

DOES REMITTANCES REDUCE POVERTY? AN EMPIRICAL EVIDENCE IN SELECTED DEVELOPING COUNTRIES

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Abstract: *This study has examined the impact of remittances on poverty in developing countries from 1981 to 2010 for 54 developing countries. The main contribution of our work show that remittances have significantly decreased the level, depth and severity of poverty in developing countries. Different from the existing studies which have used the traditional panel estimators, this study utilizes the dynamic panel estimators such as System-GMM to tackle the specification issues of endogeneity, measurement errors and heterogeneity. We find that 1 percent increase in remittances decreases the poverty headcount by 0.41 percent.*

Keywords: *Remittances, Poverty, Developing Countries, System GMM*

Introduction

According to World Bank (2015), the remittance inflows surged from \$325 billion in 2010 to \$ 431.60 billion in 2015. Existing evidence has shown that remittances receiving households have higher incomes and expenditure relative to similar households that do not receive remittances. Remittance inflows have grown rapidly and become an increasingly key factor to the objective of poverty alleviation in situations of low income in developing countries. Thus, the linkage between remittances and poverty in developing countries has drawn attention recently. Poverty alleviation in developing countries is one of the vital topics for the United Nation's Millennium Development Goals (MDG). The United Nations proposed the goal of halving poverty in the developing world from 1990 to 2015; however, only a few nations' poverty rates (e.g., East Asia Pacific, Latin America, and the Caribbean) in 2010 were not lower than the benchmark level in 1990. The poorest countries are all from Sub-Saharan African regions (such as, Guinea, Ethiopia, The Gambia, Democratic Republic of Congo, Madagascar, Liberia, Niger, Central African Republic, Burundi, and Malawi).

Though the importance of remittances is clearly recognized in previous literature, poverty is still the burning issue for developing countries. According to Alvaredo & Gasparini (2013), 1 of every 5 persons in the developing world still lives in extremely deprived conditions (less than \$1.25 a day), while 4 out of 10 people have household per capita consumption levels lower than \$2 per day. The purpose of this study is to investigate the impact of remittances on poverty in developing countries. The findings of this study can provide an assessment of the magnitude of the links associated with remittances and poverty. The rest of the paper is organized as follows. Section 2 reviews the literature on the relationship between remittances and poverty. Section 3 presents the dataset and the method used. Section 4 analyses the empirical result and section 5 provides the concluding remarks and relevant policy implication derived from this study.

Literature Review

The study on the relationship between poverty and remittance has attracted increasing interest from researchers, academics and policy makers around the world. The earliest studies on remittances (see for example, Johnson & Whitelaw, 1974) explain that remittances are used for altruistic purposes. In line with this implication, Lucas & Stark (1985) postulate that “Certainly the most obvious motive for remitting is pure altruism—the care of a migrant for those left behind”. Indeed, this appears to be the single notion underlying much of the remittance literature.

Recent theories on the relationship between remittances on poverty have also focused on the idea that there can be self-interest reasons for remitting. These self-interest approaches of remittances are built on the family because they consider the family as a business or as a nexus of contracts that permits the members to enter Pareto-improving arrangements (Chami et al. 2013). Self-interest theories of remittances date back to the pioneering study of Lucas & Stark (1985). Remittance inflows can reduce poverty by increasing consumption and this importantly helps recipients of remittances to improve their living conditions. Additionally, remittances also assist in the creation of new social assets, services, and community physical infrastructure, including schools, roads, health, and other community projects which will indirectly contribute to poverty reduction (Ghosh, 2006; and Sorensen & Pedersen, 2002).

A number of studies have examined the impact of remittances on poverty (e.g., Imai et al., 2014; Adams & Page, 2009; Acosta et al., 2007 and Jongwanich, 2007); spending behavior (see, Adams & Cuecuecha, 2013; Cox Edwards & Ureta, 2000 and Yang, 2008) and macroeconomic effects (for instance, Acosta et al., 2007 and Amuedo-Dorantes & Pozo 2004). Among the others, System GMM has been widely used in the literature in analysing the relationship between remittances and poverty. Adams and Page (2005) discovered that remittances had a strong effect on poverty alleviation in developing countries, a 10 percent increase in the proportion of international migrants in a country’s population leads to a 2.1 percent decrease in the number of people living on less than US\$ 1 a day. Employing the same econometric method, Jongwanich (2007) found that remittances have a significant bearing on poverty alleviation by increasing of income in Asia and Pacific countries. In the same way, Imai et al., (2014) confirm that remittances contribute to poverty reduction in 24 Asian and Pacific countries over the period 1980-2009 by controlling the endogeneity of remittances and other variables. Their finding is supported by Vargas-Silva (2009), who uses annual data of Asia to examine the effects of remittances on growth and poverty. They reveal that remittances reduce poverty and spur economic growth. Then again, this position is in line with Acosta et al., (2007), who propose that remittances have statistically significant poverty reduction effects of the remittances receiving countries in Latin America.

