are themselves older (i.e. more likely to be of working age). So there are more chances for such household to receive remittances (Adams 2006; Devkota 2014). The expectation is that the sign of age and age squared of household head will be negative and positive respectively. This variable will identify the model, meaning that the sign of age and square of the age of the household head will reverse in the multinomial logit model and the income regression model.

A larger household size means greater total household expenditure. For given productive assets (such as land and livestock), a larger household is more likely to see to meet its expenditures by sending one or more members of working age into an external labor market. Further, there is also widespread unemployment and underemployment in Pakistan. Thus household size is expected to be positively related with migration (Adams 2006; Devkota 2014). Livestock ownership is also another variable to affect migration. Livestock is an important source of income in Pakistan,

especially among lower-income households. The need to tend livestock on a daily basis leads us to expect that that livestock ownership is negatively related with migration.

Human capital is another important variable as better-educated individuals enjoy greater mobility in domestic and foreign labor markets. However, the educational requirements for Pakistani laborers recruited to Gulf States are quite low. As a result we expect that the propensity to migrate abroad could be bimodal in education, with larger proportions of migrants coming from very highly educated as well as very poorly educated households.

According to Adams (1993, 2006) and Lipton (1980) migration is related to the life cycle hypothesis. According to this hypothesis, people of working age earn more in order to save for future and to retire their past debts. Further, if an area has a higher proportion of migrants, there are more chances to migrate. In order to capture this, we add migdensity, which is the ratio of number of migrants to total population in a stratum multiplied by adults in a household. We expect that there will be a positive relationship between migdensity and migration.

Finally, the dowry dependency ratio is also an important variable affecting migration. In Pakistan, payment of a dowry at the time of marriage is “almost universal” (Anderson 2007). Dowry payments routinely exceed one year of total household income in value (Anderson 2007; Makino 2015) and the dowry is identified as a major financial challenge for most households (Shah, Arshad and Qasim 2016). The birth of a girl is a signal that the family must increase savings. Women’s participation in the paid labor force is very low, especially in rural areas. To meet these future expenses, therefore, adult household members have to increase income, and this may lead them to migrate to other regions or go abroad. So it is more likely that migrants are drawn from households having a larger proportion of females.

Land is also an important variable affecting migration. Households that own land are more wealthy and may be able to use land as collateral to finance migration.

We estimate the second stage income function as follows. Use E to define real per adult equivalent expenditures, as discussed earlier. Then the equation to be estimated is:

$$E = f(\text{agehh}, \text{agehhsq}, \text{hhsiz}, \text{hhsizesq}, \text{livestock}, \text{prim}, \text{middle}, \text{matric}, \text{college}, \text{higher}, \text{migdensity}, \text{dependency ratio}, \text{Punjab}, \text{Sindh}, \text{KPK}, \text{rural}) \quad (5)$$

Province and rural fixed effects are included to take account of time-invariant differences across these spatial and administrative divisions. Age and age squared of the household head will identify the model as already discussed. It is expected that the age of household head will affect E positively, but that its square will take a negative sign.

3.3 Estimating net gains from migration and remittances

Counterfactual household expenditures are estimated as follows. We first estimate the multinomial logit model (4). We then estimate the inverse Mills ratios and incorporate these into the expenditure equation (5) of those households who do not receive remittances, whether domestic or foreign. If the coefficients of the IMRs are not statistically significant, it means that the population group is a random draw from the population and OLS can be used in estimation.

In our case, the IMRs are statistically significant. So we utilize these parameter estimates to predict the incomes and expenditures of households that receive domestic or foreign remittances. These incomes are added to the remittance receipts of those households who receive remittances. As mentioned earlier, we estimate real remittances per adult equivalent rather than per capita nominal domestic/foreign remittances.

4. RESULTS AND DISCUSSION

4.1 Data and estimation results

Descriptive statistics for the models to be estimated are given in table 4. The survey households are divided into three groups: those receiving no remittance income, and those receiving remittance income from domestic and foreign sources respectively. The total number of households is 15,807. Food and fuel expenditure data are missing for one household, so the usable number for estimation is 15,806. Of these, 13,333 households receive no remittances; 1,612 households receive domestic remittances, and 861 households receive foreign remittances. There are 72 households that receive remittances from both sources. We include them with the foreign remittance-receiving group.

