3. IS THE RELATIONSHIP BETWEEN REMITTANCES AND ECONOMIC GROWTH INFLUENCED BY THE GOVERNANCE AND DEVELOPMENT OF THE FINANCIAL SECTOR? NEW EVIDENCE FROM THE DEVELOPING COUNTRIES

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Abstract

We examine the remittances-growth relationship and its interaction with governance and financial development using the System GMM along with the bootstrap panel Granger causality approach. The analysis covers 58 countries divided into low, lower-middle and middle-income economies. The results reveal that remittances and their interaction with financial development have a positive effect on economic growth within all income groups. However, the interaction between remittances and governance is mainly supporting growth in middle-income countries. The bootstrap panel Granger causality approach finds deeper evidence of causality running from remittances to growth in the low and lower-middle-income groups, but weak evidence is provided for the middle-income countries. We find the causality relationships to be idiosyncratic as their sign and direction vary within the groups.

Keywords: worker's remittances; financial development; financial institutions; governance; economic growth; bootstrap panel causality test

JEL Classification: F24, O16, C32, O43, C22

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1. Introduction

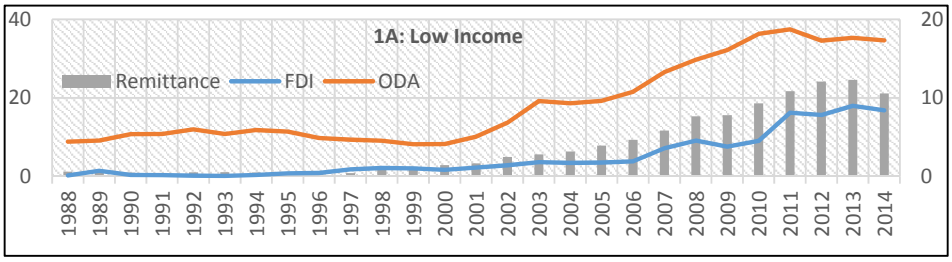
The inflow of foreign capital and good governance play significant roles in financial development and sustainable economic growth. In the developing countries, these elements help in reducing capital needs and create the necessary conditions for stable economic growth (Loungani & Razin, 2001). Remittances generated by migrant workers are the largest flow of foreign currency to the lower-middle (hereafter LMI) and the second major flow to the low-income (hereafter LI) and the middle-income (hereafter MI) groups of countries. The flow of remittances, foreign direct investment, and official development assistance are presented in Figure 1. The long-term impact of worker remittances can be achieved with the prerequisites of sound economic and governance policies that encourage business and investments and provide social services (Calero *et al.*, 2009; Yang, 2008). These policies should encourage savings and investment so that the household's income that exceeds the basic needs can be either saved or invested (Arif, 1999). The good governance with a transparent policy framework may attract investments, catalyze business growth and encourage remitter households to turn their saving towards productive investments that promote growth. Governance strengthens the institutions that reduce uncertainty, endorse efficiency, which in turn boosts remitter confidence and routes remittances to the investment path that contributes to economic growth (Catrinescu *et al.*, 2009). Entrepreneurs are aware that law accountability will protect their rights and ensure normal business conduct.

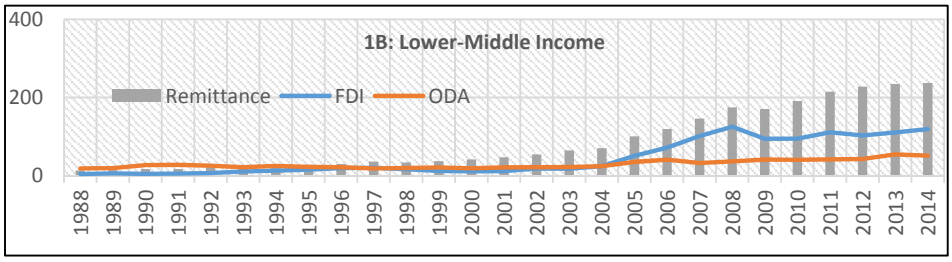
In contrast, it is clear that underperforming government institutions subject to corruption and characterized by lax law contribute to an increase in investment risk. In this context, investors choose to divert their actions from these destinations (Alesina and Perotti, 1993). This reduces the investment level and, ultimately, slows down economic growth. In the presence of poor governance, remittances might be the only source of capital available to potential investors and entrepreneurs (Bjuggen *et al.*, 2010).

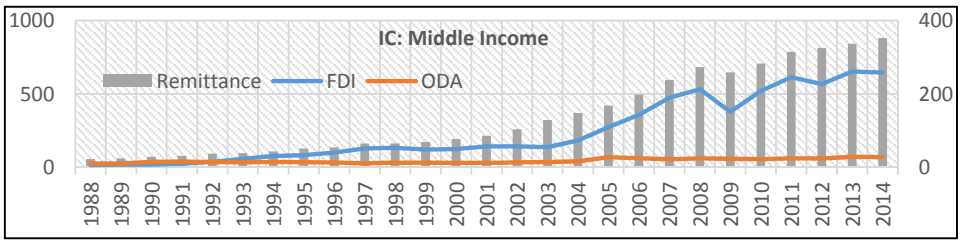
The evolution of remittances and other capital inflows to low, lower-middle- and middle-income country groups is shown in Figure 1.

Figure 1

Remittance and Other Sources of Capital Inflow in Different Income Groups







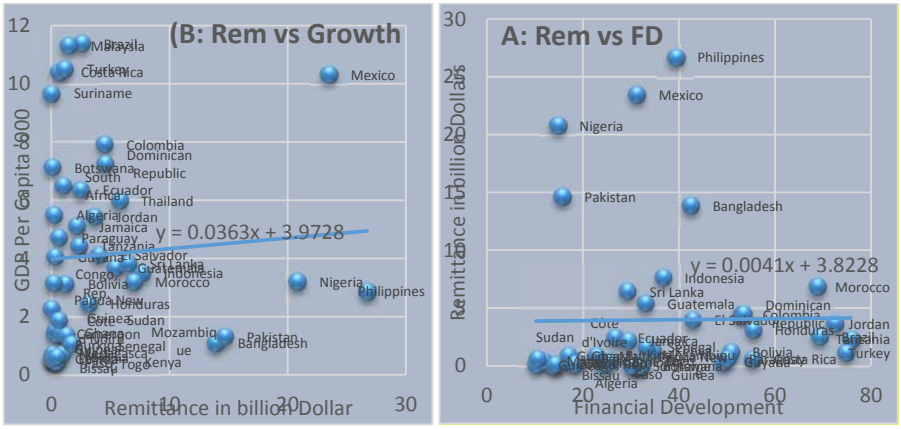
Note: Data is in Billion US dollars.

Source: World Bank development indicators (WDI).