On the other hand, country-specific studies also yield similar results on the negative relationship between remittances and poverty. For instance, Quartey (2005) employs the household surveys to examine the impact of remittances on poverty reduction in Ghana and concludes that remittances have improved the household poverty. This finding is consistent with Adams & Cuecuecha (2013). They examine the impact of remittances on poverty and show the significant role of remittances in reducing poverty and enhancing investment in health, education and housing in Ghana. Qayyum et al., (2008) look at the issue of the relationship of workers' remittances with economic growth and poverty in Pakistan. They find that workers' remittances have significant in poverty reduction using annual time series data period from 1973 to 2007. Moreover, for the case in Guatemala, Adams & Cuecuecha (2013) discover that remittances reduce the level, depth and severity of poverty. They reveal that remittances are important to reduce poverty headcount, poverty gap and poverty gap square. Similar analysis is conducted by Brown & Jimenez (2008) on Fiji and Tonga. They report that remittances increases income inequality and decrease poverty. Nevertheless, the World Bank (2006) reports that the poverty headcount ratio, reduced from 42% in 1995-1996 to 31% in 2003-2004 is attributed to the increase of remittances in Nepal. This is in line with Lokshin, et al., (2010), whom also reveal that remittances reduce poverty in Nepal.

On the contrary, there is a group of studies who highlighted the mixed or conflicting results on the relationship between remittances and poverty. Cattaneo (2005) reveals that is no relationship between remittances and poverty. His estimation shows no proof of supporting theory that remittances reduce poverty using cross country data from 149 developing countries and 23 OECD countries. The finding is consistent with Campbell & Kandala (2011) in Botswana, who show that migrant remittances have no significant impact on poverty. Remittances from the migrants do not assist the poor households in Botswana to improve the economic status because it is only one of many options available to households in order to reduce poverty.

Data, Modeling, And Methodology

This paper uses relevant data covering the period from 1981 to 2010 for 54 developing countries. Appendix 1 lists the countries included in this study. We employ the basic growth-poverty model suggested by Ravillion & Chen (1997) accompanied by the frameworks postulated by Adams & Page (2005) to evaluate the effect of remittances on poverty. Thus, the following specification is estimated:

$$\begin{aligned} \ln POV_{it} = & \alpha_0 + \beta_1(POV)_{it-1} + \beta_2 \ln(GDP)_{it} + \beta_3 \ln(INE)_{it} + \beta_4 \ln(REMIT)_{it} \\ & + \beta_5 \ln(FD)_{it} + v_i + \epsilon_{it} \end{aligned} \quad (1)$$

$(i = 1, \dots, N; t = 1, \dots, T_1)$

Equation (1) represents the basic growth-poverty model. Whereas POV is the measure of poverty in country i at time t , INE_{it} is Gini coefficient and GDP_{it} is per capita income measured by GDP per capita. v_i is the unobserved country specific effects and ϵ_{it} is the error term. β_2 measures the “growth-elasticity of poverty” with respect to GDP per capita. The model undertakes that economic growth – as measured by GDP per capita will reduce poverty. As per the literature and conventional wisdom, the increase in GDP per capita is negatively affecting poverty (Imai et al., 2014, Ravallion, 2001), and income inequality is expected to be positively correlated with poverty (Adams & Page, 2005). β_3 determines the elasticity of poverty with respect to income inequality. The income inequality variable is expected to be positive. We also included the lagged value of poverty in the model because

poverty is persistent (Hoynes et al., 2006). In addition, financial development (FD) is included into the model because a secured financial system will help to reduce poverty. It is crucial to have a good financial market to provide access for the poor to financial facilities, including credit and insurance-against-risk services. It also supports the productive assets of the poor by enhancing their productivity, and increases the potential for achieving sustainable livelihoods (World Bank, 2001). The data come from several sources. Appendix 1 provides a brief description, summary statistics, and sources of the variables used in the analyses that follow.

