

Macroeconomic Determinants of Remittances in South Asian Countries: A Dynamic Panel Study

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Abstract *The study attempts to identify the macroeconomic determinants of remittance inflows in South Asian countries. It uses additively separable utility function as theoretical framework and the Arellano-Bover/Blundell-Bond Systems of Generalized Method of Moments (SGMM) method as empirical framework. We use data on five countries in South Asia over the period 1976-2012. Results indicate that the remittance inflows in South Asia are altruistically motivated by the economic condition of home country whereas they are motivated by self-interest in case of the host country's economic condition. The emigrant stocks abroad, financial development and political rights significantly and positively affect the remittance inflows. The impact of 9/11, 2001 on remittance inflows is also found significantly positive. This is probably as a result of receiving more remittances through formal channel instead of informal channel due to strict monetary regulation. The study implies that well managed financial, political and macroeconomic environment and pro-growth policy formulation are crucial to attract more remittances in this region.*

1. Introduction

Remittances to developing countries are increasing substantially in the recent years. According to Migration and Development Brief 23 (World Bank, 2014), international migrant remittances to developing countries are projected to grow by 5.0 percent to reach US\$435 billion in 2014, accelerating from the 3.4 percent

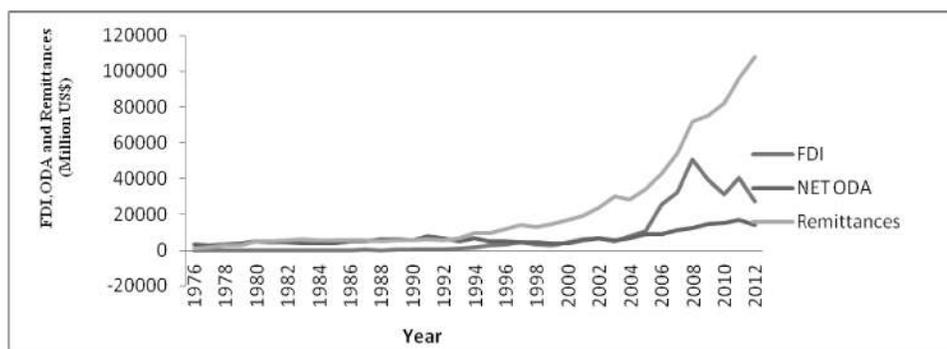
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expansion of 2013 and rise further by 4.4 percent to reach US\$ 454 billion in 2015. Global remittance flows, including flows to higher-income countries, are expected to follow a similar pattern, rising from US\$582 billion in 2014 to US\$608 billion in 2015. In 2013, remittances are more than three times larger than Official Development Assistance (ODA), steadier than both private debt and portfolio equity flows, and excluding China significantly exceeded foreign direct investment (FDI) flows to developing countries. They are also more stable component of receipts in the current account, reliably bringing in foreign currency that helps sustain the balance of payments and dampen gyrations. The main drivers of growth in remittance flows are migrant stocks and the expansion of incomes in the destination countries. Remittance flows from major oil producing countries track closely with oil prices, as do other factors affecting migrant employment opportunities. Exchange rates and the cost of sending remittances are also important determinants. Appreciation of the remittance source country's currency against that of the recipient country boosts remittance flows. Similarly, the falling costs and increasing convenience of sending money are helping lift remittance flows, especially through formal remittance channels. Conversely, compliance with international anti-money laundering and counter financing of terrorism regulations may be a significant cost factor putting upward pressure on prices, which may in turn leave substantial flows in underground channels.

In 2014, South Asia receives US\$117 billion as remittance income from the rest of the world up from US\$111 billion in 2013 and US\$ 82 in 2010. In 2013, remittances to India, the world's largest recipient, are likely to expand by only 1.5 percent in 2014 to US\$71 billion, partly as a result of firming exchange rates. However, partial year data for this year points to very strong growth in Pakistan (16.6 percent), Nepal (12.2 percent), and Sri Lanka (12.1 percent). Growth in remittances to Pakistan may also be motivated on humanitarian grounds following the floods in mid-2014. The expansion is being led by flows from the Gulf Cooperation Council (GCC) countries, where the number of skilled workers has increased, and unskilled migrants are also again finding opportunities (as new migrants take the places of deportees). In Nepal, the outflow of migrant workers rose 16 percent in fiscal 2013-14 compared with a year earlier, supporting robust growth in remittances that have been expanding at double-digit rates since 2010. However, within this region, Bangladesh is now facing a slow growth in remittance inflows due to sending relatively less migrants in abroad than previous period. The remittance inflows in South Asia compared to other financial flows are increasing very rapidly that can be seen in the Figure 1.

