

Dynamics of the remittances: Financial development nexus in Sub Saharan Africa (SSA)



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ABSTRACT

This paper explores the inter-connectedness of remittances and financial development and how their associated covariates such as savings, investment, money supply and economic growth are impacted by this relationship. The study employs a panel vector autoregression (P-VAR) estimation technique, and the generalized methods of moments (GMM) are applied after removing fixed effects and lagged regressors are used as instruments to have consistent estimators. The main findings of the study demonstrate that (i) remittances and financial development have a feedback interrelationship, and some interlinkages are identified amongst their covariates, (ii) economic growth has a dual connection with financial development and that (iii) savings, investment, and broad money supply influence both financial development and remittances. These findings contribute to current discussions in the literature as they support the importance of deepening financial markets in SSA, and attracting more remittances. The significant role played by the diaspora in improving domestic financial depth is confirmed. Progression in SSA economic growth helps to stimulate those in the diaspora to repatriate most of their earnings back home.

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Introduction

The study of the nexus between financial development and economic growth is widely recognised in the literature, with many scholars acknowledging that finance promotes economic activity (see for example Levine, 1999; Puatwoe and Piabuo, 2017; Guru and Yadav, 2019). The remittances-financial development relationship has been explored in the past with findings suggesting that remittances contribute towards economic growth indirectly through their effect on financial development (Ofori and Grechyna, 2021). However, the connection between remittances and financial development needs to be investigated further to guide policy makers, especially for developing countries as they have experienced a rising trend of the remittances from their citizens living and working abroad. Using panel data obtained from the World Bank database, this paper examines the relationship between remittances and financial development in Sub Saharan Africa (SSA).

According to the World Bank (2007), remittances may be domestic or international. The former takes place within the borders of a country, for example when a rural to urban migrant send their income earnings to their rural homes. This study focuses on the latter, which is concerned with the transfer of funds beyond the borders of countries typically involving migrant workers. Over the previous decade, remittances to SSA show a steady increase until the end of 2019, when the COVID pandemic sets-in which slowed down the inflow of the funds. This trend is indicated in Figure 1 below.

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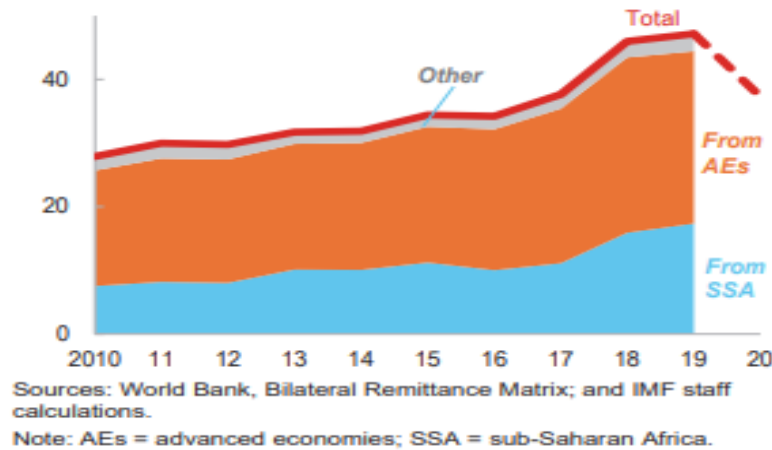


Figure 1: Sub-Saharan Africa: Remittance inflows by origin, 2010-20 (Billions of USD); *Source:* IMF (2020)

The rising trend in Figure 1 is consistent with the general view that remittance inflows play an important role for the increasing economic growth through its effect on financial development (Ofori and Gechyna, 2021). However, it is vital to investigate the nature of the relationship that may exist between remittances and financial development. Does remittances impact on financial development and if they do, to what extent?

Financial development is understood to be achieved when the rate of financial assets accumulation is greater than that of non-financial assets (Shaw, 1973). Various approximations for financial development are applied, some of which include Broad Money (BM), Domestic Savings (DS), and Domestic Credit to the Private Sector (CPS) as a ratio to GDP (Rehman, Hysa and Poon, 2021). Such measures are applied to examine the extent to which remittances have affected the proxies for financial sector development, and vice versa, or both. To have an overall picture of the general trend of the financial development indicators, 5-year averages are presented in Table 1 below for the entire period of study, 1975 to 2020. Variables with missing data are still indicated for the years to which the data is covering.