Well-performing financial markets help in lowering transaction costs and may funnel remittances towards those projects that yield the highest return and enhance growth (Freund and Spatafora, 2008; Mundaca, 2009). On the opposite, in an inefficient credit market, worker remittances become an alternative for local entrepreneurs that cannot manage a high interest rate, or provide the required collateral. In the developing countries, credit is the highest concern for the entrepreneurs due to the less-efficient credit market (Paulson and Towsend, 2000; Aghion *et al*., 1999). In these economies, remittances have a significant positive impact on economic growth (Fayissa and Nsiah, 2010; Khurshid *et al*., 2017). It is true that the developed financial systems may attract more remittances. However, they cannot magnify their growth impact (Chowdhury, 2016). The remittances-financial development and growth positions in the three income groups are presented in Figure 2.

Figure 2

Remittances, Financial Development and Growth

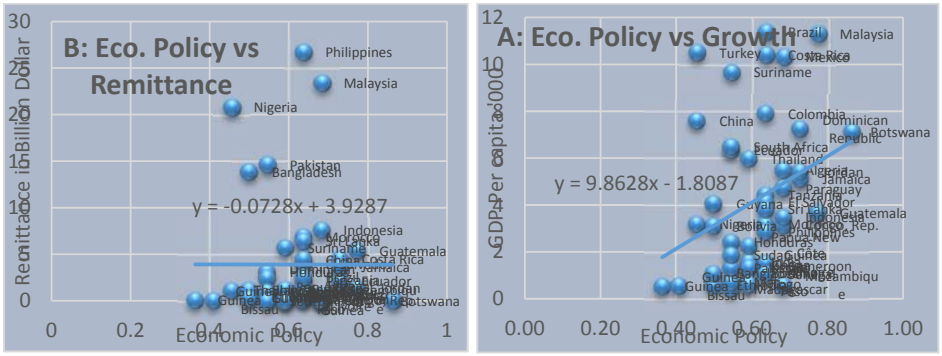


Source: Authors' computation.

The five-year average data values of remittances, financial development and GDP per capita growth show that remittances are positively linked with financial development and growth. We observe this particularly in the lower-middle and middle-income groups. The remittances, economic policy and the growth situation are plotted in Figure 3. These graphs are drawn using the last five year average of remittances, economic policy and growth. The data indicate that sound economic policies have a substantial impact on the per capita growth, but this relationship seems more dominant in the middle-income countries. However, we find a negative impact of economic policies on the remittances inflow in our data set, except for the Philippines, Pakistan, Malaysia, Nigeria and Bangladesh. These countries, featured as outliers on the graph, took notable policy measures for remittances growth.

Figure 3

Economic Policies, Remittances and Growth

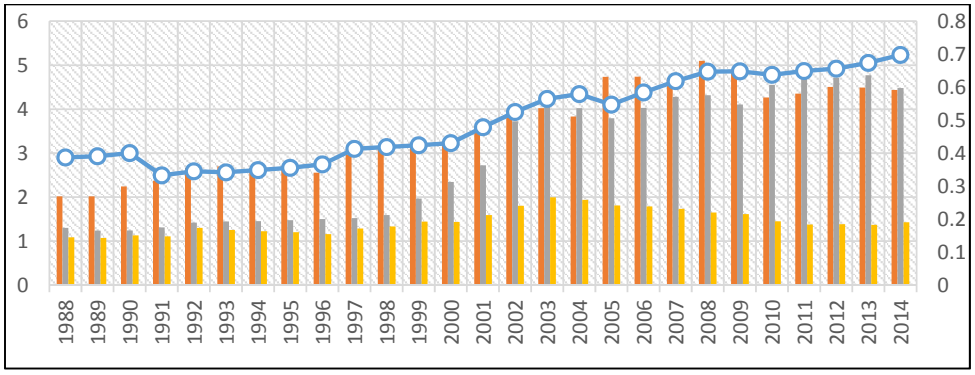


Source: Authors' computation.

Remittances were continuously surging over the last four decades. In 2013, remittances were higher than FDI in all the developing countries, except for China. In the World Bank Migration and Remittances Report 2015, the remittances are recorded as $440 billion and were expected to accelerate in 2017 to reach $479 billion (Khurshid *et al*., 2017). The remittances as a share of global GDP grew from 0.42% in 1998 to 0.70% in 2014 and from 1.33%, respectively, to 1.43% in the MI group. As a share of GDP, the highest growth of remittances may be observed for the LI group. It went from 1.59% to 4.48% in the LI group and from 3.10% to 4.49% of GDP in the LMI group of countries. Figure 4 shows the trends of remittances as a share of GDP in the LI, LMI, MI groups and at the global level. The top remittance receivers with the highest percentage of GDP are Tajikistan, with 41.7%, followed by Nepal with 29.2% and Tonga with 27.9%. The increasing trend in the remittance flow and its growing share in the whole economy give the motivation to investigate their relationship in the LI, LMI, and MI countries. From Figure 5, one may see that India remains a top remittance receiver, with $70.97 billion; China received $61.49 billion, while Mali hosted $894.51 million in 2014. In the LMI group, the other top remittance receivers are the Philippines, Nigeria, and Pakistan, namely with $28.4, $20.92 and $17.066 billion. The total flow of remittance in the LMI group was $237.25 billion, much higher than the combined sum of FDI and ODA, which reached $170.142 billion in 2014. In the LI group, Mali, Ethiopia, Madagascar and Togo received the highest amount of remittances. Madagascar received $624.37; Ethiopia and Togo received $427.48 and $344.76 million, respectively. The flow of remittances towards the LI group remains weaker due to strict immigration rules, delicate financial situation and unemployment in the host nations. The remittance inflow is the 2nd largest source of foreign exchange inflow to the middle-income countries. In the MI group, China, Mexico, and Thailand hosted $62.33 billion, $24.46 and $5.65 billion, respectively (Khurshid *et al*., 2018). Due to weak economic activity in Japan and Spain, growth in the remittances flow was sluggish in Argentina, Paraguay, and Brazil. Since 2010, a 124.59% increase in worker remittances was noticed in the MI group. They received a sum of $352.032 billion in the form of remittance in 2014 (World Bank, 2015).

Figure 4

Remittance as a Share of GDP

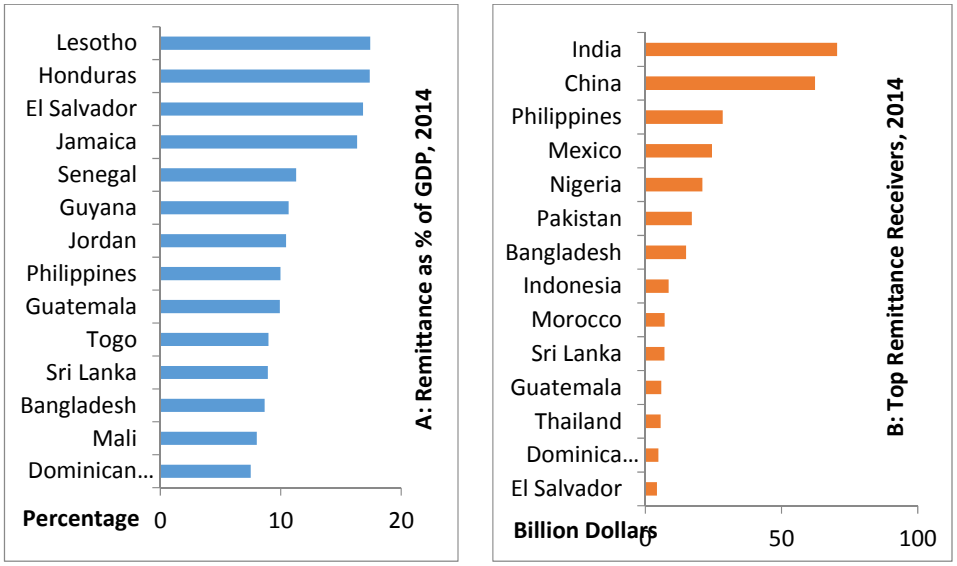


Source: World Bank

Note: Orange – lower middle income; Gray - low income; Yellow – middle income; Blue dotted line-world.