[Table 4 about here]

The table shows that heads of households who receive remittances from any source are older than those in households that do not. Households in receipt of foreign remittances are larger than

others. The percentage of household members who have never attended school is lowest in the households that receive foreign remittances, and the percentage of all other education levels is highest in the same households.

The multinomial logit estimates are given in table 5. The coefficient of age and squared of age of household head are negative and positive respectively, as hypothesized. When the household head is young, children of the household are more likely to be studying and less likely to migrate. When the head is older, those children may have completed their education and have more chances to migrate. These results are consistent with Acosta (2007) and Dimova and Wolff (2008).

The coefficient of household size squared for households receiving domestic and foreign remittance income is positive, showing that larger households have more family members available to migrate. These results are consistent with Acosta (2007) and Adams (2006). With respect to education, the results are also according to expectation. Households having larger number of members with primary, middle, college and higher education have more chances to migrate and receive remittances, a result also found in Adams (2006) and Devkot (2014). The rural dummy is positive according to expectation for households receiving domestic remittances, but it is negative for households receiving foreign remittances.

The coefficient on the ratio of unmarried girls to adults in the household is positive and highly significant. This very strong result provides support for our hypothesis that such households are driven to send workers out to earn and save for dowry expenses. Though this variable has never been used in prior studies, the magnitude of the estimate and its extremely high significance points to a very large and important phenomenon, and certainly one that merits deeper exploration in the future. The sign of Mig.density is also according to the expectation.

Table 6 presents results of the household income regressions. These estimates are consistent with those of Acosta (2007) and Devkota (2014), but opposite to Barham and Boucher (1998) and Adams (2006). The coefficient of the Mills ratio for households receiving foreign remittances is positive and significant at the five percent level indicating that those households are not merely a random draw from the whole set of households. Further, this result reveals that households that do not have migrants are more likely to have higher per adult equivalent income, which is in

accordance with the argument that the potential migrants compare income at home and abroad when deciding to migrate.

[Table 5 about here]

[Table 6 about here]

Remaining results are also according to expectations.

The age of the household head is positive and its square is negative and significant. Household size is negatively related with per adult equivalent expenditure. This result is consistent with Adams (2006), Acosta (2007). The coefficients of number of individuals with 12/14 years of education and higher education are positive, but statistically significant in the case of the latter. The households with number of individuals having 5, 8 and 10 years of education have lower per adult equivalent expenditure as compared to those who are never attended school and it is significant only in case of 5 and 8 years of education. The possible reasons may be that 1) they may be unable to get jobs, a reflection of widespread unemployment/under employment in Pakistan; or 2) such people may be having a higher reservation wage and thus opt for unemployment over low-paid work. The coefficients of provincial dummies are positive and statistically significant for Punjab and Sindh. The sign of the livestock is positive and statistically significant showing that livestock estimate is an important variable to affect income positively. This result is also according to expectations. The sign of rural is not according to expectation, but insignificant, whereas the sign of dowry dependency ratio is according to priori expectations. The sign of migdensity is also according to the priori expectation.

4.2 Remittances and household poverty

Table 7 shows the prevalence of poverty by household type, as calculated from the above estimates. It shows that the headcount ratio is about 6% in households with no remittances, whereas it is about 6.64% and 9.79% in households receiving domestic and foreign remittances respectively and all these poverty estimates are statistically significant. The poverty gap is 2.9% in households with no remittances, whereas it is only 2.89 % and 3.73% in households with domestic and foreign remittances respectively and all these poverty estimates are also statistically significant. The squared poverty gap, which takes account of the severity of poverty and the distribution of poverty among the poor, is about 2.07 % in households with no

remittances, whereas it is 1.74 % in households with domestic remittances and 1.84 % in households with foreign remittances and again all these poverty estimates are statistically significant. The results of differences in poverty estimates between households receiving no remittances and receiving domestic/ foreign remittances depict that they are statistically significant between only receiving no remittances and receiving foreign remittances in case of only headcount ratio see table 8.

[Table 7 and 8 about here]

Prima facie the table depicts that there should be lower poverty in households receiving foreign remittances as compared to households receiving domestic remittance because mean monthly income (Rs. 6,845) in the former case is higher than that in case of the latter (Rs. 6,211). But the situation is here different from this. The reason can be seen from a breakdown of household mean income by quintile, shown in Table 9. The counterfactual mean incomes of foreign remittance-receiving households in the first and second quintiles are much lower than those of either other household group. In the first quintile, the counterfactual income of households receiving foreign remittances is 20.9 % and 24.35 % less than those of households receiving no remittances and domestic remittances, respectively. The very strong implication is that migration for work abroad is a strategy adopted by very poor households, those whose own resources or opportunities for internal migration are much more limited by contrast with their neighbors.