The study applies the panel GMM first proposed by Holtz-Eakin et al. (1988) and developed by Arellano & Bond (1991) and Arellano & Bover (1995). This estimator is more suitable compared to the usual panel data technique because it controls for endogeneity, includes unobserved country-specific effects and allows the inclusion of lagged dependent variables. This study adopts this estimation strategy in order to control for country-specific effects, which cannot be done using country dummies due to the dynamic structure of the model (Azman-Saini et al., 2010). In addition, this estimator also accounts for a simultaneity bias triggered by the possibility that some of the explanatory variables may be endogenous. Moreover, estimating the equation by least squares has disadvantages. First, the unobservable country-specific effects are correlated with other explanatory variables. Second, all the explanatory variables are not exogenous. If the explanatory variables are not all exogenous, conventional OLS method cannot be applied because it has violated one of the main assumptions of the conventional linear regression model that all the explanatory variables should be exogenous. Thirdly, the inclusion of the lagged dependent variable $(POV)_{i,t-1}$ arises autocorrelation (Baltagi, 2008). The model in this study includes lagged poverty in the empirical specification which involves a correlation between the regressors and the error term and unobservable country-specific effects which may be correlated with the dependent variable and independent variables.

Considering the aforementioned issues, Beck et al., (2000) argued that the GMM panel estimator would be an ideal method because this estimator corrects for country-specific effects, allows for the inclusion of lagged dependent variables, and control the possibility of endogeneity of all the explanatory variables. The GMM panel estimators consist of both first difference, GMM (DIF-GMM), introduced by Arellano and Bond (1991), and system GMM (SYS-GMM) as initiated by Blundell & Bond (1998).

Empirical Results

The relationship between remittances and poverty are summarized in Table 2. Because the first differences might be weakly correlated with its lagged levels. Blundell & Bond (1998) show that SYS-GMM performs better than DIF-GMM because is able to reduce biases and imprecision associated with difference estimator, especially when the explanatory variables are persistent, lagged levels of the variables become weak instruments. As the result, the SYS-GMM estimator is more appropriate than DIF-GMM for this study. The dynamic SYS-GMM is also capable of handling unobserved country heterogeneity, measurement error, and potential endogeneity problems (Bond et al., 2001).

We present three columns of coefficients, where we analyse equations (1) and (2) using three different measures of poverty (poverty headcount, poverty gap, and squared poverty gap) under \$1.25 a day. The poverty headcount measure the percentage of population living in households with consumption or income per person under \$1.25; the poverty gap, measures the depth of poverty; and the squared poverty gap, which represents the mean of the squared

distance below the poverty line. Column 1 of the table presents the estimated result of analysing the equation (1) using poverty headcount. Column 2 of the table presents the estimated result of analysing the equation (1) using poverty gap and column 3 of the table shows the estimated result of analysing the equation (1) using poverty squared gap.

Our estimation result shows remittances have significantly decreased the level, depth and severity of poverty in developing countries. The impact of remittances on poverty is negative and statistically significant on each of the three poverty measures: headcount, poverty gap, and squared poverty gap. The coefficient estimates of remittances suggest that a 1 percent increase in remittances will decrease poverty headcount by 0.41 percent. This finding is consistent with recent literature on the negative effects of remittances on poverty (Adams & Page 2005; Imai et al. 2004). The lagged poverty headcount is positive and significant as expected. The previous year poverty estimates are positively correlated with current poverty measures.

Other variables have the expected signs. The estimate of income inequality is positive and significantly correlated with poverty measures. This simply means that, as the inequality gap becomes wider, the poverty rate will also increase. The estimates of inequality are positive and consistent with previous findings by Ravillion (2011) and Adams & Page (2005). The result also indicates that GDP or income per capita contributes a significant role in poverty reduction. The estimate of income per capita is negatively correlated with poverty measures. For example, the headcount will decrease by 0.001 points with an increase of 10 percentage point in GDP per capita. These findings seem to support Shahbaz et al., (2014) and Qayyum et al., (2013), where they reveal evidence that remittances can enhance economic growth. The results are also consistent for poverty gap and squared poverty gap.

