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**Remittances and Poverty Linkages in  
Pakistan: Evidence and Some  
Suggestions for Further Analysis**

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## INTRODUCTION

Global remittances experienced a dramatic increase over the years, particularly since 1990 wherein the developing world emerged to be the major beneficiary accounting for 60 percent of the total amount. Because of the sheer volume, and magnitude of the remittances, and pre-eminence of these flows compared to the FDIs, development assistance and in some cases the trade related transactions, the development practitioners tended to focus and investigate the importance of remittances which are generally regarded as a dependable source for growth, improved welfare and poverty alleviation in the developing world. Given the fact that remittances flows entail wide ranging ramifications both for sending as well as receiving countries, difficult to be generalised, hence empirical evidence has been mounted though lack of consensus is visible.

Remittances directly generate a rise in the recipients' income, smoothening consumption and facilitating investment in human capital, a major source of development. The indirect effects of remittances on poverty are felt through GDP growth, enhanced fiscal space and access to foreign exchange. These favourable developments highlighted by eminent researchers were counter-balanced as well. For instance emergence of moral hazard, low share of the poor in the remittances and the negative effects of appreciation of real exchange rate were pointed by the investigators too. While the literature review is detailed in a separate section, we first look at the growth and regional distribution of remittances.

### **Global Remittances, Growth and Regional Distribution (1976-2010)**

Remittances, according to World Bank staff estimates roughly quadrupled during 1976-2010 (see Table 1). During the first twenty years overwhelming proportion of global inflow was destined to high income countries accounting for over 60 percent of the remittances. Since 1990, however, the trend changed wherein the developing countries emerged as major recipients. Almost three-fourths of remittances inflow was acquired by developing countries in 2009. These changes in the direction of remittance flows have been generated by varying migratory scenes associated with changes in the demographic levels as well as age structure and the developmental profiles of both high income and developing countries.

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Table 1

*Remittances Inflows (US\$ Million)*

	1976	1980	1990	2002	2009	2010 (Estimated)
World	11740	36696	68384	169243	415977	440077
High Income Countries	7417	18930	37510	58266	108890	114611
Developing Countries	4323	17766	30874	111018	307088	325466
South Asia	1086	5295	5571	24137	74850	82585
East Asia	47	1047	3089	27018	85686	91160

Source: World Bank Staff Estimates.

Within the global context, the South Asia and East Asian regions registered a tremendous increase in their volumes of global remittance almost eighty to ninety times rise during this period. In relative (percentage) terms East Asia outpaced the South, the percentage share of the former 3 percent in 1980 jumped up to 21 percent in 2010 whereas the latter experienced a modest gain from 14 percent to 19 percent during the same period. Within South Asia, India ranked first in fetching the remittances to be followed by Pakistan during 1976-90 period. Since 1996, Bangladesh secured the second position in the ranking while Pakistan was relegated to third position (see Table 2).

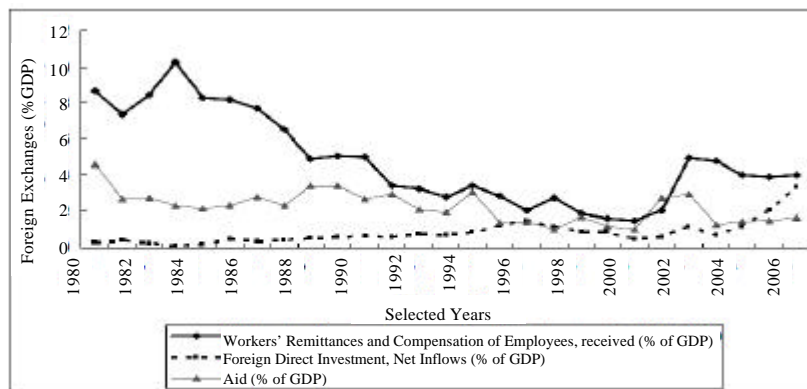
Table 2

*Average and Annual Remittances Inflows of SAARC Countries*

		(US\$ Millions)					
		Bangladesh	India	Maldives	Nepal	Pakistan	Sri Lanka
Average	1976-80	145	1,387	–	–	1,228	56
	1981-85	511	2,469	2	–	2,543	281
	1986-90	725	2,444	1	–	2,104	358
	1991-95	1,008	4,358	2	54	1,606	629
	1996-2000	1,650	10,517	2	71	1,247	1,011
Annual	2001	2,105	14,273	2	147	1,461	1,185
	2002	2,858	15,736	2	678	3,554	1,309
	2003	3,192	20,999	2	771	3,964	1,438
	2004	3,584	18,750	3	823	3,945	1,590
	2005	4,315	22,125	2	1,212	4,280	1,991
	2006	5,428	28,334	3	1,453	5,121	2,185
	2007	6,562	37,217	3	1,734	5,998	2,527
	2008	8,941	49,941	3	2,727	7,039	2,947
	2009	10,523	49,256	3	2,986	8,720	3,363
	2010e	11,050	55,000	3	3,513	9,407	3,612

Source: World Bank staff estimates based on the International Monetary Fund's Balance of Payments Statistics Yearbook 2008.