[Table 9 about here]

Accordingly, foreign remittance income has a large effect on welfare of the poorest households. In the first quintile, household income is over 250 % higher when remittances are taken into account. In the second quintile, the difference is about 77%. Similarly domestic remittance income has also large effect on the welfare of the poorest. In the first quintile income is over 64% higher when remittances are included. In the second quintile it is over 30 %.

Based on counterfactual incomes (i.e. excluding remittance receipts), headcount ratio, poverty gap and squared poverty gap are about three hundred, four hundred and five hundred percent higher in households receiving foreign remittances, whereas these are almost one hundred, one hundred and thirty eight, and two hundred percent, respectively higher in households receiving

domestic remittances as compared to those households who are not receiving any remittances. All these differences are statistically significant see table 8. When remittances are included, headcount ratio, poverty gap and squared poverty gap in the households receiving foreign remittances reduces by about 2, 3 and 5 hundred percent, whereas these decreases by 81 percent, 139 percent and 221 percent respectively in households receiving domestic remittances. These differences show that among poor households, foreign remittances contribute substantially to reducing the most severe poverty—a finding not revealed by looking only at differences in the headcount ratio, since that measure is insensitive to changes in the distribution of income among households lying below the poverty line. The contribution of foreign remittances to reducing the poverty gap and squared poverty gap is larger than that of domestic remittances (consistent with Devkot 2014); among the poor, the benefits of domestic migration and remittances accrue more to households lying closer to the poverty line than is the case for foreign remittances.

5. CONCLUSIONS

The export of low-skilled labor and the countervailing flow of remittance income from abroad is a widespread phenomenon in poorer developing countries. Pakistan has emerged in the past 15 years as a significant source of such labor exports. A large fraction of Pakistani workers abroad come from poor and middle class households and take blue-collar jobs in oil-exporting Middle Eastern states. These locations account for over 80% of Pakistani workers abroad and about 80% of foreign remittance receipts. In this study we estimate the influence of remittances that they send back on the incomes and poverty status of the families that they leave behind. We also explore the causes of outmigration, using estimation methods not previously applied to the Pakistan case and investigating causal factors that have not previously been the subject of research.

Measured headcount poverty in the survey data is about 6 % on average among households that receive no remittances, and about 6.64 % and 9.79%, respectively, among households receiving domestic and foreign remittances. Our calculations based on a counterfactual of no migration show that sending workers out of the household greatly reduces the prevalence of poverty among affected households.

Remittance income receipts are a direct source of additional income for poor households, even after allowing for the income foregone by the departure of a worker from the household.

However, Pakistan's most wealthy households also derive income from remittances—in this case, mainly from more-educated and long-term migrants to wealthy countries like the U.K. and U.S.A. This source of additional household income is also large in the aggregate. Its presence suggests a second channel by which remittance receipts affect the welfare of the poor, through the expenditures of wealthier households on personal services, construction, and other industries that are large employers of low-skill, low-income individuals. This general equilibrium impact through the domestic labor market has not been quantified and merits additional research effort.

Finally, as noted earlier there is a strong correlation between oil prices and remittances—presumably due to the spillover from oil export revenues to construction, services, and other labor-intensive activities in Gulf states. This carries the implication that for poor households electing to send one or more members to work in the Gulf, there is an added element of income volatility transmitted through oil prices. In a time of sustained softness in energy prices, it is worth remembering that for those who send family members to work in the Gulf as a poverty avoidance strategy, the gains may be only as robust as the Gulf economies themselves.

