The Altruistic Motive of Remittances: A Panel Data Analysis of Economies in Sub Saharan Africa

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Abstract

Remittances have become an important source of foreign exchange earnings in many countries as migrants continue to send income to relatives at home. However, the main motives for sending remittances remain controversial. This paper examines the relative importance of the socio-political and economic determinants of remittance inflow using an unbalance panel data of 36 economies in the Sub Saharan African Region in an attempt to assess the altruistic motive of remittance inflow. The results using a random effect estimation technique show that altruism is important for remitting, as the per capita income differential between host and home country and the age dependency ratio are positive and statistically significant. The level of per capita income of the home country is also found to be negative and statistically significant which also supports the altruistic motive of remittances. The results further suggest that the development of the financial sector and the proportion of Catholics in the population will encourage remittance inflow. These results are robust to the different specifications and estimation methodology.

Keywords: remittance, altruism, Sub Sahara Africa

JEL classification: D64, F22, F24, O15

1. Introduction

With the emergence of globalization, workers' remittances – the repatriated earnings of emigrants have become a major phenomenon in international finance. This practice of migrants sending income to family members at home has been occurring for many decades, but the magnitude of remittances, both on the national and international level has skyrocketed in recent years, consequently drawing much attention. According to World Bank estimates, remittances to Sub Saharan African countries totaled about $3.2 billion in 1995 and increased to $4.6 billion in 2000. In 2005, migrants in Sub Saharan Africa sent home approximately $9.4 billion, up by more than 102% from 2000. In 2007, the World Bank reported that remittances to Sub Saharan Africa grew to approximately $18.6 billion which is about 3.7 percent of the Gross Domestic Product (GDP). However, these numbers declined in 2008 and 2009 to about 3.4 percent of GDP.

The numbers above indicate that remittances are developing into an important source of income for many countries in this region and thus have significant effects on their economic stability and growth. To illustrate this on a global scale, remittances now account for almost a third of global external finance. For many of the developing nations the flow of remittances can increase the GDP by a significant percentage. For example, in 2000 the United Nation reported that remittances increased the GDPs of El Salvador, Jamaica, Jordan, and Nicaragua by about 10%. World Bank estimates showed that in 2007, remittance inflows accounted for approximately 29%, 10%, and 11% of the GDP of Lesotho, Cape Verde and Gambia, respectively. These numbers however decreased in 2009 to 26% and 9% respectively for Lesotho and Cape Verde following the financial crisis.

Despite the increased interest in remittances, relatively little work is being done to improve the understanding of the varying nature of remittance inflow to many developing countries, especially those in the Sub Saharan African Region. Previous works on the economics of remittances have investigated the effect of remittances in specific countries or regions. Moreover, the few papers that have investigated the determinants of remittance inflow have concentrated on Latin American economies, South Eastern European countries, North Africa, and Asia economies, focusing mainly on the micro economic determinants. Thus, there is a need to investigate not

only the determinants of remittance inflow but to look at the role of altruism in influencing remittance inflows to the economies of Sub Saharan Africa.

This paper will therefore contribute to the remittance literature by investigating the macroeconomic and political motives for workers' remittances. Specifically, it verifies whether remittances are altruistic in nature, that is, whether or not remittances are countercyclical by increasing during period of hardship and vice versa. It is worth noting that the countries in the Sub Saharan Africa do not only have a large migrant population, but are very poor, heavily indebted, and characterized by political instability. Moreover, in recent years, this region has continued to witness a tremendous growth in remittance inflows, implying that remittance can be a key factor in improving the living standards in this region. Hence, there is a need to improve our understanding of the factors that account for the varying nature of remittance inflow in this region.

The remainder of this paper is organized as follows: In the section on the economics of remittance inflows, a short survey of the existing literature on the determinants of remittance inflow is presented. Both the theoretical and empirical literatures are reviewed. The section on data description and estimation methodology discusses the data used in the analysis and presents the equation to be estimated. The section on estimation results discusses the estimation technique employed. This section also discusses the results from the estimation. The last section presents the policy implication of the findings in this paper and concludes.

