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Impact of Remittances, Foreign Direct Investment, Trade Openness and Domestic Investment on Economic Growth: Panel Evidence from Selected Sub-Saharan African Countries. An Application of Fully Modified OLS

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Abstract: Over the past three decades, international remittances inflows have emerged as a significant and stable source of financial inflows and growth promotion for many developing countries. To better understand remittances-economic growth nexus, the current study seeks to analyze the long run relationship between FDI, Openness, Domestic Investment and Economic growth in some selected Sub-Saharan African countries namely: Nigeria, Ghana, Kenya and Senegal using annual panel data for the period of 1980-2017 and employed econometrics analytical techniques including descriptive statistics and matrix correlation of variables and LLC and IPS unit root test and Pedroni, From the long-run cointegrating parameter estimates of FMOLS and DOLS, results opined that an increase in remittances, foreign direct investment trade openness and domestic investment, increases economic growth of SSA countries proxied by GDP.Therefore the study recommends that there is the need for Sub-Saharan African countries to design policies, programs as well as the institutional reform that will encourage the productive use of remittances.

Keywords: Economic Growth, remittances, FDI, Domestic Investment, Trade openness and FMOL

1.1. Introduction

Over the past three decades, international remittances inflow have emerged as a significant and stable source of financial inflows and growth promotion for many developing countries. In some, developing countries the inflow of remittances represent a major part of international capital flows, surpassing FDI, export revenue, and foreign aid, and have grown faster than FDI, or official development assistances and Staying resilient even times of economic crisis (Kapur 2004; Guilano & Ruiz-Arraz, 2005; World Bank, 2006., Ratha, 2012).

International remittances are now considering one of the most visible outcomes of migration in the world. People migrate from one place to another in order to improve living condition of their families in their home countries. Remittances consist of goods or financial instruments transferred by migrant living and working abroad to residents of the home economies of the migrants. It is limited to transfer made by workers that had stayed in foreign economies

for at least one year while transfer from migrants that are self-employed are excluded (IMF, 1999). Recent financial flows into developing countries in the form of remittances are receiving increased attention. This resulted because of their size and impact on economic growth of recipients' countries (Fayissa & Nsiah, 2008). The importance of remittances cannot be understated. Remittances directly or indirectly raise national income, rates of investment and consumption and stimulate the production and creation of jobs and implicitly the income of the families who do not receive remittances (Chami et al; 2005). The inflow of remittances generally lead to the reduction of poverty level, the acquisition of skills and techniques, improvements in health conditions and educational access and other benefits (Al-Khathalan, 2012).

The overall link between remittances and economic growth has remained theoretically and empirically controversial and important issue of debate among economists and other researchers over the past three decades. Development economists like Chami et al(2005) observed that there are good reasons to believe that remittances can play a critical role in economic growth and development by helping beneficiary developing countries to alleviate poverty and minimizing balance of payments problems. Stark and Bloom (1985) observed that workers' remittances are used by workers to increase their wealth, enhance their income. Fayissa and Nsiah (2008) observed that remittances boost growth in countries where the financial systems are less developed by providing an alternative way to finance investment and helping overcoming liquidity constraints. Developing countries use remittances to their advantage by bridging the balance of payments (BOP) gap (Al-khathalan, 2012).

Remittances impact group in three ways first, by enhancing the rate of capital accumulation, remittances not only increase the rate of physical and human capital, but also lower the cost of capital in the recipient country. The second effect related to the resulting change in the labor force growth. Remittances may have a negative impact on the labor force participation, as the remittance income is substitute for labor income. Thirdly, remittances affect the efficiency of investment by affecting TFP growth (Barajas et al, 2009). Remittances lead to so much appreciation of local currency. It can also harm the economy of the country, as it will discourage exportation thus reduce entrepreneurial competition in the recipients' country (Lopez et al; 2007). Remittances can retard economic growth this can happen if the remittances received are used by recipients to reduce their labour supply to the economy (Chami et al; 2005). The impact of remittances on national economic growth and employment are rather unclear (World Bank, 2006). The consequences of remittances on long term economic and development do not well understand (Kapur, 2004).

Remittances are sent by emigrants to families and friends back home. This has been a substantial source of income for homes in developing countries

and specifically Sub-Saharan countries. Since the adoption of IMF-World Bank led Economic Recovery Programme (ERP) that embodied the Structural Adjustment Programme (SAP) by Sub-Saharan African in 1980s macroeconomic policies and programs in the region have become more liberal and market oriented. This has encouraged and increased the global flow of finance such as Foreign Direct Investment (FDI), Official Development Assistance (ODA), Foreign Aid and International migrant remittances.