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Table 1: Population covered by province (thousands)

	Without weights			With weights		
	Urban	Rural	Total	Urban	Rural	Total
Punjab	17.95	24.36	42.31	23,814.74	50,954.65	74,769.40
Sindh	12.30	15.93	28.22	15,058.57	15,891.89	30,950.45
KPK	8.74	14.98	23.72	3,109.30	15,093.85	18,203.15
Baluchistan	5.27	6.98	12.24	1,343.02	4,083.92	5,426.94
Total	44.25	62.25	106.49	43,325.63	86,024.32	129,349.95

Source: Authors' calculations from PSLMS

Table 2: Distribution of Households Receiving Foreign Remittances by Province

	Urban		Rural		Overall	
	Remittances receiving households	Total household	Remittances receiving household	Total household	Remittances receiving households	Total households
Punjab	214 (7.26%)	2,949	221 (5.59%)*	3,957	435 (6.30%)*	6,906
Sindh	21 (1.12%)*	1,897	5 (0.22%)*	2,301	26 (0.62%)*	4,198
KPK	115 (9.08%)*	1,267	268 (13.40%)*	2,009	363 (11.08%)*	3,276
Baluchistan	8 (1.28%)*	629	9 (1.13%)*	797	17 (1.19%)*	1,426
Pakistan	358 (5.31%)*	6,742	503 (5.55%)*	9,064	861 (5.45%)*	15,806

Source: Authors' calculations from PLSMS

Numbers within brackets are percentage of households receiving foreign remittances

Table 3: Distribution of remittances received and migrants by host country, 2011-12

Country name	Percentage of remittances	Percentage of migrant population
Kingdom of Saudi Arabia	40.42	49.5
United States	1.54	1.6
Dubai	18.27	4.4
United Arab Emirates	4.17	17.4
United Kingdom	5.92	3.6
Oman	2.53	3.6
Algeria	2.96	2.9
Kuwait	3.46	2.7
Other countries	20.72	14.3
	100	100

Source: Authors' calculations from PLSMS

Table 4: Summary data on remittance non receiving and receiving households

Variables	Remittance non receiving	Internal remittances receiving	Foreign remittances receiving		
			Total	Quintile1	Quintile5
Real per adult equiv. exp. (Rs/mo)	3555	3574	4627	1881	7251
Age of HH head	46.94	49.18	51.09	48.49	52.45
Household size	6.46	5.83	6.85	9.72	5.41
Schooling					
...Never attended	0.87	0.89	0.85	1.00	0.69
...Primary	0.74	0.78	0.82	0.83	0.73
...Middle	0.52	0.56	0.67	0.57	0.67
...Matric	0.34	0.29	0.40	0.30	0.49
...FA/BA	0.29	0.25	0.38	0.13	0.59
...MA and higher	0.12	0.07	0.15	0.02	0.23
Rural	0.64	0.82	0.72	0.87	0.53
Urban	0.36	0.18	0.28	0.13	0.47
Punjab	0.56	0.71	0.63	0.29	0.80
Sindh	0.28	0.03	0.02	0	0.03
KPK	0.11	0.25	0.33	0.68	0.16
Baluchistan	0.05	0.01	0.02	0.03	0.01
Livestock	0.28	0.33	0.30	.34	.28
Land value	.874	.9305	.9345	.86647	.90566
Mig. density	.0937	.1661	.2309	.24896	.20269
Dowry dependency	.6384	.7884	.7181	.78285	.5906
Observations (15,806)	13333 (0.8435)	1612 (0.1020)	861 (0.0545)	53 (0.0616)	382 (0.4437)

Source: Author's calculations from PLSMS

Table 5: First stage remittances and migration choice: multinomial logit model

	Domestic remittances		Foreign remittances	
	coefficient	z-value	Coefficient	z-value
Age of household head	-0.03538	-3.13	-.0774278	-5.5
...Squared age	0.000502	4.62	.0008617	6.48
Household size	-0.27976	-12.01	-.2668307	-9.57
...Squared size	0.006583	7.52	.0071698	7.93
Primary education	0.209523	2.97*	.3861565	3.95
Middle education	0.099902	1.71	.2967145	3.72
Matric education	-0.19222	-3.01	-.0269192	-0.34
FA/BA education	0.058138	0.85	.3225666	3.92
MA and higher	-0.18297	-1.73	.232194	2.11
Punjab	1.337799	4.47	.3106478	1.04
Sindh	-0.39427	-1.21	-1.527947	-4.2
KPK	1.67841	5.53	1.038624	3.42
Livestock	-0.13641	-2.15	-.1785501	-2.03
Land hav	0.524415	5.04	.5956437	4.23
Rural	0.467039	6.06	-.2868719	-3.08
Dowry dependency ratio	0.722782	15.81	.7190323	11.69
Mig. density	4.688418	16.21	6.509073	19.7
Constant	-3.15788	-7.45	-2.143124	-4.42
Number of observations		15806		
Pseudo R ²		0.15		