Table 1: Financial Development Indicators

Averaged Years	Broad Money as a % of GDP	Domestic Savings (DS) as a % of GDP	Domestic Credit to Private Sector as a % of GDP (CPS)
1975-1980	32.05		27.73
1981-1985	26.78	33.98	25.36
1986-1990	30.48	28.47	33.52
1991-1995	32.52	24.15	55.54
1996-2000	32.43	23.04	56.31
2001-2005	34	22.72	52.27
2006-2010	38.61	23.46	55.91
2011-2015	37.40	20.68	45.60
2016-2020	39.61	18.94	37.67

Source: Computed from World Bank Database (2021)

The SSA's 5-year averages for the financial development proxies shown in Table 1 carry some economic meaning. Broad money as a percentage of GDP shows that money supply has been fluctuating but observed an overall increasing trend for the entire 1975 to 2020 period, which could be an indication of financial deepening leading to financial development. On the other hand, the CPS has a steady rising trend from 1975 till 2000, when it slightly dropped to the period ending 2005 and rose again in the period ending 2010. Thereafter, the CPS has been declining in the decade ending 2020. Overall, the trend shows that the region made some good progress in terms of availing credit to the private sector at least up to the decade ending 2010. The digression that follows in the previous decade could be partly explained by the world recession that is still stifling the global economy at the beginning of that decade and the COVID 19 pandemic towards the end of the same decade. Regarding DS, the variable shows a declining trend on average from 1981 to the period ending 2020. The declining pattern is a drawback to financial development because low savings would not significantly drive investment and therefore economic growth (Rehman et al, 2021).

Given the above outlook of the trends in remittances and financial development variables over a period of 1975-2020, there is a need to further understand this linkage. Based on the analytical framework developed in this study, findings show that there is feedback relationship between remittances and financial development. In addition, some interlinkages are identified among their covariates. Economic growth has a dual relationship with the level of financial development. Also, the results show the influence of savings, investment and broad money on both financial development and remittances. The study argues that it is important for SSA to develop its financial markets to attract remittances, which in turn further improves the region's financial depth. Persistent economic growth, at home, is necessary for stimulating those in the diaspora to repatriate their earnings. The findings also show that growth of money slows down both savings, and remittances. Thus, the capacity to develop financial markets is dampened. Stability in domestic investment has a crucial role of stimulating remittances and further developing financial markets.

This paper is organized as follows: following the introduction part, a second part is literature review with theoretical and empirical studies that shed light on linkages between theory and practice. The third part introduces the background information on research methodology. After analysis and findings of the study, authors provide discussions and implications. Finally, this paper concludes with key points, recommendations, future research directions and limitations.

Literature Review

This section discusses theoretical and empirical literature that shows the interlinkages between remittances and financial development and their covariates. The aim is to develop a framework and bring out the hypothesized relationships among variables. This hypothesized relationship is developed after considering main discussions and findings in literature.

Theoretical and Conceptual Background

The interrelationship between financial development variables and remittances and their covariates is summarized in Figure 2 and this also provides the conceptual framework adopted for the current study.

Figure 2 indicates that the effect of broad money increases on financial development is expected to be negative because of its direct impact on inflation. As money supply rise, inflation levels in the economy also increase. Therefore, the impact of inflation explains the negative effect of broad money on financial development. Past studies (Mtar and Belazreg, 2021, Swamy and Dharani, 2019) find that inflation impacts negatively on financial development. On the other hand, broad money is expected to have a negative impact on domestic savings as it causes spending to rise because of the lower interest rates (Mirdeto, 2009, Chaudhry et al, 2014). In turn, the decrease in savings is expected to have a positive effect on remittances, while the increase in savings could result in the fall in remittances (Reinhart and Talvi, 1998). An elevated national savings level might imply that there are sufficient funds available locally, with little need for inflows from external sources in form of remittances.

