Impact of Remittances on Economic Growth and Poverty: Evidence from Pakistan

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Impact of Remittances on Economic Growth and Poverty

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Abstract

The study focused on the importance of remittances inflow and its implication for economic growth and poverty reduction in Pakistan. By using ARDL approach we analyze the impact of remittances inflow on economic growth and poverty in Pakistan for the period 1973-2007.

The district wise analysis of poverty suggest that overseas migration contributes to poverty alleviation in the districts of Punjab, Sindh and Balochistan however NWFP is not portraying a clear picture.

The empirical evidence shows that remittances effect economic growth positively and significantly. Furthermore the study also finds that remittances have a strong and statistically significant impact on poverty reduction thus suggesting that there are substantial potential benefits associated with international migration for poor people in developing countries like Pakistan. So the importance of remittance inflows can not be denied in terms of growth enhancement and poverty reduction that consequently improves the social and economic conditions of the recipient country.

Keywords: Remittances; Growth; Poverty; Pakistan

1) Introduction

Remittance is an important source of foreign exchange earnings for Pakistan since 1970. During the past four decade Pakistan received significant amount of remittances, however, fluctuation were also observed in the inflow of remittances. Inflow of remittances affects economic growth positively by reducing current account deficit, improving the balance of payment position and reducing dependence on external borrowing (Iqbal and Sttar, 2005).

Inflows of remittances increase the economic growth and reduce the poverty by stimulating the income of the recipient country, reducing credit constraints, accelerating investment, enhancing human development through financing better education and health [Calaro (2008); Jongwanich (2007); Stark and Lucas (1988); Taylor (1992); Faini (2002); Gupta et al.(2009)]. However Chami et al (2003) find that remittances have negative impacts on economic growth of recipient country because a significant flow of remittances reduce labor force participation and work efforts which lowers output. Thus, the impact of remittances on economic growth and development of recipient country has been controversial.

In case of Pakistan, a number of studies have been undertaken at micro as well as macro level that directly or indirectly focused on the impact of remittances on growth and development (Burney,1987; Arif, 1999; Adams,1998; Malik et al,1993; Nishat *et a* ,1993; Burki,1991; Kozel and Alderman,1990; Amjad,1986; Nishat and Bilgrami,1991). The general conclusion of these studies suggest that remittances have positive effects on economy of Pakistan in terms of aggregate consumption, investment, reduction in current account deficit, external debt burden and improve education/skills of the households. Furthermore, labour migration is considered to be a useful source of foreign exchange earning (Naseem, 2004). Siddidui and Kemal (2006) explored the impact of decline in remittances on welfare and poverty in Pakistan. The analysis shows that in Pakistan poverty rises due to decline in remittances during nineties. Kemal (2001) finds that remittance inflow is major variable affecting the poverty levels both through change in income and consumption level and as well as through increase in capital stock.

During the current decade since the event of 9/11 the inflow of remittances in Pakistan has increased sharply that is US$1075 millions in 2000 to US$ 6000 millions in 2007. This massive inflow of remittances contributes in reducing current account deficit, increasing foreign exchange reserves, stabilizing exchange rate and reducing poverty. Generally previous studies were based on survey data and ignored the relationship between remittances and poverty so this study contributes to existing literature by empirically examining the impact of remittances on economic growth and poverty.

The rest of the paper is organized as follow. Section 2 presents a review of literature. Section 3 provides an overview of overseas migration and worker's remittances in Pakistan. Furthermore district wise analysis of overseas migration and poverty is also presented in this section. Model specification, data and methodology are given in section 4. Section 5 discusses empirical results, while the final section concludes the study.

2) Literature Review

An appropriate understanding of remittance and growth relationship can help policy makers to design a suitable economic policy. Giuliano(2008) finds that remittances boost growth in countries with less developed financial system as it provide an alternative way to finance investment and reduce liquidity constraints. Workers remittances also play an important role in human capital investment in the recipient country through relaxing resource constraints. Calero (2008) explored that remittances increases school enrollment and decrease the extent of child work. Moreover the study finds that remittances are used to finance education when households are facing aggregate shocks as these are associated with increased work activities. International remittances also perform an important role in reducing the extent of inequality and poverty. Acosta et al (2007) presented the household survey base estimates for 10 Latin American countries which confirmed that remittances have negative though relatively small inequality and poverty reducing effects.