In case of Pakistan the 1980s appeared to be the golden period when around half of the remittances inflow to South Asia was received as compared to 12 percent in 2009. The foreign remittances to Pakistan according to official data declined from US\$ 1467 million in 1991 to US\$ 1086 million in 2000/01 but subsequently the remittance registered a large increase to US\$ 5.6 billion in 2008-09, with recent expectations in 2010-11 to attain around US\$ 11 billion foreign exchange from this source. Whilst Middle East is still the major contributor, the Western countries USA and UK also emerged as prominent in this respect, though their share in total remittances seems to have diminished somewhat since the financial crisis. These remittances account for over 60 percent of exports in 2009-10 and are much more than the yearly FDI (see Figure 1).



Source: World Bank (2010).

**Fig. 1. Selected Sources of Foreign Exchange for Pakistan**

The extent to which the expansion since 2001-02 in these inflows occurred because of a perceived shift from the unofficial to official or banking channels or whether these raises represent additionality is yet to be determined. It may be added that because of global anti-money laundering drives since 9/11 and inclusion of attractive measures such as speedy disposal and competitive exchange rate initiated by the Government to get the remittances diverted to official channels may have had their impact in generating this diversion. It is imperative to distinguish these compositional shifts because the impact of these two different streams particularly on growth and poverty are often claimed to be different. The expansion in the remittances through official channels is expected to provide additional space to the planners of the country while in case of unofficial remittances the foreign exchange simply may not enter the country [Amjad (2010)]. Remittances inflows to Pakistan as recorded by household surveys are scrutinised in this exercise and compared with the official data to

discern the variation in the composition as well as the magnitude of the remittances received by the households.

Remittances, an unrequited transfer from the emigrants to their families are generally viewed in the economic literature as a dependable source of strength in particular for poverty reduction and overall development [see IMF (2006)]. Given that the poverty alleviation is an overarching goal of socio-economic development, the role and effects of the migration and the flow of remittances are increasingly being analysed to better understand the ramifications of this transaction both for sending and receiving countries.

This exercise is envisaged to provide a brief account of the research studies on inter-relationship between remittance inflows from abroad and the poverty levels obtained in the country. This is discussed in Section 1 wherein the literature pertaining to Pakistan as well as international is discussed. Size and distribution of foreign remittances as yielded by Household Income and Expenditures Surveys for 1996-97 to 2007-08 period are depicted in Section 2. An empirical exercise utilising Pakistan's macro level data for 1975-2009 is conducted and its results discussed in Section 3. The final section suggests proposals for additional investigation to better understand the nexus between remittances, poverty, and growth.

## **1. BRIEF LITERATURE REVIEW**

The socio-economic consequences of remittances are wide-ranging though difficult to be generalised. Hence the need for empirical evidence is stressed [Lucas (2004)]. Remittances can directly affect poverty through the rise in the income of the recipient, which in turn smoothens the consumption of the poor and alleviates poverty. It also helps to overcome the working capital constraints by poor households thereby facilitating the recipients to invest in physical and human capital. The remittances can influence the poverty situation indirectly through their impact on economic growth as well as on income distribution, and human capital formation.

There is overwhelming evidence that migration as well as remittances reduce "the level, depth and severity of the poverty" [Adams and Page (2005); IMF (2006); Jongawanich (2007)]. Remittances, admittedly, can influence positively the growth through a number of channels as highlighted in the relevant literature [Taylor (1992) and Faini (2002)]. By releasing the inefficient credit market constraints the remittances can facilitate expansion in the entrepreneurial activities as well as provide much needed funds to finance education and health thereby promoting growth. Positive effects of remittances on the growth through backward and forward linkages of the investment activities can hardly be ignored. Also remittances through official channels improve the creditworthiness of the country and enhance the access to



international capital markets. A number of studies found positive relationship between remittances and economic growth.