Figure 1: International Financial Flows to South Asia



In recognition of the growing importance of migrant remittances to developing countries, a significant amount of research has been conducted on the determinants of remittances. While there is some country specific study of determinants of remittances in South Asian countries (Begum and Sutradhar, 2012; Barua et al. 2007; Shah and Amir, 2011; Bayezid Ali, 2012; World Bank, 2012; Hasan, 2008; Gupta, 2005; Kock and Sun, 2011; and Lueth and Ruiz-Arranz, 2007), relatively very few studies have been analyzed these South Asian countries as a group. To date, there are few studies which have used the panel data approach to analyze migrant remittance inflows to South Asian countries (Salahuddin, 2013; and Imai et al. 2012). However, those studies do not consider only South Asian countries rather they include countries other than the region also. So far our knowledge goes, there are no studies that use dynamic panel approach to determine the macroeconomic factors of remittances in this region. This creates a lacuna to research in this area. That is why, this study concentrates on the macroeconomic determinants of remittances in South Asian countries. Finding the determinants of remittances is important to formulate effective macroeconomic policy environment and to raise the amount of remittance inflows to South Asian countries. We know that macroeconomic factors affect migrants' remittances in different directions. Therefore, understanding the macroeconomic factors underlying the inflows of remittances is crucial for the formulation of relevant, effective and integrated policy towards mobilizing optimal remittances in South Asian countries.

The amount of remittances coming through the formal channel depends upon several factors that play important role in the decision matrix of remittances. According to an OECD (2005) study, the level of migrants' remittance flows depends on both the migrants' ability, i.e., their income and savings from income, and their motivations to remit savings back to the home country. The existing

literature has identified two types of determinants of remittance inflows. The first category refers to the microeconomic determinants that operate mostly at household level and link with socio-demographic characteristics of migrants and their families. These factors include migrant's income, gender, marital status, age, education level, number of years in abroad, migration costs, risk, household income, wealth, shocks and dependency ratio, living expenses in the country of destination and number of children.

The second type of determinants includes economic, political and institutional factors affecting the economy in general. It is generally known as macroeconomic determinants of remittances generally include number of migrants, economic activity in the host and home countries, exchange rates, interest rate, unemployment rate, inflation rate, financial development, monetary policy, fiscal policy, political and economic environment, cost of transferring remittances and black market premium.

Schrooten (2005) categorizes the factors determining remittance inflows into two: objective and subjective factors. Objective factors are related to macroeconomic conditions in the home country that include the average income level and the unemployment rate. The subjective factors are duration of stay of migrants in the host country, level of migrants' skills, earnings of the migrants as well as economic condition of the family at home.

In general, empirical research on determinants of remittance inflows has focused on microeconomic survey data. Microeconomic case studies have, however, been criticized for undervaluing the macroeconomic impact of remittances by focusing on isolated community (Buch and Kuckulenz, 2004). That is why, the current study deviates from the microeconomic perspective and concentrates on determining macroeconomic factors affecting remittance inflows.

In addition to microeconomic and macroeconomic factors, remittance inflows are motivated by the following factors. First, remittances may be motivated by altruism. Altruism as defined in the Cambridge University Press Dictionary Online is 'willingness to do things which benefit other people, even if it results in disadvantage for yourself'. The altruistic theory of remittances from the macroeconomic perspective suggests that remittances are higher when negative shocks and high frictions in the labor market occur in low-income countries, creating an incentive for the active population to migrate to the industrialized world in search of higher-wage jobs. Given an existing strong social tie between a migrant and his/her family left behind, the theory of pure altruism predicts that the migrant will remit more funds to his/her family back home during severe

economic hardships in the home country and reduce both the amount and the frequency of funds transferred during economic boom at home. Accordingly, with a decrease in real per capita income (or during economic recession), inflation episodes, exchange rate instability and constraints in the credit market of a typical labor-exporting country, the migrant is expected to remit more money and more regularly to his/her family back home.