Figure 5

Top Remittance-receiving Countries, both as Amount and Percentage of GDP



Source: World Bank

2. Empirical Literature

The above-discussed capital inflow, investment, financial development phenomena impact growth in the receiving economy and this influence was examined in numerous studies. Nyamongo *et* al. (2012) conducted a panel study of 36 African countries and found that remittances were a leading source of capital that drove growth. The authors further explained that their instability had a negative effect, while the inflow itself set a positive effect on financial development that helped in promoting growth. Bettina *et* al. (2012), Kumar (2013) and Katsushi S. Imai *et al*. (2014) find similar evidence in their empirical work.

Vargas-Silva *et al*., (2009) in 20 Asian countries, Jongwanich (2007) in developing Asia and the Pacific countries, Gupta, Wagh, and Pattillo, (2007) in Sub-Saharan Africa find that remittances have a positive impact on the financial system and institutions that lead towards the economic growth in the recipient economy. Sobiech (2015) examined the remittance-growth relationship with a mixed panel of both developed and developing economies and concluded that remittances had a positive impact on growth in the early stages of financial development. Despite the evidence mentioned above, Ziesemer (2012) argues that the results may vary across different economies.

Few other studies came out with different results; for example, Chami *et al*. (2005) concluded in their study, covering 113 countries, that remittances hurt growth. The higher inflow of remittances increases the demand for local currency and stimulates spending; this uplifts the exchange rate and competitiveness through a decline in the labor supply

of the recipient economy, thus affecting growth (Bussolo and Medvedev, 2007). Likewise, Adolfo *et al*. (2009) and Ahmed (2010) draw similar conclusions. On the contrary, IMF (2005) did not find empirical linkages among remittances, per capita output growth and investment rate in an analysis conducted for 101 developing countries. More recently, Chowdhury (2016) investigated the remittance growth relationship in 33 remittance-receiving economies for a period ranging from 1979 to 2011. The result suggests that financial development is neither a substitute nor a compliment in the remittance and growth relationship. Furthermore, the financially developed economies may encourage remittance inflow, but a high economic development has an insignificant role in the remittance-growth relationship of the receiving economies.

The empirical work discussing the role of governance on the remittance-growth hypothesis is very scarce. There are no empirical studies that fundamentally establish the direct effect of governance in a remittances-growth relationship. According to the World Bank (2006), in a sound policy environment with higher levels of human capital and strong institutions, remittances may be more efficient in driving investments and boosting growth. In particular, the flow of remittances is growing significantly due to favorable government policies that enhance the processes related to money transfer, that ease access to banking, lower transfer costs, temper concerns about terrorist financing and money laundering and expand the network of service providers in the remittance market. In a panel study of 79 developing countries for the 1995-2005 period, Bjuggen *et al*. (2010) studied the effect of remittances on investments using a dynamic panel data approach. The outcomes reveal that the marginal effect of remittances decreases in the presence of a developed credit market and an improved institutional framework. Ahoure & Abidjan (2008) studied the role of governance in a remittances-investment relationship in Africa over a period from 2002 to 2006. The results show that remittances have a negative impact on investment when controlled by governance. The author further argues that countries with the right governance approach may reduce this adverse effect.

Different approaches have been put forward in the literature in the field. The results seem to be clustered around two opposite perspectives. The first stipulates that remittances are fundamental to the developing economies, as they meet credit demand and therefore ensure growth. The second perspective advocates that remittances tend to raise domestic prices, which will furthermore stress an adverse influence on competitiveness. This is followed by another stream of thought centered around the idea that remittances do not have a pivotal role, but a rather minor one in the financial system.

In order to investigate the remittance-growth hypothesis, most of the panel studies used a single estimation procedure for all the countries that fall into different income groups.

There are fundamental differences in terms of governance quality, development of financial institutions and liquidity constraints among different countries. Given this argument, various panel studies that focus on different countries report conflicting results and their conclusions cannot be generalized.

This study fills the gap in the existing literature in different ways. Firstly, we selected 58 major remittance-receiving countries from the LI, LMI and MI groups. Dividing them into groups helps control for the specific economic characteristics that these categories share. Secondly, in order to overcome the data limitation regarding the remittances, we use the remittances series suggested by Khurshid *et al*. (2016). The informal flows of remittances are about 40% of the total remittances pool, and in the absence of "compensation of employees" and "migrant transfers," they account for 60% (Qiang *et al*., 2019). Thus, in this case, the results cannot be inferenced to the real economy. Thirdly, following the argument

of Barajas *et al.* (2010) and Ziesemer, (2012) who consider that remittances' impact on the macroeconomic variables varies from country to country, this study uses the panel Granger causality approach to document the causal link between remittances and growth in each country of the samples. There are two main advantages of this approach: (i) the causality relationship for each country is tested separately by assuming that the panel is homogeneous. Also, the contemporaneous correlation helps in getting additional information in the panel setting; (ii) the estimation of unit root and cointegration is not pre-requisite as it generates *bootstrap critical values.* After addressing the concerns about endogeneity, the results indicating that remittances promote growth in the less financially developed systems may hold. The panel Granger causality results may be considered as country-specific.

This study is designed as follows. Section 3 describes the data and methodology, while Section 4 discusses the empirical findings. Lastly, Section 5 contains the conclusion and policy recommendations.

3. Data and Research Methodology

3.1. Data

In this section, we describe the data used in the growth regression. We divide this study into two parts; firstly, we find the relationships among remittances, financial development and growth in 58 countries classified into the three income groups. Secondly, we investigate how governance impacts the remittance-growth connection in different income groups by using annual data from 1988 to 2014. The remittances series used here is the sum of "worker remittances," migrant transfers" and "compensation of employees" and the data set is collected from the IMF, and the World Bank development indicators (WDI). In all regressions, remittances are computed as share of GDP (Rem/GDP).