This paper seeks to analyze the long run relationship between FDI, Openness, Domestic Investment and Economic growth in some selected Sub-Saharan African countries namely: Nigeria, Ghana, Kenya and Senegal taking economic growth as the dependent variable while the components of remittances are the predictor variables.

2.1. Conceptual Literature Reviews

This section reviewed conceptual issues related to remittances and economic growth.

2.1.1. Concept of Remittances

The origin and concept of remittance emerged from the theory of migration, its definition also linked to its impacts, uses, kind of transfer and the channel of financial or funds transfer. According to IMF (1999) remittances are defined as the sum of three items in the IMF's Balance of Payment Statistics year book (BOPSY): "Workers' Remittances", "Compensation of Employees" and "Migrants' Transfer".

i. Workers' Remittances (part of current transfer in the current account) are current transfers made by migrants whose are employed and resident in another economy. This typically includes those workers who move to an economy and stay, or are expected to stay a year or longer.

ii. Compensation of employees (part of the income component of the current account) instead comprises wages, salaries and other benefits (cash or in kind) earned by non-residents of another countries. Such workers typically include border and seasonal workers, together with some other categories, e.g. Local Embassy Staff.

iii. Migrant transfer (part of the capital account) include financial items that arise from the migration (change of residence) of individuals from one economy to another (stay less than a year).

Ratha (2003) define remittances as migrants' capital transfer, which is assets that a migrant bring into or takes out of the country. According to Kapur (2004) "Remittances are financial resource flows arising from the cross-border movement of nationals of a country". The narrowest definition "unrequited transfer refers primarily to money sent by migrants to family and friends on whom there are no claims by the sender unlike other financial flows such as debt or equity flows".

However, many experts questioned some of the above conventional and technical definitions of remittances believe that remittances sender are not always and necessarily migrants, and remittances are not always sent to migrants' relatives and/or to the country of origin. Among the experts Lubambu (2014) who defined remittances as cross-border private voluntary monetary and non-monetary (social or in-kind) transfer made by migrants and Diaspora, individually or collectively, to people or to communities not necessarily in their home country.

2.1.2. Concept of Economic Growth

According to Jhingan (1997) economic growth is related to a quantitative sustained increase in the country's per capita output or income accompanied by expansion in its labour force, consumption, capital and volume of trade. Todaro and Smith (2011) identified three components of economic growth that are of prime importance:

i. Capital accumulation: including all new investments in land, physical equipments and human resources through improvements in health, education, and job skills
ii. Growth in population and hence eventual growth in the labour force
iii. Technological progress-new ways of accomplishing tasks

2.2. Empirical Literature

In this section, the study reviewed the empirical literature on the effect of remittances alongside with other determinants of growth (foreign direct investment, trade openness and domestic investment) on economic growth. In this sub-section, our focus is on remittances and economic growth, plenty empirical studies has been conducted on the remittances – growth impact, the evidence from this literature is mixed and conflicting across methodologies and countries. This study attempts to review some of these empirical studies.

Matuzeveviciute and Butkas (2016) using unbalanced panel data for 116 countries over the period 1990 to2014 studied the interaction between remittance and the level of economic development as well as its impact on long run economic growth. The study employed OLS, fixed effect model and found that, in generally remittance have a positive impact on long run economic growth, but the impact differs based on the country's economic development level and the abundance of remittance in the economy. The finding of this study is in line with the finding of previous studies such as khathalan (2012), but contradicts with finding of Balde (2009), Barajas et al (2009). Contrarily, Adarkwa (2015) examines the impact of remittances on economic growth in four selected West African countries: Cameroon, Cape Verde, Nigeria and Senegal. Using OLS for the panel data from 2000 to 2010 the study found that there is positive effect of remittances and economic growth in Senegal and Nigeria, and negative effect in Cape Verde and Cameroon.

