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DETERMINANTS OF REMITTANCES IN PAKISTAN: AN EMPIRICAL ANALYSIS OF REMITTANCES FROM SKILLED AND UNSKILLED MIGRANTS

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ABSTRACT

Remittances have emerged as a vital player in the balance of Payments of different countries and are pivotal for the stability of the external sector of developing countries such as Pakistan. This study analyses the macroeconomic determinants of remittances as well as the comparative remittances of skilled and unskilled workers to draw a clearer picture of the current state and composition of the remittances. The study makes use of Johansen's co-integration technique to check for the existence of long run liaison among the variables. The study finds that remittances are positively and negatively affected by unskilled and skilled migration respectively. The macroeconomic variables included in the model are also found to be significant factors determining the flow of remittances to Pakistan.

Keywords: *Skilled migration, unskilled migration, remittances, foreign exchange.*

JEL Codes: *F22, J61, F24.*

1. INTRODUCTION

Remittances are considered backbone of developing countries' external sector. In this global village developing nations like Pakistan are pouring much to their foreign reserves. Every year large number of Pakistanis migrate abroad and remit their incomes to their families in Pakistan which is ultimately included in national income. This makes it an essential part of the economy and, obviously, for the families of workers in the home country. Remittances are basically self-enforcing contractual agreement between migrant and the family. It is also an external source of capital growth for developing nations.

Emigration from developing to developed countries has been common throughout the human history. But which kind of migration is useful? is the topic of this study. People usually leave their home country due to attractive salary and better living standard and to support their dependents in a good

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manner as well. People send money to their native countries which is known as remittances. Through remittances, loss of labors especially skilled labors can be compensated.

Foreign exchange is not only a valuable source of developing countries but also very important for poverty reduction. Smooth financial sector is very important which depends upon remittances. Productive investment is also based upon this sector (Rashid.R 2011). Ratha D. suggested remittances as anti-poverty force for developing nations which definitely increases the living standard of receiving countries. Remittances are now considered an essential part of the economies and particularly for developing countries like Pakistan. Remittances play vital role in the external sector of the economy.

In the past and more specifically in the last century when remittances emerged as a vital player in the balance of Payments of different countries the focus was on finding the effect of these remittances on the economy and the families of workers back home. With the passage of time researchers started to analyze the determinants of remittances and recently studies have been carried out to see whether skilled workers remit more or less to home countries or not. Role of skilled migrants in their home country is more valuable than remittances. They can serve themselves in their home country in a better way than to leave their remittances. It is also noted that skilled migrants earn more than unskilled migrants (Remittances and the Brain Drain Riccardo Faini June 2006).

Around the globe, all evidence proves that native countries who receive money from abroad have high level of spending as most part of the remittances received by families is used for consumption spending. So finding the determinants of remittances in current state of the world and the economy of Pakistan entails much importance. Looking at the comparative remittances of skilled and unskilled workers will help us to draw a clearer picture of the current state and composition of the remittances as well as from the perspective of labor available to the home economy it is imperative to see the comparative remittances of both type of workers. While talking about the working of the economy and the analysis of remittances major macroeconomic variables of the economy should also be considered in the study. This study includes the macroeconomic variables along with the comparison of the remittances of skilled and unskilled workers.

2. LITERATURE REVIEW

Faini R. (2006) conducted a study related to association between brain drain and their remittances. It is mostly assumed that loss of brain drain can be mitigated through remittances. But in this study, it is found that smaller flow of capital inflow is associated with intellectual migrants. Niimi Y. et al (2008) studied the relationship between remittances and brain drain to check whether skilled migrants remit less or more. They included migration rates, migrants' education level, source countries' income, financial sector development and expected growth rate as the determinants of remittances. They found that skilled migrants remit less as remittances declined with the share of migrants with tertiary education. Bollard A. et al (2009) revisited the relationship between remittances and brain drain; they used micro

data from surveys of immigrants in eleven major destination countries to show that more educated migrants remit more. Their study found a positive association between remittances and level of education.

Ponce C. R et al investigated the macroeconomic determinants of remittances in El Salvador. The analysis considers co integration using GDP, interest rate differential and M2 as the determinants of remittances. They found all the variables as significant to the analysis of the remittances. Mouhoud M. E et al (2008) studied the macroeconomic determinants of migrants' remittances in the Southern and Eastern Mediterranean countries. They used GDP, inflation, interest rate differential and exchange rate as the determinants of remittances. The study found a significant relationship between the variables used in the analysis. The findings revealed a negative relationship between remittances and inflation. Neypti et.al (2005) also conducted a study on worker's remittances in Turkey. They proved through empirical evidence that many variables like interest rate, inflation rate, growth and host country level incomes have significant relationship with capital inflow. Among them, they found that inflation have indirect relationship with remittances as well. Elbadawi A I. and Rocha R R. (1992) studied the determinants of Expatriate Workers' Remittances in North Africa and Europe. The authors test their model using Greek migration data and find per capita remittances to be positively related to per capita income and interest rates in the host country and negatively related to inflation rates in the home country.

