

# REMITTANCES, FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH: EMPIRICAL EVIDENCE FROM LESOTHO

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## Abstract

Increasingly remittances now constitute a great source of foreign currency inflows for many developing countries. In some instances remittances have outpaced the growth of foreign direct investment (FDI). Amongst others, remittances can be used as a vehicle of savings mobilisation as well as fostering the supply of credit by providing liquidity to the market. In this article we investigate the causal relationship between the remittances, financial development and economic growth in Lesotho for the period 1975 to 2010. We make use of per capita remittances, real per capita broad money supply and real per capita growth domestic product as the proxies for remittances, financial development and economic growth respectively. We then test for cointegration amongst the variables by applying the Johansen procedure and then test for Granger causality based on the vector error correction model (VECM). Our results confirm the existence of at least one cointegrating relationship and also indicate that the direction of causality runs from remittances to the economy without feedback. The results also suggest that financial development Granger causes economic growth without feedback which is consistent with 'supply-leading' growth hypothesis. The results also confirm a causal relationship running from financial development to remittances without feedback. The results also lend credence to the "complementarity" hypothesis in that, remittances complement rather than substitute financial development in bringing about economic growth. \*

**Key Words:** Remittances, Financial Development, Economic growth, Granger Causality, Lesotho

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## 1. Introduction

Remittances have increasingly become a great source of financial inflows outside foreign direct investments (FDI), for developing countries that have experienced high levels of emigration over the years. In 2010 remittances were estimated at US\$440 billion of which US\$326 billion were sent to developing countries, greater than the value of FDI and more than double official development assistance (ODA) (World Bank, 2011). As FDI channels dry up in the aftermath of the 2007-2009 financial crises, it has become imperative now more than ever before for developing countries to mobilise and tap into foreign exchange inflows from their export labour. Increasingly the research on the finance-growth nexus has now turned attention to focus on the relationship between remittances, financial development and economic growth.

The aim of this paper is to contribute to the remittances-growth nexus literature by incorporating a third variable, that is, financial development. Thus we estimate a triumvirate model testing for a

relationship between, remittances, financial development and economic growth. Previous studies have largely been based on bivariate data, that is, the focus has been on remittances and economic growth or remittances and financial development. (See for example; Ajilore and Ikhide, 2012; Ramirez, 2013; Jawaid and Raza, 2012, Siddique, Selvanathan and Selvanathan, 2012; Motelle, 2011). The major disadvantage of bivariate models is that they may suffer from omitted variable bias. As such it is essential to also interrogate the relationship between remittances, and economic growth by incorporating financial development as the third variable in the model.

The motivation behind the incorporation of financial development as a third variable is that it could be a confounder in the relationship between remittances and financial development. It could be argued that a developed financial system promotes migrant remittances and thereby enhancing savings and the provision of more credit. This would in turn stimulate economic activity. The motivation in selecting Lesotho as the focus of this study lies in

that, it is the leading Sub-Saharan African (SSA) country when considering remittances as a percentage of gross domestic product (GDP) at 29% (Ratha and Silwal, 2012). Further according to the same report, Lesotho ranks in the top 10 countries in SSA receiving USD500 million remittance inflows in 2010.

This study seeks to carry out a three pronged attempt to investigate the relationship between the remittances, financial development and economic growth in Lesotho. To the best of our knowledge there has been no in-depth similar study that has focused solely on Lesotho other than Motelle (2011). By employing a bivariate model, Motelle (2011) tested the causal relationship between remittances and financial development and found evidence of causality running from financial development to remittances. We have already alluded to the fact that bivariate models suffer from the omission variable syndrome, hence the introduction of a third variable such as financial development, will alleviate this problem and bring about robustness.

We also chat the way forward for policy makers in Lesotho as we unravel the intricate relationship between remittances, financial development and economic growth. We intend to investigate the causal relationship between remittances, financial development and economic growth by first testing for cointegration amongst the variables for a long run relationship by applying the Johansen procedure. We will then estimate a Vector Error Correction Model (VECM). Lastly we will then conduct Granger Causality/Block Exogeneity tests based on the vector error correction model to determine the nature and direction of flow of causality amongst the variables.