Secondly, remittances may also reflect a portfolio choice about investment opportunities in the home and host country. This implies that as economic conditions in labor-exporting countries improve relative to the labor-importing country, more remittances are received in the labor-exporting countries through higher migrant savings and investment (Coulibaly, 2009). For instance, increased real per capita income in a migrant's native country is considered by the migrant as a positive signal of higher return on investment at home. Also, with higher economic prospects at home, a migrant, who hitherto had lost confidence at home and decided never to return home, could now consider returning home in the future. Such a migrant can increase his/her savings at home. It is for this reason that a higher real deposit interest rate of a migrant's home country relative to the migrant's host country is expected to impact positively on remittance inflows in the labor-exporting country. In a similar manner, as the national currency of a migrant's home country becomes stronger and stable domestically (low inflation) and internationally (exchange appreciation), the migrant may regain his/her confidence in his/her home country and, consequently, remit more funds home for the commencement of income-generating projects. Thirdly, remittances can be driven by mixed motives rather than pure altruism and pure self-interest. This is most likely to be the case at the macroeconomic level where economic models are formulated from the mixed motive viewpoint, which involves a combination of pure altruistic motive and pure self-interest motive. Finally, once migrants have decided how much to remit, must decide how to send it. High official costs such as money transfer fee or the presence of dual exchange rate or the level of financial development would affect the extent to which remittances are transferred formally and recordedly. The rest of the paper is organized as follows: Section 2 explains the theoretical and methodological framework, Section 3 provides empirical results and Section 4 gives the conclusion.

2. Theoretical Framework

Considering the theoretical ideas of Lucas and Stark (1985) and taking the ideas of mathematical formulation of Rapoport and Docquier (2005), Vargas-Silva and Huang (2006) and Adenutsi (2014) an optimal theoretical framework is designed

to determine the macroeconomic determinants of remittances in South Asian countries. Within this framework, a representative migrant maximizes his or her life time consumption and transfers (remittances) to his or her family at home with respect to his/her income constraint, initial divergence constraint and impetus effect constraint. The utility function is composed of consumption goods and transfers (remittances).

The income constraint reflects the fact that the migrant's total disposable income must be equal to the total expenditure on his/her own consumption of composite goods, remittances and financial asset holdings. The initial divergence constraint highlights the initial difference in the migrants' home country and host country conditions. It is actually a total wealth constraint. The impetus effect constraint suggests that the total amount of funds transferred is dependent upon the prevailing economic conditions and regulatory environment in the migrants' home country. The transversality conditions are imposed to reflect the fact that no individual/household can be in a 'Ponzi-Game' situation. That is, none can continue borrowing perpetually without loan repayment and at the terminal stage, the migrant must repay all his/her debt. For optimality in consumption, the individual dies with no saving. The steady-state solution of the model allows us to hypothesize how remittances respond to changes in the economic conditions of the host and home country and to determine the quantity of composite goods and amount of remittances that individual migrant chooses to maximize his/her utility. With this framework, the explicit intertemporal equilibrium relationships between the inflows of remittances and other relevant macroeconomic factors at home and host country are established.

We assume that we have a two period model in which remittances are sent in the first period. First period represents an initial stage of international migration of an individual (emigrant) typically from a less developed country (home country) to a more developed country (host country). Thus the economically active migrant resides in a relatively industrialized country where she/he is engaged in an income-generating economic activity whilst her/his dependants continue to live in her/his low income home country. In this context, the utility of the migrant depends on his/her personal consumption in the host/foreign country (C_f) and the consumption of his/her family at home country (C_h). The utility function of the representative migrant in the first period is written as $U(C_f, C_h)$ with $U_1 > 0$, $U_{11} < 0$, $U_2 > 0$, $U_{22} < 0$. For simplicity, we assume that utility is additively separable. The consumption expenditure of the migrant's household living at home depends on the income and remittances received, (ϕr) where parameter ϕ represents ϕ the cost associated with sending remittances and $(\phi r \leq \dots)$. This implies

that although a migrant remits r dollars back home but the household only receive a fraction (θr)

Migrant’s household income is separated into two components. The first component is the fraction of household income that is not susceptible to changes in the macroeconomic conditions of the home country (Y_h). The second component is the fraction of household income, γY_h , that is susceptible to changes in the macroeconomic conditions on the home country. Therefore, the income received by the migrant’s household living at home is given by $Y_h + \gamma Y_h$ with γ capturing the relationship between the economic conditions in the migrant’s native country and the average income earned by his/her family at home. It is assumed that $\gamma \geq 0$ which implies that an improvement in the economic conditions in the home country is associated with an improvement in the household, even though the magnitude of γ may differ across households.

