An Empirical Investigation of the Impact of Foreign Remittances on Poverty in Developing Countries

Mohammad Imran Hossain[1]

[1] Graduate School of Asia Pacific Studies, Ritsumeikan Asia Pacific University, Japan

Abstract

Remittances sent to home countries by migrant workers became significant in amount. Such funds can have profound implications for economic development, human welfare and poverty reduction in a developing country context. This paper examines the impact of foreign remittances on poverty in selected developing countries. A set of time series data has been utilized to empirically check the relationship between remittances and poverty for a list of 44 developing countries worldwide. For the purpose of the study, the 'Three Stage Least Squares' (TSLS) regression technique has been applied. A separate analysis for a group of countries among the list which recorded a remittances to GDP ratio of 2% or more has been performed. The study finds that remittances have a significant negative impact on poverty in a developing country.

Keywords: Foreign remittances, Poverty, Developing countries, TSLS.

Contents

1. Introduction

Workers' remittances represent a significant portion of financial flows to a developing country (Okodua and Olayiwola, 2013). Billions of such funds are transferred through official as well as unofficial channels. In 2012, total official flows of remittances to developing countries were estimated at $401 billion, an increase of 5.3% over the previous year. The figure becomes $529 billion if remittance flows to high-income countries are also included. Remittances sent home by migrants to developing countries are equivalent to more than three times the size of official development assistance (ODA) and can have very important implications for economic development and human welfare (World Bank, 2012).

For many developing countries the amount of remittances flow has reached to such a large level that it becomes significant in terms of the share in GDP (International Monetary Fund, 2009). In many developing countries, more than 20% of GDP is contributed by remittances. Examples include Tonga (38%), Nepal (22%) and the Kyrgyz Republic (28%). For some of the developing countries, remittances form almost 40-50% of their GDP (World Bank, 2013). For instance, in 2012 the remittances to GDP ratio in Tajikistan was as high as 47% (World Bank, 2012). Hence, today in many developing countries worldwide, remittances play an important role in the national economy and because of the large magnitude of remittances relative to their total income flows, those countries rely on remitted funds in many ways (MPI, 2011).

Certainly, remittances do not go unnoticed in most of the countries that receive them (IMF, 2009) and recent data indicates that remittances are increasingly becoming an important source of external financing for many developing countries (Martín *et al.*, 2007). On the other hand, in developing countries large numbers of people live under poverty and remittances help lift a huge number of people out of poverty. The phenomenon has been explained by the World Bank (2013) as such:

> "Remittances can contribute to lowering poverty and building human and financial capital for the poor. Remittances generally reduce the level and severity of poverty, typically leading to: higher human capital accumulation; greater health and education expenditures; better access to information and communication technologies; improved access to formal financial sector services; enhanced small business investment; more entrepreneurship; better preparedness for adverse shocks such as droughts, earthquakes, and cyclones; and reduced child labor."
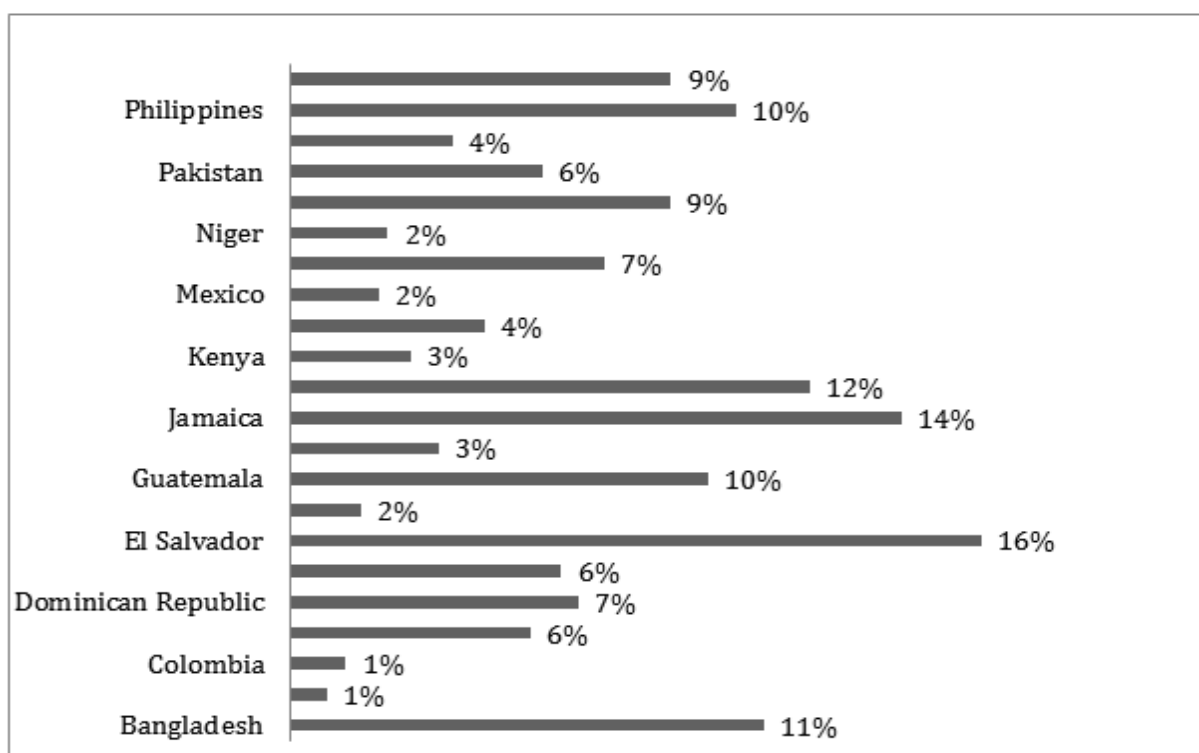

