Macroeconomic Determinants of Migrants' Remittances: Evidence from a Panel of Developing Countries

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ABSTRACT

This work aims to assess the various macroeconomic determinants of migrants' remittances for a panel of 22 developing countries highly dependent observed over the period 1990 to 2014. The results underline the importance of the origin country's GDP, the host country's GDP, inflation, financial development and institutional quality as major determinants of personal remittances. However, the migrant stock, the official exchange rate and the real interest rate in the country of origin do not have a significant influence on remittances received by the panel considered.

Keywords: Remittances, International Migration, Panel data, Developing countries.

JEL Classification: C23, F22, F24, O10

1.0   INTRODUCTION

The consequences generated by international migration arouse considerable debate, both in the migrants' countries of origin and the host countries. This is due to its multidimensional character, which affects several aspects. The fact that the majority of international migrants are from developing countries doesn't make migration a North-South phenomenon. In fact, nearly half of reported migrants move from one developing country to another. In 2014, according to the World Bank's estimates, 3 per cent of the world's population lived outside their country of origin and transferred approximately $493 billion[2]. Developing countries deserve special attention since they receive more than 70 per cent of remittances' flows.

Today, we are witnessing a growing awareness of remittances' benefits in terms of contribution to the economic development of migrants' countries of origin at local, regional and national levels. By way of background, it wasn't until the early 21st century that this question

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[2] 2014's migrant remittances by areas are reported in appendix A

has actually gained visibility within international organizations such as Organization for Economic Cooperation and Development (OECD), International Monetary Fund (IMF), International Organization for Migration (IOM) and the World Bank.

In recent years, migrants' remittances surpassed Official Development Assistance (ODA) received by a lot of countries. However, they are not considered as a substitute for this help, but rather as an alternative source of development finance in many developing countries. (Wanner, 2008). These transfers have also the particularity of being distributed to a large number of people. According to an estimate of the International Fund for Agricultural Development (IFAD), they concern one person out of ten in the world.

Remittances can be defined as interpersonal transfers between migrants and their families remained in the country. According to IMF's Balance of Payments Manual, migrants' remittances include three categories[3]: *i)* Compensation to employees comprises wages, salaries, and other remuneration, in cash or in kind, paid to individuals who work in a country other than where they legally reside. *ii)* workers' remittances refer to current transfers by migrants who are employed in new economies and considered residents there and *iii)* Migrants' transfers refer to capital transfers of financial assets made by migrants as they move from one country to another and stay for more than one year (IMF, 2009; Straubhaar & Vadean, 2006).

This paper aims to contribute to the literature of migrants' remittances and intends to further understanding of this phenomenon. It analyzes the key macroeconomic determinants that might be responsible for the variation in remittance inflows. Thus, we use a panel of 22 developing countries heavily dependent on remittances over the period 1990-2014.

The rest of the paper is structured as follows: section 2 reviews the existing literature on the determinants of remittances; section 3 presents the data and describes the methodology; section 4 discusses the main empirical findings. The last section concludes with policy implications.

2.0 MACROECONOMIC DETERMINANTS OF REMITTANCES: RELATED LITERATURE

Understanding the determinants of remittances and their impacts particularly on economic growth represents a major macroeconomics' research field and a central element of Economic

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[3]The categories used by the IMF include only official remittances, they don't capture transfers through informal remittance systems.

Policy's analysis. In what follows, we propose a range of theoretical and empirical literature related to the topic.

Migrants' remittances represent an external source of capital, for developing countries, steadily increasing (Straubhaar & Vadean, 2006). These transfers take the form of a multitude of relatively small-scale transactions (each migrant transfers to his/her family a varying portion his/ her income). However, once all these transactions are aggregated, we realize how remittances are a significant source of capital for recipient countries.

Understanding the potential role of remittances in the development of countries of origin requires knowing the reasons behind the migrants' decisions to remit. A seminal paper by Lucas and Stark (1985) provides three main motives that drive remittances' decisions: pure altruism, pure self-interest and tempered altruism or enlightened self-interest[4].