The consumption function of the migrant’s household living at home is given by $C_h[(Y_h + \gamma Y_h), \theta r]$. The consumption function is additively separable with $C_{h1} > 0$, $C_{h2} > 0$, $C_{h11} < 0$ and $C_{h22} < 0$. Likewise, the income of the migrant is in the form of $y_f + \eta Y_f$ such that η reflects the relationship between the economic conditions in the host country and the income the migrant earns in the host country. In addition to consuming and sending remittances, the migrant saves a percentage of his/her income in the home country, s . Thus, the income constraint of the migrant during the first period can be written as $y_f + \eta Y_f = C_f + r + s$. In this case, y_f is the fraction of emigrant’s income in the first period that is not susceptible to changes in macroeconomic conditions of the host country ηY_f is the fraction that is susceptible to change and r is the proportion of the migrant’s disposable income which she/he remits home, whilst ‘ s ’ represents the fraction of migrant’s income saved in the home country. In the second period, migrant’s household migrates to the host country and joins the emigrant. Similar results can be obtained assuming that in the second period the emigrant returns to the home country and joins the household. If this assumptions hold, then the optimization problem of a migrant is given as

$$\max_{\{c,r,s\}} U(C_f, C_h) + \psi V(C_z) \tag{1}$$

subject to, $y_f + \eta Y_f = C_f + r + s$ (2)

and $C_z = y_z + \eta Y_z + (1 + i)s$ (3)

where, $V(C_z)$ is the utility from second period consumption with $v_1 > 0$, $V_{11} < 0$, and i is the interest rate (intuitively the deposit rate) of the host country, ψ is a discount factor, and Y_z and Y_f have similar interpretations to Y_f and Y_f but for the second period. The first order condition of the optimization problem yields:

$$U_1 = \psi V_1(1+i) \quad (4)$$

$$\phi U_2 C_{hr} = \psi V_1(1+i) \quad (5)$$

From equations (4) and (5), we get the derivative of r with respect to host country income Y_f as:

$$\frac{\delta r}{\delta Y_f} = \frac{\eta \psi U_{11}(1+i)^2}{D} \geq 0 \quad (6)$$

where D is the determinants of the matrix of the second derivatives that can be written as:

$$D = U_{11}\psi V_{11}(1+i)^2 + \phi^2 \psi V_{11}(1+i)^2 [U_{22}C_{hr} + U_2 C_{hrr}] + U_{11}\phi^2 [(C_{hr})^2 U_{22} + U_2 C_{hrr}] > 0$$

The central implication of equation (6) is that an improvement in the economic conditions of the host country positively affects remittance flows from the host country to the migrants' home country. This is so because an increase in y_f implies improvements in economic conditions in the host country which enable a migrant to remit more as $\eta \geq 0$, given that households spend their incomes on normal goods. It can also be shown that an improvement in the economic conditions of the migrant's home country is associated with a decrease in remittance inflows in the home country, that is:

$$\frac{\partial r}{\partial Y_h} = (-) \left[\frac{\phi \psi U_{22} C_{hr} C_{hyh} [U_{11} + \psi V_{11}(1+i)^2]}{D} \right] \leq 0 \quad (7)$$

Equation (7) is non positive when a migrant is remitting for altruistic purposes. Under this assumption, the migrant remits low amount of funds to his/her family in the home country because the target household is better off ($\gamma \geq 0$).

The model presented above allows us to hypothesize how remittances respond to changes in the conditions of the host and home country. We estimate those responses in the following empirical section.

2.1 Empirical model and Methodological Issues

The empirical model of remittance determinants is based on the theoretical framework described above and specified with a framework of dynamic panel data estimation method. The general dynamic panel data model is written as

$$R_{it} = \alpha_i + \rho R_{i,t-1} + X'_{it}\beta + \varepsilon_{it} \quad (8)$$

where the residuals are white noise error such that $\varepsilon_{it} \sim N(0, \delta_\varepsilon^2)$ and $\alpha_i \sim iid(0, \delta_\alpha^2)$ and ρ is a scalar such that $|\rho| < 1$; $i = 1, 2, 3, \dots, 5$ is an index for five South Asian countries; $t = 1, 2, 3, \dots, T$ is an index for time variants, in this case years, so that $T=38$ for the overall period, 1976-2012. The endogenous variable R is a measure

of remittances, X_{it} is a row vector of explanatory variables that affect the inflow of remittances with the dimension k where $k=n*1$ and n is the number of exogenous variables. $R_{i,t-1}$ is included as an explanatory variable so as to capture the theoretical conviction of dynamic effects of remittance inflows. This suggests that migrant remittances could either decay or decrease in value overtime, often by the second generation as family and social ties become weak (Glytsos, 1997). Moreover, the inclusion of the lagged dependent variable in the regression equation (1) is justified by two reasons. First, by including the lagged value of remittances as a regressor we control for all the unobserved factors which affect remittances and which, at the same time, are potentially correlated with other macroeconomic explanatory variables in the equation. Thus, the inclusion of the lagged dependent variable in the regression equation allows avoiding the problem of omitted variable bias. Second, the existing literature on remittances argues that remittances are persistent as they tend to adjust to a certain long-run desired level. Hence, the inclusion of dependent variable captures this effect (Melkadze, 2012).