All the diagnostics are satisfactory, the Sargan test and the second-order autocorrelation tests indicate that we cannot reject the validity of the moment conditions assumed for the estimation. Serial correlation and Sargan testing of overidentifying restrictions are executed to assess the validity of the instrument. The serial correlation test, tests the null hypothesis that there is no serial correlation among the error terms in the first-differenced equation. The null of the absence of first order serial correlation may be rejected, but the null of the absence of second order serial correlation should not be rejected. The models are misspecified if the null hypothesis of second order auto-correlation is rejected.

Table 1: Estimated results: SYS-GMM: \$1.25 per day Poverty Line

Variables	(1) Poverty Headcount	(2) Poverty Gap	(3) Square Poverty Gap
Poverty Headcount	0.832*** (-0.0386)		
Poverty Gap		0.699*** (-0.0548)	
Square Poverty Gap			0.551*** (-0.0663)
Remittances	-0.413*** (-0.119)	-0.187*** (-0.0488)	-0.0783*** (-0.0273)
Inequality	0.0026*** (-0.0006)	0.0010*** (-0.0003)	0.0006*** (-0.0002)
GDP	-0.0001** (-0.0006)	-0.0007** (-0.0003)	-0.0008*** (-0.0003)

Financial Development	0.837 (-0.700)	0.745** (-0.377)	0.764*** (-0.273)
Number of Observations	158	158	158
Number of code	54	54	54
Number of Instrument	17	17	17
AR1	0.013	0.0382	0.0491
AR2	0.147	0.3287	0.3659
Sargan	0.413	0.5699	0.5184

Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Conclusion

In this study, all empirical specification is estimated on panel dataset by using a dynamic panel data method. Precisely, the two-step system GMM estimator (Blundell & Bond, 1998) is preferred to address the specification issues such as endogeneity, heterogeneity and measurement errors. The present study investigated the effect of remittances on poverty in developing countries. There are several important conclusions that can be drawn from this study. First, the analysis shows that the variables of interest provide expected signs, and thus are consistent with the existing literature. These results are also robust while using different measures of poverty. The negative relationship between remittances and poverty has been empirically supported by Adam & Page (2005), Acosta et al. (2007) and Imai et al. (2014). The findings of this study have important implications for policy perspectives in the developing countries. Policy makers can apply the recommended approaches derived from the results of this study. To decrease poverty, a set of appropriate and complementary policies that extends beyond the focus on remittances must be put in place. In particular, remittances-receiving countries need to develop a plan for maximizing the benefits of remittances and to minimize their negative repercussions. Further, lowering the transaction costs of remittances will help to increase the poverty-reducing impact of remittances.

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APPENDIX

Appendix 1: List of Countries

Albania	Egypt, Arab Rep	Lao PDR	Paraguay
Bangladesh	El Salvador	Lesotho	Peru
Bolivia	Ghana	Malawi	Romania
Botswana	Guatemala	Malaysia	Rwanda
Brazil	Honduras	Mali	South Africa
Bulgaria	India	Mexico	Sri Lanka
Cambodia	Indonesia	Morocco	Swaziland
Cameroon	Iran, Islamic Rep	Mozambique	Thailand
China	Jamaica	Nepal	Tunisia
Colombia	Jordan	Nicaragua	Turkey
Costa Rica	Kazakhstan	Niger	Uganda
Cote d'Ivoire	Kenya	Pakistan	Ukraine
Ecuador	Kyrgyz Republic	Panama	Vietnam

Appendix 2: Definition And Data Source Of The Variables

Variable	Definition	Source
Poverty Headcount (%) (PH)	Percentage of population living in households with consumption or income per person under \$1.25	Povcal Net, Online Database
Poverty Gap (PG)	Mean distance below the poverty line as a proportion of the poverty line	Povcal Net, Online Database
Squared Poverty Gap (SPG)	Mean of the squared distances below the poverty line as a proportion of the poverty line	Povcal Net, Online Database
Remittances to GDP (%) (REM)	Total of remittances, migrant transfers and workers compensation. (% of GDP)	World Development Indicator
Gini coefficient	A measure of inequality between 0 and 100	World Development Indicator
GDP Per Capita	GDP per capita (constant 2005 US\$)	World Development Indicator
Financial Development (FD)	Private credit by deposit money banks to GDP (%)	Financial Structure Database 2013