This study uses two measures to proxy for economic growth. First, we focus on the gross domestic product divided by midyear population (GDP per capita), and "productivity growth," which is a "Solow residual." It is defined as "real per capita GDP growth minus 0.3 times the rate of increase of the capital stock per person".[7] We consider the credit provided to the private sector (Credit/GDP) and liquid liability of the financial system as a ratio of GDP (M2/GDP). The credit given to the private sector is defined as the funds granted to the private sector by the financial corporations in different forms such as loans, commercial credits and other account receivables that establish a claim for repayment. The liquid liability of the financial system captures the full size of the financial sector and is a benchmark for financial position and efficiency. The interaction variables, such as (Rem*M2) and (Rem*Credit) explain the collaboration between remittances and financial sector to achieve economic growth. The other independent variables include inflation (CPI), gross fixed capital formation to the GDP (GFCF), trade openness (TOPN), foreign direct investment (FDI/GDP), government expenditures (GEXP), population growth rate and global financial crises as a dummy variable (GFC). All variables except for inflation are used in natural logarithm form.

Unlike the previous studies, this study aims to find the role of governance (government institutions' quality and policy) in the remittance-growth relationship. The data series of governance variables is collected from the International Country Risk Guide (ICRG). This

7 For details see, Finance, Financial Sector Policies, and Long-run Growth by Ross Levine (2008, pp.16)

study chooses five composite indicators to check our empirical nexus in different income groups. The governance variables are denoted as Regulatory Quality (RQ), Control of Corruption (CC), Government Effectiveness (GE), Voice and Accountability (VA) and Political Stability and Absence of Violence (AV).[8] The interaction terms in the governance, remittances and growth relationship are REM*RQ, REM*CC, REM* GE, REM* VA and REM* AV. The dynamics of these variables will explain the role of governance in the remittances-growth relationship.

The exogenous instruments include the age dependency ratio, time to start a new business, expenditure on higher education and labor force participation rate. This study does not include the remittances inflow coming from informal, unrecorded channels. We consider that under new money laundering regulations, the informal money channels were significantly reduced at the global level. Nevertheless, this is an acknowledged problem in all the previous research on remittances. If other conditions remain constant, we may assume that the unofficial flow can only generate an added effect on the growth reported by our theoretical model.

3.2. Estimation Methodology

3.2.1. Governance, Financial Development, and Remittances-Growth

In order to empirically study these relationships, we divide our study into two parts: firstly, we focus on the remittances, financial development and growth hypothesis, and secondly, we consider governance, remittances, and growth.

To begin with, we estimate the impact of remittances and other macroeconomic variables on economic growth without including the financial development and governance variables for illustrative purposes. We estimate equation (1) using OLS regression and system Generalised Method of Moment Regression (SGMM) method.

$$GDP_{it} = \theta_0 + \alpha_1 GDP_{i,t-1} + \alpha_2 REM_{it} + \alpha_5 X_{it} + \Gamma_t + \gamma_t + \varepsilon_{it} \quad (1)$$

In equation (1), $GDP_{i,t-1}$ represents the initial GDP per capita (logarithm form), REM are the remittances as a ratio of GDP, $X_{it}$is the matrix of control variables as explained in the data section, Γ_t shows the time-specific effect, γ_t represents country-specific unobserved fixed effect, while, ε_{it} is the error term in the equation.

Remittances impact the economic activity of the recipient economy via a host of channels. In the following regression form, we test the effect of remittances on growth that passes through the financial markets. We also introduce the interaction term and test its significance. We estimate the following equation:

$$GDP_{it} = \alpha_0 + \alpha_1 GDP_{i,t-1} + \alpha_2 REM_{it} + \alpha_3 FDIV_{it} + \alpha_4 (REM_{it} * FDIV_{it}) + \alpha_5 X_{it} + \Gamma_t + \gamma_t + \varepsilon_{it} \quad (2)$$

In equation (2), $FDIV$ represents financial development and $(REM_{it} * FDIV_{it})$ is the interaction term. Furthermore, α_2 and α_4 are the coefficients of remittances and the interaction terms, respectively.

To address our second empirical question of whether governance quality affects the remittance-growth relationship; we construct the following equation;

[8] *For a detailed definition and further reading see http://www.prsgroup.com/.*

$$GDP_{it} = \beta_0 + \beta_1 GDP_{i,t-1} + \beta_2 REM_{it} + \beta_3 GOVIT_{it} + \beta_4 (REM_{it} * GOVIT_{it}) + \beta_5 X_{it} + \Gamma_t + \gamma_t + \varepsilon_{it} \quad (3)$$

In equation (3), $GOVIT$ and $(REM_{it} * GOVIT_{it})$ represent governance and the interaction term of this relationship, whereas, β_2 and β_4 are the corresponding coefficients.

3.2.2. Panel Granger Causality between Remittances and Growth

This study uses the panel data causality approach developed by Kónya (2006) to find a causal link between remittances and growth. The panel causality approach is based on a bivariate finite order vector autoregressive model, and we apply it to our context to remittances -*Rem*, and growth -*G*. The equation system of the Granger causality test for remittance (*Rem*) and growth (*G*) is stated as:

$$\begin{cases} Rem_{it} = \alpha_{1,i} + \sum_{j=1}^{l_{1i}} \beta_{1,i,j} Rem_{i,t-j} + \sum_{j=1}^{l_{1i}} \gamma_{1,i,j} G_{i,t-j} + \varepsilon_{1,i,t} \; t = 1, \dots, T \; i = 1, \dots, N \\ G_{it} = \alpha_{2,i} + \sum_{j=1}^{l_{2i}} \beta_{2,i,j} Rem_{i,t-j} + \sum_{j=1}^{l_{2i}} \gamma_{2,i,j} G_{i,t-j} + \varepsilon_{2,j,t} \; t = 1, \dots, T \; i = 1, \dots, N \end{cases} \dots\dots (A)$$

where: *i* and *t* stand for countries and time (*i, t = 1, 2…, N),* respectively. In system (A), *l* symbolizes the lags, while l_{1i} and l_{2i} indicate *the* longest lag, similar in each model but variant across variables. For each pair of (l_1, and l_2), this study assumes *1* to *5 lags and* sets for one that minimizes the Schwarz Criterion (Kenya, 2006).[9] The error terms ($\varepsilon_{1,i,t}$, $\varepsilon_{2,i,t}$) in the system (A) are white noises, correlated within but different across countries. System A is estimated using a Seemingly Unrelated Regressions (SUR) approach. The Granger causality approach generates the country-specific bootstrap values by simulations.

Following system (A), we find a unidirectional causality from G to Rem in the country *i,* only if all $\gamma_{1,i}$ are different from zero, while $\beta_{2,i}$ is zero. Conversely, it is the case of causality running from *Rem* to *G*. In the case of bidirectional causality, both $\gamma_{1,i}$ and $\beta_{2,i}$ should be different from zero. (*G, Rem*). If all $\beta_{2,I}$ and $\gamma_{1,I}$ are zero, there is no causal relationship between the variables.[10]

3.3. Endogeneity

The first set of estimates without financial development does not address the issue of endogeneity. Theoretically, it is possible that with higher growth rates, both the efficiency of the financial market and the magnitude of remittances increase. This may lead to an overstatement of the effect of these variables and of their relationship with growth. In the literature in the field, variables are not subject to reversed causality; for example, creditor rights (Porta *et al*., 1997) and the legal system have been commonly used. This study did not use an instrumental variable (distance - the country of origin) proposed by Rajan and

[9] *As Kenya (2006) argued, lag structure affects the causality relationship between variables. A great number of lags waste observations, affect the standard error and the results become unreliable. Whereas, too few lags lead to omitting variables, cause estimation bias and ultimately lead to incorrect results.*

[10] *As per Kónya (2006), this definition implies causality for one period ahead.*

Subramanian (2005), as this variable remains constant over time. The endogeneity problem is solved using the SGMM regression methodology of Arellano and Bover (1995).