There is, however, somewhat lack of concurrence among researchers about the impact of migration and remittances on GDP growth. Some concerns have been expressed that remittances may not benefit the poorest households, because only the relatively better off households participate in emigration, given that it is a costly venture and these households receive the remittances [Stahl (1982)]. Chami, *et al.* (2003) on the basis of 113 cross-country study reported a negative relationship between remittances and GDP growth, and attributed it to moral hazard, generated under the conditions of asymmetrical information associated with the long distance between the remitter and recipient wherein the latter tend to curtail participation in the labour market and productive activities, hence a negative impact on growth. The authors counsel to apply broader framework to study simultaneously the causes and effects of remittances through linking the economics of family with macro-outcome of remittances and migration treating family as a unit of analysis. That the workers' remittance could lead to appreciation of the real exchange rate inflicting economic cost on production of tradable goods sector (the so called Dutch Disease problem) has also been noted by some researchers [Amuedo-dorantes (2004)]. A recent research endeavour [Barajas, *et al.* (2009)] offers a rather pessimistic conclusion that no robust and significant positive impact of remittances over long term growth can be traced, even after properly measuring the remittances and with well specification and instrumentation of growth equations. The authors viewed "that decades of positive income transfers—remittances—have contributed little to economic growth" just like the foreign aid as suggested by Rajan and Subramaniam (2005). In nutshell the controversy regarding the impact of remittances on GDP growth remains unresolved.

## **Research Studies on Pakistan**

### *Survey Based Studies*

The consequences of remittances can be assessed at different levels, households, community, and macro-level. Household level data collected through field surveys in Pakistan have been used to depict the consumption/investment divide of the remittances. It was found that more than 60 percent of the remittances were spent on the consumption while the remaining was spent on construction, real estate and investments [Gillani (1981)]. During their stay abroad, averaged to be 3 to 5 years in the Middle East, the emigrants sent around two thirds of their earning while bring good deal of savings at their final return [Amjad (1988)]. The propensity of Pakistani emigrants to remit out of earnings was estimated to be around 78 percent by a study, based on ILO survey of 1986 of the return migrants [Arif (1999)].

Studies also focused upon the effects of remittances on the poverty too, though the recipient households have obviously benefitted in terms of increased consumption, hence poverty alleviation [Arif (2004)]. Jamal (2004) comparing the household consumption with and without foreign remittances suggested that poverty has declined by 5 percent in 1998-99. A recent study [Moghal and Diawara (2009)] investigated the impact of remittances on both poverty and inequality in Pakistan. This study explored the differential impact of internal and external remittances on these variables in addition to the sources of foreign remittance in terms of regions such as Middle East and North America are also examined. The findings of the study suggest that the international remittances reduce poverty as well as inequality both at macro and micro level. In terms of regional origin, remittances from Middle East are negatively associated with both poverty and inequality while for those from other region the impact on poverty is marginalised. Household savings according to the study emerge to be the principal channel through which the remittances influence poverty in Pakistan.

#### *Analysis of Macro-level Data*

The impact of workers remittances has been examined from different angles in Pakistan using macro data. It was observed that the remittances had a far reaching influence on the domestic labour market, and macro aggregates such as balance of payments [Amjad (1986)]. Time series data have been used to unravel the nexus between the remittances GDP growth and poverty. Using the growth accounting framework GNP growth for 1969-86 period was decomposed into principal components with the conclusion being that remittances have had a positive effect on GDP growth, reduced the current account deficit and improved the debt servicing ability [Burney (1987)].

Declining remittances were regarded to be a major factor explaining the worsening poverty during 1990s [Siddiqui and Kemal (2006)]. That remittances have a positive influence on poverty alleviation but only in the long run, in the short run the remittances have negative effect, attributable to transaction costs associated with emigration was concluded by a study based on 1973-2007 data [Qayum, *et al.* (2008)]. Utilising roughly the same time series data another study reported that remittances do not attain the statistical significance in a multivariate regression as poverty reducing variable [Siddiqui (2008)].

In a recent attempt it was hypothesised that diversion of remittances through official channels have an added effect on poverty alleviation routed through the provision of space to the economy resulting into higher level of growth which impacts on poverty [Amjad (2010)]. The remittances multiplier using a simple Keynesian model for the period 1959 to 1987-88 in a study was estimated to be 2.4 primarily operating through consumption [Nishat and Balgrami (1991)]. Jamal (2004) in his study extended the period to 1973-2003

and found the remittance multiplier to be 3.07 for Pakistan mostly channelled through consumption. The author viewed that role of remittances for investment and growth is negligible in addition the impact multiplier being a short run phenomenon.