Reference category: households receiving no remittances

Table 6: Second stage regression (households receiving no remittance)
Dependent variable: real per adult equivalent expenditure

	Coefficient	t-value
Age of household head	166.5132	3.98
... Squared age	-1.4496	-3.9
Household size	-465.223	-7.97
... Squared size	10.08734	6.48
Primary education	-542.494	-3
Middle education	-444.84	-2.33
Matric education	-109.504	-0.68
FA/BA education	411.6403	1.61
MA and Higher	1110.381	2.83
Punjab	2109.161	2.15
Sindh	3141.117	2.94
KPK	888.5551	1.33
Livestock	847.3877	12.47
Landhav	-68.1492	-0.46
rural	898.0901	1.27
Dowry dependency ratio	-383.144	-2.49
Mig. density	-6277.88	-3.04
Millsp1	-1026.49	-2.3
Millsp2	1306.502	2.88
Constant	4479.373	3.56
R ²	0.325	
F-test	340.31 (0.00)	

***significant at 1% level **significant at 5 % level *significant at 10 % level

Table 7: Role of remittances in poverty alleviation

	Coefficient	Standard error	95% confidence interval	
			Lower	Upper
Poverty including remittances				
i-receiving no remittances (Number of observations: 13,333)				
Headcount ratio	6.00	.373	5.27	6.73
Poverty gap	.02900	.00249	.0241	.0339
Squared poverty gap	.02069	.00224	.0163	.0251
Income	5272.72			
ii-receiving domestic remittances (Number of observations=1,612)				
Headcount ratio	6.6428	1.046	4.59	8.70
Poverty gap	.02892	.004997	.01911	.03874
Squared poverty gap	.0174	.003491	.01059	.02430
Income	6211.3	83.63	6046.99	6375.60
iii-receiving foreign remittances (Number of observations=861)				
Headcount ratio	9.786	1.538	6.76	12.81
Poverty gap	.03734	.007192	.02319	.05149
Squared poverty gap	.018419	.004614	.00934	.02750
Income	6845	215.01	6421.49	7267.62
Poverty excluding remittances				
i-receiving no remittances				
Headcount ratio	6.001	.373	5.27	6.73
Poverty gap	.029006	.00249	.0241	.0339
Squared poverty gap	.02069	.00224	.0163	.0251
Income	5273	26.77	5220.19	5325.25
ii-receiving domestic remittances				
Headcount ratio	12.04	1.146	9.79	14.30
Poverty gap	.06913	.00887	.0517	.0866
Squared poverty gap	.05576	.00848	.0391	.0724
Income	4566	65.89	4436.68	4695.59
iii-receiving foreign remittances				
Headcount ratio	26.52	2.541	21.52	31.52
Poverty gap	.1524	.01768	.1176	.1872
Squared poverty gap	.1208	.01679	.0878	.1539
Income	3636	111.75	3415.79	3855.56

Source: Authors' calculations

Table 8: Hypothesis testing

	Coefficient	Standard error	t-values	Confidence interval	
				Lower	Upper
Including remittances					
[Headcount]rnr*-rdr**	-.6408	1.1062	-0.58 (0.563)	-2.811546	1.529842
[Headcount]rnr-rfr***	-3.7846	1.545	-2.45 (0.015)	-6.8173	-.75190
[Poverty gap]rnr-rdr	.00008	.00539	0.02 (0.988)	-.0105135	.0106773
[poverty gap]rnr-rfr	-.0083	.00745	-1.12 (0.264)	-.022963	.0062928
[squared pov. gap]rnr-rdr	.003249	.0039	0.82 (0.410)	-.0044941	.0109935
[squared pov. gap]rnr-rfr	.002274	.00503	0.45 (0.652)	-.0076051	.0121533
Excluding remittances					
[Headcount]rnr*-rdr**	-6.0419	1.201	5.03 (0.01)	-8.3987	-3.6852
[Headcount]rnr-rfr***	-20.519	2.548	-8.05	-25.5199	-15.518
[Poverty gap]rnr-rdr	-.04012	.00911	-4.40	-.05801	-.02222
[poverty gap]rnr-rfr	-.123406	.017858	-6.91	-.1584497	-.088363
[squared pov. gap]rnr-rdr	-.03507	.00860	-4.08	-.0519553	-.01819
[squared pov. gap]rnr-rfr	-.100137	.01700	-5.89	-.133503	-.06677

*=receive no remittances, **=receive domestic remittances, ***=receive foreign remittances

Source: Authors' calculations

Note: p-values within parentheses.