The remainder of paper is arranged as follows: the next section reviews the literature about the remittances-finance-growth nexus. Section 3 reviews the empirical literature. Section 4 gives an overview of remittance inflows to Lesotho. Section 5 describes the data, methodology and presents the empirical results. Section 6 discusses economic and policy implications and then Section 7 concludes.

## 2. Review of Literature: Remittances, Financial Development and Growth Nexus

The finance- economic growth nexus theory has evolved over the years and can be traced to the works of Schumpeter (1912) and later McKinnon (1973). The main argument by Schumpeter was the important role played by financial institutions in spurring technological innovation and economic activities. The financial activities of savings mobilisation, project evaluation, risk monitoring and management facilitate these two functions. On the other hand McKinnon posits that financial development is stunted by restrictive government regulations, interest rate

ceilings, loan subsidies and high reserve requirements for the banking sector.

It would seem that there is consensus amongst the scholars when characterising the finance-growth nexus as follows: (1) there is no causal relationship; (2) the causal relationship is demand-following, that is, economic growth leads to a demand in financial services; (3) the causal relationship is supply-leading, that is growth in the financial sector will spur economic growth; (4) negative causal relationship from finance to growth; (5) interdependence.

Hitherto extant studies have interrogated the finance-growth nexus by mainly focusing on the stock markets and the banking sector. There is limited research that focuses on the worker remittances. The importance of the remittances in financial development and economic growth is gaining prominence over the last decade. Aggarwal, Demirgüç-Kunt and Perfa (2011) aver that remittances promote financial development since there is a positive association between remittances and savings as well as bank credit. Rao and Hassan (2011) also find evidence to buttress this view. They conjecture that remittances could have an indirect growth effect-which is that of investment and the development of the financial sector.

On the supply side, it is argued that the deposit of remittance receipts in banks increases the availability of loanable funds and thus bank's ability to extend credit to both remittance and non-remittance receiving households and more so to the former, given their stable source of foreign earnings (Brown, Carmignani and Fayad, 2013). They go on to aver that remittances contribute to financial development by: (i) fostering 'financial literacy' among the remittance-receiving communities, thereby increasing households' demand for and use of banking services; and (ii) increasing the supply of loanable funds to the financial sector, thereby promoting greater financial depth.

Bettin and Zazzaro (2012) postulate that if remittances are channelled into investments, going to finance the start-up of small enterprises or the accumulation of human capital, or if they improve the creditworthiness of recipients and their access to external financial resources (collateral function), the impact on economic growth is positive. If however, the prevailing end uses of remittances are on increasing consumption and expenditures on housing, land and other forms of second-hand non-financial assets the association with economic growth is very feeble-depending on the type of purchased goods and on the existence of unexploited national productive capacity.

In sum the relationship between the remittances, financial development and the real sector could be classified in terms of causality with respect to six possible null hypotheses:

$H_1$ : Remittances causes economic growth

$H_2$ : Remittances causes financial development

*H<sub>3</sub>: Financial development causes economic growth*

*H<sub>4</sub>: Financial development causes remittances*

*H<sub>5</sub>: Economic growth causes remittances*

*H<sub>6</sub>: Economic growth causes financial development*

### **3. Review of the Empirical Literature**

Siddique, Selvanathan and Selvanathan (2012) investigated the causal link between remittances and economic growth in Bangladesh, India and Sri Lanka using data for the period 1976 to 2006. They utilised per capita remittances and per capita gross domestic product as the indicators for remittances and economic growth respectively. They tested for causality based on the Vector Autoregression (VAR) framework and found out that remittances lead to economic growth in Bangladesh. With India, their results suggested that there was no causal relationship between remittances and economic growth, and there was evidence of bidirectional causality for Sri Lanka running from remittances to economic growth and vice-versa.

Jawaid and Raza (2012) investigated the relationship between workers' remittances and economic growth in China and Korea over the period 1980 to 2009. They employed real gross domestic product as the indicator for economic growth and real remittances as a measure of workers' remittances. Further they tested for cointegration and proceeded to test for Granger causality based on the Vector Error Correction model (VECM). Their results confirmed the existence of positive cointegrating relationship between remittances and economic growth in the case of Korea and a negative cointegrating relationship between remittances and economic growth for China. Further they found evidence of unidirectional causality which runs from workers' remittances to economic growth for both Korea and China.