Nevertheless, Salahuddin and Gow (2015) examined the relationship between migrant remittance and economic growth using data from 1977 to 2012 for Bangladesh, India, Pakistan and the Philippines. This study conducted across sectional dependence test, CIPS panel unit root test, panel Pedroni and Westernlund co-integration tests and employed the PMG technique. The result shows that there is a highly significant long-run positive relationship between remittance and economic growth in these countries. However, indicates an insignificant positive association between them in the short-run.the error correction term in the short run is -0.037suggesting that approximate 3% of the deviations in the short-run from the long-run equilibrium have corrected each year. The overall results support the argument that remittances are playing increasingly important role for these countries' economies. The finding of this study confirmed the finding of salahuddin (2013), though they used different methodology.Similarly, Aboulezz (2015), using ARDL techniques to determine the effect of international remittance on economic growth in Kenya for the annual time series data from1993 to 2014. The result shows that the international remittance indicators are significant factors influencing the economic growth in Kenya and concluded that economic growth in Kenya has largely driven by international remittances. The finding of this work is in line with findings of previous studies such as Qayyum, Javid and Aarif (2008), Karamelikli and Bayar (2015). The limitation of this study is that of the period.

Karamelikli and Bayar (2015) examined the relationship between remittance, gross domestic saving, foreign direct investment and economic growth of turkey for the period 1974 to 2013 using ARDL method. The study found that, remittance, FDI, and gross domestic saving had positive impact on economic growth. The finding and methodology of this study is consistent with that of Aboulezz (2015).this study failed to find long run relationship among the variables. Equally, Assaf (2015) analyzed the effect of remittance and other traditional sources of economic growth (gross fixed capital formation, foreign direct investment, labour force) on economic growth in Jordan. for the annual time series data spanning from 1975 to 2013 using OLS and found positive effect of remittances, gross fixed capital formation, on GDP and a negative effect of FDI and labour force on GDP. The result of this study confirmed the result of previous studies such as salahuddin (2013).

However, Nyeadi and Atiga (2014) investigate the link between remittance and economic growth in Ghana from 1980 to 2012 using Granger-causality and co integration test under the VAR framework. The result showed a unidirectional link between remittance and economic growth and showed that remittance lead to economic growth marginally. But economic growth does not lead remittance. They concluded that remittance played a very useful role in promoting house welfare and health. They also recommended that policies regarding emigration should put in place to make it more encouraging to emigrate and remit to Ghana since remittances promote economic growth.

While, Salahuddin (2013) estimated the effect of remittances on growth for a panel data of some Asian countries namely: Bangladesh, India, Pakistan and Philippines from 1977 to 2009 using OLS. The result shows that there is positive relationship between remittances and growth. The finding of this study is in line with finding of Yaseen (2012) and contradicts the findings of Koyamah-mash (2012), Balde (2009). The major limitation of this study is that it failed to find long-run relationship.

In addition, Khathalan (2012) established the long run and short run relationship between workers' remittances and economic growth in Pakistan during the period of 1976 – 2010 using ARDL and the ECM techniques. The result shows that there is positive and significant relationship between worker's remittances and economic growth in long run and short run. The finding and methodology of this study is in line with finding and methodology of Karamelikli and Bayar (2015) confirmed the finding of Qayyum, Javid, Arif (2008) and contradicts with finding of Balde (2009).Contrarily, Abu Siddique, Selvanathan and Selvanathan (2012) employed Granger – causality test under a VAR framework to investigate the causal link between remittances and economic growth in Bangladesh, India and Sri Lanka for the period 1976 to 2006. The study found that growth in remittances does not lead to economic growth in Bangladesh and in India, and there is no causal relationship between growth in remittances and economic growth; but in Sri Lanka, a two – way directional causality has found. that is, economic growth influences growth in remittances and vice – versa. Koyamah – mash (2012) also found that remittances do not lead to economic growth in ten ECOWAS countries. The finding of this study is consistent with finding of previous studies such as Barajas et al (2009) and contradicts the finding of Iheke (2012).However, Iheke (2012) analyzed the effect of remittances on Nigerian economy using OLS from 1980 to 2008 and found positive effect, which contradicted the finding of Barajas et al (2009) and Koyama – mash (2012) and in line with finding of Yaseen (2012). The major limitation of this study is that the period is not enough to give better analysis. Lastly, Yaseen (2012) observed the impact of remittances on economic growth for the panel data of 7MENA countries over the period of 2000 – 2010 using fixed effect model. The results show that there is positive impact of remittances on economic growth. This study supports the work of Iheke (2012) above.