According to the altruistic model, migrants care about the well-being of those who remained in the country. From a macroeconomic point of view, a deterioration of the economic situation in the country of origin, accompanied by strong frictions on labor market encourage labor force to migrate to high income countries seeking a better life. Given the strong social link existing between the migrants and their families, they would transfer more funds to the latter in order to meet their needs and thus, increase their consumption. Therefore, in times of economic recession, high inflation, unstable exchange rate and constraints in the credit market in the country of origin, migrants are expected to remit more money regularly to their families (Vargas-Silva & Huang, 2006).

In contrast to the altruistic motive, pure self-interest motive underlying the flow of migrant remittances, which is closely related to the theory of portfolio choice, implies that the welfare depends on the migrant only. The latter might transfer money with having as perspective the inheritance of a part of the family's wealth or the desire to see parents take care of his/her property. For instance, an improvement in economic conditions in the country of origin compared to the host country is considered by the migrant as a positive signal for a better return on investment. Thus, a migrant who had decided not to return home might consider a possible return and therefore increase his/her savings at home (Adenutsi, 2014)

However, from a theoretical point of view, Lucas and Stark (1985) argue that remittances can be driven by mixed motives rather than pure altruism or pure self-interest. Hence, tempered

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[4] For a more detailed explanation, see Hagen-Zanker J. & Siegel M., (2007). The determinants of remittances: A review of the literature. Maastricht Graduate School of Governance.

altruism or enlightened self-interest presents a less extreme motive. Remittances are viewed, in this case, as an outcome of "implicit family loan agreement" or "implicit co-insurance agreement" (Agarwal R. & Horowitz A., 2002). At first, the migrant plays the role of the insured and the family the role of the insurer (the family finances the initial cost of the migration project). The second step sees the migrant becoming an insurer for the family members left behind.

Note that the various individual or family motives might be the source of migrants' remittances. In fact, remittances might be driven by all these motives together. As Drapier & al. (1997) point out, the empirical validation of each of these motives remains difficult. Although, theoretically, remittances can be analyzed from the altruistic and the self-interest perspectives at the micro level, the macroeconomic models, however, are formulated from a mixed viewpoint combining both pure altruistic motive and pure self-interest motive (Adenutsi, 2014; Mouhoud & al, 2008).

Although migrants' behaviors and individual motivations might explain a part of microeconomic remittances' flows, the economic activity of the host country and the country of origin could explain another. Thus, remittances at the aggregate level can be compared to other key macroeconomic variables of recipient countries. Empirical studies on macroeconomic determinants of remittances' inflows focus on socio-demographic, economic and institutional factors as macroeconomic determinants of remittances (Rahman & Abdul Wadud, 2014; Hagen-Zanker & Siegel, 2007).

The migrant stock in the host country is considered as a crucial determinant of remittances: the higher the volume of workers in the host country is, the greater the volume of remittances would be (Hagen-Zanker & Siegel, 2007).

In addition, various empirical studies (Adenusi, 2014. Singh & al, 2010; Freund & Spatafora 2008; Vargas-Silva & Huang, 2006; Aydaş & al 2005; and Lianos, 1997) show that the income gap between the home country and the host country, exchange rate fluctuations, deposit interest rates, political risk and the level of financial development affect the volume and frequency of remittance flows.

In this sense, Chandavarkar (1980) offers one of the first empirical studies on the macroeconomic determinants of remittances (towards Yugoslavia, Turkey, Portugal, Yemen, India and Pakistan), between 1973 and 1977. He highlights the positive impact of the exchange rate on remittances' inflows as well as the importance of a stable institutional environment.