4. Empirical Findings

Table 1 reports the results of the remittances-growth relationship using the SGMM and OLS estimation approaches. The outcomes show that remittances had no impact on the growth of the MI and LMI countries when they are simply added as an explanatory variable in the growth equation. These results are contradictory with the recent literature, which explains that micro-level remittances have an impact on investments, consumption, education and health.

These outcomes pose a question on whether the implications of remittances are homogenous or vary along a dimension. In the next step, we investigate this assumption in order to find out whether the financial development of the remittance-receiving economy influences their capacity and supports growth.

Table 1

Remittances and Growth

	Middle Income		Lower Middle Income		Low Income	
Variables	OLS	GMM	OLS	GMM	OLS	GMM
GDP(-1)	0.947*	0.864*	0.9971*	0.707	0.9644*	0.8554*
	(0.0103)	(0.0435)	(0.0062)	(0.0711)	(0.015)	(0.0256)
REM	0.003	0.019	0.021	0.015	0.0480*	0.0907**
	(0.0211)	(0.1259)	(0.1191)	(0.2143)	(0.0327)	(0.0425)
CPI	-0.312*	-0.123	-0.8920*	-0.248	-0.3591*	-0.3064*
	(0.0129)	(0.1243)	(0.0891)	(0.1831)	(0.0463)	(0.049)
GFCF	0.050*	0.112**	2.8986*	0.148	0.2063*	0.154
	(0.0184)	(0.0528)	(0.2362)	(0.0609)	(0.0805)	(0.1695)
	0.0270***	0.521*	-0.0074*	0.004	0.7946*	-0.7224*
TOPN	(0.0109)	(0.1224)	(0.0011)	(0.0008)	(0.1048)	(0.1077)
POP	0.146**	0.8364*	-2.9739*	-0.108	-4.7195*	-4.7817*
	(0.076)	(0.2271)	(0.6714)	(0.5781)	(0.6295)	(0.6445)
FDI	0.096*	0.1298*	0.5257*	0.065	0.4985*	0.4352*
	(0.0336)	(0.0486)	(0.1892)	(0.0558)	(0.1675)	(0.1684)
GEXP	-1.21*	-1.006	0.947**	1.481***	2.164*	1.894**
	(0.7421)	(1.8252)	(0.0751)	(1.0014)	(1.047)	(1.074)
GFC	0.174*	-0.041*	-0.291	0.751***	-0.362*	-0.512**
(Dummy)	(0.007)	(0.0006)	(0.0107)	(0.1150)	(0.0094)	(0.0314)
C	-0.341	0.137***	-12.769*	-0.68**	14.491*	14.800*
R-squared	0.966		98.525		0.973	
Observations	598		675		270	
Countries	23		25		10	
AR(2)		0.1858		0.8391		0.6027
P-value (Hansen test)		0.33		0.58		0.71
**significant at 1 percent, **significant at 5 percent and ***significant at 10 percent*						

The results of the financial development and remittances-growth relationship using the SGMM approach in the three income groups are presented in Table 2. The results are estimated using two growth and financial development variables. The outcomes from both

growth variables are qualitatively and quantitatively similar in the MI group. The findings show that remittances have a significant and positive impact on the economic growth in the three groups. Both interaction terms have a positive impact on growth in the MI countries and significantly influence it in the LI and LMI groups. The results suggest that the decrease in remittances due to financial development is marginal and that these cash flows are more relevant in the financial systems with a low degree of development, as they mitigate liquidity constraints and encourage productive investments (Fayissa and Nsiah, 2010). Remittances have *de facto* acted as a substitute for financial services in boosting growth by fulfilling the needs for credit and insurance that the market has failed to provide. The inflow of remittances is much higher in the LMI and MI groups as compared to the LI group of countries, but a significant share of it is used for consumption purposes that impact the aggregate demand and competitiveness, consequently (Lartey, Mandelman & Acosta, 2012). However, both financial development variables (*DCGDP, M2GDP*) are positively influencing the economic growth in all groups. The government expenditures and population growth in the LI and LMI groups negatively contribute to the growth process. The results are also consistent with the "Solow residual."

The obtained results of the role of governance in the remittances-growth relationship using equation (3) are summed up in Table 3 and Table 4. The political risk rating evaluates the political stability on a comparable basis. Due to the similarity in the outcomes of both growth variables, in this section we use the GDP per capita (log. form) as the dependent variable.

The findings reveal that remittances hurt growth in the MI group, while the opposite may be observed for the LMI and LI counties. This is due to a better economic situation in the MI countries, as compared to the LMI and LI countries. The spending effect due to remittances inflow is more dominant in the MI group. In this case, remittances tend to increase the disposable income, decrease labor force participation rate, increase wages and also negatively impact the growth of exports (Bussolo and Medvedev, 2007). In the LI and LMI groups, the economic policies have an adverse impact on growth, while political stability and accountability are slowing down the growth process in all the three groups. Economic policies are only effectively playing a role in the growth process of the MI group. The coefficients of interaction between remittance-regulatory quality (REM*LOGRQ) and political stability and absence of violence (REM*LOGPV) are positive and significant in the MI countries.

On the other hand, in the LMI group, the coefficients of the two interaction terms, (REM *LOGCC) and (REM*LOGVA) are positive and significant. However, the quality of governance does not back up the growth process and also reduces the growth effect of remittances in the LMI group. In all three groups, the control of corruption coefficients show that this is one of the main hurdles in the growth process. The flow of remittances increases during the period of economic and political distress (Suleri, A. Q., 2010). In uncertain situations, investors are reluctant to invest and, therefore, remittances remain the largest source of capital that helps in overcoming the financial constraints in the receiving economy. On the other hand, foreign direct investment and trade openness have a significant and positive impact on the economic growth of all three groups. The results of the Hansen test confirm the validity of our instruments and the autocorrelation AR (2) test exhibits no second-order serial correlation in our models.