Brief literature review carries a good deal of diffidence and lack of concurrence regarding the impact of remittance on growth and poverty alleviation. Cross-country studies yield global results glossing over the differences in the characteristics of the countries, thereby producing varying country specific results. Furthermore, the macro or balance of payment data on remittances are not adequate for deeper investigation of the characteristics of the recipient households which are depicted by household surveys. In the next section the household survey data are used firstly to compare with the official balance of payment data on remittances, and secondly to examine the distribution of remittances among different regions and income classes to infer their impact on poverty.

## **2. SIZE AND DISTRIBUTION OF REMITTANCES BASED ON HIES**

### **Size and Distribution of Remittances**

It is important to construct a time trend estimates of remittances using HIES data and make a comparison with official data on remittances for the period these data are available. This will enable us to confirm the rise in remittance suggested by the official data sources in addition to providing some clues regarding the shift of remittance inflow from Hundi/Hawala to official banking sources as is widely believed. A perusal of remittances distribution will facilitate the inference pertaining to their impact on poverty alleviation.

Household Income and Expenditure Survey (HIES) started collection of information on foreign remittances from 1996-97. For the period since then the estimates are reported in Table 3.

There is a rise in the magnitude of the foreign remittances from Rs 15,946 millions in 1996-97 to Rs 118,970 millions 2007-08—almost seven and a half times during these eleven years. Adjusting for the inflation (CPI) the average annual rise in foreign remittances works out to 3.3 percent. According to HIES, the percentage of households receiving these remittances has risen from 3.1 percent in 1996-97 to 5.0 percent in 2007-08, whereby these remittances inflow accounted for 2.3 percent and 5.3 percent respectively as a share of total household income.

Conversion of foreign remittances estimated on the basis of HIES into the equivalent of US Dollars is indicative of the widening gap between HIES and Balance of Payments or official data reported in Annual Economic Survey.

Table 3

*Foreign Remittances based on Household Income and Expenditure Survey for Different Years*

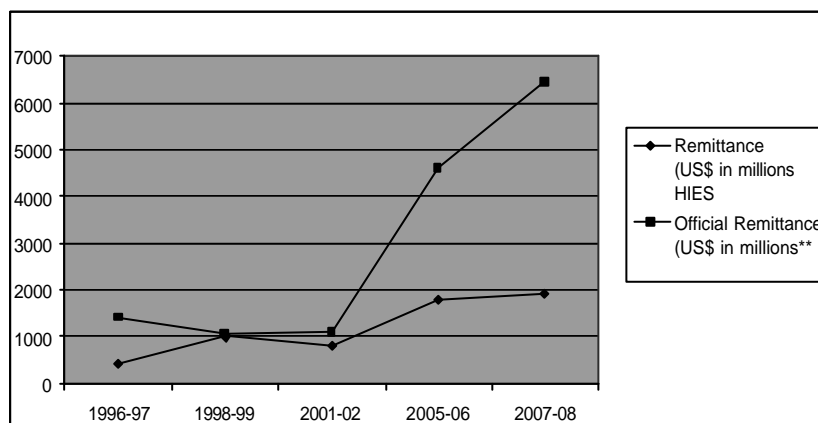
Years	%		Foreign Remittance* (Rs in Million)	Exchange Rates** (Rs / US\$)	Remittance (US\$ in Million) (HIES)	Official Remittance (US\$ in Million)**
	Households Receiving Foreign Remittances	Remittance Amount as of Total Household Income**				
1996-97	3.1	2.3	15946.4	38.99	409.01	1409
1998-99	4.4	5.4	46968.6	46.79	1003.8	1060
2001-02	4.1	5.7	49755.1	61.42	810.1	2389
2005-06	5.5	6.9	107374.5	59.85	1794.1	4600
2007-08	5.0	5.3	118970.5	62.54	1902.3	6451

*Source:* Household Income and Expenditure Survey and PSLMS for relevant years. (Estimates based on household level data).

*Notes:* \* Survey based weighted sum of foreign remittance adjusted by the ratio of total population of Pakistan to the weighted population of Survey.

\*\* Pakistan Economic Survey 2009-10.

Almost one billion Dollar gap between these two sources in 1996-97 widened to 4.5 billion Dollars in 2007-08. Estimates based on HIES were 31 percent of official data in 1996-97 with a slight diminution to 29 percent for 2007-08. There are some dissimilarities in year to year fluctuation as well while there is persistent rise in Rs in HIES data, the balance of payment data indicate a decline in 1998-99 from 1996-97. The HIES data in US\$ indicate a similar dip for 2001-02 attributable to substantial depreciation of Pak Rs to 61.42 per dollar. A sharp departure since 2001-02 is striking (see Figure 2) indicating that the households receive only one-thirds of the remittances reported in the balance of payment data.