Jongwanich (2007) examines the impact of workers remittances on growth and poverty in Asia-Pacific developing countries. The empirical evidence shows remittances have a significant impact on poverty reduction and trivial impact on growth. Burgess and

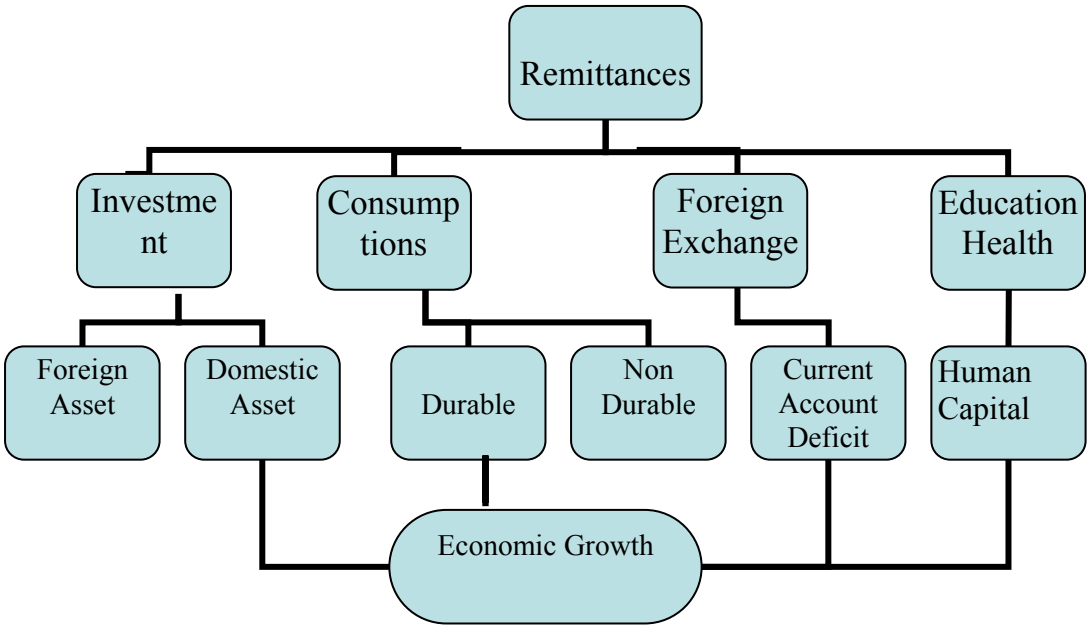
Vikram (2005) examine the different channels through which remittances can affect economic activity. The study does not clearly support the short term stabilizing effect on consumption, however the longer term economic effect of such flows seems to be ambiguous. Catrinescu *et al* (2006) explored that remittances exert a weakly positive impact on long term macroeconomic growth. Furthermore the study also supports the idea that development impact of remittances enhances in the presence of sound macroeconomic policies and institution.

Fayissa and Nsiah (2008) argued that remittances enhance economic growth in countries where financial systems are not very strong by providing an alternative way to finance investment and help to overcome liquidity constraints. Iqbal and Sattar (2005) shows that real GDP growth is positively correlated to workers' remittances during 1972-73 to 2002-03 and workers' remittances emerged to be the third important source of capital for economic growth in Pakistan.

Adams and Page (2005) used the data of 71 developing countries in their study on remittances, inequality, and poverty and concluded that remittances significantly reduce the level, depth and severity of poverty in the developing world. Lucas (2005)[1] argues that remittances probably contributed in a significant way to poverty alleviation process in case of Pakistan.

The impact of remittances on economic growth and poverty has been an extensively discussed issue both among academics and policy makers. Although this area of research has been explored extensively and widely, yet further research on this issue is still required to arrive at overall judgment related to the desirability of foreign remittances for economic growth and poverty reduction. On the basis of literature related to affects of remittances on growth and poverty, we can summaries the following main channels through which remittances enhance growth and ultimately reduce poverty in remittances receiving economy.

[1] Cited by Jongwanich (2007)

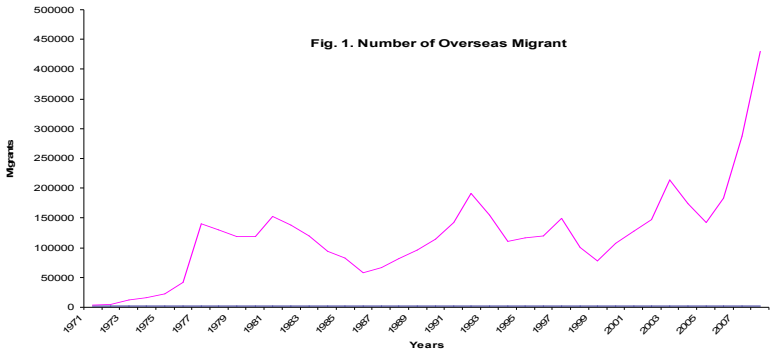


3) Overseas Migration and Workers Remittance: An Overview

Before proceeding to empirical analysis, it may be useful to have an overview of overseas migration and development of workers remittances since 1970. Approximately 5 million Pakistanis[2] have migrated to different countries around the world during 1970-2008. Majority of the Pakistanis have migrated to the Middle East countries such as to Saudi Arabia (2.3 Milliom) and UAE (1.3 million). Other major concentrations and absorptions are Oman and Kuwait. Pakistani workers also migrated to several other countries both developing and developed around the world.

In the decade of 1970s, the total amount of remittances sent home by the migrant workers increases as the number of migrant to Middle East increases. However remittance flows continue to decline after reaching a peak in 1982-83. The declining trend in remittances continues to persist till 2001. The Pakistani overseas migrant showed a recurring and fluctuating behavior from 1971 to 2008.