Table 2

Remittances, Financial Development, and Growth

	Low-Income Countries				Lower-Middle Income Countries				Middle-Income Countries			
	M2GDP		DCGDP		M2GDP		DCGDP		M2GDP		DCGDP	
Variables	Growth1	Growth 2	Growth 1	Growth 2	Growth 1	Growth2	Growth 1	Growth 2	Growth 1	Growth 2	Growth 1	Growth2
GDP(-1)	0.972*	0.9352*	0.9473*	0.9214*	0.8516*	0.847*	0.8586*	0.852*	0.8773*	0.9485*	0.8576*	0.8354*
	(0.013)	(0.0225)	(0.0184)	(0.0243)	(0.0298)	(0.0291)	(0.029)	(0.0286)	(0.032)	(0.019)	(0.0367)	(0.0373)
CPI	-0.030**	-0.3262*	-0.0214	-0.0023	-0.3927*	-0.4512*	-0.3882*	-0.446*	-0.0042	0.0379***	-0.0355	-0.0352
	(0.014)	(0.0253)	(0.0131)	(0.0148)	(0.0867)	(0.0796)	(0.0909)	(0.0871)	(0.107)	(0.0226)	(0.0483)	(0.0477)
GFCF	0.108*	0.0207	0.069**	0.1201*	0.0965**	0.0774***	0.1051**	0.0491	0.1473**	0.0481**	0.0566	0.1655*
	(0.039)	(0.082)	(0.0327)	(0.0337)	(0.0471)	(0.0463)	(0.0489)	(0.048)	(0.0788)	(0.0244)	(0.0502)	(0.0565)
PP	-0.009	-0.686**	-0.0794	-0.2184	-0.0925	0.0367	-0.0032	-0.0535	0.7131*	0.1907**	0.9815*	1.1819*
	(0.156)	(0.3272)	(0.151)	(0.1594)	(0.3068)	(0.314)	(0.2904)	(0.2803)	(0.1393)	(0.104)	(0.3675)	(0.4393)
FDI	0.024	0.0328	0.033	0.0508	0.0344	0.076*	0.0514*	0.0565*	0.1421*	0.1191**	0.0568	0.0736
	(0.04)	(0.0845)	(0.0337)	(0.0357)	(0.0321)	(0.0278)	(0.0138)	(0.0133)	(0.0316)	(0.0526)	(0.0659)	(0.0666)
REM	0.027**	0.0935**	0.0515*	0.0548*	0.0001*	0.0009*	0.0018*	0.0018*	-0.012**	-0.0015	0.0259*	-0.0223*
	(0.012)	(0.0461)	(0.013)	(0.0133)	(0.0029)	(0.0023)	(0.0026)	(0.0023)	(0.0066)	(0.0015)	(0.007)	(0.0072)
GEXP	-0.1322*		- 1.7623		-0.167**		0.3085*		2.172**		0.234*	
	(0 .0026)		(1.2881)		(0 .0280)		(0.0827)		(0.8452)		(0.0314)	
DCGDP	0.0161	0.0072**			0.2887**	0.2871*			0.1389**	0.0162		
	(0.0364)	(0.0033)			(0.0525)	(0.0491)			(0.0659)	(0.0118)		
DC*REM	0.0536*	0.0017			-0.0472*	-0.0523*			-0.0282	-0.0167*		
	(0.022)	(0.0014)			(0.0137)	(0.0132)			(0.0187)	(0.0065)		
M2GDP			0.0007**	0.005			0.0493	0.0987*			0.0934**	0.0713**
			(0.0031)	(0.0032)			(0.0326)	(0.0285)			(0.0403)	(0.0391)
M2*REM			0.0003**	0.0004			0.1216*	0.1316*			0.0112	-0.0206
			(0.0006)	-(0.0007)			(0.0377)	(0.0365)			(0.0138)	(0.0142)
C	14.420*	14.253*	-0.36	0.1671	-0.012	-0.113	-0.105	-0.214	6.295*	-0.41	0.358	-0.089**
Countries	10				25				23			
AR(2)	0.3852	0.3405	0.1875	0.2632	0.6169	0.5901	0.9358	0.4784	0.1958	0.2071	0.1628	0.2766
Hansen	0.40	0.42	0.31	0.37	0.91	0.84	0.76	0.77	0.46	0.41	0.58	0.51

Note: Growth1: Solow residual, Growth 2: GDP per capita Growth
**significant at 1 percent, **significant at 5 percent and ***significant at 10 percent.*

Table 3

Governance, Remittance, and Growth

Income Group	Low Income			Lower-Middle Income			Middle Income		
	RQ	PV	VA	RQ	PV	VA	RQ	PV	VA
GDP(-1)	0.9546*	0.9464*	0.9378*	0.7607*	-0.1204	0.0905*	0.2577*	0.2913*	0.2677*
	(0.022)	(0.0253)	(0.0262)	(0.0704)	(0.0283)	(0.0296)	(0.0296)	(0.0289)	(0.0299)
GFCF	0.0916	0.1505*	0.1471*	0.1103***	0.1069	0.1026*	0.1085*	0.1143*	0.1523*
	(0.0702)	(0.0602)	(0.0576)	(0.061)	(0.025)	(0.0256)	(0.0308)	(0.0285)	(0.0312)
POP	-11.391*	-10.569*	-9.3836*	-0.147	-0.6799	-0.6087	-0.6283**	0.4338	0.0839
	(0.7164)	(0.7388)	(0.7543)	(0.5788)	(0.4617)	(0.4147)	(0.3056)	(0.2822)	(0.0519)
TOPN	0.4988*	0.4203*	0.5819*	-0.0037*	0.0038	0.0029*	-0.5681*	0.5866*	0.5408*
	(0.124)	(0.1054)	(0.1097)	(0.0011)	(0.0004)	(0.0004)	(0.0485)	(0.0472)	(0.0499)
FDI	-0.3001**	-0.5579*	-0.505*	-0.055	-0.0183	-0.0112	0.1318*	0.117*	0.1139*
	(0.148)	(0.1327)	(0.1291)	(0.0575)	(0.021)	(0.0205)	(0.0331)	(0.0328)	(0.0345)
REM	0.2906*	0.2676*	0.0803*	0.0131*	0.0133	0.0146*	-0.0325*	-0.028*	-0.0247*
	(0.1147)	(0.1064)	(0.0288)	(0.0043)	(0.0014)	(0.0016)	(0.0042)	(0.0041)	(0.0041)
RQ	0.8242*			-4.4673			-0.0857***		
	(0.3535)			(2.891)			(0.048)		
REM*RQ	0.767*			-0.2053*			-0.0169		
	(0.2373)			(0.0748)			(0.0149)		
PV		17.826*			-0.253			-0.1713	
		(4.9273)			(0.1321)			(0.7152)	
REM*PV		5.3103*			-0.0221			-0.0176	
		(2.1174)			(0.0274)			(0.0256)	
VA			13.299*			-2.1848**			-0.0757
			(3.0878)			(1.13)			(0.0685)
REM*VA			-0.9974			0.1871*			-0.0196
			(0.8219)			(0.0472)			(0.0194)
C	-10.184	-21.849*	-5.0202	-14.776*	5.5855*	1.7082	5.7449*	5.5241	7.7453*
AR(2)	0.7142	0.1523	0.6641	0.4308	0.6702	0.5681	0.9888	1	0.9964
Hansen (*P*-values)	0.77	0.38	0.65	0.59	0.67	0.62	0.84	0.91	0.84

Note: Dependent variable is GDP per capita growth

*significant at 1 percent, **significant at 5 percent and ***significant at 10 percent.