2. The Economics of Remittance Inflows

2.1 Theoretical Literature

There is a vast body of theoretical literature explaining the motivations of migrants to remit money to their relatives at home. Remittances are sent due to a combination of factors which include; altruism, exchange or self-interest and insurance. Understanding these motives has been on the agenda of researchers for the past two to three decades. Rapoport and Docquier (2005) provide an excellent overview of the theoretical models. On the one hand, it is widely acknowledged that altruism towards family members at home is an important motivation for remitting (Johnson and Whitelaw, 1974; Lucas and Stark, 1985). The altruistic behavior is modeled by allowing the utility of a remitter to be derived from the well-being or consumption level of those recipients left behind (Becker, 1974). This basically implies a negative relationship between the income of the recipient and the amount of remittances.

In contrast to altruism, self-interest is also a motive to remit if migrants send remittances with the aspiration to inherit, to demonstrate laudable behavior as an investment for the future or with the intent to return home. If a migrant wants to invest at home, the household can be a trustworthy and well-informed agent. A migrant who intends to return home may invest in housing, livestock etc. and will ask the family to be the agent. The migrant may also send remittances to invest in his reputation at home. Inheritance may be used as a blackmailing device by the household head to receive remittances. According to this theory, remittances increase with the household's assets and income, the probability of inheriting (dependent on the age of parents, number of siblings, etc.), the migrant's wealth and income, and decreases with risk aversion. Only in the case of the aspiration to inherit, can self-interest be distinguished from altruism in the migrant's behavior and a larger income and or wealth of the household should lead to more remittances.

Other papers (Poirine, 1997; Ilahi and Jafarey, 1999) have emphasized the idea of remittances as repayments to the family who finances migration in the first place. This suggests a U-shaped relation between the family's pre-transfer income and remittances. Poor families are unable to make the investment in migration costs while wealthy families have less incentive to send a family member abroad to increase family income. Thus, assuming that wealthy families can invest more in education, remittances should first increase and then decrease in the migrant's skill level.

The phenomenon of migration might also be seen as a means of reducing risk by diversifying the sources of a family's income (Stark, 1991a & 1991b). In this framework, remittances act like an insurance against income shocks that might hit the recipients in the home country (Agarwal and Horowitz, 2002; Gubert, 2002). At the macroeconomic level, this implies that remittances will increase if output is more volatile in the recipient country.

Finally, remittances may be seen in an exchange framework, where they represent a payment by the migrant for services provided by family members, such as taking care of her relatives or property (Cox, 1987; Cox, Eser and Jimenez, 1998). If the family's marginal utility decreases in income, more remittances are required to guarantee the provision of services at home. Hence, a higher pre-transfer income of the family and lower unemployment at home would raise the amount of remittances.

2.2 Empirical Literature

The empirical literature has largely focused on the microeconomic level using survey data. Many of these studies indicated that the education and the income level of the migrant and his family are the major determinants of remittances. Durand et al. (1996) showed that migrant's wage and job situation, the number of dependents at home, marital status, and age of the migrant are major factors that shaped the amount remittance. Briere et al. (2002) used household survey data from the Dominican Republic to test between two motivations to remit: insurance, whereby migrants remit on the basis of an insurance contract with their parents; and investment, whereby migrants remit on the basis of potential bequests from their families. The authors found that the importance of these two motivations to remit varies by destination (internal vs. international migration) and gender. The insurance motive is mainly fulfilled by female international migrants to the US. Female migrants to the US send more remittances when their parents are ill, while male migrants to the US do not do this unless they are the sole migrant from the household. The motive of migrants to remit also crucially depends on whether migration is temporary or permanent. For temporary migrants, remittances are often obligatory, while remittances send by permanent migrants are gifts to relatives in the home country (Glytsos, 1997). Agarwal and Horowitz (2002) recently tested altruism versus risk sharing motives to remit and gave evidence supporting the altruistic incentive. A detailed overview of the microeconomics determinant is given in Buch and Kuckulenz (2004).