Negative relationship of inflation with remittances is developed by Hassan.M.M (2008) in his study "the macroeconomic determinants of remittances in Bangladesh". He checked many macroeconomic determinants of remittances in case of Bangladesh. He came to know that inflation, interest rate and exchange rate have significant relationship with remittances. Ojapinwa and Victor T (2012) analyzed the determinants of migrants' remittances in Nigeria. GDP, unemployment rate, openness, consumer price index and population growth were used as the factors affecting remittances. The association between GDP and remittances was found to be positive and negative between inflation and remittance. They suggested stability of macroeconomic variables of the economy in order to enhance the flow of remittances. Mouhoud M. E et al (2008) studied the macroeconomic determinants of migrants' remittances in the Southern and Eastern Mediterranean countries. They used GDP, inflation, interest rate differential and exchange rate as the determinants of remittances. The study found a significant relationship between the variables used in the analysis. The findings revealed a negative relationship between remittances and inflation. Neypti et.al (2005) also conducted a study on worker's remittances in Turkey. They proved through empirical evidence that many variables like interest rate, inflation rate, growth and host country level incomes have significant relationship with capital inflow. Among them, they found that inflation have indirect relationship with remittances as well. Elbadawi A I. and Rocha R R. (1992) studied the determinants of Expatriate Workers' Remittances in North Africa and Europe. The authors test their model using Greek migration data and find per capita remittances to

be positively related to per capita income and interest rates in the host country and negatively related to inflation rates in the home country.

Negative relationship between exchange rate and remittances is analyzed by Zeb A. (2015). They used Johansen and Juselius Co integration approach to find long run relationship of variables and applied vector error correction model to check short run relationship on time series data during the period 1995-2013. They identified terrorism and exchange rate performs as a push factor for Pakistan and other variables like GDP and inflation work vice versa. Nishat M. and Bilgrami N. (1993) investigated the determinants of worker's remittances in Pakistan. They included income, experience, age, property, and education as the factors affecting remittance in Pakistan. The study found most of these variables to be significant and suggested to export unskilled workers rather than skilled workers. Banga R. and Sahu K P. carried out a study to analyze the impact of remittances on poverty in developing countries. This study undertook the analysis of developing countries. They empirically investigated the relationship between poverty and remittances and found that remittances negatively affect the poverty, but the share of remittances should be more than 5% of GDP to show its effectiveness.

3. THEORETICAL FRAMEWORK

Remittances are main part of foreign inflows in Pakistan. Studying the determinants of remittances is an important study perspective. There are two types of workers that go abroad which are included in our study; skilled workers and unskilled workers. It is pertinent to ask whether skilled workers send more remittances to home country or unskilled. From the perspective of home country migration of skilled workers is harmful for the domestic economy and if they do not send remittances more than they would have earned home then it is further exacerbating the issue. So, it is an important factor affecting remittances hence added into our analysis. So the remittances function can be expressed as;

$$REM = f\,(SM) \qquad f>0 \qquad \text{.....(1)}$$

Where REM = remittances and BDS = skilled migrants.

Skill set of individuals migrating abroad is an essential factor determining their earnings; hence, the remittances. Now it is important from the perspective of comparison to take into account the impact of unskilled workers which go abroad and send remittances. It is commonly believed that skilled workers earn higher wages so the remit more to home country but as the unskilled establish their skills abroad with the passage of time they also begin to earn more wages. So it is also noteworthy that migration of unskilled workers does have its implications on remittances. So we can express the remittances function as;

$$REM = f\,(SM, UM) \qquad f_2<0 \qquad \text{.....(2)}$$

Where UM = unskilled migrants.

Besides the skills of migrating workers there are other factors as well which have a liaison with remittances. While talking about remittances one cannot overlook the impact of exchange rate. Exchange rate is important because workers earn wages in foreign currencies abroad which must be converted into domestic currency on the prevailing exchange rate. Appreciation of domestic currency leads to decrease in the value of remittances while depreciation of domestic currency tends to increase in the value of remittances. Now with exchange rate in the analysis the function can be expressed as;

$$REM = f\,(SM, UM, ER) \qquad f_3<0 \qquad \text{…..(3)}$$

The next factor which is considered to be important in the context of remittance is inflation in home country. Although it has not received that much attention in determining remittances, but it does have impact on remittances. Inflation raises the uncertainty in the economy as a result migrant workers tends to retain their income and savings abroad which in turn reduces the flow of remittances. Inflation affects remittances in an indirect manner perhaps this could be attributed a reason for the lesser attention. But some studies have included inflation as a determinant of remittances [Neyapti B. et al (2005)]. Now the remittances function can be expressed as;