[2] Figures on overseas Pakistanis are from Bureau of Emigration and Overseas Employment.



Source: Bureau of Emigration and Overseas Employment

The high unemployment, massive poverty, expectations for higher earnings abroad may be reasons for over the time increase in the number of Pakistanis going abroad. Majority (i-e 3 million) of migrant workers are either unskilled or semi skilled from low income backgrounds which allowed their families behind to establish small business, get hold of real assets and make considerable and extensive enhancement and improvement in their standard of living.

Figure 2 shows the skill composition of migrant workers to different countries around the world. Out of the total, 1.8% is highly qualified (engineers and doctors), 7% are highly skilled, 44% are skilled 46.3% are semi skilled and unskilled including masons, carpenters, technician, followed by electrician, and mechanics.

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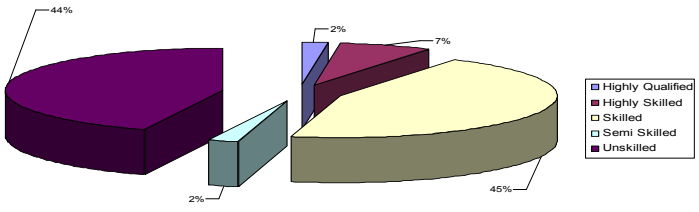
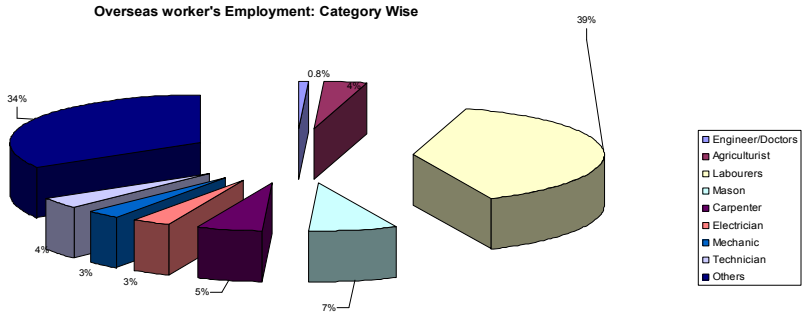
Fig. 2. Skill Composition of workers since 1970-2008



Source: Bureau of Emigration and Overseas Employment

Among the highly qualified, the category demanded most was that of the (1.8%). Over the time the process of human capital flight or brain drain is imposing monetary cost to the economy as highly qualified and skilled workers also take with them the skills and trainings supported and sponsored by the government.

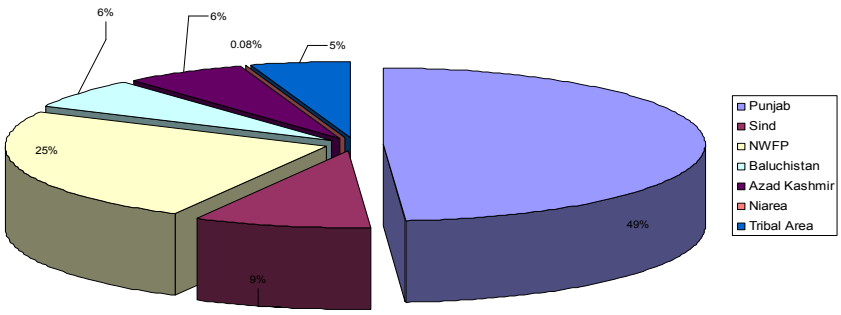


Source: Bureau of Emigration and Overseas Employment

Furthermore a large proportion of migrated workers are laborers (38.8 percent) and agriculturalist (3.7 percent) which can have substantial and considerable effect on domestic labor supply in case both categories of workers continue to migrate.

Geographical distribution of origin of workers is shown in Figure 3. as can be seen most of the workers belong to Punjab (48.8%) followed by NWFP (24.6%), Sindh (8.7%) and Balochistan (6.4%). The relatively low overseas migration from Sindh points to the fact that better job opportunities and business environment may possibly be prevailing there which encourages and persuade people to stay in home country.

Fig. 2. Migrated Workers: Province Wise



Source: Bureau of Emigration and Overseas Employment

Overseas Migration and Poverty

District wise analysis of overseas migration and poverty[3] for the provinces of Punjab (Figure 5), Sind (Figure 6) and Balochistan (Figure 8) confirms that percentage of people below the poverty line are lower in those districts where the percentage of migrated workers is higher. Additionally 48.8 percent of overseas migrant belongs to the province of Punjab which points to the fact that remittance inflows from abroad may be the reason for reducing poverty in the districts of Punjab. However the district wise analysis of NWFP is mixed as the Figure 7 is not portraying a clear picture and pointing to the fact that there may possibly be some other factors that are contributing to the occurrence of poverty.