Uddin and Sjö (2013) investigated the relationship between remittances, financial development and economic growth in Bangladesh for the period 1976-2011. They found out that in the long run, the inflow of remittances and the expansion of the financial sector drive the growth in GDP, whereas in the short run, remittances act as a shock absorber to income changes.

Motelle (2011) investigated the role of remittances in financial development in Lesotho by conducting a time series study. Amongst the explanatory variables employed were trade openness and inflation and a dummy for financial liberalisation. The econometric approach employed was to test for cointegration and estimate a VECM and finally to test for Granger causality amongst the variables. The key findings were that, remittances had a long run effect on financial development but however they do not cause financial development. Trade openness and inflation also had significant effects on financial

development both in the short and long run. The Granger causality tests revealed that financial development causes more remittances.

Singh, Haacker, Lee et al (2010) investigated the determinants of remittances in sub-Sahara Africa. The sample comprised of 36 countries in sub-Sahara Africa for 1990 to 2005. They utilised the ratio of remittances to GDP as a proxy for remittances. The other variables were incorporated into the regression equations are; and index of financial development, host income, ratio of expatriates to population, institutional quality, real exchange rate and interest rate differential. Panel fixed effect and fixed effect two-stage least square (FE 2SLS) estimation methods were used. The coefficient of real per capita GDP in the home country was found to be negative, suggesting that when adverse economic shocks decrease incomes in their home country, migrants would remit more to protect their family from those shocks. Remittances were also found to reflect a portfolio choice about investment opportunities in the home country. Further the results also indicated that remittances were positively related to financial deepening, with countries with more developed markets bound to attract more remittances relative to GDP.

Nyamongo, Misati, Kipyegon, et al (2010) conducted a study to examine the role of remittances and financial development for a panel of 36 countries in Africa over the period 1980-2009. They employed panel econometric methods. Amongst their major findings were that; (1) remittances are an important source of growth for the African countries, (2) the volatility of remittances appeared to have a negative effect on the growth of countries in Africa, (3) remittances appeared to be working as a compliment to financial development and (4) the importance of financial development in boosting economic growth appeared weak.

According to Mundaca (2009) remittances can have a significant positive long-run effect on growth. Using a panel data set of countries in the Latin America and Pacific region, Mundaca (2009) considered the effect of long-run investment and demographic variables, and controlled for fixed time and country effects. The empirical analysis indicated that financial intermediation tends to increase the responsiveness of growth to remittances. The overall conclusion was that making financial services more generally available should lead to even better use of remittances, thus boosting growth in those countries.

Benmamoun and Lehnert (2013) compared the effects of migrant remittances, official development assistance and foreign direct investment on economic growth by using panel data from 1990 to 2006. They employed the Generalised Method of Moments (GMM) approach and found out that international remittances, FDI, and ODA are positively and significantly associated with the economic growth rate of low income countries. They specifically find

out that the impact is greater with international remittances. Moreover, international remittances prove to be a greater contributor of economic growth than ODA and FDI even when countries are highly dependent on FDI.

Naudé and Bezuidenhout (2014) investigated the responsiveness of migrant remittances to various disasters, both natural and human-made. They also investigated whether remittances could be affected by systemic financial crises by employing a panel data set of 23 Sub-Saharan African (SSA) countries from 1980 to 2007. They find out that remittances are slow to respond to natural disasters, unresponsive to outbreaks of conflict, and will slowly decline following a systemic financial crisis. This therefore implied that, given its stability, remittances are sources of resilience in SSA.

#### 4. An Overview of the Remittance Inflows into Lesotho

The key metrics of the remittance inflows for the period 1975 to 2010 are given in Table 1, Figures 1.1, 1.2 and 1.3. The remittance inflows have grown by over 330% from levels around USD121 million in

1975 to levels around USD526 million in 2010. What is noticeable is that the remittance inflows took a dip during the period corresponding to the financial crisis between 2007 and 2008. In 2007 remittance inflows had picked at levels around USD451 million. The remittance inflows dwindled in 2008 to levels around USD439 million in 2008. However this was reversed in 2009 as the remittance inflows rebounded to levels around USD450 million. The remittances would then peak at that highest level of around USD525 million in 2010.