Figure-1. Remittances as a share of GDP (in 2011) for selected developing countries (%)
Source: World Bank (2013)

Typically, migrant people leave their family members behind in their country of origin and support their livelihood with a steady flow of remittances. This implies that remittances transferred by migrant workers directly affect many more people because remitted funds are generally spent on consumption necessities which include food, clothing, shelter, medicine, and education etc. Thus, remittances support poor families with a higher level of consumption than would otherwise be possible. In this way, at least on the surface, remittances help reduce poverty.

Although the empirical literature on the effects of remittance flows on growth appears to be inconclusive, there is a lot of evidence to support the hypothesis that foreign remittances significantly affect poverty and development. IMF (2005) found no statistically significant effect of remittances on economic growth. But Giuliano and Ruiz-Arranz (2005) and Ramirez and Sharma (2009) found that remittances appear to have positive effects on growth only in countries that possess small financial sectors. Chami *et al.* (2003) and Chami *et al.* (2005) found that remittances and economic growth are negatively correlated.

Nevertheles, remittances can impact family welfare, poverty and economic development in direct as well as indirect ways. For an example, Pant (2008) concludes that remittances may stimulate demand for other goods and services in an economy and consequently impact the economy positively. Faini (2003) also suggests a positive relationship between migrant remittances and economic growth. According to Hildebrandt and McKenzie (2005), remittances cause knowledge transfer and change in attitudes of the members of the recipient family. Yang (2003)

and Woodruff and Zenteno (2001) concluded that remittances can spur entrepreneurial activity at the household level. Lopez Cordova (2005) and Adams and Page (2005) indicated a strong and statistically significant negative impact of remittances on poverty (i.e. remittances help reduce poverty). Taylor (1992) and Gustafsson and Makonnen (1993) discovered that international remittances help reduce both poverty and inequality. Adams (2004) also found a similar result and concluded that foreign remittances help reduce the squared poverty gap.

2. Methodology

This study makes an effort to estimate the impact of remittances on poverty in selected developing countries. We use cross-country panel data to gather enough observations to analyze the remittance-poverty nexus. The ultimate objective of this research is to measure the impact of remittances on 'Poverty Headcount' ratios, 'Poverty Gap' at $ 1.25 a day (PPP) and 'Poverty Gap' at $2 a day (PPP) using a set of panel data starting from 1990 to 2012 for 44 developing countries. In order to test whether the impact of remittances share in GDP is stronger beyond a certain threshold level, a separate analysis is undertaken for 27 countries within the list which have recorded a remittance to GDP ratio of 2% or higher. This paper provides the associated systematic theoretical analysis and robust empirical estimation, using the most accurate and comprehensive remittances data available in the World Bank Database.

We derive a simple set of two simultaneous equations incorporating the remittance variable, and then we perform several estimations for the defined model by implementing the study's empirical research on remittances and poverty.