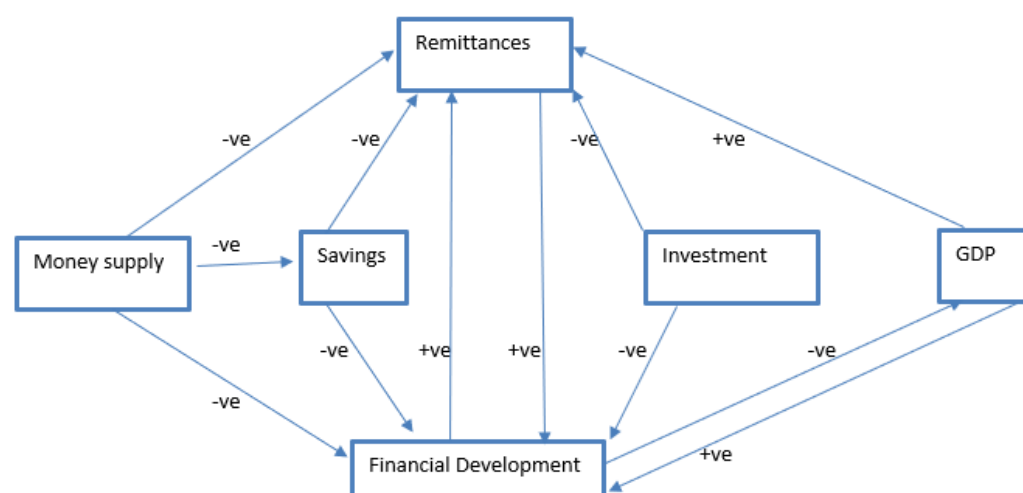


Figure 2: Conceptual framework: Interlinkages between remittances and financial development and covariates; Source: Authors own conceptualization from the empirical literature

Figure 2 also shows that the effect of a rise in money supply on financial development is expected to be negative. Yet again, the effect of the money supply is explained via the increase in inflation rate and some studies confirm the negative impact of inflation on the financial development (Mtar and Belazreg, 2021, Swamy and Dharani, 2019). The rationale is that high inflation rates accompanied by increases in broad money tends to discourage investors from channeling their funds into the financial sector which

undermines its development. In addition, investment is expected to have a negative impact on remittances as it resonates with a previous study (Bouoiyour et al, 2019). Finally, since the financial sector in SSA is underdeveloped, financial development may be expected to have a negative effect on GDP growth as in-depth financial systems are said to harm growth (Caporale et al, 2015).

Empirical Review and Hypothesis Development

It has been observed that remittances generally enhance investment and consumption in home country (Rehman *et al.*, 2021). The funds have become the key source to finance health care services, education, consumption or even investment in livestock and real property for the families of the migrant workers sending the remittances. However, when the financial sector is underdeveloped, especially in SSA where there are no banking facilities in most cases, channelling a significant proportion of the remittances towards productive investment may be a challenge (Mallick, 2008). Some studies focus on the relationship between financial development and remittances, by suggesting that the former is necessary to intermediate remittances' effect on economic growth (Cazachevici *et al.*, 2020; Rehman *et al.*, 2021).

One school of thought (Acosta *et al.*, 2009) suggests that remittances are an exogenous variable that goes straight to impact consumption and leisure with little or no impact on the tradable sector. The theory entails the negligible connection between remittances and financial development. Empirically, different researchers find mixed results and thus the current study is necessary especially on the case of SSA where remittances have generally been rising while domestic savings have been shrinking over the years. Sobiech (2019) finds a negative interaction between remittances and financial development variables on economic growth for 61 developing and emerging countries on a data covering a 40-year period, 1970 to 2010. Thus, the finding supports theory that says remittances are exogenous. Rehman *et al.*, (2021) find a similar result of a negative interaction between remittances and financial development by focusing on six Western Balkan Countries for an eight-year panel data of 2000 to 2017. However, Bangake and Eggoh (2020) find a positive interaction between the two variables using a sample of 60 countries. Based on the Generalized Moment Method (GMM) they conclude that remittances could contribute to economic growth in countries that have advanced financial sectors. Fromentin (2017) differentiates between the short run and long run impact of the remittances on financial development for data covering the period 1974 to 2014 on developing countries, using the Pooled Mean Group econometric approach. The study reveals that remittances significantly promote financial development in the long run, but the impact is weak in the short run. On the other hand, using macro and micro cross-country data on Azerbaijan and Kyrgyzstan, Brown *et al.*, (2013) find some mixed results on the relationship. The results are weak and positive in the case of Azerbaijan, but negative for Kyrgyzstan and they conclude that remittances hurt financial intermediation.

Another school of thought postulates that remittances and financial development are complementary to each other, implying that more remittances flow in where financial systems are well-developed (Olayungbo and Quadri, 2019). The ripple effect further enhances financial development and attracts more remittances (Sibindi, 2014; Dahal, 2014; Karikari et al, 2016). Aggarwal *et al.*, (2011) studies remittances flow to 109 countries, using data covering the period, 1975-2007, and find that there is a positive significant relationship between remittances and financial development. Most studies consider the complementarity of remittances and financial development in conjunction with their covariates such as broad money, savings, and investment. To them, the interlinkage of the two cannot be explained in isolation without factoring in the interplay of these related variables (Olayungbo and Quadri, 2019).