Straubhaar (1986) finds, over the period 1963-1982, that only the economic situation of the host country (the level of wages in Germany) is significant, exchange rate and interest rate have no significant impacts on the amounts transferred. El Sakka & McNabb (1999) show that the differential of exchange rate and the differential of interest rate have an impact on remittances received by Egypt. The remittances sent are invested in real and financial assets, they are not used to improve the consumption of those left behind. Other works such as Shahbaz & Aamir (2009) on Pakistan and Gupta (2005) on India find a negative relationship between remittances and the economic situation of the origin country. These papers which support the hypothesis of an altruistic motive underlying remittances' flows conclude about a counter-cyclical effect of remittances. In other words, a decline in the GDP of the country of origin leads to an increase in migrants' remittances.

Bouhga-Hagbe (2004), Faini (1994) and Elbadawi & Rocha (1992), interested in remittances towards five countries (Morocco, Portugal, Tunisia, Turkey and Yugoslavia) highlight that remittances' flows are driven by altruism. Bouhga-Hagbe (2006) also shows that remittances to Morocco, Tunisia, Egypt, Jordan and Pakistan are motivated by altruism since they increase when agricultural GDP decreases. Similarly, Coulibaly (2009) supports the hypothesis of altruist motive behind remittances. Using 16 Latin American countries data, he finds that remittances' flows respond positively to a deterioration of the economic situation of the home country.

3.0 METHODOLOGICAL APPROACH AND EMPIRICAL MODEL

This section provides an empirical evaluation of the macroeconomic determinants of remittances of migrants for a panel of 22 developing countries heavily dependent on remittances over the period 1990-2014. The selection of countries was apprehended by a dependency ratio **Rem / GDP**. Studies such as Danzer & Ivaschenko (2010), Ratha (2006) and the Migration Policy Institute (2006) also suggest this criterion. They define the dependency to remittances as the situation where remittances, as percentage of GDP, are superior to the average. Out of the 104 developing countries, as classified by the World Bank, are selected countries for which data are available for the period considered. 69 countries were selected in the first step. By applying the average dependency ratio which is equal to 4.58%, only 22 countries stand out above average.

Table 1: List of 22 countries having a dependency ratio superior to the average

Country	Dependency ratio	Country	Dependency ratio
Bangladesh	5.99	Lesotho	44.67
Cape Verde	14.61	Morocco	6.64
Dominica	5.52	Nigeria	4.71
Dominican Republic	7.25	Philippine	9.04
Egypt	6.33	Samoa	19.74
El Salvador	14.51	Senegal	6.21
Grenada	7.42	Sri Lanka	7.10
Guatemala	6.58	St. Vincent and the Grenadines	4.66
Honduras	10.60	Togo	5.61
Jamaica	12.10	Vanuatu	5.36
Jordan	17.65	Yemen	13.21

Source: calculation of dependency based on WDI data

Our model is based on the empirical literature on the topic. More specifically, it is based on the work of Adenutsi (2014), Rahman & Abdul Wadud (2014) and Singh & al (2010).

We consider the following specification[5] :

$$R_{i,t} = \alpha_0 + \alpha_1 LYPH_{i,t} + \alpha_2 LYPO_{i,t} + \alpha_3 INF_{i,t} + \alpha_4 MIGPOP_{i,t} + \alpha_5 OER_{i,t} + \alpha_6 TIRD_{i,t} + \alpha_7 DF_{i,t} + \alpha_8 QI_{i,t} +$$

As:

$R_{i,t}$: Migrant remittances received as a percentage of GDP;

$LYPH_{i,t}$: The host country's GDP per capita in its logarithmic form[6] ;

$LYPO_{i,t}$: The home country's GDP per capita in its logarithmic form;

$INF_{i,t}$: The home country's inflation rate;

$MIGPOP_{i,t}$: The number of migrants to the home country's population;

$OER_{i,t}$: The home country's official exchange rate;

$TIRD_{i,t}$: The home country's real interest rate;

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[5] The source and description of variables are reported in Appendix B.
[6] Appendix C presents the list of the host countries selected.