Another strand of literature, reviewed by Aydas and Metin-Ozcan (2004), has investigated the macroeconomic determinants of remittances. In this paper, this second path is followed in an attempt to better understand how the macroeconomic and political environment affect remittance flows to the countries in the Sub Saharan African Region. Macroeconomic studies have emphasized determinants such as the level of economic activity in the host and the home countries, the wage rate, inflation, interest rate differentials and the efficiency of the banking system (El-Sakka and McNabb, 1999). Wahba (1991) suggested that political stability, consistency in government policies and financial intermediation have a significant influence on the flow of remittances. In a sample of five Mediterranean countries, Faini (1994) found evidence that the real exchange rate is also a significant determinant of remittances. Real earnings of workers and total number of migrants in the host country were consistently found to have a significant and positive effect on the flow of remittances (Swamy, 1981; Straubhaar, 1986; El-Sakka and Mcnabb, 1999; Chami, Fullenkamp and Jahjah, 2005).

In addition, demographic factors like the share of female employment or a high age dependency ratio in the host country have a negative influence on remittances, while illiteracy rates have a positive effect (Buch and Kuckulenz, 2004). Aydas et al. (2004) indicated that the black market premium, interest rate differential, inflation rate, growth, home and host country incomes and periods of military regime have significantly affected Turkish remittance flows. Chami, Fullenkamp and Jahjah (2005) found a statistical significant negative relation between the income gap of the recipient country against the US and workers' remittances in percent of GDP. Buch and Kuckulenz (2004) found out that economic growth and the level of economic development do not have a clear cut impact on the magnitude of remittances a country receives.

The above discussion on the recent empirical literature on workers' remittances suggests that altruism tend to play an important role in workers' decision to remit. However, the impact of other macroeconomic variables (e.g. interest rate differential, inflation differential) on such decision is not clear-cut. The present study develops a simple empirical model of macroeconomic and political determinants of workers' remittances to shed further light on the role of altruism in the context of the countries in the Sub-Saharan African Region.

3. Data Description and Estimation Methodology

In this paper, an unbalance panel data of 36 countries (see Table 1, below) in the Sub Saharan African Region is used to investigate the forces that account for remittance inflow in Sub Saharan Africa from 1980 to 2009.

Table 1. List of countries included in the study

Botswana	Kenya	Senegal
Benin	Lesotho	Sao Tome and Principe
Burkina Faso	Madagascar	Seychelles
Cameroon	Malawi	Sierra Leone
Cape Verde	Mali	South Africa
Comoros	Mauritania	Sudan
Congo, Republic	Mauritius	Swaziland
Cote d'Ivoire	Mozambique	Tanzania
Gabon	Namibia	Togo
Gambia, The	Niger	Uganda
Ghana	Nigeria	Zimbabwe
Guinea	Rwanda	
Guinea-Bissau		

Source: World Development Indicators (2009)

The table shows the number of the countries that were included in the analysis. The rest of the countries in this Sub Region were not included due to missing data.

In addition to the altruistic motives to transfer money to the home country, the paper also investigates the impact of other factors which may influence the decision of foreign workers to remit. From the review of the literature regarding the relative importance of the various factors, the altruistic motive of remittance inflow can be captured by equation (1) below:

$$\operatorname{Re}mit_{it} = \beta_0 + \beta_1 Income_{it} + \beta_2 Inf_{it} + \beta_3 \operatorname{Re}gime_{it} + \beta_4 Fin\_Dev_{it}$$
$$+ \beta_5 Age\_dep_{it} + \beta_6 Interest\_Dif_{it} + \sum_{j=1}^{K} \phi_j X_{jit} + \alpha_i + \varepsilon_{it} \tag{1}$$

Where $\operatorname{Re}mit$ is the ratio of remittances to GDP; $income$ is the GDP per capita of the home country; $Infl$ is the rate of inflation of the home country; $\operatorname{Re}gime$ is the type of political regime; Fin_Dev is financial sector development; Age_dep is age dependency; $Interest\_Dif$ is the real interest rate differential and X_{jit} is a set of other variables included in the regression equation. α_i is a country specific fixed-effects and ε_{it} is the error term.