The link between investment and remittances is analysed by Bjuggren *et al.*, (2008) using dynamic panel data on 79 developing countries that received remittances during the period 1995 to 2005. They find that remittances, strong quality institutional frameworks and well-functioning credit markets impact positively on investment. Their study concludes that the extent to which remittances kindle investment is dependent upon other factors such as the quality of institutions used to run economies and the policies on the ground. These factors determine the proportions of remittances that is channelled towards consumption, savings, or investment. These findings are further buttressed by Nwokolo *et al.*, (2021) who confirm that a stable domestic investment climate attracts more remittances, which in-turn enhances investment. Their study focuses on 28 SSA countries over a period 1995 to 2017 and utilizes the panel autoregressive distributed lagged method.

Furthermore, the connection between GDP growth and financial development has been widely studied and published by various authors. Although different researchers produce mixed results concerning this relationship, with some indicating that economic growth induces financial development (see for example Guru and Yadav, 2019) while Tadesse and Abafia, (2019) argue that it is finance that drives growth, it is generally acknowledged that the relationship is bidirectional (Safdar *et al.*, 2021). Using the Granger causality tests on Eswatini quarterly time series data, covering 1996 to 2018, Fakudze *et al.*, (2021) confirm a bidirectional relationship between economic growth and financial development.

Equally, the relationship between GDP growth and remittances have received widespread attention in recent times. Existing empirical evidence largely demonstrates that remittances positively impact GDP growth in various ways, including spillover effects through savings, consumption, and the multiplier effects (Dridi *et al.*, 2019). For instance, Mim and Ali (2012) focus on the channels through which remittances can spur growth in 15 MENA countries, over the period 1980 to 2009. They find that remittances have positive significant effect on consumption and investment, and thus economic growth. However, remittances may also dampen economic growth by discouraging recipients to work and therefore reducing labour supply (Dridi *et al.*, 2019; Barajas *et al.*, 2010).

Finally, the study of the nexus between savings and financial development has tended to focus mainly on how the later impacts on the former. Studies have generally shown that financial development positively influences private savings (see for example, Balcilar *et al.*, 2016; Kapingura and Alagidede, 2016). In a study that seek to investigate the causality between the two variables on the Turkish economy, using data covering the period 1970 to 2008, Balcilar *et al.*, (2016) find that a composite index of financial development positively impacts on private savings. This relationship is confirmed by the positive cointegration association between financial development and savings on the South African economy for the period 1980 to 2012 (Kapingura and Alagidede, 2016).

Research and Methodology

The study employs panel vector autoregression (PVAR) methodology to understand the dynamic relationship between remittances and financial development and other covariates. The method allows for unobserved individual heterogeneity, and we specify the model adopted from past studies (Časni et al, 2016, Love and Zicchino, 2006) as follows:

$$Y_{it} = \beta_0 + \beta_i Y_{i(t-1)} + f_i + d_{c,t} + \varepsilon_{i,t}$$

where Y_{it} is a vector of covariates for country i at time t , f_i is country-specific time-invariant unobserved heterogeneity, $d_{c,t}$ denotes country-time-specific dummy, and ε_{it} are identically and independently distributed errors.

Thus, to ensure that we have the same underlying structure for all countries in the sample the study allows for individual heterogeneity in all variables by using fixed effects (f_i). Forward mean differencing is applied to remove the average value of all future observations available for each country and time to preserve orthogonality between transformed and lagged independent variables. The study applies generalized methods of moments (GMM) after removing fixed effects, and lagged regressors are used as instruments to have consistent estimators. Residuals are decomposed to ensure that they become orthogonal to separate shocks to one of the VAR errors. Thus, Cholesky decomposition of the variance-covariance matrix of residuals is used and ensures that shocks are orthogonalized. The effect of variables on others is determined by the ordering followed in the model.

Impulse response functions (IRFs) are used to determine the reaction of one variable to innovations in another variable in the system. Forecast error variance decompositions (FEVD) are used to gauge the magnitude of the overall effect of a shock to show the proportion of the change in one variable explained by another overtime. Granger Casualty Tests for first order panel VAR are drawn from the PVAR results by looking at the coefficients and not the signs.