**Fig. 2. Comparison of Official and HIES Remittances**

Acosta (2007) in his exercise on Latin American countries found similar discrepancies between the survey-based estimates and balance of payments data wherein the former were around 70 percent less than the latter, roughly similar to our estimates for Pakistan. The divergence between the two sets was attributed by the author to possibility of non-representativeness of the household surveys with respect to the estimation of remittances. This may be one of the reasons in case of Pakistan too, but one can also suggest that the official data are also containing noise and other inflows are included in the official data, hence further scrutiny is warranted both of HIES as well as the official data.

The HIES data do not support the widely held perception that share of unofficial remittances sent through Hawala/Hundi have been curtailed since 9/11 because of anti-money laundering drives as well as the governmental measures to attract remittances such as speedy disposal and competitive exchange rate. HIES 2007/08 yields that 40 percent of the recipient households received remittances through banks (official channels). This is not different than the one reported by Amjad (2007) for mid-eighties and a recent study by Arif (2009).

According to the survey of 2007-08, 40 percent of the recipient households received 45 percent of the total remittances through banks. There is a good deal of variation around these percentages as indicated by Table 4.

Table 4

*Percentage Distribution of Foreign Remittances through Banks and Recipient by Pakistan, Rural/Urban and Provinces—2007-08*

	Foreign Remittances (%)	Recipients (%)
Pakistan	45.4	40
Urban	62.3	55
Rural	39.0	35
Punjab	57.2	55
Sindh	90.0	83
Khyber Pakhtunkhwa	13.6	9
Balochistan	34.3	34

*Source:* PSLMS 2007-08.

The table suggests that only 9 percent of the recipients in Khyber Pakhtunkhwa admitted to have used banking channels and received 13 percent of foreign remittances. In contrast, 90 percent of foreign remittances have been routed through banks by 83 percent of recipients in Sindh. Unfortunately, due to non-availability of data for other years, the overtime comparison cannot be made.

### Distribution of Remittances

Average remittance per recipient household and the size distribution of foreign remittance given in Table 4 depicts almost a three times rise in average remittances from Rs 48574.00 in 1996-97 to Rs 151794 in 2007-08 yielding an annual growth rate of 2.8 percent at the overall level of the country. Given the fact that CPI has doubled during this period, the remittances of recipients in terms of the constant prices grew by roughly one-third s.

Rural/urban distribution is suggestive of higher average remittance per recipient in urban areas than rural areas, though the differentials have narrowed down, wherein the urban numbers grew at the rate of 2.4 percent per year compared to 3.3 percent for rural areas for the period of 1996-97 to 2007-2008. The distribution of remittance therefore underwent a shift wherein the share of rural areas in total increased from 49 percent in 1996-97 to 72.4 percent in 2007-08 (see Table 5).

Table 5

<i>Average Remittances/Recipient Households—Rural-Urban and Provinces</i>					
(Pak Rs Per Year)					
Years	1996-97	1998-99	2001-02	2005-06	2007-08
Pakistan	48674 (100)	69568 (100)	74952 (100)	132626 (100)	151794 (100)
Urban	65141 (50.7)	81440 (43.5)	84657 (40.8)	137242 (33.7)	177336 (27.6)
Rural	38631 (49.1)	62555 (56.5)	69456 (59.2)	118901 (66.3)	143910 (72.4)
Punjab	51895 (62.5)	66727 (58.3)	75048 (61.8)	131477 (68.0)	167104 (67.6)
Sindh	61761 (11.5)	81594 (7.8)	93343 (7.3)	107836 (4.5)	172165 (2.5)
Khyber Pakhtunkhwa	39288 (20.0)	72681 (1.6)	71254 (28.1)	113147 (26.4)	123084 (28.6)
Balochistan	61737 (2.6)	89310 (2.4)	73370 (2.7)	101165 (1.1)	176503 (1.3)

*Source:* HIES and PSLMS for relevant years.

*Note:* Figures in parenthesis denote the percentage distribution of foreign remittances.

Provincial distribution of remittances indicates that while the average per recipient household is higher in Balochistan and Sindh but the share of these provinces in total remittances were low and also experienced a decline during the period under study. Khyber Pakhtunkhwa and Punjab provinces got their share in total remittances risen during these years of 1996–2008.