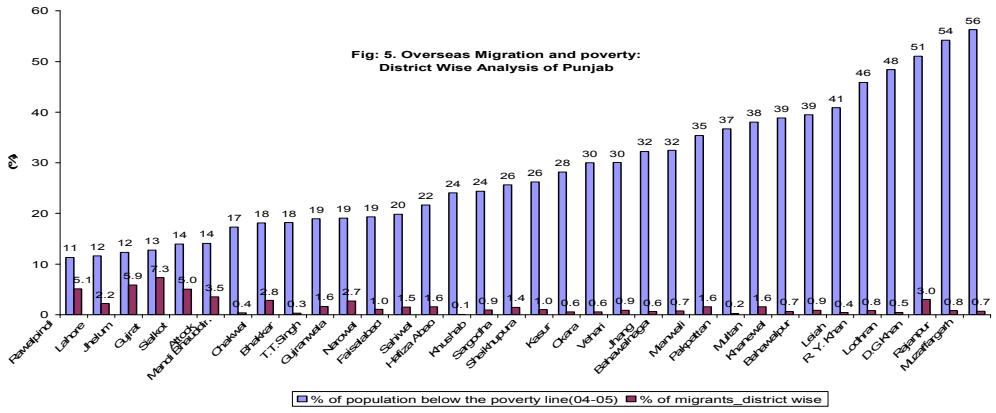
Table 1: Correlations

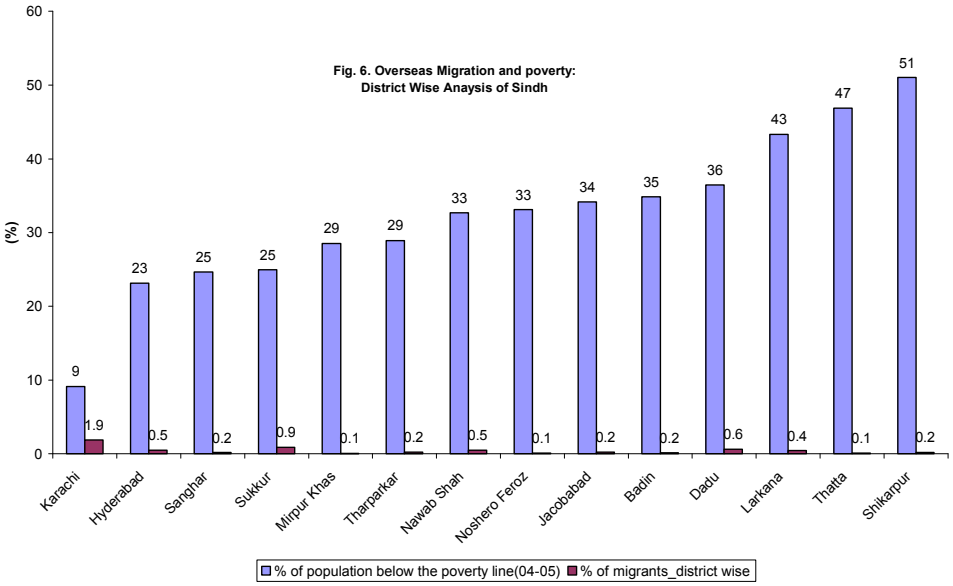
		Poverty	Overseas Migrant
Poverty	Pearson Correlation	1	-.369**
	Sig. (2-tailed)		.000
Overseas Migrants	Pearson Correlation	-.369**	1
	Sig. (2-tailed)	.000	

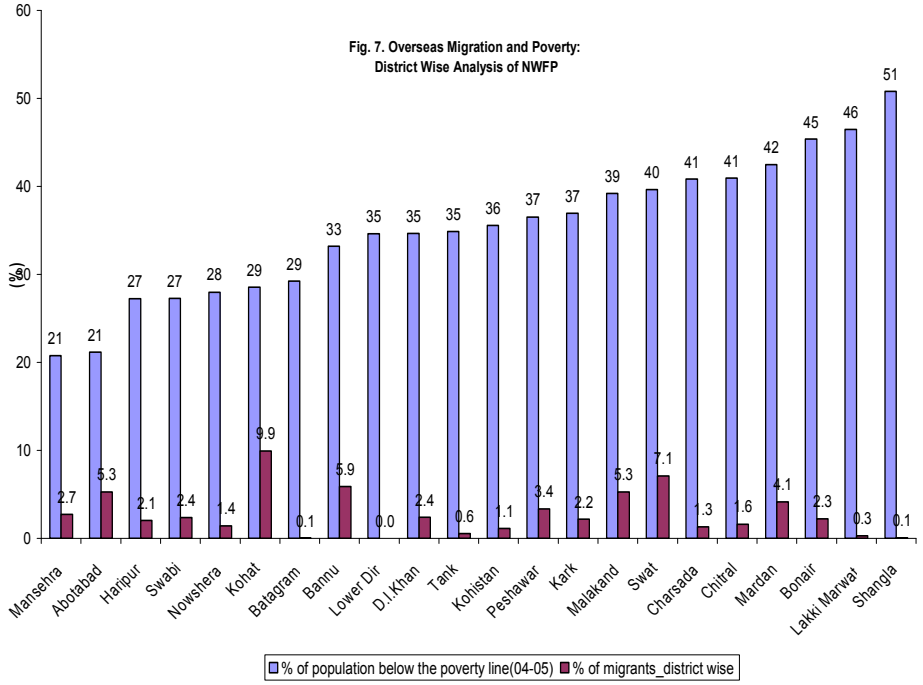
**. Correlation is significant at the 0.01 level (2-tailed).