$$REM = f\,(SM, UM, ER, INF) \qquad f_4<0 \qquad \text{…..(4)}$$

GDP in the home country is another important factor affecting the flow of remittances. Sustainable growth of GDP in the economy reduces the uncertainty and establishes confidence of the migrants in the home economy as a result they remit most part of their income and savings to home country which means increased remittances. So, the liaison between remittances and GDP is expected to be positive [Jebran k. et al (2015)]. Now the remittances' function can be expressed as;

$$REM = f\,(SM, UM, ER, INF, GDP) \qquad f_5>0 \qquad \text{…..(5)}$$

All these factors are expected to be significant determinants of remittances. Earlier studies have included these variables into the analysis with different perspectives, but no specific study can be found considering all these factors in one model with special emphasis on Pakistan where remittances entails an essential role not only for the economy as whole but also for the migrating individuals abroad and their families back home.

4. METHODOLOGY AND RESULTS

We make use of data from 1982-2017 which has been taken from World Development Indicators (WDI). In this study Johansen co integration technique is used. The following model is used in the analysis:

$$LREM = \beta_1 + \beta_2 GDP + \beta_3 INF + \beta_4\, ER + \beta_5 SM + \beta_6 USM$$

Where, LREM = Log of Remittances, GDP = Gross Domestic Product (GDP)

INF = Inflation ER = Exchange rate

SM = Skilled Migrants USM = Unskilled Migrants

For this technique to be applicable all variables must be integrated of first difference, that is they must be I(1). To check for the stationartiy of the variables Augmented Dicky Fuller test is utilized.

Table 1. Augmented Dicky Fuller test results

	Level		1st Difference	
Variable	t-statistic	Prob.*	t-statistic	Prob.*
LREM	-1.459945	0.8243	-5.062581	0.0013
GDP	0.201367	0.9971	-5.818764	0.0002
ER	0.437697	0.9984	-4.105861	0.0159
UM	-2.387490	0.3793	-4.558639	0.0048
SM	-2.504213	0.3243	-4.111067	0.0143
INF	-2.404613	0.3710	-7.157207	0.0000

Now it is evident from table 1 that all the variables are stationary at first difference as, the probability value and t-statistics (t-statistic values are compared with critical values and were found significant) significant at first difference for all variables. Hence Johansen co integration can be applied to these variables to check for long run relationship and co integration among remittances (REM) and GDP, exchange rate(ER), unskilled migration (USM), and skilled migration (SM). The unit root test for remittances is applied on log value as this study makes use of log-linear model. While for all other variables unit root test is applied on original values.

Table 2. Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistics	0.05 Critical Value	Prob.**
None *	0.903477	206.9240	95.75366	0.0000
At most 1 *	0.821487	129.7710	69.81889	0.0000
At most 2 *	0.622156	72.90888	47.85613	0.0001
At most 3 *	0.513969	40.79086	29.79707	0.0018
At most 4 *	0.348860	16.98193	15.49471	0.0297
At most 5	0.082014	2.823899	3.841466	0.0929

Trace test indicates 5 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Based on the findings of table 2 Trace test indicates five co integrating equations at the 0.05 level which confirms that there exist significant long run relationship between remittances (dependent variable) and all explanatory variables.

Table 3. Unrestricted Co integration Rank Test (Maximum Eigen value)

Hypothesized No. of CE(s)	Eigen value	Max-Eigen Statistics	0.05 Critical Value	Prob.**
None *	0.903477	77.15303	40.07757	0.0000
At most 1 *	0.821487	56.86209	33.87687	0.0000
At most 2 *	0.622156	32.11802	27.58434	0.0122
At most 3 *	0.513969	23.80894	21.13162	0.0205
At most 4	0.348860	14.15803	14.26460	0.0520
At most 5	0.082014	2.823899	3.841466	0.0929

Max-eigenvalue test indicates 4 co integrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Maximum Eigen value test is also used to check for co integration along with Trace test. As it can be seen from table 3 maximum Eigen value test also indicate 4 co integrating equations. It confirms the existence of log run relationship.

Table 4. Normalized cointegrating coefficients (standard error in parentheses)

LREM	SM	UM	GDP	INF	ER
1.000000	-5.36E-06	3.79E-06	-9.84E-12	0.049228	0.027433
	(1.9E-06)	(1.7E-06)	(2.8E-12)	(0.00862)	(0.00349)

Table 4 depicts the normalized co integrating coefficients with standard error in parentheses. Now in order to interpret the estimated coefficients the signs of the coefficients are reversed [Maggiora & Skreman, (2009)].