Quintile distribution of foreign remittances and the recipient households are detailed in Table 6 where in the data of different years are compared. The share of bottom two income groups in total foreign remittances declined from 8.6 percent in 1996-97 to 5.7 percent in 2007-08. The corresponding fractions of the recipient households followed suit from 19 percent to 13.8 percent respectively.

Table 6

*Quintile Distribution of Foreign Remittances and Recipient Households:  
1996-97 and 2007-08 (Percentages)*

Household Income	1996-97		2001-02		2005-06		2007-08	
	FR	N	FR	N	FR	N	FR	N
Q1	3.5	9.1	1.4	4.9	2.0	5.0	2.0	5.1
Q2	5.1	10.3	3.0	7.6	3.3	7.8	3.7	8.7
Q3	10.5	15.6	7.8	14.8	7.9	14.9	9.9	15.3
Q4	24.0	25.4	21.2	25.0	21.5	27.9	20.0	29.6
Q5	57.5	40.1	66.0	48.0	65.0	44.5	64.5	41.3

The top income group registered a rise in the relative size of the foreign remittance from 57 percent to 64.5 percent along with marginal rise in the fractions of the recipient households from 40 percent to 41 percent of the total for the two years under analysis. The inter-quintile shift of the remittances may have been generated by the changing skill mix of the emigrants as well as the rising cost of emigration but there no data to confirm this view. Since the share of remittances in total household income being low (5 percent in 1996-97), the inter-quintile shift of remittance fails to exert substantial changes in Gini Indexes estimated for income with and without remittances. Still their distribution is reflective of little impact on bottom or poorer income groups respectively after 2001-02.

Acosta (2007) in his study on a number of Latin American countries using the household surveys for various years viewed that remittances tend to lower poverty but the outcome depends overall upon fraction of household receiving remittances; the share of group belonging to lowest income groups and relative importance of remittance with respect to GDP. On all these counts, the remittances distribution and size hardly inspire confidence that a major impact on poverty alleviation in Pakistan has been generated by these inflows particularly since 2001-02 because of the shift away from bottom group. The relevance of the remittances particularly since the 2001-02 for poverty alleviation appears to have drastically impaired.

### 3. EMPIRICAL ANALYSIS – 1975-2009 – MACRO LEVEL

Results of a regression exercise utilising the 1975-2009 data are reported in the appendix tables simply to demonstrate the complications entailed in estimating the impact of remittance on poverty in particular through the use of O.L.S. To begin with it may be noted that data problems are menacing in this respect. Poverty incidence at the aggregate level and its variation can hardly be explained by economic variables alone. Institutions, policies and socio-economic texture bear upon the poor/ non poor divide; hence these have to be reckoned. Among the economic variables generally GDP growth has been found to be a strong explanatory variable though the sectoral composition of GDP growth and its distribution is also important in this respect. Population size and its regional distribution have been generally ignored in Pakistan but these are important too in this context. Studies conducted on Pakistan including this exercise failed to incorporate these variables. It needs to be underscored that the dependent variable, poverty (head count ratio) for all the years under analysis is not based on estimates of the national household surveys rather presented a blend of guesstimates, and extrapolation, essentially based on Amjad and Kemal (1997). The dicey nature of the dependent variable varying from 34 to 17 during these years needs to be kept in mind while interpreting the results provided in Appendix tables.

#### **Results**

GDP as well as remittances as a fraction of GDP or the total size of the remittances (Equation 6 in Appendix Table 1) emerged as significant explanatory variable, leading to poverty alleviation. It may be added that GDP per capita in bi-variate cross-tabulation is negatively associated with poverty levels but fails to withstand the multivariate application where it reverses the direction of causation as well as leads to drastic reduction in the  $R^2$  along unexpected signs for some of the explanatory variables. The size of population used as a control variable following Warr (2006) emerges to be highly significant variable positively associated with aggregate poverty level, thus worsening the poverty situation (see Appendix Table 1). It may be added that population size also proxies the labour supply hence may simulate that effect too. Unskilled worker wages reported by Federal Bureau of Statistics were used in the regression to capture the labour market conditions; the variable has negative association with aggregate poverty but fails to acquire significance. Simulating the impact of rise in remittances experienced since 2002, through insertion of a dummy was found to have negative influence on poverty, but is statistically insignificant though it lends support to contention of Amjad (2010). Similarly inflation has positive association with poverty but fails to acquire the conventional statistical significance.