GDP per capita of the home country would be used as a proxy for the economic condition in the migrants' home country. The economic condition is considered as one of the important determinants of workers' remittances. Altruistic motive is believed to play a prominent role in sending remittances, thus an adverse economic situation in the migrants' home country, which results in a fall in family income at home may lead to a surge in inflow of remittances.

In order to further verify the effect of the income level on remittance inflow, we will follow Chami et al. (2008) and Schiopu and Siegfried (2005) by using income differential between host and home country to reflect the altruistic motive to remit. The income differential will be measured as the difference in income between country i and the United States (i.e. $(Income\_differential = y_{USA} - y_i)_t$) (Note 1). A positive coefficient will indicate that remittances are countercyclical, since they increase when the income gap between country i and the United States widens and decrease when the income gap narrows. It is worth noting that the results may be biased since worker's remittance comes from other countries. However, we are using United States as a representation of other countries based on the assumption that the income level in US does not differ much from most of the host economies.

Regime type captures the type of political regime in a country in a given year. It takes the value 1 if the political regime is democratic and zero otherwise. As a proxy for regime type we will use the Polity IV project's assessment of constitutional democracy. The sign can either be positive or negative. A democratic regime on the one hand may not encourage emigration and hence will not receive as much remittances as undemocratic regimes. In this case the coefficient will be negative. On the other hand democratic regimes as opposed to

undemocratic regimes can create institutions that are conducive to channel and manage remittances, hence will enhance and encourage remittance inflow.

Age dependency ratio gives the number of dependents to the working age population. The expected effect on remittance inflow is positive and will further support the altruistic motive. This is because there is a higher need for remittance inflow in countries with a high ratio of dependents to working age population.

Improvement of the *financial secto*r development will reduce the cost of sending remittances, hence should stimulate remittances (IMF, 2005). In the absence of a good measure for the development of the financial sector, we will follow Wahba (1991) by using bank deposits per GDP in the receiving countries as a proxy for financial development.

The domestic *inflation* rate captures the degree of macroeconomic instability. The expected impact on remittances is not clear-cut. While an unstable macroeconomic environment creates incentives to migrate abroad, high inflation might also have a positive impact on remittances. This is because high inflation rate and greater uncertainty about future price changes will result to lower expected rate of return on money remitted. The expected impact of inflation on remittances would thus be negative.

Interest rate differential is a proxy for the investment opportunities or return on financial assets in the remittance receiving country. It is computed as the home country real interest rate minus host country real interest rate and is defined as: $Interest\_Dif_{it} = (r_i - r_{USA})_t$ (Note 2). If remittances are influenced by investment motive then the level of remittances should be positively correlated with the return on financial assets. Therefore, the amount of remittances to the home country can be negatively correlated with the host country real interest rate or positively correlated with the home country real interest rate. A positive coefficient on the real interest rate differential implies that remittances behave like other opportunistic capital flows, assuming equal market risk in both countries.

The following additional variable is also controlled for: religion (Note 3). However, there were also a set of variables for which sufficient data were not obtained. Data on the number of migrants, for instance, have not been available for a sufficiently large set of countries and a sufficiently long time period. For the same reason, we could not include unemployment and political stability, as a proxy for the level of economic activity and political atmosphere, respectively in the home country. With high unemployment, both the incentives to migrate and the need of the migrants' families are higher. An unstable political atmosphere would also encourage migration, but may not lead to inflow of worker's remittance.

With the exception of the variable on regime type, the variables used in this study were obtained from the World Development Indicators of the World Bank.