Table 9: Predicted mean income in households receiving/not receiving remittances

Quintile	Non Remittances		Domestic Remittances		Foreign Remittances	
	Excluding	Including	Excluding	Including	Excluding	Including
First	2418	2418	1516	2487	571	2000
Second	4373	4373	3713	4830	2445	4347
Third	5434	5434	4837	6167	3858	6151
Fourth	6377	6377	5716	7499	4934	8161
Fifth	7762	7762	7065	10112	6402	13581
Overall	5273	5273	4566	6211	3636	6845

Source: Author's calculations

Table 10: Number and percentage of households receiving remittances by quintile

Quintile	HHs receiving domestic rem.	Percent	HHs receiving foreign rem.	Percent
First	175	10.86	53	6.16
Second	227	14.08	90	10.45
Third	341	21.15	131	15.21
Fourth	401	24.88	205	23.81
Fifth	468	29.03	382	44.37
Overall	1,612	100	861	100

Source: Author's calculation from PLMS

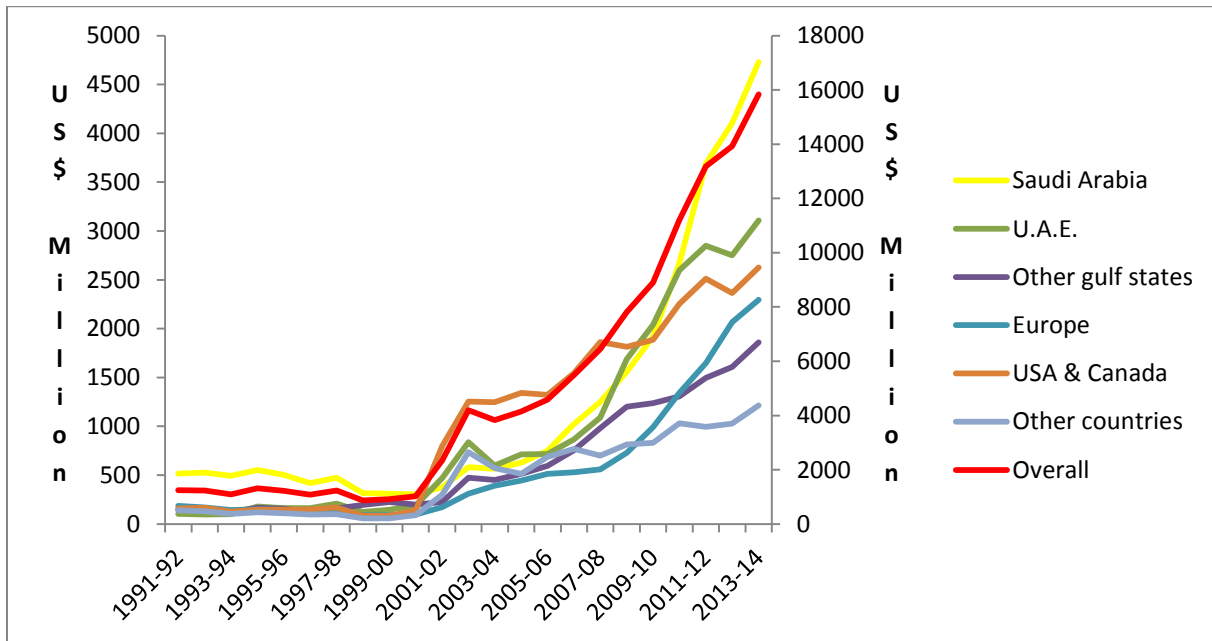


Figure 1: Foreign remittances to Pakistan by country, 1991/2 to 2013/14.