One important objective of this study is to trace a relationship between remittances and poverty in the context of selected developing countries. In the econometric model two simultaneous equations are introduced following United Nations (2011). In the first equation 'poverty' (Poverty Headcount ratios, Poverty Gap at $ 1.25 a day, and Poverty Gap at $2 a day) is considered as the dependent variable while 'Per capita GDP', 'Inequality' (Gini coefficient), and 'Remittances as a share of GDP' are modeled as independent variables (Ravallion, 1997).

In developing countries poverty trends seem to maintain a robust relationship with the choice of poverty estimates. The 'Poverty Headcount Ratio (PCR)' only measures the percentage value of poverty incidence, but does not say anything about the distance of the poor households from the estimated poverty lines. To overcome this problem and to measure the depth of poverty accurately we need to employ one of the two important tools: the Poverty Gap (PG) index and the Squared Poverty Gap (SPG) index. This pair of distributional sensitive techniques can appropriately estimate the depth of poverty in the population by closely tracking the movement in the headcount ratios. Considering the fact that differences in income or consumption between the poor and the poorest group have an important implication for the poverty reality in any developing country, the present study uses both poverty headcount ratio and poverty gap indices.

On the other hand, following IMF (2007), the second equation captures the determinants of remittances by indicating that 'remittance' (as a share of GDP) is explained by 'poverty', 'trade' (as a share of GDP), 'education' (secondary school enrolment ratio) and lagged values of remittance. Hence, the empirical model for this study is obtained as follows:

$$Log(POV_{it}) = \alpha_1 + \alpha_2 Log(PCY_{it}) + \alpha_3 Log(INEQ_{it}) + \alpha_4 Log(REMIT_{it}) + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(1)$$

$$Log(REMIT_{it}) = \beta_1 + \beta_2 Log(POV_{it}) + \beta_3 Log(TRADE_{it}) + \beta_4 Log(EDU_{it}) + \beta_5 Log(REMIT_{i,t-1}) + \varepsilon_{it} \ldots(2)$$

where in equation *(1)*, *POV* stands for poverty, *PCY* represents per capita GDP, the variable *INEQ* represents inequality in terms of Gini coefficient, and *REMIT* indicates remittances as a share of GDP. In the second equation, *TRADE* stands for the trade openness indicator in the form of the total volume of export and import as a share of GDP, *EDU* represents adult literacy rate which is a proxy for secondary school enrolment ratio and $REMIT_{i,t-1}$ is lagged remittances. ε_{it} in both equations is for error terms where $\varepsilon_{it} = \gamma_i + \delta_t + \mu_{it}$. Here γ_i is an individual (country) effect, δ_t is a time effect, and μ_{it} is independently and identically distributed among countries and years. For this study all the variables are in real terms and the errors are assumed to be independently and identically distributed. In order to take account of the endogeneity problem (that there is a possibility of having a bi-directional relationship within two variables such as poverty and remittance) we estimate through the 'Three Stage Least Squares' (TSLS) method using two equations, as indicated above (IMF, 2007).

We assume α_2 to be negative because poverty is expected to decline as per capita income rises. On the other hand, literature suggests that greater inequality leads to higher poverty rate; thus α_3 is expected to be positive. The proposed model estimates the sign and magnitude of α_4 which defines the impact of remittances on poverty. For the above model, β_2 is expected to be positive because it is likely that a higher rate of poverty will cause more people to migrate and thus more remittances will be flowing to a certain country. The coefficient β_3 is also expected to be positive because the more open an economy is the more amount of remittances it will receive. The reason is that more openness will allow remittances to flow in the country easily; also compared to a less open economy labor mobility also may take place more easily. Next, the coefficient of the variable 'education', β_4 may take a positive (negative) sign if the situation of the country is in a way that more (less) educated people migrate. Finally, the last variable 'lagged remittance' captures the dynamic impact. In the model a log transformation has been adopted for all the variables, which allows us to interpret the coefficients as elasticities.

The scope of this paper covers a panel data set from 1990 to 2012 in estimating the specified model. The World Bank Data Bank and World Development Indicators act as the main source. Another source that was also utilized is the International Financial Statistics (IFS) database.

3. Results and Discussion

The empirical findings of the study are presented below. Table 1 shows the statistical estimations for a Three Stage Least Squares Estimations where the dependent variables, 'poverty' (Poverty Head Count Ratio, Poverty Gap at $ 1.25 a day, and Poverty Gap at $ 2 a day) and 'remittances' were estimated against six explanatory variables namely 'per capita GDP' (Current US $), 'Gini Coefficient', 'remittances as a share of GDP', 'lagged remittances',

'trade as a share of GDP' and 'education' (secondary School enrolment rate, %) for the whole sample.