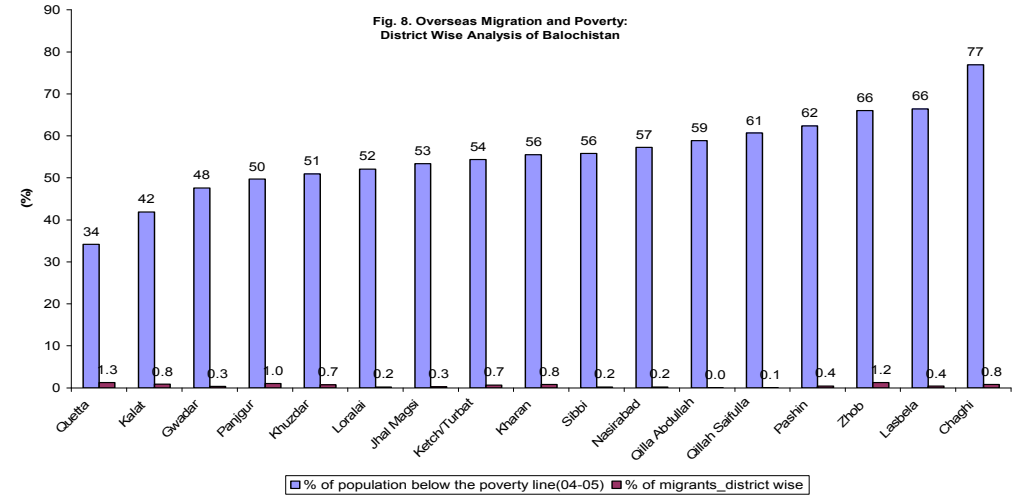
[3] Data on district wise poverty has been taken from Jamal (2007), Income poverty at District Level: An Application of Small Area Estimation Technique

Furthermore, correlation between overseas migrants and the percentage of population below the poverty line also demonstrates that overseas migration is making its contribution in achieving the objective of poverty alleviation and improving the standard of living of citizens.









In case of Pakistan recorded remittances sent home by migrant from abroad has reached $ 6000 millions in 2007 from $1100 millions in 2000. The exact magnitude of remittances is believed to be even lager involving both recorded and unrecorded flows through formal

and informal channels. Table A in appendix shows that in decade of 1980s and after 9/11 incident remittances inflow were quite high. During 1970s average annual inflow of remittances were 4.2 percentages of GDP and during 1980s average annual inflow of remittances reached at 7.5 percent of GDP. In the decade of 1990s remittances inflow declined at its lowest level and reached to 2.9 percent of GDP. After 2000 again remittances inflow start rising and reached to 4.2 percent of GDP in 2007.

Figure: 8 Trends in GDP and Remittances

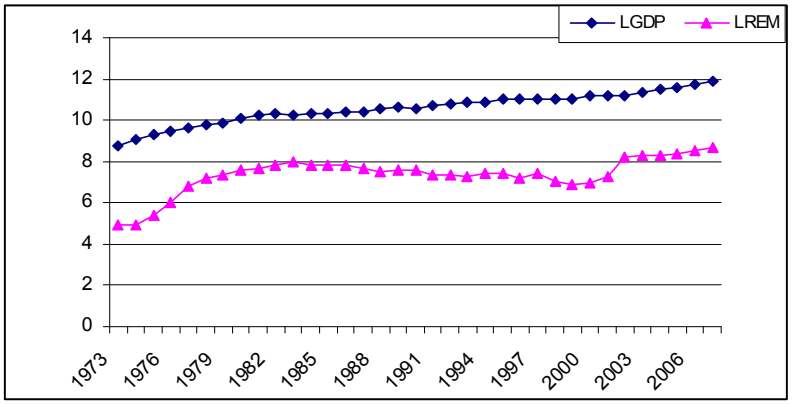
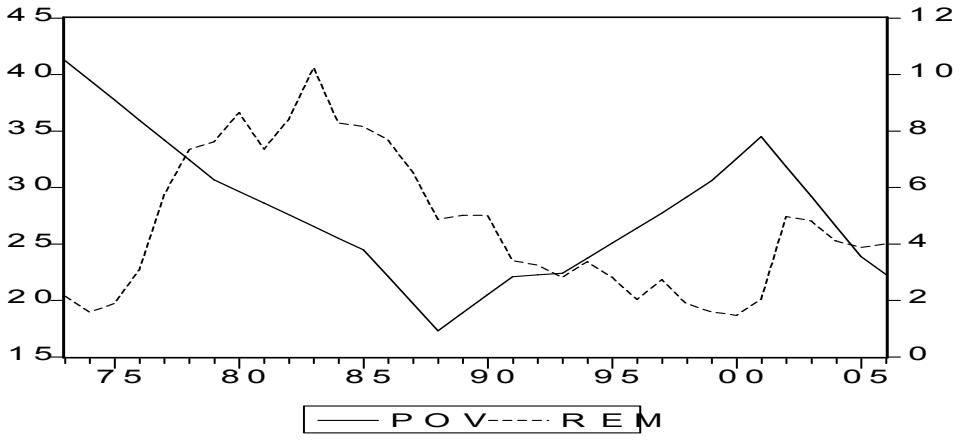


Figure 8 depicts the positive relationship between GDP and remittances. GDP and remittances inflow show an increasing trend till 1983, however after 1983 remittances inflow depict consistently declining trend till 2000 and GDP increase at decreasing rate during this period. After 2000 both series move in the upward direction. The figure makes it clear that over the time, trend in remittances and GDP growth are almost the same.