Source: Economic Survey of Pakistan, 2014-15

Note: overall on right axis, country-specific on left axis

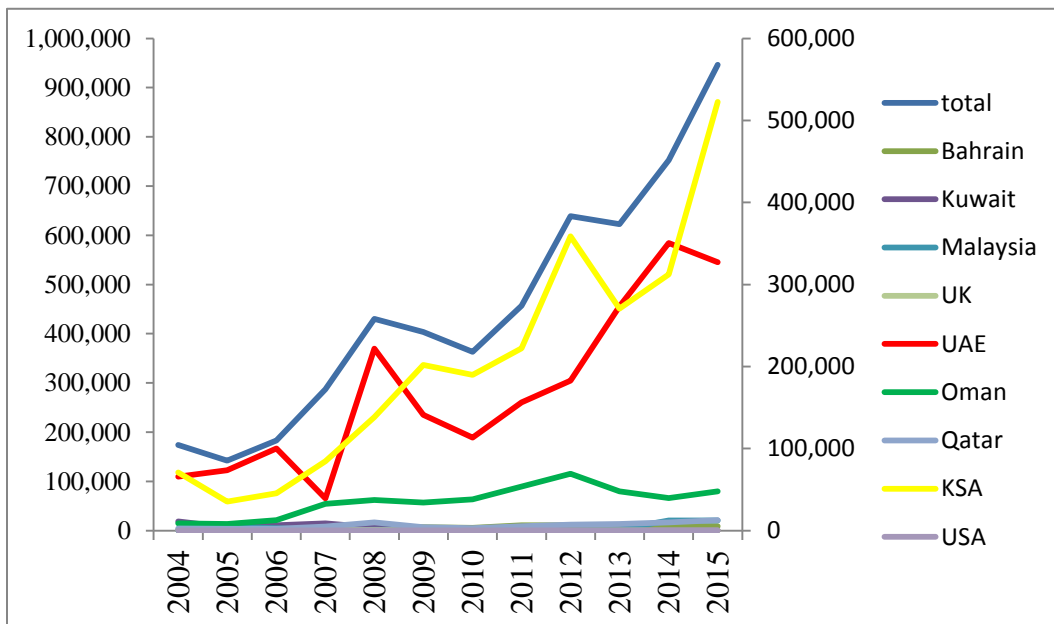


Figure 2: Pakistani migrants by host country, 2004 to 2015

Source: Bureau of Emigration and Overseas Employment, Govt. of Pakistan

Note: total on left axis, country specific numbers on right axis

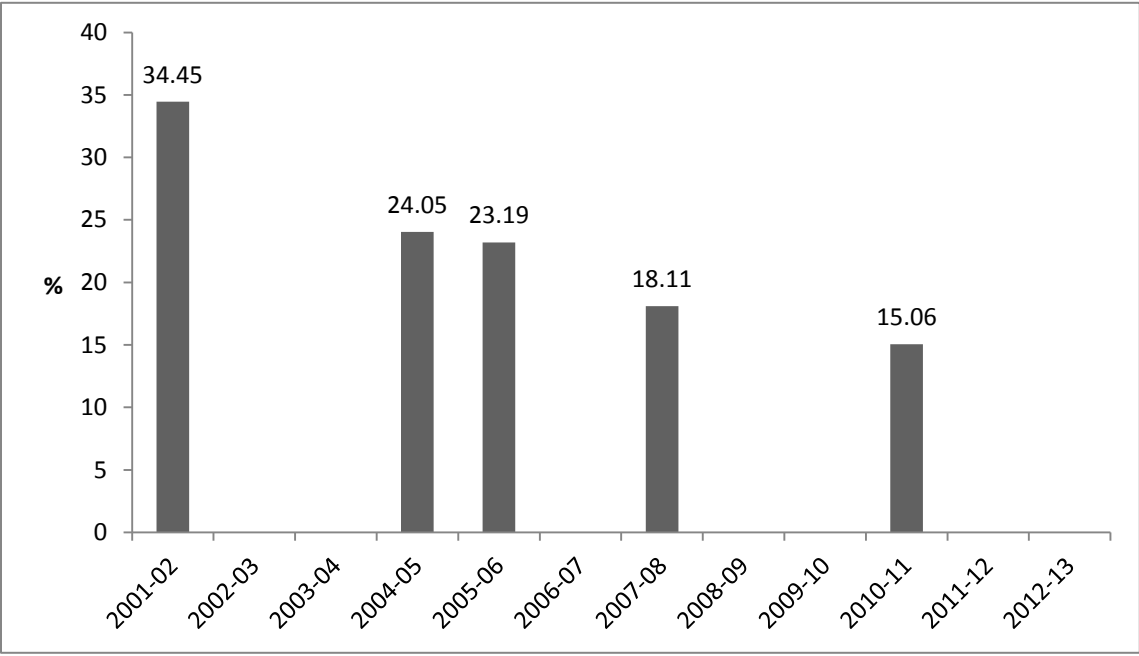


Figure 3: Headcount ratio, 2001-02 to 2010-11

Source: Cheema and Sial (2010, 2014)