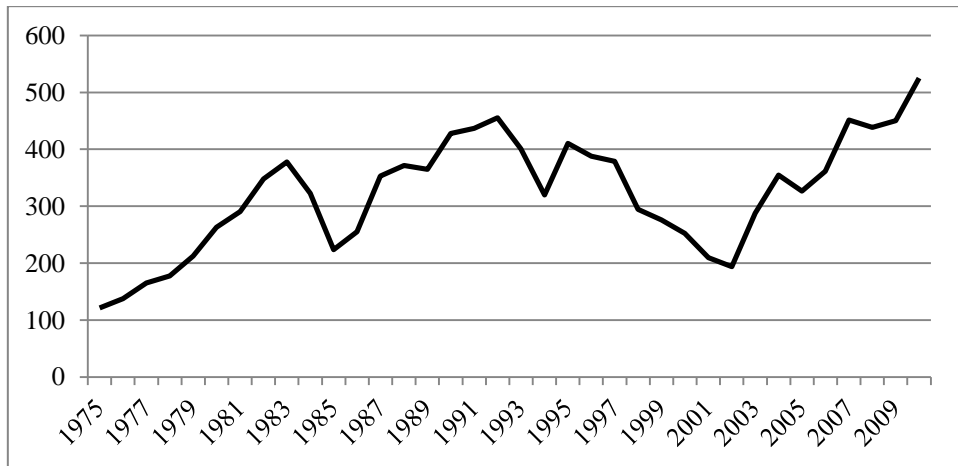
Expressed as a percentage of gross domestic product, remittance inflows have progressively declined from levels of 81% in 1975 to 24% in 2010. This could be attributed to the diversification of the economy. A similar trend is observed when this metric is expressed in terms of export income with remittances diminishing from a high of 991% of export income in 1975 to a low of 66% in 2010. The remittances expressed in terms of export income also took a tumbling in 2008 from a high of 59% in 2007 to 49% in 2008. They would ultimately recover to levels around 62% in 2009. This period corresponds to the 2007-2009 financial crises.

**Table 1.** Trends in remittance inflows to Lesotho for the period 1972-2010

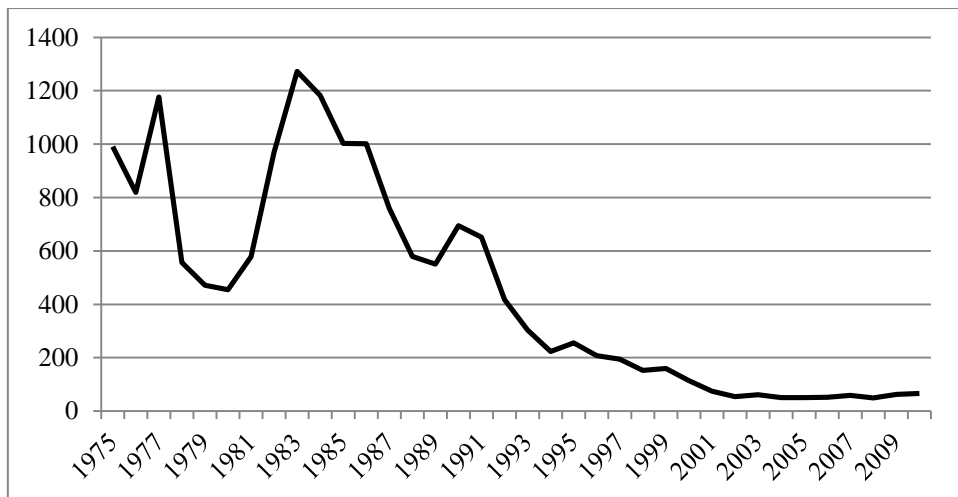
Year	Remittances Inflows (USD millions)	% Export Income	% Gross Domestic Product
1975	121,7026	991	81
1976	138,0000	819	93
1977	165,1400	1177	85
1978	177,4450	557	67
1979	212,4646	471	73
1980	263,2141	454	61
1981	290,5889	578	67
1982	348,1253	970	106
1983	377,8835	1272	106
1984	322,5563	1183	106
1985	223,9178	1003	90
1986	255,4494	1002	88
1987	353,0871	759	96
1988	371,459	579	86
1989	364,9586	550	81
1990	427,8778	694	79
1991	437,0787	651	72
1992	455,4319	417	63
1993	400,7552	303	56
1994	319,6515	223	42
1995	410,5304	256	48
1996	387,6533	207	48
1997	378,7465	194	44
1998	294,6342	152	36
1999	275,9375	160	34
2000	252,2195	114	33
2001	209,4299	75	30
2002	194,2406	54	30
2003	287,9161	61	30
2004	354,9257	50	29
2005	326,5516	50	24
2006	361,4522	52	25
2007	451,1833	59	28
2008	438,5504	49	27
2009	450,110397	62	26
2010	525,295097	66	24