Figure 9 exhibits relationship between poverty and remittances for Pakistan during 1973-2006. Right vertical axis represents the remittances as percentage of GDP and left vertical axis poverty (head count) estimate. The figure shows that poverty is negatively related to increase in remittances during the period of 1973-2006 in Pakistan. In the decade of 1980s poverty decreased coupled with increase in remittance inflows whereas decrease in remittance inflow during 1990s is associated with increase in poverty with remittances reaching its lowest point. However after the incident of 9/11 remittances inflow sharply moves in upward direction with poverty starting to decline as well.

Figure: 9 Poverty and Remittances Trend in Pakistan 1973 to 2006



The above data analysis is also supported by the empirical finding in literature as Siddiqui and Kemal (2006) pointed out that increase in poverty during 1990s may be due to short fall of remittances in this decade. Therefore data and literature both support the hypothesis that remittance contributes to poverty reduction in Pakistan.

4) Methodology

Theoretical as well as empirical literature predicts that remittances contribute not only in the growth process of recipient country but also play an important role in reducing poverty. This study intends to explore the effect of remittances on real GDP and poverty in Pakistan, we specify following two independent models to deal with remittances, growth and poverty.

(i) Remittances and Growth

We specify an empirical to explore the impact of remittances on economic growth. The Model is as;

$$LRGDP_t = \alpha_O + \partial_1 REM_t + \partial_2 INV_t + \partial_3 HDI_t + \partial_4 OP_t + \varepsilon_t \quad (1)$$

Where $RGDP$, REM, INV, HDI and OP are log of real GDP, remittances as percentage of GDP, gross fixed capital formation as percentage of GDP, human development index[4], OP is trade openness, respectively. ε is well behaves error term.

Previous studies suggest that remittances effect the economic growth positively through reducing the current account deficit, external borrowing and availability of foreign exchange (Iqbal and Sattar, 2005). The impact of human capital, investment and trade openness on output is assumed to be positive.

(ii) Poverty and Remittances

We used similar to the model suggested by Ravallion (1997), Ravallion and Chen (1997) and Adam and Page (2005) to explore the impact of remittances on poverty. The model is written as,

$$LP_t = \alpha + \beta_1 LRGDP_t + \beta_2 LIEQ_t + \beta_3 LREM_t + \omega_t \qquad (2)$$

Where LP is a measure of poverty, LRGDP is real gross domestic product, LIEQ is income inequality, LREM is remittances and ε is well behaved error term. The expected signs of $\beta 1$, β_2, and β_3 are negative, positive and positive/negative respectively.

To estimate both models in equation (1) and (2), Autoregressive Distributed Lag (ARDL)[5] method developed by Pesaran et al. (2001) has been used. This technique is more appropriate for small sample size and can be implemented irrespective of whether the underlying variables are I (0) or I (1). In this approach long run and short run parameters of the model are estimated simultaneously. ARDL formulation can be written as follow

$$\Delta Y = \beta_1 + \beta_2 Y_{T-1} + \beta_3 Z_{t-1} + \sum_{i=1}^{k} \beta_4 \Delta Y_{t-i} + \sum_{i=1}^{k} \beta_5 \Delta Z_{t-i} + \varepsilon \qquad (3)$$

Where Y is dependent variables, Z is the vector of explanatory variables included in the regression equation 1 and 2. Bounds testing procedure develop by Pesaran et al (2001) is used to test the presence of long run relationship among the variable in equation (3). The test based on F test for cointegration analysis. The null hypothesis is that the

[4]calculated on the basis of three dimensions of human development, leading a long and healthy life, literacy rate and school enrollment, and having a decent standard of living measured by GDP per capita

[5] ARDL methodology is well established in the literature and there is no need to give detailed account here.

coefficients β_2 and β_3 are jointly equal to zero. In other words the null hypothesis states that there is no long run relationship between the variables in equation (3). The computed F-statistics is compared with the critical value bounds of the F-statistic. If computed F-statistic higher than the upper bound of the critical value of F-statistic, the null hypothesis would be rejected and vice versa.

Annual data from 1973 to 2007 has been used to analyze the effect of remittances on real output and poverty. Data on gross domestic product (GDP), remittances and gross fixed capital formation proxy for investment are obtained from World Bank (2008). Data on human development index (HDI) are taken from United Nations Development Program (UNDP)[6]. Data on poverty (.i.e. Headcount ratio) and income inequality are taken from Jamal (2006) for the period from 1973 to 2003 and extended to 2006 using the same methodology used by Jamal (2006).