$DF_{i,t}$: Domestic credit to private sector as a percentage of the home country's GDP;

$QI_{i,t}$: Index of political stability of the home country (institutional quality);

The empirical model is estimated through fixed and random effects estimation methods. The fixed effects model is the estimator of the transformed model using deviations from individual average that eliminate the persistent differences between individuals. This method emphasizes the intra-individual variability. It also has the advantage of being able to identify and measure effects that are not directly observable in cross section. The random effects model assumes, meanwhile, that the individual-specific effects are random. In other words, the error term - which takes into account these effects- and the explanatory variables are uncorrelated. To determine whether a fixed or random effect model is most appropriate, we compute the Hausman test.

4.0 MAIN FINDINGS

Fixed effects model and random effects model provide more or less similar results. However, the Hausman test shows that fixed effects model is preferable.

The inspection of results highlights several facts. Indeed, macroeconomic conditions in the host countries and countries of origin are crucial determinants of migrants' remittances. They seem to play a role in absorbing shocks. The coefficient associated with GDP per capita of the home country *(LYPO)* is negative and significant. This suggests that when adverse economic shocks affect income in the country of origin, migrants would be willing to remit more in order to protect the well being of their families. In light of this result, it can be argued that migrants' remittances are motivated by altruism. Likewise, the coefficient of GDP per capita of the host country *(LYPH)* is positive and significant, which means that countries with a large Diaspora attract more funds. In other words, the more migrants' communities are in rich countries the more remittances will be important.

As for the number of migrants relative to the home country's population *(MIGPOP)*, it is positively correlated with the level of remittances, which means that the growing migrant stock abroad contributes to increase flows towards the recipient country. This result is consistent with the findings of Singh & al. (2010) and Barua & al (2007). However, the fact that the coefficient is not significant is probably due to the selected panel.

Table 1 : Estimation Results

Endogenous variable: R	Fixed Effects model	Random Effects model
LYPO	-409597.29* (-2.25)	-8995.6788 (-0.06)
LYPH	1350289.3** (5.78)	718100.27** (4.00)
MIGPOP	3.63e+07 (0.66)	-2.07e+07 (-0.72)
INF	35800.78* (2.13)	33667.481* (2.14)
DF	-23184.951** (-6.66)	-23624.167** (-6.39)
TIRD	33115.289 (1.87)	27108.703 (1.59)
OER	43.037081 (0.11)	239.41392 (0.58)
QI	57999.041** (3.04)	40053.498* (2.02)
Constant	-9299465.6** (-6.94)	-5735869.2** (-5.21)
R-squared	0.47	0.43
F test	14.71**	
Wald chi2		84.62**
HAUSMAN TEST	14.30*	

*, ** significance at 5% and 1% respectively.

Furthermore, inflation rate *(INF)* affects positively and significantly remittances. This indicates that inflation is not perceived by migrants, as an indicator of economic instability in their countries and could be victims of a monetary illusion. Another way to interpret this result would be an increase in prices of the recipient country makes the situation of remaining households more difficult, leading to a necessity to remit more funds.

The coefficient associated to credit to the private sector as a percentage of GDP *(DF)* as an index of financial development is significantly negative, in contrast to other works (Singh & al.

(2010) and Freund & Spatafora (2005)). For the migrants of the panel considered, a less developed financial system of the home country corresponds to higher costs of remittances, which will negatively affect the share of transfer funds through formal channels. Thus, migrant population tends to transfer money via informal channels.

The official exchange rate *(OER)* doesn't significantly affect remittances received by our panel of countries. However, our results suggest that remittances don't react significantly to an appreciation of the exchange rate, in contrast to the results presented by Yang (2008) or Chami & al. (2008) but corroborate those found by Singh & al. (2010). The positive sign of this coefficient indicates that investment and insurance motivations aren't the dominant motivations to remit.

The real interest rate in the country of origin *(TIRD)* is positive but insignificant. An increase in the latter has no effect on the amount of remittances sent by migrants. In this case, for the panel considered, migrants wouldn't be motivated to send more remittances home for investment. This corroborates the results found by Bouhga-Hagbe (2006, 2004), Faini (1994) and Elbadawi & Rocha (1992). The non-significance of the real interest deposit rate allows the rejection of the selfish behavior.