Table 2 depicts the empirical results for 27 countries that have reported remittances to GDP ratio of 2% or more. The 'three stages least square' estimation results show that remittances have a significant negative impact on Poverty Gap at $ 1.25 a day but the impact on other measures of poverty is not statistically significant (Table 2). In both cases GDP per capita significantly affects poverty negatively at 1% significance level as it was expected. Hence, the explanatory variable GDP per capita has a viable effect in poverty reduction. Similarly, Gini Coefficient turns out significantly positive meaning that with increasing 'inequality', 'poverty' also increases. Other variables like 'trade' and 'education' are found to have the right signs and to be statistically significant.

The impact of poverty on remittances appeared to be statistically insignificant but lagged remittances is found to have a significant impact on remittances. It can be inferred here that countries with higher remittances in the initial year, possibly indicating a higher migrant stock, have higher remittances. However, the study shows better results when the analysis is undertaken for countries with 'remittances as a percentage of GDP' of 2% or more (Table 3). Remittances are found to have a significant impact on two of the three measures of poverty namely Poverty Head Count and Poverty Gap at $1.25 a day. This is indicative of the fact that in developing countries remittances have a stronger impact on poverty reduction if they are above the threshold of 2% of GDP.

That remittances can reduce poverty in some developing countries has been reflected in the empirical findings of the study; however, the process of how remittances work for poverty cannot be identified. In the short run, remittances lift poor people out of poverty through helping them finance their necessities. But even if the poor receive the remittances, proper use of them is more important for the sustainable reduction of poverty in the context of a developing country. For this purpose, remittances are required to serve as a source of investments. Therefore with proper policies, remittances may be channeled to achieve both of these ends.

Table-1. Three Stage Least Squares Estimations: Dependent Variables—Poverty and Remittances (44 developing countries; 1995-2010)

Variables	Dependent Variable-Poverty HCR at $1.25 a day (PPP)(% of population)		Dependent variable-Poverty Gap at $1.25 a day (PPP)(%)		Dependent variable-Poverty Gap at $2 a day (PPP)(%)	
	PHCR	Remittances	Pov. G1	Remittances	Pov. G2	Remittances
Per capita GDP(Current US $)	-0.0013*** (0.0002)		-0.0004*** (0.00007)		-0.001*** (0.0001)	
Gini Coefficient	0.2471*** (0.058)		0.174*** (0.0223)		0.189*** (0.0437)	
Remittances as a ratio to GDP	0.1733 (0.1173)		0.0201 (0.044)		0.119 (0.088)	
Poverty		0.065 (0.0796)		0.118 (0.1797)		0.0792 (0.0997)
Lagged Remittances		6.459*** (0.6268)		6.592*** (0.5754)		6.544*** (0.6434)
Trade (% of GDP)		0.072*** (0.0122)		0.073*** (0.0136)		0.070*** (0.0126)
Education		0.124*** (0.024)		0.1231*** (0.0267)		0.125*** (0.0242)
Constant	0.600*** (3.31)	13.27*** (2.67)	-3.501*** (1.294)	-13.177*** (3.055)	-3.18*** (0.76)	-13.29*** (2.714)
R square	0.3549	0.6409	0.4439	0.6516	0.3960	0.6438
Chi2	102.22	299.68	137.35	315.81	118.04	310.28

Table-2. Three Stage Least Squares Estimations: Dependent Variables—Poverty and Remittances (27 Countries with Remittances as a Ratio of GDP as 2% or more)