It may be highlighted that the OLS estimation procedure discussed above suffers from non-stationarity (see Appendix Table 2). OLS applied to first differences, which acquire the conventional stationarity (see Appendix Table 3), yields mostly inconsistent result because of endogeneity of different explanatory variables to be addressed only through a Simultaneous Equation Framework, integrative enough to treat the family as a unit of analysis. Given the limited number of observations, it is not clear how much one can gain in this direction.

#### 4. SUGGESTIONS FOR FUTURE RESEARCH

Household Income and Expenditure Survey (HIES) provides information on foreign remittances since mid-1990s. These data can be used for determining the effect of remittances on poverty through following procedure:

- (a) A simplistic approach would be to estimate poverty rates and inequality after subtracting remittances from household income—essentially the naïve approach. The impact of remittances on poverty reduction is exaggerated if possible reduction in income associated with the absence of migrant is not reckoned.
- (b) The above cited approach in fact treats current stock of emigrants as given. One however needs to compare the current scenario with a counterfactual simulating state of economy with zero emigration [see Adams (1989)]. Further improvement has been made in the estimation procedure to address the selectivity problem as emigrants are not randomly selected from the population [see Adams (2009) and Acosta (2007)].

Comparison of poverty indices between the observed and counterfactuals yields the likely impact of remittance on poverty. Generally, it is found that remittances decrease the poverty depending upon the size and distribution of remittances while the effects on inequality are often inconclusive and specific to the country. In addition, it may be added that exercise using these counterfactuals tend to gloss over the general equilibrium effect of emigration and remittances on the economy in particular on labour market. Still, there is a need to subject the available HIES data to investigate at least for the two years, in mid or late 1990s when the official remittances were on the decline and after 2002 when remittance shot up. These exercises are likely to facilitate inferences regarding the differential impact of the magnitude as well as distribution of the remittances on poverty. Similarly with the availability of panel data remittances-poverty linkages may be investigated using Ravellion methodology.

**Scrutiny of the Official Remittance Data**

There appears to be a general consensus that comprehensive definition of remittances has yet to be agreed upon. IMF/WB reports the sum of workers remittances, compensation of employees, and migrants transfer as remittances. There is a need to prune the official data as the probability of misclassification cannot be ruled out wherein transfer from other sectors, export revenues, and foreign receipts through whitening of the black money can be incorporated into remittances.

Accounting practices in Pakistan need to be subjected to investigation with the active collaboration of State Bank of Pakistan. Transfer of funds, both into and out of Pakistan, has to be reckoned if whitening of black money and export/import linkages through under/over invoicing is to be assessed. To begin with adequate tabulation of remittances by different sizes along with frequency of transactions in a given account is needed. The importance of such an exercise stems from the fact that the ill-gotten money first sent out of Pakistan and then routed into Pakistan as remittances will have totally different impact on growth and poverty alleviation than remittances as such. Studies also found different results through varying the definition of remittances [Amuedo (2004) ]

*Estimation of Emigrants*

Nearly all the research studies conducted on Pakistan have used the emigration data as reported by Ministry of Labour. These data fail to cover the entire exodus of manpower from Pakistan. There is a need to quantify the emigrants using secondary sources of data such as Population Census of Western countries to assess the size of the Pakistani Diaspora. These estimates are important to understand and examine the inflow of remittances from different parts of the world.

Appendix Table 1  
*Regression Estimates with Non-stationary Data*

LPOVERTY						
	(1)	(2)	(3)	(4)	(5)	(6)
LGDP	-3.057*** (0.595)	-3.199*** (0.719)	-3.013*** (0.853)	-3.084*** (0.790)	-2.820*** (0.970)	-2.908*** (0.615)
LREM_GDP	-0.149** (0.055)	-0.115 (0.110)	-0.131 (0.118)	-	-	-
DO2	-0.197* (0.113)	-0.291 (0.281)	-0.229 (0.321)	-0.291 (0.281)	-0.218 (0.328)	-0.197* (0.113)
LPOP_T	6.267*** (1.197)	6.512*** (1.386)	6.226*** (1.563)	6.512*** (1.386)	6.069*** (1.663)	6.267*** (1.197)
LME_TR	-	-0.117 (0.321)	-0.062 (0.351)	-0.117 (0.321)	-0.064 (0.357)	-
LREMT_TRS	-	-	-	-0.115 (0.110)	-0.133 (0.120)	-0.149*** (0.055)
LUSW	-	-	-0.146 (0.350)	-	-0.07 (0.430)	-
INF	-	-	-	-	-0.002 (0.009)	-
C	18.348*** (3.367)	19.408*** (4.483)	18.663*** (4.883)	19.408*** (4.483)	18.161*** (5.208)	18.348*** (3.367)
Adjusted R-squared	0.624	0.612	0.601	0.612	0.588	0.624
Durbin -Watson Stat2	1.137	1.154	1.163	1.154	1.172	1.137
Prob. (F-statistics)	15.081***	11.743***	9.537***	11.743***	7.926***	15.081***
N	35	35	35	35	35	35

Source: Data for Inflation is extracted from IMFand for GDP Population are from WDI, Rest is same.