The explanatory variables are official exchange rate, home country inflation rate, migrant's host country income, migrant's home country income, broad money as a percentage of GDP in the home country, number of migrants to population ratio in the home country, and institutional quality. A time-dummy (D1) is introduced as an explanatory variable to capture post-9/11, 2001 effect such that $D1=0$ for 1976-2001 and $D1=1$ for 2002-2012. The introduction of D1 is also important as it helps to prevent any possible cross-individual correlation or contemporaneous correlation. ρ is the unknown parameter of the lagged endogenous variable, β is the unknown parameter vector of the k exogenous variables and α_i shows the individual country specific fixed effects. A more specific version of equation (8) can be written as:

$$R_{i,t} = \alpha_0 + \sum_{p=1}^n \alpha_p R_{i,t-p} + \alpha_1 PCGDP_{f_{i,t}} + \alpha_2 PCGDP_{h_{i,t}} + \alpha_3 OEXR_{i,t} + \alpha_4 INF_{i,t} + \alpha_5 M2GDP_{i,t} + \alpha_6 PR_{i,t} + \alpha_7 D1_{i,t} + \alpha_8 Migpop_{i,t} \quad (9)$$

where R_{it} is the remittances to GDP ratio, R_{it-p} is the lagged remittances to GDP ratio, $PCGDP_{fit}$ is the host country's per capita GDP, $PCGDP_{hit}$ is the home country's per capita GDP, $OEXR_{it}$ is the home country's official exchange rate, INF_{it} is the home country's inflation rate, $M2GDP_{it}$ home country's broad money as a percentage of GDP, PR_{it} denotes index of political rights of home country, $D1_{it}$ is the time dummy and $Migpop_{it}$ indicate the number of emigrants to population from home country.

The specification in equation (9) cannot be easily estimated with the standard panel data methods of Ordinary Least Square (OLS), panel Fixed Effect (FE) or

Random Effect (RE) because of endogeneity problem. Generally, GMM method proposed Arellano and Bond (1991) is employed to estimate the parameters in dynamic panel data model. In this method first differenced transformed series are used to adjust for the unobserved individual specific heterogeneity in the series. But Blundell and Bond (1998) find that this method has poor finite sample properties in terms of bias and precision, when the series are persistent and the instruments are weak predictions of the endogenous changes. Arellano and Bover (1995) and Blundell and Bond (1998) propose a Systems of Generalized Method of Moments (SGMM) based approach to overcome these limitations in the dynamic panel data models. This method uses extra moment conditions that rely on certain stationarity conditions of the initial observations. The SGMM estimator combines the standard set of equations in the first differences with suitably lagged levels as instruments, with an additional set of equations in the levels with lagged first differences as instruments. The SGMM estimators are based on the assumptions: 1) the error term is orthogonal to the exogenous variables so that, $E(X'_{it}\varepsilon_{it}) = 0$, (2) the error term is uncorrelated with the lagged endogenous variable implying that $E(R_{it-t}\varepsilon_{it}) = 0$, and (3) the exogenous variables might be correlated with the individual effect in which case. $E(X'_{it}\alpha_i) \neq 0$

2.2 Data

We use annual time series data covering the 1976-2012 periods for India, Bangladesh, Nepal, Pakistan and Sri Lanka, most of the data are obtained from secondary sources. We form an unbalanced panel data series on the basis of availability of data. We do not consider the remaining other countries of South Asia due to unavailability of data. The main source of data is World Development Indicators-2013. But migration data are collected from the national sources namely Bangladesh Bureau of Employment and Manpower (BMET), Ministry of Overseas Indian Affairs (MOIA), Department of foreign Employment of Nepal, Bureau of Emigration of Government of Pakistan and Sri Lankan Bureau of Foreign Employment (SLBFE). Per capita GDP of host country is calculated by averaging the top five remittance sending countries. Political Rights data are collected from the data base of Freedom House Foundation.