Source: author's own compilation, data from World Bank (2012)

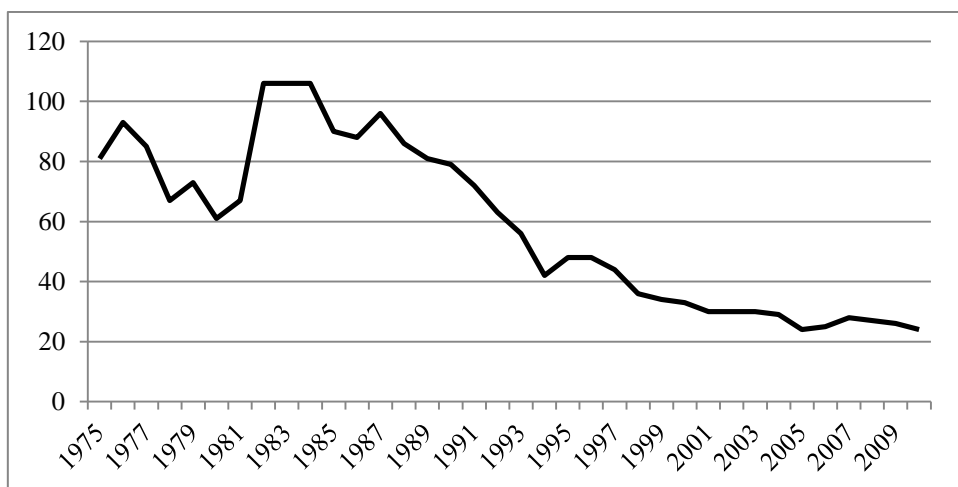
**Figure 1.** Trends of remittances inflows to Lesotho during the period 1975 to 2010. *Source:* author's own compilation, data from World Bank (2012)



**Figure 2.** Migrant worker remittance inflows into Lesotho during the period 1975 to 2010, as a percentage of export income. *Source:* author's own compilation, data from World Bank (2012)



**Figure 3.** Migrant worker remittance inflows into Lesotho during the period 1975 to 2010, as a percentage of gross domestic product. *Source:* author's own compilation, data from World Bank (2012)



## 5. Data and Methodology

### 5.1 Measures of Remittances

In this paper we make use of per capita remittances as an indicator of remittances in Lesotho. Per capita remittances (YREM) are defined as real remittances inflows divided by the population. We employ the real gross domestic product (YGDP) per capita as a proxy for economic growth and per capita broad money (YM2) as the proxy for financial development. In our model we make use of annual data from 1975 to 2010. The national population figures were extracted from the International Financial Statistics (IFS) database. A GDP deflator was applied on the nominal values to calculate the real values, with the year 2005 being set as the base year.

$$\Delta lygdp = a_0 + \sum_{i=1}^n a_{1i} lygdp_{t-1} + \sum_{i=1}^n a_{2i} \Delta lym2_{t-1} + \sum_{i=1}^n a_{3i} \Delta lyrem_{t-1} + a_4 ECT_{t-1} + \mu_t \quad (1)$$

$$\Delta lym2 = b_0 + \sum_{i=1}^n b_{1i} lym2_{t-1} + \sum_{i=1}^n b_{2i} \Delta lygdp_{t-1} + \sum_{i=1}^n b_{3i} \Delta lyrem_{t-1} + b_4 ECT_{t-1} + \varphi_t \quad (2)$$

$$\Delta lyrem = c_0 + \sum_{i=1}^n c_{1i} lyrem_{t-1} + \sum_{i=1}^n c_{2i} \Delta lygdp_{t-1} + \sum_{i=1}^n c_{3i} \Delta lym2_{t-1} + c_4 ECT_{t-1} + \psi_t \quad (3)$$