Independent Variables	Dependent Variable-Poverty HCR at $1.25 a day (PPP)		Dependent variable-Poverty Gap at $1.25 a day (PPP)		Dependent variable-Poverty Gap at $2 a day (PPP)	
	PHCR	Remittances	Pov. G1	Remittances	Pov. G2	Remittances
Per capita GDP(Current US $)	-1.1*** (0.09)		-1.11*** (0.098)		-0.91*** (0.08)	
Gini Coefficient	1.67*** (0.41)		2.52*** (0.43)		0.87*** (0.34)	
Remittances as a ratio to GDP	-0.53*** (0.096)		-0.76*** (0.101)		0.45*** (0.08)	
Poverty		0.064** (0.026)		0.054** (0.026)		0.081** (0.031)
Lagged Remittances		0.97** (0.024)		0.99*** (0.027)		0.97*** (0.024)
Trade (% of GDP)		0.10** (0.05)		0.103* (0.05)		0.116** (0.54)
Education		-0.013 (0.12)		-0.02 (0.11)		-0.044 (0.114)
Constant	2.10*** (0.74)	-0.46 (0.27)	-0.42 (0.78)	-0.17* (0.26)	-3.18*** (0.76)	-0.167 (0.26)
R square	0.6295	0.9592	0.69	0.95	0.61	0.96
Chi2	156.47	2146.47	209.93	2132.64	147.14	2204.60

Note: In both tables *** ** and * indicate a significant level of 1%, 5%, and 10% respectively.

References

Adams, J.R., 2004. Remittances and poverty in Guatemala. World bank policy research Working Paper, No. 3418. Washington: The World Bank.

Adams, R. and J. Page, 2005. Do international migration and remittances reduce poverty in developing countries? World Development, 33(10): 1645-1669.

Chami, R., C. Fullenkamp and S. Jahjah, 2003. Are immigrant remittance flows a source of capital for development? IMF Working Paper No. 03/189. Washington: International Monetary Fund.

Chami, R., C. Fullenkamp and S. Jahjah, 2005. Are immigrant remittance flows a source of capital for development? IMF Staff Papers, 52(1): 55-81.

Faini, R., 2003. The brain drain: An unmitigated blessing? Centro Studi Luca d'Agliano Development Studies Working Paper No. 173.

Giuliano, P. and M. Ruiz-Arranz, 2005. Remittances, financial development, and growth, IMF working paper. Research Department, International Monetary Fund.

Gustafsson, B. and N. Makonnen, 1993. Poverty and remittances in Lesotho. Journal of African Economies, 2(1): 49- 73.

Hildebrandt, N. and D. McKenzie, 2005. The effects of migration on child health in Mexico. World Bank Policy Working Paper No. 3573.

IMF, 2005. World economic outlook. Washington D.C: International Monetary Fund.

IMF, 2007. World economic outlook. Washington D.C: International Monetary Fund.

International Monetary Fund, 2009. Do workers' remittances promote economic growth? International Monetary Fund Working Paper, No. WP/09/153, Washington, DC.

Lopez Cordova, J.E., 2005. Globalization, migration, and development: The role of Mexican migrant remittances. Economía, 6(1): 217-256.

Martín, S.J., N. Jorgensen and J.M. Labeaga, 2007. The volume and geography of remittances from the EU. Brussels: The European Union.

MPI, 2011. Migration data hub. Available from http://www.migrationinformation.org/datahub/ [Accessed July 03, 2013].

Okodua, H. and W.K. Olayiwola, 2013. Migrant workers' remittances and external trade balance in Sub-Saharan African countries. International Journal of Economics and Finance, 5(3): 134-142.

Pant, B., 2008. Mobilizing remittances for productive use: A policy-oriented approach, Nepal Rastra bank. Working Paper Serial Number: NRB/wP/4, Dec 2008.

Ramirez, M.D. and H. Sharma, 2009. Remittances and growth in Latin America: A panel unit root and panel cointegration analysis. Euro-American Association of Economic Development, 9(1): 5–36.

Ravallion, M., 1997. Can high-inequality developing countries escape absolute poverty? Economics Letters, 56(1): 51-57.

Taylor, J., 1992. Remittances and inequality reconsidered: Direct, indirect, and intertemporal effects. Journal of Policy Modeling, 14(2): 187–208.

United Nations, 2011. Impact of remittances on poverty in developing countries. United Nations Conference on Trade and Development. United Nations: New York and Geneva.

Woodruff, C. and R.M. Zenteno, 2001. Remittances and microenterprises in Mexico. Mimeo: UC San Diego.

World Bank, 2012. World data bank. Available from http://databank.worldbank.org/ddp/home.do [Accessed October 25, 2012].

World Bank, 2013. World data bank. Available from http://databank.worldbank.org/ddp/home.do [Accessed July 2, 2013].

Yang, D., 2003. Financing constraints, economic shocks, and international labor migration: Understanding the departure and return of Philippine overseas workers. Harvard University, Dissertation Chapter.