2.3 Definition and Expected Signs of the Variables Used in the model

The study includes remittance GDP ratio as dependent variable. Our explanatory variables are not strictly exogenous because we also include lagged dependent variable as an exogenous variable in our dynamic panel data study. In addition to

lagged remittance GDP ratio, we use domestic inflation rate, official exchange rate, home and host country's income level, broad money to GDP ratio and political freedom as explanatory variables. Moreover, a time dummy of 9/11, 2001 has been incorporated to see whether there is any change in remittance inflows that come through formal channel. Definitions and expected signs of the variables used in the model are given in Table 1.

Table 1: List of Variables, their Definition and Expected Signs

Name of the variables	Definition of the variables	Expected signs
Remittance-GDP Ratio	Personal remittances comprise personal transfers and compensation of employees. Data are the sum of two items defined in the sixth edition of the IMF's Balance of Payments Manual: personal transfers and compensation of employees. It is measured as a ratio of GDP.	Dependent Variable
Lagged Remittance-GDP Ratio	The immediate past values of the Remittance-GDP ratio.	+/-
Inflation Rate	Inflation as measured by the annual growth rate of the GDP implicit deflator shows the rate of price change in the economy as a whole.	+/-
Official Exchange Rate	The annual value of domestic currency in terms of US Dollars.	+/-
Per Capita GDP of Home Country	GDP per capita of a typical South Asian country is gross domestic product divided by midyear population. Data are in current U.S. dollars.	-
Per Capita GDP of Host Country	Average GDP per capita of a typical South Asian countries' gross domestic product divided by midyear population. Data are in current U.S. dollars.	+
Broad Money to GDP Ratio	Broad money is the sum of currency outside banks; demand deposits other than those of the central government; the time, savings, and foreign currency deposits of resident sectors other than the central government; bank and traveler's checks; and other securities such as certificates of deposit and commercial paper.	+/-
Political Rights	Political Rights are measured on a one-to-seven scale, with one representing the highest degree of political freedom and seven the lowest.	+/-
Post 9/11,2001	A dummy to capture post-September 11, 2001, when the US and other migrant-host countries improved regulations on international money transfers, which has discouraged migrants from using informal channels to remit.	+
Migrant population ratio	Total number of migrants are divided by population size to get data on migrant population ratio	+

3. Empirical Results

Results of determinants of remittances in South Asian countries are presented in Table 2. A one percent level of statistical significance of the Wald statistics shows that the explanatory variables jointly explain the dependent variable in the models. The positive statistical value of lagged remittance GDP ratio indicates that remittances have strong feedback effects on determining more remittances.

Table 2: Results of SGMM Estimation

Variable	Coefficient	Probability Value
Lag1 Remittances	0.8250098***	0.000
Inflation rate	-0.0282266*	0.090
Official exchange rate	-0.0079307	0.174
Home-country income	-0.001472***	0.000
Host-country income	0.000024	0.148
Broad money to GDP	0.0185221*	0.037
Number of migrants to Population in Home Country	285.7256***	0.000
Political rights	0.2859274***	0.000
Dummy for September 11, 2001	0.9007509***	0.002
Constant term	-0.8755116*	0.067
Number of observations	148	
Number of Cross Section	5	
Wald (χ^2)	4949.11***	0.000

Note: */*** indicate significance at 10 percent and 1 percent respectively.

The rate of inflation affects remittance inflows negatively and significantly. This indicates that inflation is regarded as a symptom of economic instability in home country to the migrant population. that is why, they remit less amounts of remittances rather they prefer to remit later for not to afford the inflationist effect. Insurance motivation may work here in sending remittances. The result shows that one unit changes in inflation rate reduces remittance GDP ratio by 0.0282266 units.

The official exchange rate does not affect remittance inflows significantly in South Asian region. However, the negative sign attached to official exchange rate indicates that the investment and insurance motivations are the dominant motivation in the remitting decision. The impact of an appreciation of the local currency in the case of insurance motivation would be the same as the impact of inflation. The migrant would prefer to remit more later to offset the impact of the appreciation of the local currency (because he must send more money in the foreign currency). In the case of investment motives, especially for the

investments in housing, the migrant is expected to decrease the amount of remittances in the case of an appreciation of the origin country's currency. This is because, the cost of the construction increases in the currency of his host country.