Where:

lygdp = logarithm of the per capita real gross domestic product (economic growth) variable

lym2 = logarithm of the per capita broad money supply

lyrem = logarithm of the per capita remittances

ECT<sub>t-1</sub> = error correction term lagged one period

$\mu, \varphi, \psi$  = mutually uncorrelated white noise residuals

#### 5.2.1 Stationarity tests

The variables were subjected to stationarity tests. These were the Phillips-Perron and Augmented Dickey Fuller tests. The results of the stationarity tests are presented in Table 2. All variables were found to be non-stationary when tested at their levels. They became stationary when differenced once. As such it can be concluded that the variables are integrated and of order one.

#### 5.2.2 Cointegration analysis

Thus having established that all the variables are non-stationary and integrated of order one, we proceed and test for the number of cointegrating relationships by applying the Johansen Test for Cointegration. Cointegrated variables ensure that we eliminate spurious relations and as such share common stochastic trends. Further than that, they enable us to formulate an error correction model as we determine

### 5.2 Empirical model specification and estimation techniques

In order to investigate the relationship between remittances sector development and economic growth, we make use of the Granger causality test. The Granger causality test is based on the vector error correction model between remittances, financial development and economic growth.

A vector error correction (VEC) model is a restricted VAR designed for use with non-stationary series that are known to be cointegrated. The VEC has cointegration relations built into the specification so that it restricts the long run behaviour of the endogenous variables to converge to their cointegrating relationships while allowing for short-run adjustment dynamics. We adopt test for Granger causality based on the error correction model which can be expressed as follows:

the long-run relationship among the variables. We first estimate an unrestricted VAR and determine the lag length selection criteria. The optimum lag length selected is 4 (Refer to Table 3). We thus then apply the Johansen test using the optimum lag length of 4. The results as presented in Table 4 suggest that there is one cointegrating relationship amongst the variables. The null hypothesis that there is no cointegrating vector is rejected as the trace statistic (64.1882) is greater than the critical value (42.9152) from the Johansen tables at the 5% level of significance. Further the maximum Eigen test statistic (40.8441) is greater than the Eigen critical value (25.8232) at the 5% level of significance. We conclude therefore that there is one cointegrating vector.

#### 5.2.3 Granger causality

Having established that there is at least one cointegrating relationship between the remittances, financial development and economic growth variables, we proceed to perform Granger Causality/Block Exogeneity Wald tests for causality based on the error correction model. The results are reported in Table 5. The results show that there is unidirectional causal flow from remittances to economic growth. We reject the null hypothesis of exogeneity of remittances in the economic growth function as the p-value (0.0349) is less than 0.05. Remittances Granger cause economic growth without feedback. The results

also suggest that financial development also Granger causes economic growth as the p-value (0.002) is highly significant. There is also evidence of unidirectional Granger causality running from financial development to remittances as the p-value (0.0208) is less than 0.05. We fail to reject the null hypothesis of exogeneity of the remittances and economic growth variables in the financial development function at the 10% level of significance as all the p-values are greater than 0.10.

These results imply that remittances Granger causes economic growth. Thus the direction of causality runs from remittances to economic growth

without feedback. Further financial development Granger causes economic growth. The direction of causality thus runs from financial development to economic growth with no feedback. Financial development is unaffected by economic growth and remittances. However financial development Granger causes remittances.

Our results thus support the following null hypotheses that we set out to probe:

$H_1$ : Remittances causes economic growth

$H_3$ : Financial development causes economic growth

$H_4$ : Financial development causes remittances

**Table 2.** Stationarity Tests

Variable	Phillips-Perron		Augmented Dickey-Fuller		Order of Integration
	With constant	With constant and trend	With constant	With trend and constant	
LYGDP	-1.3215	-3.5055*	-1.3215	-3.3882*	I(1)
DLYGDP	-3.2111**	-2.9058*	-3.4878**	-3.3642**	I(0)
LYM2	-3.4397**	-2.9044	-3.9301***	-3.1503	I(1)
DLYM2	-4.1242***	-4.3994***	-4.0233***	-4.2092**	I(0)
LYREM	-1.1214	-2.7399	-1.1255	-2.7470	I(1)
DLYREM	-5.8375***	-5.7870***	-5.7400***	-5.0256***	I(0)

\* represents a stationary variable at 10% level of significance.  
 \*\* represents a stationary variable at 5% level of significance.  
 \*\*\* represents a stationary variable at 1% level of significance.