Table 4

Governance, Remittances and Growth (II)

	Low Income		Lower-Middle Income		Middle Income	
LIC	**CC**	**GE**	**CC**	**GE**	**CC**	**GE**
GDP(-1)	0.9591*	0.9074*	0.7318*	0.7897*	0.2871*	0.2974*
	(0.0207)	(0.0228)	(0.0714)	(0.0706)	(0.0291)	(0.0354)
GFCF	0.1942*	0.1084	0.129**	0.1037	0.1185*	0.1601*
	(0.0712)	(0.073)	(0.0630)	(0.0722)	(0.0289)	(0.0306)
CPI	-0.4504*	-0.0972	-0.0028	-0.0236	-0.108**	-0.0726
	(0.1305)	(0.1091)	(0.0717)	(0.0696)	(0.0511)	(0.0543)
POP	-11.675*	-0.7504***	-0.3125	-0.4396	0.4473	0.6681*
	(0.8223)	(0.4051)	(0.5429)	(0.5675)	(0.302)	(0.2229)
TOPN	-0.3526*	-0.3821*	0.0041*	0.0041*	0.6211*	0.614*
	(0.1336)	(0.1252)	(0.0009)	(0.0010)	(0.0456)	(0.047)
FDI	0.2517	0.3802*	0.0602	0.0367	0.1465*	0.124*
	(0.159)	(0.1470)	(0.0588)	(0.0576)	(0.0328)	(0.033)
REM	0.0462**	0.0688*	0.0159*	0.011*	-0.0302*	-0.0296*
	(0.0034)	(0.0191)	(0.0046)	(0.0044)	(0.0040)	(0.0035)
CC	0.8701*		-8.3144*		-0.0518	
	(0.0285)		(3.2041)		(0.685)	
REM*CC	-1.4101		0.4224*		-0.0195	
	(1.5116)		(0.1376)		(0.0258)	
GE		0.6201*		-15.264*		-0.9871
		(0.0492)		(3.6906)		(1.2971)
REM*GE		0.2934*		-0.315**		-0.0404***
		(0.0354)		(0.1537)		(0.0242)
Constant	10.402* (0.2341)	8.713* (1.9678)	-7.019** (1.0354)	5.6071* (0.1626)	4.154** (1.0144)	-6.090* (1.0284)
Observations	162		357		289	
Countries	9		21		17	
AR(2)	.4810	0.4032	0.3583	0.3828	0.9996	0.9915
Hansen (pv*alues)*	0.39	0.37	0.70	0.68	0.91	0.87

*Note: GDP per capita growth is the dependent variable. Where, REM*CC and REM*GE are two interaction terms. *, **, *** are significance at 1, 5 and 10 percent.*

The results of the bootstrap panel causality results are shown in Table 5. The causality results are summarized as:

Period: 1988-2014	***Rem*** $\Longrightarrow$ ***G* (Growth)**	***G*** $\Longrightarrow$ ***Rem***	***Rem*** $\Longleftrightarrow$ ***G***
Low Income	Ethiopia, Guinea-Bissau, Madagascar	Tunisia	No Causality
Lower-Middle Income	Bangladesh, Cameroon, El Salvador, Guatemala, Honduras, India, Kenya Morocco, Senegal, Vanuatu	Pakistan	No Causality
Middle Income	Colombia, Grenada, Mexico, Turkey	Thailand	No Causality

The results reveal one-way causality from remittances (*Rem*) to Growth (*G*) in Ethiopia, Guinea-Bissau, and Madagascar at 10 percent, 5 percent, and 1 percent, respectively. In

the remaining cases, the null hypothesis of non-causality from remittances to growth can be rejected in the LI group. This study finds strong evidence of causality between remittances and growth in the LMI group. The findings suggest that remittances are Granger causing growth in the case of Bangladesh, Cameroon, El Salvador, Guatemala, Honduras, India, Kenya, Morocco, Senegal, and Vanuatu. However, in the middle-income group, the remittances-growth hypothesis is confirmed for Colombia, Grenada and Mexico, whereas in Turkey, remittances are negatively impacting growth. The causality results from growth to remittances show that remittances are sensitive to growth only in Tunisia (LI group), Pakistan (LMI group) and Thailand (MI group). No other evidence supports the growth-remittances hypothesis in the three income groups. Similarly, the results are not compatible with the two-ways causality assumption in all three income groups. This implies that the economic conditions of the country do not necessarily determine remitters to send remittances back to their countries of origin. The results confirm the hypothesis that remittances bolster additional growth in the less financially developed than in the developed economies. The findings are in line with the conclusions of the three periods overlapping generation model approach proposed by Mundaca (2009) that also hint to the idea that remittances support more growth in the less financially developed economies. However, the outcomes vary from country to country (Ziesemer, 2012).

Table 5

Remittances and Growth Causality Results

	Remittances to Growth					Growth to Remittances				
Income Group		**Bootstrap Critical Values**					**Bootstrap Critical Values**			
Low Income	**C**	**Wald test**	**1%**	**5%**	**10%**	**C**	**Wald test**	**1%**	**5%**	**10%**
Benin	0.016	0.18	20.953	13.140	9.148	-0.013	0.01	26.690	11.907	8.805
Burkina Faso	-0.047	2.21	45.328	15.829	11.799	0.100	1.25	26.680	14.793	11.016
Ethiopia	0.061	11.6*	55.656	12.967	9.324	0.162	0.67	23.565	14.156	11.062
Guinea	0.008	0.42	48.280	10.833	7.874	-0.53	0.30	24.548	12.754	8.832
Guinea-Bissau	0.159	17.61**	61.420	16.031	11.100	0.21	1.27	29.909	16.956	11.543
Madagascar	0.131	37.3***	20.018	11.451	8.490	0.71	1.28	27.902	14.843	10.281
Mali	-0.056	0.92	18.788	11.692	8.437	0.32	11.2	26.392	16.168	11.516
Mozambique	0.060	0.88	18.003	10.991	7.762	-0.08	0.41	22.428	13.004	9.348
Tunisia	-0.016	0.01	16.431	9.482	6.470	0.08	10.6*	36.978	15.536	9.794
Togo	0.040	3.99	22.632	12.745	8.865	-0.05	0.06	31.264	14.297	10.147
Lower-Middle										
Bangladesh	0.097	10.0*	26.481	13.017	7.954	-0.07	0.52	45.654	23.994	16.952
Bolivia	0.076	1.56	45.692	25.846	18.670	-0.03	0.23	35.979	21.803	14.551
Congo, Rep.	0.084	2.75	40.533	17.792	12.195	-0.09	0.58	17.022	8.011	5.685
Cameroon	0.072	12.7*	33.242	16.163	11.854	0.38	1.41	29.585	20.044	12.030
Cote d'Ivoire	0.067	4.19	38.200	20.013	13.317	0.13	0.69	27.177	13.276	9.632
El Salvador	0.111	20.3**	28.850	16.400	9.919	0.04	0.87	31.906	16.012	11.397
Ghana	0.035	2.16	35.944	18.068	12.629	0.45	4.74	41.013	15.868	11.326
Guatemala	0.076	15.3**	27.441	13.437	9.488	-0.11	1.44	40.017	22.696	16.650
Guyana	0.046	6.50	34.387	20.232	15.006	-0.03	0.03	33.992	19.006	12.657
Honduras	0.151	54.6***	29.808	16.984	11.989	0.13	0.76	42.017	21.027	14.597
India	0.134	15.05*	37.196	18.199	12.759	0.09	1.63	36.776	21.349	13.905