Data and Variables

The study employs unbalanced, annual, panel data from World Bank covering the period 1975 to 2020 for 39 countries in SSA. The countries are selected based on availability of data for key variables under discussion. Variable definitions are adopted as obtained from World Bank database and they are all percentages. Remittances (REM) are defined as personal remittances which comprise personal transfers and compensation of employees and this is expressed as percentage of GDP. Investment (INV) is proxied by gross fixed capital formation which includes land improvements; plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. Broad money (BM) is the sum of currency outside banks; demand deposits other than those of the central government; the time, savings, and foreign currency deposits of resident sectors other than the central government; bank and traveller's cheques; and other securities such as certificates of deposit and commercial paper. Domestic credit to the private sector (CPS) as a % of GDP is a proxy for financial development and refers to financial resources provided to the private sector by financial corporations, such as through loans, purchases of nonequity securities, and trade credits and other accounts receivable, that establish a claim for repayment. Gross domestic savings (DS) are calculated as GDP less final consumption expenditure (total consumption). We capture differences in the size of economies using annual percentage growth rate of GDP (GDPg) at market prices based on constant local currency.

The study applies the following diagnostic tests: The method by Im, Pesaran and Shin (2003) is applied to check for unit root; the variance inflation factors (VIF) are applied to test for multicollinearity; the method by Andrew and Lu (2001) is applied to check the lag length for the VAR and eigenvalue stability condition is applied on PVAR model.

Findings and Discussions

All variables are stationary at levels except the remittances (REM) variable which is stationary after first difference (Table 2). There is always an argument as whether to only use I(0) variables in a VAR. Sims (1980) and Sims et al (1990) argue that there is no need for first differencing when using a VAR since the aim is to determine interrelationships among variables and not parameter estimates. In view of this we estimate our model using all variables at levels.

Table 2: Test for unit root

Variable	Levels	First Difference	Status
REM	2.3564	-3.8764***	I(1)
INV	-10.3728***		I(0)
BM	-3.9882****		I(0)
CPS	-4.4828***		I(0)
GDPg	-20.8065***		I(0)
DS	13.5076***		I(0)

***significant at 1%, ** significant at 5% and *significant at 10% levels

Tests for Multicollinearity

This is achieved by estimating an OLS regression for each explanatory variable. The values for R^2 for each model are extracted and used to calculate the VIF for each coefficient. Serious multicollinearity exists where the value of $VIF(\beta_i)$ is greater than 5. Moderate correlation exists where the value for VIF is less than 5 (Daoud, 2017). Findings (Table 3) show that there is no problem of serious multicollinearity as values for VIF are less than 5.

Table 3: Tests for Multicollinearity

Dependent Variable	R^2	VIF
REM	0.4656	1.87125749
INV	0.0701	1.07538445
CPS	0.4158	1.71174255
BM	0.1007	1.11197598
GDPg	0.4655	1.87090739
DS	0.0786	1.08530497

Results for PVAR

To choose the lag length, the study uses model selection measures calculated using pvarsoc for first to third order PVAR using the first four lags of variables as instruments. Based on the three-model selection by Andrew and Lu (2001) and overall coefficient of determination, results (Table 4) show that the first order panel VAR model is preferred. This model has the lowest MBIC, MAIC and MQIC.

Table 4: Lag Length Selection

Sample 1979-2019				No. of obs = 1278		
				No. of Panels = 39		
				Ave. no. of T = 32.769		
Lag	CD	J	J P. Value	MBIC	MAIC	MQIC
1	.9986	175.7653	.0000	-596.7643	-40.2347	-249.2231
2	.9987	110.9102	.0022	-404.1095	-33.0898	-172.4154
3	.9982	50.0693	.0597	-207.4406	-21.9307	-91.5935

Based on lag selection criteria the study fits a first order panel VAR with the same specification of instruments using GMM estimation. The main variables of interest are remittances (REM), financial development (CPS), savings (DS) and investment (INV). Findings in Table 5 are used to assess interrelationships and to infer the direction of causality. The study shows that remittances have a positive effect on the level of financial development. They help improve the flow of credit from the financial institutions to the private sector which is consistent with some previous studies (Dahal, 2014, Karikari et al, 2016). More so, results suggest that financial sector development has a positive impact on remittances. A strongly developed financial sector gives confidence to migrants who in turn transfer money back home. This is consistent with Sibindi (2014) who also shows that financial development granger causes remittances. However, the latter seems to have no effect on the development of fixed capital. This may suggest that remittances

are being used to augment consumption levels as stated in past studies (Adams and Cuecuecha, 2010, Maphosa, 2007). Instead, investment has a negative effect on remittance flows which is common in unstable environments in the short to medium term (Bouoiyour et al, 2019). Contrary to results by Ahamada and Coulibaly (2013) our study finds that growth rate of GDP has a positive impact on remittance flows which subsequently lead to the development of the local financial sector (Makhlouf, 2019). Our findings also suggest that remittances indirectly affect growth by working through the financial sector. In this case, evidence suggests that the measure of financial development, credit to the private sector, has a negative effect on growth. This is synonymous with underdeveloped financial markets within SSA. This assertion is consistent with views by Caporale et al (2015) that lack of financial depth retards growth.