**Table 3.** Lag length selection criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	45.54687	NA	1.29e-05	-2.744959	-2.606186	-2.699723
1	145.1611	173.5215	3.74e-08	-8.591036	-8.035944	-8.410090
2	156.2982	17.24465*	3.33e-08	-8.728918	-7.757507	-8.412262
3	168.5098	16.54476	2.84e-08	-8.936119	-7.548389	-8.483754*
<b>4</b>	<b>178.0550</b>	<b>11.08466</b>	<b>3.01e-08*</b>	<b>-8.971288*</b>	<b>-7.167240*</b>	<b>-8.383213</b>
5	186.8741	8.534649	3.59e-08	-8.959620	-6.739252	-8.235835

**Table 4.** Cointegration Tests

Rank	Trace Statistic	Trace Critical Value 0.05	Prob	Max-Eigen Statistic	Eigen Critical Value 0.05	Prob
P=0	64.1882***	42.9152	0.0001***	40.8441***	25.8232	0.0003***
P=1	23.3440	25.8721	0.1000	14.5335	19.3870	0.2203

**Table 5.** VEC Granger Causality/ Block Exogeneity Wald Tests

Dependent variable: D(LYGDP)			
Excluded	Chi-sq	df	Prob.
<b>D(LYM2)</b>	<b>16.93959</b>	<b>4</b>	<b>0.0020</b>
<b>D(LYREM)</b>	<b>10.35270</b>	<b>4</b>	<b>0.0349</b>
All	21.41574	8	0.0061
Dependent variable: D(LYM2)			
Excluded	Chi-sq	df	Prob.
D(LYGDP)	0.878471	4	0.9276
D(LYREM)	2.065985	4	0.7236
All	3.575349	8	0.8933
Dependent variable: D(LYREM)			
Excluded	Chi-sq	df	Prob.
D(LYGDP)	4.969975	4	0.2904
<b>D(LYM2)</b>	<b>11.58129</b>	<b>4</b>	<b>0.0208</b>
All	32.36038	8	0.0001

## 6. Economic and Policy Implications

Our empirical results suggest that remittances, financial development and economic growth are cointegrated, that is they move in tandem to each other in the long run. The results also confirm that remittances and financial development have a positive influence on economic growth. The results also confirm that financial development has a positive influence on remittances. From a policy perspective, it is imperative that the Lesotho government puts in place a policy framework that will enhance the financial system. Thus the provision of more reliable money transfer agencies, the opening up of more bank branches will enhance financial deepening. With enhanced financial deepening will result in more remittances being channelled through the official financial system. This will provide more liquidity to the financial system and thereby ensure that more and more credit becomes available. The provision of more credit to the productive sectors of the economy will stimulate economic growth.

The other policy imperative is that, the authorities must put in place measures that will help stimulate remittances. Amongst the measures would be ensuring that the transactions are hassle free. To this end, they can promulgate policies that will promote money transfer using the mobile networks. The government can also harness migrant worker remittances by setting up investment vehicles such as diaspora bonds amongst others to help finance the fiscus.

## Conclusion

This paper examines the causal relationship between remittances, financial development and economic

growth in Lesotho. We find evidence that remittances spur economic growth in Lesotho. Our findings lend credence to ‘supply-leading’ remittances-growth hypothesis. Our results also confirm that financial development has a positive effect on economic growth. This is consistent with the “supply-leading” finance-growth hypothesis. The results also confirm that financial development promote remittance inflows. Our findings also reveal that remittances compliment rather than substitute financial development in bringing about economic growth. This is consistent with the ‘complementarity’ hypothesis. We wish to suggest that in future the focus of research should be to unravel whether the ‘induced financial literacy’ hypothesis subsist in the context of Lesotho. Further research could also be done to determine the effect remittance inflows have on poverty alleviation.

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