Finally, the coefficient of institutional quality *(QI)* is positive and highly significant. It shows that countries with better institutions and / or a more stable political system would receive more remittances. The institutional quality, political rights and governance could be considered as factors that should influence the amount of remittances (Rahman & Abdul Wadud 2014; Singh & al.2010).

5.0 CONCLUSION AND POLICY IMPLICATIONS

This paper intended to identify the key macroeconomic determinants of migrants' remittances of 22 developing countries heavily dependent. The empirical estimation conducted on panel data over the period 1990 - 2014 shows that the home country income, the host country income, inflation, financial development and institutional quality are the main determinants of migrants' remittances of the panel considered. The empirical results suggest that migrants react to macroeconomic conditions at home. This suggests that remittances in these developing countries are mainly driven by altruistic motive which is indicated by significant negative coefficient of domestic per capita GDP. Likewise, the macroeconomic situation of the host countries is crucial as far as remittances are concerned. To this extent, the location of migrants' communities matters, the wealthier the country where migrants are located, the higher the

remittances they send back home. Our findings propose, also, that well functioning domestic institutions seem to be better at unlocking the potential for remittances to contribute to faster economic development in these countries.

Furthermore, as to their economy-wide consequences and because other motives of remittances only become important after altruism, a labor-exporting country will receive more remittances on a regular basis if there is an investment-friendly macroeconomic environment. In order to attract more remittances, policymakers in the developing countries should think more about implementing stable and pro-growth policies. It is, therefore, recommended to devise strategies aimed at achieving a higher and sustained rate of economic growth, improved financial market development and exchange rate stability.

As any research work, this paper could still be improved and extended into various directions. Data availability represents the main limit. A study incorporating more countries would increase, possibly, variables' variability and therefore lead to more accurate results. In addition, it would be appropriate to consider a dynamic modeling rather than static modeling.

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APPENDICES

Appendix A: Migrants' remittances by region (% of GDP)
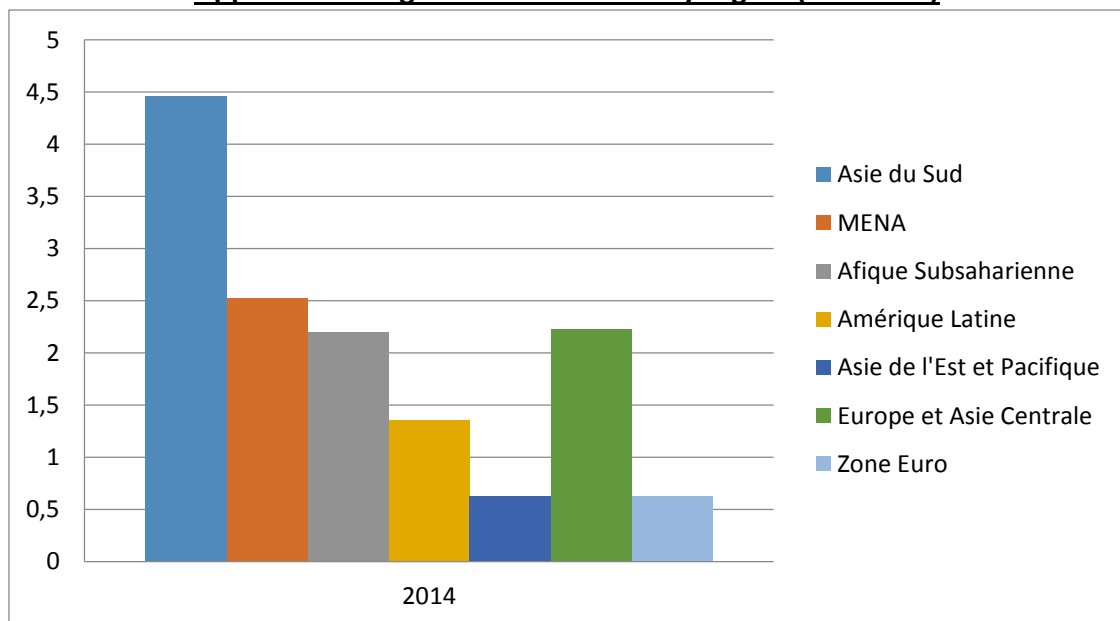
Source: Calculation made based on World Bank data