5) Empirical Results

Before estimation the time series property of the data has been examined to determine their order of integration by using Augmented Dickey Fuller (ADF) unit root test. The results are reported in table 1

Table: 1 Test of non-stationarity of Variables

Variables	Constant/ Trend	Level	First Difference
LP	c, t	-3.711*	
LREM	c, t	-1.951	-4.55*
LRGDP	c, t	-0.927	-4.71*
LIEQ	c	-5.99*	
HDI	c, t	-5.20*	
OP	c, t	-2.827	-6.53*

Note;* indicate significant at 5% level. c,t denotes constant and trend

[6] http://hdr.undp.org/statistics/data/indicators.cfm?x=16&y=1&z=1

As can be seen from the table, LRGDP, REM and OP are non-stationary at level and become stationary after taking first difference. This implies that these three series are integrated of order one, i.e. I (1) while LP, LIEQ HDI are stationary at level, i.e. I (0). Table 1 shows that order of integration of all the variables is not same, therefore the mixed results obtained from the unit root test justify using ARDL technique to estimate the long-run and short-run relationship among the variables under investigation.

5.1 Remittances and Economic Growth.

Equation (1) is estimated by using lag length of order three which is selected on the basis of AIC and SBC criteria. The final form of the model selected is subject to all the diagnostic tests. Results of diagnostic tests are reported in panel B of table 2. Panel A of table 2 reports the results of the unrestricted error correction modeling.

To determine the cointegration relationship among the real GDP, remittances, investment and HDI, we test the hypothesis that the coefficients of the lag level variables are equal to zero. First differences of the variables explain the short run effect of explanatory variables on the dependent variable. Based on the redundant variable test, we obtained F-statistics equal to 14.17. This value is higher than that the upper bound of the tabulated value .i.e. 4.32 (Panel C of table 2).

In order to find the long run coefficients, we normalized remittances; investment, HDI and openness by real GDP and results are presented in panel (D) of Table 2. It can be evident from Table 2 that in the long run remittances are positively related to economic growth. In the short run the effect of remittances on GDP is negative; however the magnitude of this variable is small and negligible. Investment and human development index positively and significantly affect GDP in long run as well as in short run. Results shows that the trade openness is negative but insignificant, negative sign of trade openness could be due to the reason that trade is more likely to be based on imports of consumption goods. In panel (D) of table 2 the long run coefficient of investment and human development index are consistent with economic theory showing their importance for growth and development.

Table: 2 Estimate of Growth and Remittances Equation

Dependent Variable: $\Delta LRGDP_t$

A: Model		
Variable	Coefficient	t-Statistic
$\Delta RGDP_{t-1}$	0.690345	2.986167
$\Delta LRGDP_{t-2}$	0.295166	2.250736
ΔINV_t	0.870203	3.569036
ΔREM_{t-1}	-0.926541	-4.256735
ΔREM_{t-3}	0.567470	2.621423
ΔHDI_t	0.235796	2.006562
ΔOP_{t-3}	0.151114	1.926871
$LRGP_{t-1}$	-2.555010	-7.799704
INV_{t-1}	0.910469	3.824714
REM_{t-1}	1.189132	6.566328
HDI_{t-1}	0.275218	3.299042
OP_{t-1}	-0.137629	-1.237194
C	-17.40686	-3.057456
Adjusted R-squared		0.81
DW		1.94
B: Diagnostic Tests		
Serial Correlation LM Test		1.3743 [0.2813]
ARCH Test		0.0819 [0.7767]
Jarque-Bera(2)		1.1647 [0.5585]
Ramsey RESET Test		2.3709[0.1420]
C Cointegration Test		
F-statistics (5,18)		14.177[0.000010]
D: Long Run Coefficients		
REM		0.465
INV		0.3563
HDI		0.1077
OP		-0.054
C		-6.81

Note: p- values are stated in [ ]. Breusch-Godfrey Serial Correlation LM and ARCH Test are based on F-statistics. While normality test is based on Chi-square test

5.2 Empirical Results of Poverty and Remittances

To estimate equation (2), we used general to specific approach on the basis of AIC and SBC criteria, select lag length of order 3 and remove the insignificant variables from the model. After all the diagnostic checks (reported in panel B of table 3) we select the estimated model.