Table 5. Normalized co integrating coefficients (reverse signs)

Variables	LREM	SM	UM	GDP	INF	ER
Coefficients	1.00	5.36	- 3.79	9.84	-0.0492	-0.027
Standard error		(1.9)	(1.7)	(2.8)	(0.00862)	(0.00349)
t-statistics		2.82	-2.22	3.51	-5.70	-7.74

Table 5 depicts the normalized co integrating coefficients with reverse signs in order to make interpretation. In table 5 t-statistics is also introduced in addition to standard error which is calculated by using following formula;

$$\text{t-statistics} = \hat{\beta}/\text{standard error}$$

t-statistics is used to check the significance of estimated parameters, here it shows that all the variables included in the model are significant hence they can be used for interpretation and analysis.

Now we come to the interpretation of the coefficients of the variables included in the model. The main focus of our study is to find out whether skilled workers remit more to home country or unskilled. The value of the coefficient of brain drain for skilled workers is 5.36 which mean that one unit rise in brain drain of skilled workers results in 5.36 percent increase in the flow of remittances. While the coefficient of brain drain for unskilled workers is -3.79, it indicates that one unit increase in migration of unskilled workers causes 3.79 percent decline in the flow of remittances. Now it is evident from the

results that the skilled workers remit more to home country as compared to unskilled workers as there is positive association among brain drain for skilled workers and negative among brain drain for unskilled workers and remittances [Niimi Y. et al (2008)]. Skilled workers have the required skills and hence earn more wages abroad while the unskilled workers have to start at lower wages because of their incompetency hence they remit less as compared to skilled workers. Niimi Y. et al (2008) found that skilled migrants remit less as remittances declined with the share of migrants with tertiary education. Besides generally (not always) the main purpose of migration of skilled workers is to earn higher wages abroad, so they remit more comparative to unskilled workers. Although the results demonstrates that skilled workers remit more to the home country than the unskilled workers but while discussing the comparison of remittances among skilled and unskilled workers it cannot be overlooked that the migration of skilled workers is loss to the home economy in the form of human capital. The migration of unskilled workers is less harmful for the economy as they are not that much compatible in the ever changing and upgrading technology in the current world.

The value of the coefficient of GDP is 9.84 which indicate that one unit increase in GDP causes 9.84 percent increase in remittances. This shows positive liaison between remittances and GDP [Jebran k. et al (2015)]. This is a significant relationship, and the value of the coefficient suggests that remittances are in some way determined by changes in GDP (Although it is not as extensively used in the analysis of remittances in the literature). The value of the coefficient of inflation is -0.0492, it means that a one unit rise in inflation of home country results 0.0492 percent decline in remittances. This shows a negative relationship among remittances and inflation [Neyapti B. et al (2005)]. This is an important finding as inflation represents the uncertainty in the home country. The results show that unstable prices have a negative impact on remittances inflow to the home country.

The value of coefficient of exchange rate is -0.027 which means that a one unit increase in exchange rate causes remittances to decline by 0.027 percent, here the relationship is negative [Jebran k. et al(2015)]. Exchange rate entails much importance in the context of remittances because remittances are transferred from foreign to domestic currency on the prevailing exchange rates of respective currencies. So, exchange rate which is deemed to be a significant factor affecting remittances is proved to be of much importance. In the current scenario when exchange rate of Pakistani rupee is fluctuating it becomes even more pivotal to see how it impacts the remittances.

5. CONCLUSION

The main focus of this study is the analysis of remittances in Pakistan in the context of skilled and unskilled workers by using Johansen's approach to co integration. The comparison of the remittances resulting from the migration of skilled and unskilled workers is done by taking the migration data of skilled and unskilled workers from period 1982-2017. Alongside the comparison of the remittances received from skilled and skilled workers inflation, GDP and exchange rate are also included

as important factors determining remittances in Pakistan. All the variables used in the analysis have significant impact on remittances. The study found that skilled workers remit more as compared to unskilled workers. From the perspective of flow of remittances brain drain (migration of skilled workers) is a significant and encouraging contributor. But when talking about the migration of skilled workers its impact on the domestic economy cannot be overlooked as it comprises the loss of human capital which is vital for the growth and development of the domestic economy.

The results of the study suggest that when economy faces the fluctuations in the exchange rate and inflation it affects the remittances negatively. These fluctuations do not only disturb the flow of remittances coming into the country but also have negative effect on the families of individuals working abroad. So, the fluctuations in the macroeconomic variables in the economy should be minimized and more sustainable economic environment must be provided which will not only ensure economic stability in the economy but will also have its implications on remittances as well. While considering the migration of unskilled workers they ultimately increase the flow of remittances as they get skilled with the passage of time, but they still remit less than the skilled workers and are more vulnerable than the skilled workers. The findings of the study lead to a conclusion that providing the necessary skills to the people who are in the labor force is imperative not only to be successful and significant contributors in the domestic economy but also for working abroad. So, government should design and implement the policies which are mainly focused on the development of the skills of the labor force.

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