The study shows a negative effect of broad money on savings which is consistent with results from previous studies (Mirdeto, 2009, Chaudhry et al, 2014). An increase in broad money stimulates spending in the economy as interest rates are low. This in turn reduces the level of domestic savings in the economy as inflationary pressures build up. Whilst most of the studies (Massey et al, 2012, Ncube and Brixiova, 2013, Quartey et al, 2019) show that remittances have a positive effect on savings, this study shows that a rise in savings may lead to a fall in remittance flows. This negative connection may be understood by looking at the discussions by Reinhart and Talvi (1998) who find a similar relationship. It is possible since an increase in domestic savings results in more funds being available locally with no need for support from inflows from outside. Once savings rise there is no need to attract foreign financial flows for development and to meet investment needs. More so, the impact of remittances in the local economy is hinged on the *ceteris paribus* assumption. For example, if the domestic currency become strong then the effect on remittances is likely to weaken (Quartey and Adamba, 2015).

Furthermore, this study shows that broad money negatively affects financial development. Our findings follow from the arguments that money supply explains the level of inflation in the economy. The effects of inflation are indirectly captured within the broad money variable. Past studies (Mtar and Belazreg, 2021, Swamy and Dharani, 2019) show that inflation level has a negative effect on financial development. This is based on the premise that high money supply and hence inflation discourages investors from financing low return projects. High inflation adversely affects income and reduces savings which result in low funds moving from the public to the banking sector. Therefore, we argue that high money supply that is inflationary reduces the flow of funds to the financial sector directly, and indirectly by working through domestic savings. This will concur with the assertion that poor financial development is adversely affected by inflationary pressures and subsequently contribute less to economic growth. In addition, following Adenutsi et al (2011), our study show that high inflationary pressures negatively affect remittance flows in SSA countries. High inflationary pressures result in financial instability and hence a fall in remittances.

Table 5: Findings based 1-Lag PVAR Model

Response of:	Response to (GMM estimates)					
	REM	INV	DS	GDPg	CPS	BM
REM	1.0976*** [0.0426]	-0.0402** [0.0179]	-0.0612*** [0.0168]	0.0295* [0.0171]	0.0699*** [0.0229]	-0.0849*** [0.0237]
INV	-0.0766 [0.0613]	0.5738*** [0.0380]	-0.0346 [0.0282]	0.0592** [0.0277]	0.0038 [0.0339]	0.0427 [0.0403]
DS	0.0311 [0.0837]	0.0231 [0.0410]	0.3156*** [0.0410]	0.0580 [0.0389]	0.0373 [0.0468]	-0.1766*** [0.0508]
GDPg	0.0999 [0.0813]	-0.0569 [0.0348]	-0.197 [0.0277]	0.1948*** [0.0369]	-0.1307*** [0.0429]	-0.0169 [0.0451]
CPS	0.1656** [0.0682]	-0.0882*** [0.0288]	-0.0657** [0.0275]	0.1074*** [0.0316]	0.8544*** [0.0454]	-0.1762*** [0.0405]
BM	0.0484 [0.0555]	0.0378 [0.0231]	0.0241 [0.0197]	-0.0301 [0.0187]	-0.0051 [0.0222]	0.9556*** [0.0305]

***significant at 1%, ** significant at 5% and *significant at 10% levels; standard errors are in [.]

The study performs some post estimation tests: granger causality and stability tests. Findings for Granger Casualty Tests for first order panel VAR are deduced from the results by interpreting significant coefficients with no regard to their signs (the actual results are not reported as they mirror those in Table 5). They show that investment expenditure and savings individually granger cause both the level of financial development and personal remittances flows at 5% and 1% levels of significance respectively. The effect of investment on financial sector development is consistent with results by Odhiambo (2010). Broad money granger causes the level of personal remittances and the level of financial development. The study shows that the growth rate of GDP granger causes the flows of personal remittances. More so, there is bidirectional causality between the growth rate of GDP and level of financial development which is consistent with Olayugbo and Quadri (2019). In addition, findings support both supply-leading and demand-following hypothesis (Kibet and Agbelenko, 2015). Again, the study shows bidirectional causality between the flow of personal remittances and level of financial development.

It is critical to test the impact of exogeneous changes in each endogenous variable to others in system. This is done by estimating impulse response functions (IRF) and forecast error variance decompositions (FEVD). First, we checked for model stability and results (Table 6) confirm that the model is stable since all values are below unity.