	Remittances to Growth					Growth to Remittances				
Income Group		**Bootstrap Critical Values**					**Bootstrap Critical Values**			
Indonesia	0.057	1.52	31.543	18.347	11.812	0.01	0.02	28.368	15.704	10.840
Kenya	0.171	13.6*	32.675	15.429	10.903	-0.09	1.58	23.199	12.387	8.506
Lao PDR	-0.022	5.21	24.914	12.981	8.755	0.31	1.23	20.506	11.648	8.095
Lesotho	0.030	0.17	28.813	14.361	10.183	-0.28	13.2	37.892	19.647	14.084
Morocco	0.264	13.2*	25.698	13.540	9.463	-0.09	0.02	22.128	13.291	8.608
Nigeria	0.040	3.57	37.152	17.820	11.894	0.17	1.14	18.731	12.624	9.446
Pakistan	0.012	0.13	22.830	11.911	8.163	0.39	12.8**	22.588	12.227	8.807
Papua New Guinea	-0.041	1.66	28.483	17.264	11.600	-0.46	4.66	23.419	13.556	9.149
Philippines	0.047	1.98	25.745	13.982	9.427	0.03	0.25	23.928	13.789	8.986
Senegal	0.128	10.5*	32.249	14.844	10.286	-0.08	4.15	25.498	12.578	8.778
Sri Lanka	0.010	0.01	30.578	14.313	9.283	0.07	9.83	27.860	15.856	10.953
Sudan	0.071	3.66	16.911	11.040	7.609	-0.386	5.34	24.5	14.045	9.09
Swaziland	-0.061	1.76	25.654	14.822	9.743	-0.203	1.66	21.9	14.767	11.1
Vanuatu	0.050	23.07**	28.238	15.526	10.714	-0.176	0.28	26.2	13.646	9.39
Middle Income										
Algeria	0.019	0.06	20.489	10.851	7.480	-0.233	5.13	35.9	18.479	12.5
Belize	0.268	0.19	20.356	12.375	9.119	-0.044	5.41	32.0	14.106	10.6
Botswana	-0.130	0.80	25.074	14.775	9.056	0.037	0.26	27.1	13.508	8.76
Brazil	0.501	5.83	29.030	15.313	9.443	-0.041	0.54	25.7	14.857	9.61
China	-0.079	2.91	25.015	13.178	9.475	-0.076	0.21	35.1	17.434	11.2
Colombia	0.625	15.0*	30.986	16.315	11.521	-0.094	2.60	31.3	16.008	9.99
Costa Rica	-0.064	0.36	25.937	13.223	8.486	-0.123	1.61	22.9	12.096	9.03
Dominica	-0.075	0.10	28.027	13.985	8.975	-0.222	0.30	33.1	18.594	13.0
Dominican Republic	-0.795	2.41	19.796	12.054	8.316	0.044	4.64	36.7	16.852	11.2
Ecuador	0.090	1.76	26.318	14.410	8.585	-0.052	0.52	36.2	17.040	11.2
Fiji	-0.336	3.46	21.055	11.420	7.673	0.049	0.60	23.9	11.950	8.34
Grenada	1.172	22.1**	23.205	13.447	8.975	0.042	2.93	28.1	16.280	12.9
Jamaica	-0.811	5.16	23.551	11.505	7.805	0.070	4.68	30.0	14.012	9.67
Jordan	0.037	0.95	19.635	9.870	7.099	-0.148	8.77	40.6	22.142	14.9
Malaysia	0.047	2.91	20.741	9.882	7.177	0.032	0.13	24.1	13.628	9.52
Mexico	0.244	12.0**	17.514	9.532	6.293	0.236	8.25	27.7	14.777	10.5
Paraguay	-0.034	0.88	22.506	12.451	9.022	-0.075	0.44	19.8	10.913	7.99
South Africa	0.091	5.96	23.803	12.330	7.863	0.060	0.32	22.9	13.231	9.21
St. Lucia	0.025	2.35	38.446	13.103	7.693	0.128	0.31	16.0	9.736	6.14
St. Vincent and the Grenadines	-0.803	0.74	22.002	11.559	7.262	0.408	3.64	15.6	8.778	6.45
Suriname	-0.023	0.90	19.538	10.125	7.066	-0.405	2.51	16.0	7.760	5.35
Thailand	-0.068	2.49	19.092	10.676	7.255	0.274	10.32*	19.0	12.134	7.56
Turkey	-0.184	12.7**	21.306	11.074	7.664	-0.160	0.79	32.6	20.087	13.5

*Note: ***, **, * indicates significance at the 0.01, 0.05 and 0.1 level respectively. 2. The results are obtained using TSP codes after running in GiveWin software. 3. Bootstrap critical values are obtained from 10,000 replications.*

5. Conclusions and Implications

This study examines the remittances-growth relationship and its interaction with financial development and governance in the LI, LMI and MI groups of countries over a period ranging from 1988 to 2014. The results show that remittances and development in the financial sector have a positive and significant impact on economic growth in all three groups. Similarly, the interaction between remittances and financial development plays a positive role in the growth process of the LI and LMI groups. However, in the MI economies, not remittances, but government expenditures and economic policies are the ones that have a positive impact on economic growth. This means that the marginal impact of remittances is higher in the less financially developed economies. Testing the role of governance on the remittances-growth relationship revealed that political stability and accountability are slowing down growth process in all three groups. Similarly, the control of corruption is a hurdle in the growth process of the sample countries. This is due to the fact that remittances may become the main source of capital available in the context of a poor governance. In what concerns the governance quality, it is mainly magnifying the impact of remittances on growth in the MI group. FDI and population also boost growth only in the MI countries. However, trade openness is positively contributing to the growth process of all three groups. The results of the bootstrap panel causality approach find strong causality evidence running from remittances to growth in the LI and LMI groups. The results are consistent with the three periods overlapping generation model, which suggests that remittances boost growth by reducing the liquidity constraints in the less financially developed economies. The results of this test do not provide evidence of bidirectional causality between remittances and growth. The sign and direction of causality relationships vary in each group; therefore, we conclude that this relationship is rather country-specific and endogenous.

Starting from these results as a reference point, it is possible that the effectiveness of remittances in the LI and LMI countries may be enhanced in the presence of a deep financial system that could funnel cash flows through the banking sector and reduce costs. More exactly, in the LI and LMI groups, financial institutions need to act effectively in order to attract remittances and turn them into a liquidity source for lending. To overcome any adverse effects (such as the *Dutch disease*) and increase the remittances' impact on economic growth, governments and financial institutions must also play an important part. This should involve: acting as facilitators in providing ex-ante investing opportunities, allocating funds, monitoring remittances investment, implementing a corporate governance system of allocating remittance capital, facilitating trade, diversification, and risk management. Efforts in the area of good governance from the part of decision-makers may amplify the impact of remittances on economic growth.

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