4. Estimation Results

From Table 2 below, the pairwise correlation between remittance inflow and the main variables of interest shows that remittance inflow is negatively and significantly correlated with income level, albeit very low (less than 15 percent).

Table 2. Pairwise correlation

	Remit	Religion	Income level	Income Differential	Age Dependency	Inflation
Remittance	1					
Religion	0.16***	1				
Income level	-0.11***	0.27**	1			
Income differential	0.04	-0.16***	-0.49***	1		
Age dependency	0.09***	0.14***	-0.45***	-0.09**	1	
Inflation rate	-0.04	-0.02	-0.13***	-0.08**	-0.02	1
Financial development	0.2***	0.06**	0.14***	-0.03	-0.09***	-0.08**
Regime type	-0.015	-0.09***	0.14**	0.26***	-0.36***	-0.03
Interest differential	0.04	0.02	-0.07**	0.14**	-0.09**	-0.59***
Interest rate	-0.04	0.08**	0.07*	-0.99***	-0.05	-0.61***

***, ** and * statistically significant at one, five and ten percent levels, respectively

There is also a positive and statistical significant correlation between religion, age dependency financial development and remittance inflow. The relationship between remittance and income differential is negative but insignificant.

Part of the correlation noted between remittance inflow and its determinants may be spurious, reflecting the effects of other factors. This section checks whether the pairwise correlation observed are robust in a multivariate regression analysis. The analysis looks at the relationship between the variables discussed above and workers' remittances using a panel model. A good model to use here is either the random or fixed effect model. This is because they account for the individuality of each cross – sectional unit. In order to decide on which model is best the Hausman test for model specification is applied. The results do not allow us to choose the fixed effects model at 10% level. Thus, the results for the Error Component Model (Random Effect Model) are presented. To check on the robustness of these results, the regression equation is also fitted using the instrumented variable via the Generalized Methods of Moment (GMM) using the default heteroskedasticity-robust weight matrix estimation technique. In order to solve potential problems of heteroskedasticity, all the results are estimated using robust standard errors.

Table 3 below presents the estimated results of the determinants of remittance inflow to the economies of the Sub Saharan African region.

Table 3. Empirical results for remittance determination

Dependent variable: Remittance to GDP				
	Error component model (Random effect model)		Instrumental variable estimation (GMM)	
Variable	Coefficient (z-statistics)	Coefficient (z-statistics)	Coefficient (z-statistics)	Coefficient (z-statistics)
Income level$_t$	-0.0005** (-2.50)	-	- 0.0019*** (-6.88)	-
Income differential$_t$	-	0.0002*** (3.71)	-	0.0001** (2.19)
Dependency ratio$_t$	0.2028*** (5.22)	0..4213*** (5.50)	0.2586*** (4.84)	0.3549*** (6.22)
Inflation rate$_t$	0.0361** (2.07)	-0.0321 (-0.72)	0.0729** (2.17)	-0.0336 (-0.73)
Financial development$_t$	0.3119*** (4.05)	0.4985*** (5.18)	0.2827*** (4.04)	0.4345*** (3.34)
Regime type$_t$	-0.5905 (-0.75)	-0.7016 (-0.60)	-1.1566 (-1.10)	-0.5978 (-0.51)
Interest differential$_t$	0.0461** (2.08)	0.1799*** (3.06)	0.1832*** (3.40)	0.1461** (2.45)
Religion	0.1392* (1.75)	0.1798** (2.07)	0.1788*** (4.33)	0.1393*** (4.08)
Constant	-13.387** (-2.56)	-54.9587*** (-5.57)	-27.0117*** (-4.56)	-41.626*** (-6.90)
Wald chi2(7)	45.75	45.29	46.01	46.48
Number of observations	509	509	509	509
Number of groups	32	32		
R-Square	-	-	0.2104	0.1939
***, **, * significant at 1%, 5% and 10% levels, respectively.				