Remittances to South Asian countries do seem to play a shock-absorbing role. The coefficient of per capita GDP in the home country's per capita GDP is significantly negative. It shows that if per capita GDP of home country decreases by one unit, remittance GDP ratio rises by 0.001472 units. This suggests that when adverse economic shocks decrease incomes in their home country, migrants would remit more to protect their family from those shocks. Another way of interpreting this result is that migrants send remittances so that those left behind can maintain a certain quality of life. In that case, migrants must send more if those who receive remittances become poorer. That is migrants are altruistically motivated to sent remittances.

As expected, the coefficient of host country's per capita GDP is positive, which means that the location of migrant communities matters—the wealthier the country where migrants are located, the higher the remittances they send back home. However, the coefficient is found insignificant probably as a result of not including all host countries where migrants emigrated.

The coefficient of political rights is significantly positive. It indicates that countries with better institutions or a more stable political system would receive more remittances relative to GDP. Institutional quality, political rights and governance situation can be viewed as reflecting the business environment, which in turn should influence the amount of remittances driven by the investment motive. This reflects the portfolio approach to send remittances in this region.

The coefficient of broad money (M2) to GDP ratio as an index of financial development is found significantly positive. This means that one unit change in broad money to GDP ratio attracts 0.0185221 unit remittance-GDP ratio. Our results suggest that remittances are positively correlated with financial deepening. Countries with more developed financial markets would attract more remittances relative to GDP. Because financial development ease the process of money transfers and reduce the fee associated with sending remittances through competition, so that it can raise the amount or share of remittances transferred through official channels. Our finding is consistent with that of Freund and Spatafora (2005) and Singh et al. (2010).

Stock of migrants to population ratio is positively correlated with the level of remittance to GDP ratio implying that growing stock of migrants abroad contributes to higher level of remittances. Results indicate that if migrant

population ratio changes by one unit remittances GDP ratio rise by 285.7256 units. This result complies with that of Singh et al. (2010) and Barua et al (2007).

The coefficient of dummy variable (D_1) is significantly positive. This indicates that there is an upward shift in the flow of remittances from abroad, in the aftermath of September 11, 2001. Probably this is because, tighter regulations of international money transfers and clampdown on the use of informal transfer channels and channeling more remittances through formal channel.

4. Conclusion

The study sets out to analyze the macroeconomic determinants of remittances in five South Asian countries over the period of 1976-2012 by applying the Arellano-Bover/Blundell-Bond Systems of Generalized Method of Moments (SGMM) method. It shows that the main determinants of remittance inflows in South Asian countries are host and home countries income, number of migrants abroad and financial deepening, domestic inflation and domestic political rights. The empirical results suggest that remittances in South Asia are mainly driven by altruistic motive which is indicated by significant negative coefficient of domestic per capita GDP. That is, they increase when domestic economic conditions in this region worsen, emphasizing compensatory nature of remittances.. The positive coefficient of 9/11, 2001 dummy indicates that migrants are now channeling more remittances through formal channel. Our findings also suggest that well functioning domestic institutions seem to be better at unlocking the potential for remittances to contribute to faster economic growth in this region. A deeper financial sector or a more stable political environment could contain the adverse effects of remittance flows on growth and enhance their positive contributions.

References

1. Adenutsi Deodat E. (2014), Macroeconomic Determinants of Workers' Remittances and Compensation of Employees In Sub-Saharan Africa, The Journal of Developing Areas, Volume 48, Number 1, Winter 2014.
2. Ali Mohammad Bayezid, (2012), Macroeconomic Factors Influencing Foreign Remittances: The Case of Bangladesh. International Journal of Academic Research in Accounting, Finance and Management Sciences, Volume 2, Issue 3.
3. Arellano Manuel and Olympia Bover, (1995), Another Look at the Instrumental Variable Estimation of Error-Components Models, Journal of Econometrics, Vol. 68, No. 1.
4. Arellano Manuel and Stephen Bond, (1991), Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations, Review of Economic Studies, Vol. 58, No. 2.
5. Barua, Shubhasish Majumder, Md. Alauddin and Dr. Md. Akhtaruzzaman, (2007), Determinants of Workers' Remittances in Bangladesh: An Empirical Study, MPRA Paper No. 15080. Policy Analysis Unit, Bangladesh Bank, Dhaka.
6. Begum Mst.Nurunaher and Rama Rani Sutradhar, (2012), Behavior of Remittance Inflows and its Determinants in Bangladesh, Working Paper Series: WP1202, Research Department Bangladesh Bank.
7. Blundell, Richard W. and Stephen Bond, (1998), Initial Conditions and Moment Restrictions in Dynamic Panel Data Models, Journal of Econometrics, Vol. 87, No. 1.
8. Buch, C. and A. Kuckulenz, (2004), Worker Remittances and Capital Flows to Developing Countries, Centre for European Economic Research (ZEW) Discussion Paper No. 04 31, ZEW, Mannheim.
9. Chami, R., A. Barajas, T. F. Cosimano, C. Fullenkamp, M. Gapen and P. Montiel, (2008), Macroeconomic Consequences of Remittances, IMF Occasional Paper No. 259 Washington, D.C.: International Monetary Fund.
10. Coulibaly, Dramane, (2009), Macroeconomic Determinants of Migrants' Remittances: New Evidence from a Panel VAR, CES Working Paper 2009.07. Paris: Centre d'Economie de la Sorbonne.
11. Freund, Caroline and Nikola Spatafora, (2005), Remittances: Transaction Costs, Determinants, and Informal Flows, World Bank Policy Research Working Paper, Vol. 3704, Washington, DC: The World Bank.