Note: \*\*\*stands for p<0.01, \*\*stands for p<0.05 and \*stands for p<0.1.

Appendix Table 2

*Stationarity*

Augmented Dickey-Fuller Test Statistics

	Level	1st Difference	2nd Difference
LPoverty	-1.586	-5.797***	-
LGDP	-2.531	-3.998***	-
LREM GDP	-1.546	-3.544***	-
LPOPT	-2.089	-1.839	-5.451***
LME TR	-1.881	-5.403***	-
LREMIT TRS	-1.442	-3.591	-
LUSW	-0.47	-4.909***	-
INF	-2.46	-6.277***	-

Note: \*\*\*stands for p<0.01, \*\*stands for P<0.05 and \*stands for P<0.1.

Appendix Table 3

*Regression Results on First Difference*

## DLPOVERTY

	(1)	(2)	(3)	(4)	(5)	(6)
DLGDP	-1.344 (1.47)	-1.323 (1.53)	-1.363 (1.48)	-1.313 (1.46)	-1.409 (1.42)	-1.332 (1.41)
DLREM_GDP	-0.012 (0.13)	-0.01 (0.14)	0.068 (0.14)	- -	- -	- -
DO2	-0.11 (0.09)	-0.12 (0.10)	-0.18 (0.10)	-0.112 (0.10)	-0.211** (0.11)	-0.11 (0.09)
DLPOP_T	-6.465 (16.17)	-6.895 (17.67)	-14.476 (17.81)	-6.896 (17.67)	-14.865 (17.79)	-6.466 (16.17)
DLME_TR	- -	0.014 (0.21)	0.011 (0.21)	0.014 (0.21)	-0.069 (0.22)	- -
DLREMT_TRS	- -	- -	- -	-0.01 (0.14)	0.098 (0.14)	-0.12 (0.13)
DLUSW	- -	- -	0.786 (0.49)	- -	0.858* (0.49)	- -
INF	- -	- -	- -	- -	0.007 (0.01)	- -
C	0.238 (0.38)	0.248 (0.42)	0.437 (0.42)	0.248 (0.42)	0.389 (0.42)	0.238 (0.38)
Adjusted R-squared	0.030	-0.006	0.048	-0.006	0.050	0.027
Durbin -Watson Stat2	2.334	2.331	2.370	2.331	2.403	2.334
Prob. (F-statistics)	1.23	0.955	1.278	0.955	1.25	1.236
N	34	34	34	34	34	34

Source: Data for Inflation is extracted from IMF and for GDP Population are from WDI, Rest is same.

Note: \*\*\*stands for p<0.01, \*\*stands for p<0.05 and \*stands for p<0.1.

Appendix Table 4

*Correlation Matrix*

	LGDP	LREM_GDP	LPOP_T	LUSW	INF	LPOVERTY	GDP_C	POPG
LGDP	1.000	0.757	0.996	0.881	0.221	-0.373	0.995	-0.971
LREM_GDP		1.000	0.764	0.741	0.252	-0.570	0.757	-0.779
LPOP_T			1.000	0.873	0.201	-0.329	0.988	-0.955
LUSW				1.000	0.496	-0.462	0.915	-0.879
INF					1.000	-0.397	0.292	-0.226
LPOVERTY						1.000	-0.412	0.458
GDP_C							1.000	-0.968
POPG								1.000

Appendix Table 5

*Definition of the Variables*

LPOVERTY	=	log of poverty incidence(Head count ratio)
LREM/GDP	=	log of total remittances as percentage of GDP
LGDP	=	log of GDP at constant prices(2000) in local currency(Source WDI)
LGDP/C	=	log of GDP percapita at constant prices in local currency
LME/TR	=	log of Remittances from Middle East as share of total Remittances
LREMWEST	=	log of Remittances from Western countries as a share of total
DEM	=	Dummy 2002to 2009=1 otherwise=0
LREMTR	=	log of total remittances
LPOP	=	log of total population(Source WDI)
INF	=	inflation rate(Calculated from CPI extracted from IFS2009)
LUSW	=	log of real monthly wages of unskilled construction worker

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