Table 6: Eigenvalue Stability Condition

Eigenvalue		Modulus
Real	Imaginary	
.9226262	0	.9226262
.8816210	0	.8816210
.7915726	0	.7915726
.5430261	0	.5430261
.3221861	0	.3221861
.2380240	0	.2380240

Impulse Responses Function (IRF)

IRF is computed using 200 Monte Carlo draws by employing the already estimated model. Findings (Figure 2) show that a positive shock in broad money leads to a decrease in remittances from the 2nd to 10th period. Thus, an increase in money in circulation may result in few people sending money home as there will be enough liquidity in circulation. Between the 3rd and 7th period an improvement in the level of financial development would result in a positive response from remittances. Better financial development attracts flows in money from outside. Current shocks in savings have negative effect on remittances between the 3rd and 6th period. A positive shock in investment results in negative effect on remittances between 3rd and 10th period.

The study shows that a positive shock in broad money would result in a negative response in the level of financial development between the 2nd and 10th period. A positive shock in domestic savings and investment are leading to a slowdown in the level of financial development. On the contrary, a positive shock in economic growth and flow of remittances results in a rise in the level of financial development. More so, a positive shock in broad money results in negative response in savings between period two and six. Shocks in both remittances and financial development have no effect on investment.

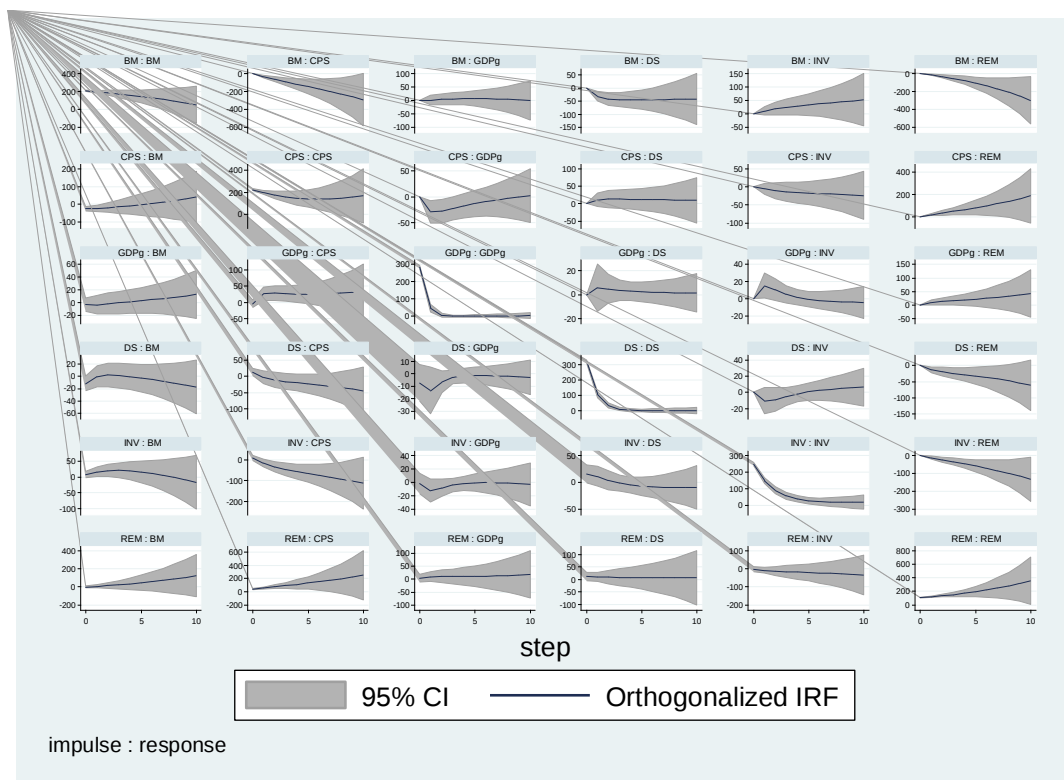


Figure 3: Impulse Response Functions

Based on FEVD estimates (Table 7) the study shows that most of the variations in remittances, investment and financial development are explained by their past changes. It can be noted that over 10 periods, at least 11% of changes in remittances are explained by the level of financial development while at least 23% of changes are accounted for by changes in broad money. At least 7% of variations in investment is explained by changes in broad money while remittances account for at least 5% of variations. At least 18% of variations in financial development are explained by remittances while broad money accounts for at least 32%.