12. Glytsos, Nicholas P. (1997). Remitting Behavior of “Temporary” and “Permanent” Migrants: The Case of Greeks in Germany and Australia, *Labor*, Vol. 11, Iss. 3.
13. Gupta, Poonam, (2005). Macroeconomic Determinants of Remittances: Evidence from India, IMF Working Paper 05/224. Washington, DC: The International Monetary Fund.
14. Hasan Mohammad monirul, (2008), The macroeconomic determinants of remittances in Bangladesh, MPRA Paper No. 27744.
15. Imai Katsushi S. Raghav Gaiha, Abdilahi Ali and Nidhi Kaicker, (2012), Remittances, growth and poverty: New evidence from Asian countries, Occasional papers, International Fund for Agricultural Development (IFAD).
16. Kock Udo and Yan Sun, (2011), Remittances in Pakistan—Why have they gone up, and why aren’t they coming down? IMF Working Paper WP/11/200, Washington, DC: The International Monetary Fund.
17. Lucas, R.E.B. and O. Stark, (1985), Motivations to Remit: Evidence from Botswana, *Journal of Political Economy*, Vol. 93(5).
18. Lueth erik and martin Ruiz-Arranz, (2007), Are Workers’ Remittances a Hedge Against Macroeconomic Shocks? The Case of Sri Lanka, IMF Working Paper WP/ 07/22. Washington, DC, The International Monetary Fund.
19. Melkadze Givi, (2012), Macroeconomic Determinants of Remittances in Georgia: A Dynamic Panel Data Approach, International School of Economics, Tbilisi State University, Georgia.
20. OECD, (2005), The Development Dimension- Migration Remittances and Development OECD Publishing, Paris, France.
21. Rapoport, H. and Docquier, F. (2005), The economics of migrants’ remittances. In L.,A, Gerard-Varet, S-C Kolm and J. Mercier (Eds) *Handbook of the Economics of Reciprocity, Giving and Altruism*, Amsterdam: North Holland.
22. Salahuddin Mohammad, (2013), Empirical Link Between Growth and Remittances: Evidence from Panel Data, University of Southern Queensland, Australia.
23. Schrooten, M. (2005), Bringing Home the Money - What Determines Worker’s Remittances to Transition Countries? Institute of Economic Research, Hitotsubashi University, Discussion Paper Series.
24. Shah Md. Mahmud Hasan and Md Zobayer Bin Amir, (2011), The Macroeconomic

Determinants of Remittances in Bangladesh: An Empirical Analysis, International Journal of Scientific and Engineering Research, Volume 2, Issue 10.

25. Singh Raju Jan, Markus Haacker, Kyung-Woo Lee and Maelan Le Goff, (2010), Determinants and Macroeconomic Impact of Remittances in Sub-Saharan Africa, Journal of African Economies, Vol. 20, number 2.
26. Vargas-Silva, Carlos and Peng Huang, (2006), Macroeconomic Determinants of Workers' Remittances: Host vs. Home Country's Economic Conditions, Journal of International Trade and Economic Development, Vol. 15, No.1.
27. World Bank, (2014). Migration and Development Brief 23, Washington DC. The World Bank.
28. World Bank, (2012), Bangladesh: Towards Accelerated, Inclusive and Sustainable Growth—Opportunities and Challenges, Poverty Reduction and Economic Management Sector Unit South Asia Region, World Bank.
29. Yang, D. (2008) 'International Migration, Remittances, and Household Investment: Evidence from Philippine Migrants' Exchange Rate Shocks', The Economic Journal, Vol 118.

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