From Table 3, the main variables of interest, income level and income differential are found to be significant with the expected coefficient. The result from column one shows that there is a negative and statistical significant relationship between remittance inflow and the level of per capita income. Precisely, an increase in real per capita income will lead to a reduction in the level of remittance inflow to the SSA region. To validate if the result on income level explains the altruistic motive to remit, column 2 presents results estimated using the income differential between the host and home country. The result shows that the lower the income of remittance

receiving country relative to sending country, the higher the amount of workers' remittance inflow. This means that the flow of remittances tends to increase when home country income is relatively low. Thus, remittances are countercyclical, compensatory in nature and are used for altruistic motive.

The effect of age dependency on remittance inflow is positive and significant. Thus, workers' remittances increase with increase in the age dependency ratio. This result can also be considered as supporting the idea that remittance inflows are generally used to assist the poor and unemployed family members left behind. Thus, it further supports the altruistic motive of remittances and the fact that they are countercyclical in nature.

We find that the proxy for financial sector development is positively related to the inflow of remittances. The main implication of this result is that improvement in the financial sector development of the home country will increase the inflow of remittances by making it easier and cheaper to transfer money.

The inflation rate is positive and significant in models with income level, but insignificant and negative when income differential is used. The positive and significant effect of inflation on remittance inflow may also support the altruistic motive for remittances, which postulates that an increase in inflation will negatively affect the family income of those left behind, thus a need for more remittance inflow to offset this negative effect on real income.

Other results presented in Table 3 show that remittance inflow is positively correlated with the proportion of Catholics in the total population. That is, the higher the proportion of Catholics in the population relative to other denomination, notably Muslim the higher the inflow of worker's remittance. It is unfortunate that this variable does not vary over the years, and so may not reflect the current trend in the proportion of Catholics in the population. Interest rate differential is also positive and has a significant influence on the inflow of worker's remittance. The regime type variable is negative but statistically insignificant.

5. Conclusion and Policy Implication

This paper looks at the socio – political and macroeconomic determinants of remittance inflow in an unbalance panel data of 36 countries in the Sub Saharan African Region. The findings in this paper complement the empirical evidence reviewed above which indicates that remittance inflow are compensatory transfers. In this regard remittances are used to compensate family members who are dependent or used to compensate for bad economic conditions which may be accompanied by a fall in home per capita income relative to host per capita income, or simply by a fall in home per capita income. This implies that, remittance recipients may use the funds to bring the family closer to its desired standard of living through the purchase of consumption goods, services, and consumer durables. Thus, income inequality can be reduced by channeling remittance inflow to macro projects which can benefit the society as a whole. In addition, we find evidence suggesting that the financial sector has an important role to play as an intermediary between remitters and recipients. Taken together, the theoretical and empirical literatures on remittance determination describe a complex interaction between remitters and their home economies that may not fit neatly into a single equation like the one presented above.

Nevertheless, we do believe that the empirical evidence presented here emphasizes the need for policy-makers, when formulating migration-related policies, to be aware of the fact that many migrants retain strong economic links to those left behind. From the results in order to facilitate the inflow of workers' remittance there is a need for a collaborative effort between partners of development, and money transfer agencies such as Western Union, Money Gram and others, in an attempt to reduce the cost and administrative procedures involved in sending money. There is also a need for a much broader cooperation between remitters and developmental partners in receiving countries to set up policies that can better capture and channel remittances to poverty alleviating projects which can be beneficial to the society at large.

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Notes

Note 1. y_{USA} is income level in USA and y_i is income level in country i. The income level is measured as GDP per capita in purchasing power parity (PPP). The PPP measure accounts for non-tradable, thereby avoiding inflating the income gap. Second, the variable captures the fact that the migrant makes his decision based on the

goods and services that the transferred amount of money can buy for his family at home.

Note 2. r_i is real interest rate in country i and r_{USA} is real interest rate in USA.

Note 3. Proportion of catholic in the country to total population of 1980