Table: 3 Estimate of Poverty and Remittances Equation

Dependent Variable: ΔLP_t

A: Model		
Variable	Coefficient	t-Statistic
LP_{t-1}	-0.0164	-9.31
$LREM_{t-1}$	-0.0023	-4.03
$LIEQ_{t-1}$	.003	3.84
$LRGP_{t-1}$	-0.01	-2.67
ΔLP_{t-1}	1.068	20.3
ΔLP_{t-2}	-0.073	-2.99
$\Delta LREM_t$	-0.0007	-1.676
$\Delta LREM_{t-1}$	0.001	2.84
$\Delta LIEQ_t$	--0.524	-36.35
$\Delta LIEQ_{t-1}$	0.646	17.16
$\Delta LRGDP_{t-1}$	0.01	3.519
Adjusted R-squared		0.99
S.E. of regression		0.000427
B: Diagnostic Tests		
Breusch-Godfrey Serial Correlation LM Test		
ARCH Test		0.962029[0.33507]
Jarque-Bera (2)		0.6579 [0.7196]
Ramsey RESET Test		4.081[0.057678]
C: Cointegration Test		
F-statistics (4,20)		77.57 [0.000]
D: Long- Run Coefficients		
LREM		-0.13795
LIEQ		0.1899
LRGDP		-0.61577

Note: p- values are stated in [ ]. Breusch-Godfrey Serial Correlation LM Test, ARCH Test, are based on F-statistics. While normality test is based on Chi-square test

To find the long run relationship among poverty, remittances, income inequality and real GDP, test the hypothesis that the coefficients of lag variables are equal to zero based on the redundant variable test. Results of cointegration test are presented in panel (C) of table 3. The results suggest that the null hypothesis of no long run relationship is rejected, because the computed F-statistics is highly significant. This implies that the long run relationship exist among poverty, remittances, real GDP and income inequality. We get the long run coefficients by normalizing the level explanatory variables and results reported in panel (D) of table 3. The results suggest that an increase in remittances can directly lead to poverty reduction in the long run. This may be due to the fact that remittances directly increase the income of poor people, smooth household consumption and ease capital constraint. The short run impact of remittances on poverty is negative which might be due to the transaction cost associated with migration. The long run elasticity of poverty with respect to income inequality (Gini coefficient) is positive and significant which is according to expectation. This positive and significant relation indicate that at a given rate of economic growth, poverty reduces more in low inequality countries, as opposed to high inequality countries, so the income inequality variable is positive and significant (Adam and Page, 2005). Long run poverty elasticity with respect to real GDP is positive and significant which is consistent with economic theory. The magnitude of the coefficient of long run variable is consistent with analysis of poverty reduction (Adam and page, 2005).

6) Conclusion

The study mainly focused on the importance of workers' remittances inflow and its implication for economic growth and poverty reduction. By using the ARDL approach we analyze the impact of remittances inflow on economic growth and poverty. It is found that remittances effect economic growth positively and significantly. Findings emerge from this study that remittances have a strong and statistically significant impact on poverty reduction and growth in Pakistan.

The finding of this study suggests that international migration of labour has substantial potential benefits for poor people in developing countries like Pakistan. In the long run

the remittance inflow can leads to sustainable growth and welfare improvement and upgradation of poor households as the impact of remittance broaden and enlarge over the time. So the government should formulate the policy that enhances the amount of remittances by reducing the transaction cost of transferring the remittances through formal channel.

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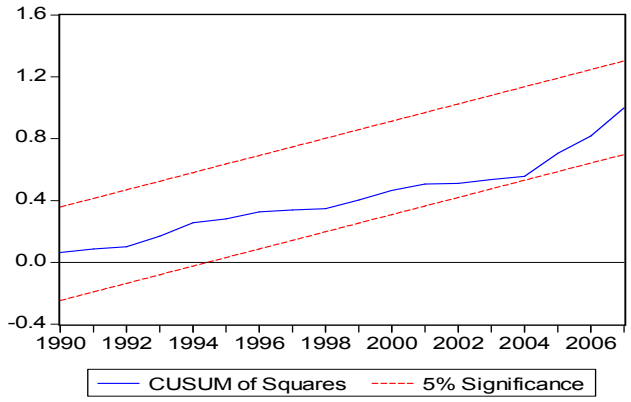
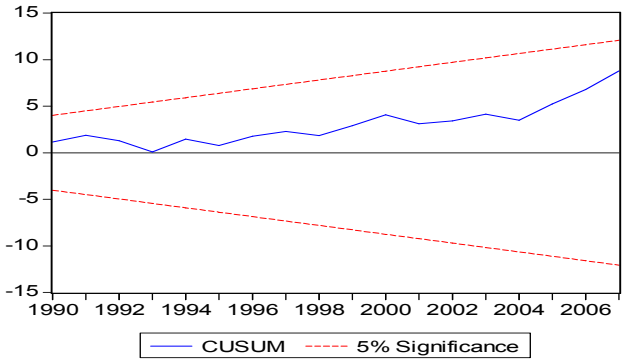
Appendix

Table -A: GDP Growth and Remittances

Years	GDP (%)	Remittances (Millions US $)	Remittances (%of GDP)
1970s	4.8	546.13	4.2
1980s	6.5	962.86	7.5
1990s	4.6	1019.58	2.9
2000	3.9	1075	1.5
2001	2	1461	2.0
2002	4.7	3554	4.9
2003	7.5	3964	4.8
2004	8.6	3945	4.0
2005	6.6	4280	3.9
2006	6.5	5121	4.0
2007	5.8	5998	4.2

Stability Test for Growth and Remittances Equation





Stability test for Poverty and Remittances Equation