Table 7: Forecast Error Variance Decomposition (FEVD)

Response variable & horizon	Forecast	Impulse Variable					
		REM	INV	DS	GDPg	CPS	BM
REM	0	0	0	0	0	0	0
	1	1	0	0	0	0	0
	2	.9603	.0044	.0120	.0023	.0110	.0100
	3	.9059	.0117	.0209	.0037	.0280	.0298
	4	.8482	.0192	.0257	.0047	.0462	.0560
	5	.7917	.0201	.0278	.0054	.0631	.0861
	6	.7386	.0317	.0284	.0058	.0777	.1177
	7	.6903	0.0363	.0282	.0062	.0897	.1493
	8	.6470	.0399	.0277	.0065	.0991	.1797
	9	.6087	.0400	.0277	.0067	.1064	.2083
	10	.5751	.0451	.0262	.0069	.1120	.2347
INV	0	0	0	0	0	0	0
	1	0	.9999	0	0	0	0
	2	.0009	.9933	.0017	.0033	0	.0008
	3	.0030	.9866	.0025	.0044	.0002	.0033
	4	.0063	.9781	.0027	.0045	.0009	.0075
	5	.0107	.9664	.0026	.0045	.0021	.0136
	6	.0164	.9511	.0026	.0044	.0039	.0216
	7	.0233	.9320	.0028	.0043	.0062	.0313
	8	.0316	.9089	.0030	.0043	.0090	.0431
	9	.0413	.8815	.0034	.0044	.0125	.0568
	10	.0526	.8498	.0039	.0045	.0165	.0727
CPS	0	0	0	0	0	0	0
	1	.0188	.0018	.0041	.0008	.9745	0
	2	.0314	.0036	.0028	.0065	.9438	.0119
	3	.0477	.0105	.0039	.0099	.8904	.0375
	4	.0669	.0189	.0053	.0114	.8241	.0734
	5	.0878	.0268	.0066	.0118	.7512	.1158
	6	.1092	.0335	.0077	.0118	.6768	.1609
	7	.1304	.0389	.0088	.0115	.6048	.2056
	8	.1506	.0429	.0097	.0111	.5379	.2478
	9	.1695	.0460	.0106	.0106	.4772	.2861
	10	.1870	.0482	.0114	0.0101	.4233	.3200

Conclusions

The aim of this study was to explore the dynamic linkages between remittances and financial development and establish the role of other covariates in understanding this linkage using data from selected countries in SSA. The study employed the PVAR approach as postulated by Abrigo and Love (2016). Findings have confirmed feedback effects between remittances and financial development. Interlinkages have been identified among related variables. Economic growth has feedback effects with the level of financial development. The study confirmed the influence of savings, investment and broad money on both financial development and remittances. It contributed to literature by showing the significance of developing financial markets, in SSA, to attract remittances and the role played by those in the diaspora to develop and improve financial depth. The level of growth of the economy stimulated those in the diaspora to repatriate most of their earnings back home.

This study showed the importance of policies directed towards having positive growth rates in SSA to boost flows of fund from outside. Broad money explained a significant portion of variations in remittances and financial development. Thus, policy makers need to restrain the growth of money supply as it weakens the capacity to save, remit funds back home and to develop the financial market. Remittances explained a significant portion of variations in financial development. As such, policies that seek to improve confidence of the people resident in other countries to send money home are ideal. More so, it is critical to improve in dissemination of information on investment opportunities in home countries and the benefits thereof and to strengthen institutions that safeguard the property rights for those in the diaspora, back home. In fact, policies can be directed towards diaspora finance and investment

strategies targeting those in the diaspora may help reduce the proportion of funds spent on consumption. This can be further augmented by continuous economic development of home countries.

Policies that reduce risk for investments back home are important as they can stimulate funds flow. The capacity of financial markets to develop new products that target those in the diaspora will help attract more funds. This initiative by financial institutions to engage in money transfer services will strengthen the effect of remittances on investment and savings which is currently weak in this study. Subsequently, the monopoly of money transfer agencies will be weakened with the result being a fall in transaction costs that will further improve funds flows. We argue that financial markets are better in distributing funds to productive sectors of the economy as opposed to individual recipients of remittances. They have a key role in transforming remittances from playing the compensatory role and to being a source for investment finance.

Conclusions from this study have been made based on the methodology and sampling framework applied to enhance our understanding on the dynamic linkages between remittances and financial development and other covariates in selected countries in SSA. They provide an impetus for further arguments to be developed in this context. They strengthen criteria for policy making in SSA and similar economies to attract funds flow from the diaspora to finance economic development. There is still a need to further deepen our understanding on the impact of diaspora finance and financial returns received by investors back home.

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