Appendix B: Source and description of variables

Variables	Description	Source
$R_{i.t}$	The sum of the two sections of the balance of payments: personal transfers and compensation of employees (% of GDP)	World Development Indicators (WDI)
$LYPH_{i.t}$	GDP relative to the population of the home country	
$LYPO_{i.t}$	GDP relative to the population of the host country	
$INF_{i.t}$	measured by change in the consumer price index	International Financial Statistics (IFS)
$MIGPOP_{i.t}$	Number of migrants relative to population of the country of origin	Calculation based on WDI data; Parsons , al. (2007)
$OER_{i.t}$	Annual average of the national currency against the US dollar	IFS
$TIRD_{i.t}$	Deposit interest rate minus inflation	Calculation based on WDI data
$DF_{i.t}$	Total credit to private sector (% of GDP)	WDI
$QI_{i.t}$	polity2 : Index used to capture the quality of governance and institutions. it varies between -10 for a weak governance and 10 otherwise.	Marshall , Jaggers (2011)

Appendix C: List of host countries of the 22 selected countries

Country of origin	Major host countries			Selected host country
	1	2	3	
Bangladesh	Pakistan (PAK)	India (IND)	Saudi Arabia (SAU)	Pakistan
Cape Verde	Portugal (PRT)	United States of America (USA)	Mozambique (MOZ)	Portugal
Dominica	United States of America (USA)	Great Britain (GBR)	U.S. Virgin Islands (VIR)	United States of America

Dominican Republic	United States of America (USA)	Spain (ESP)	Germany (DEU)	United States of America
Egypt	Saudí Arabia (SAU)	Jordan (JOR)	United States of America (USA)	Saudí Arabia
El Salvador	United States of America (USA)	Canada (CAN)	Pakistan (PAK)	United States of America
Grenade	United States of America (USA)	Trinidad and Tobago (TTO)	Great Britain (GBR)	United States of America
Guatemala	United States of America (USA)	Mexico (MEX)	Belize (BLZ)	United States of America
Honduras	United States of America (USA)	Nicaragua (NIC)	Salvador (SLV)	United States of America
Jamaica	United States of America (USA)	Grande Bretagne (GBR)	Canada (CAN)	United States of America
Jordan	Palestine (PSE)	Saudi Arabia (SAU)	United States of America (USA)	Palestine
Lesotho	Mozambique (MOZ)	Zimbabwe (ZWE)	South Africa (ZAF)	Mozambique
Morocco	France (FRA)	Spain (ESP)	Germany (DEU)	France
Nigeria	Sudan (SDN)	United States of America (USA)	Great Britain (GBR)	Sudan
Philippine	United States of America (USA)	Malaysia (MYS)	Canada (CAN)	United States of America

Samoa	American Samoa (ASM)	United States of America (USA)	New Zealand (NZL)	American Samoa
Senegal	Gambia (GMB)	France (FRA)	Italy (ITA)	Gambia
Sri Lanka	India (IND)	Saudi Arabia (SAU)	Canada (CAN)	India
St. Vincent and the Grenadines	United States of America (USA)	Canada (CAN)	Trinidad and Tobago (TTO)	United States of America
Togo	Nigeria (NGA)	Benin (BEN)	Burkina Faso (BFA)	Nigeria
Vanuatu	Wallis and Futuna (WLF)	Austria (AUS)	France (FRA)	Wallis and Futuna
Yemen	Saudi Arabia (SAU)	Israel (ISR)	Jordan (JOR)	Saudi Arabia

Source : Parsons & al. (2007)