2.3. Theoretical Reviews

2.3.1. Portfolio Management Decision Theory

In this theory, an emigrant worker to diversify his or her savings views remittances as a strategy. Accordingly, the decision to remits is based on the risk return differential of assets in to the host and recipient country. As such, the main determinants of the decision to remit include interest rate differential

on deposit accounts in the host and recipient country. Real estate return, inflation rate, and black exchange rate premium among others. Apart from these economic determinants, the desire to invest may also be driven by the desire of the emigrant worker to return home with dignity in the event that emigrant worker chooses to return back home (Kaasschieter, 2014). Since the desire to remit is purely motivate by investment opportunities, the correlation between remittances, GDP tends to be positive, and the correlation between remittances and private investment is positive since remittances is principally spend on investment activities.

3.1. Methodology

3.1.1. Model Specification

The objective of this study is to analyze the long run relationship between FDI, Openness, Domestic Investment and Economic growth,followingthe established practice in the literature, the current study adopted endogenous model as the theoretical model and the model to be estimates built from the work of Salahuddin and Gow (2015). The study used growth domestic product at current USD (GDP) as dependent variable. while remittances (REM) is measured by personal remittance received, foreign direct investment (FDI) measured by FDI at current USD, trade openness (TO) is measures by the ratio of export and imports as a percent of GDP and domestic investment (DIV) measured as gross fixed capital formation. The general model is specified as:

$$GDPC = f(REM, FDI, OPN, DIV) \tag{3.1}$$

The econometric form of the above equation can be written as:

$$\text{GDPC} = \beta_0 + \beta_1 REM_{it} + \beta_2 FDI_{it} + \beta_3 OPN_{it} + \beta_4 DIV_{it} + \varepsilon_{it} \tag{3.2}$$

To make the model linear, the value of the variable would be transform in to logarithm form other variable are in ratio. Equation 2 becomes:

$$logGDPC = \beta_0 + \beta_1 logREM_{it} + \beta_2 logFDI_{it} + \beta_3 OPN_{it} + log\beta_4 DIV_{it} + \tag{3.3}$$

Where;

log GDP = Gross Domestic Product

*log*REM = Remittances

logFDI = Foreign Direct Investment

OPEN = Trade Openness

*log*DIV = Domestic Investment

Where, β_s are the unknown parameters to be estimated, ε_{it} is the disturbance term, subscript *i* is the country's cross-country dimension and subscript *t* is the country's time series dimension.

The data for the study was collected from the World Bank, World Development Indicator (WDI) online databases covering the annual period of 37 years (1980-2017). Based on data availability and the following four countries were selected: Nigeria, Senegal, Ghana and Kenya.

4.1. Results and Discussion

4.1.1. Pre-estimation Tests

This section entails preliminary analyses of data such as descriptive statistics and Pearson's correlation matrix of variables under study; the section also deals with panel unit root test and panel co-integration test to ensure that the variables are properly screened in order to obtain reliable results from the model estimation and interpretations.

Descriptive Statistics and Correlation of Matrix

Agung (2004) pointed out that summary descriptive statistics for variables in a data set have a very important role in data evaluation and measurement of each variable for further advance statistical analysis. Table 4.1 presents the summary descriptive statistics for the variables under study.

The descriptive statistics of the variables in the model are presented in table 4.1. The table shows that the mean and median values of the entire variable under analysis are within the range of maximum and minimum values. For the standard deviations, there exists a very small variation of data from their mean value of all the variables. But, for the skewness, only DIV (0.570956) is positive but for all other variables GDP (-0.979968), REM (-0.292248), FDI (-0.124462), OPEN (-0.817614) are negatively skewed. Finally, the Jarque-Bera statistics which factors in both the skewness and kurtosis for testing normality in the series, the null hypothesis of a normal distribution is accepted for all variables; it can be concluded that the series under study are normally distributed as expected.

Table 4.1
Descriptive Statistics

	LOGGDP	*LOGREM*	*LOGFDI*	*LOGOPEN*	*LOGDIV*
Mean	2.262485	8.096697	8.280270	1.690917	9.471975
Median	2.606121	8.071882	8.224374	1.732738	9.400564
Maximum	3.508082	10.34244	9.946507	2.065297	10.93298
Minimum	-0.183890	5.698970	5.595971	1.134200	8.153907
Std. Dev.	1.003313	0.985422	0.916720	0.180156	0.560392
Skewness	-0.979968	-0.292248	-0.124462	-0.817614	0.570956
Kurtosis	2.483899	2.879502	2.364401	3.638819	3.321803
Jarque-Bera	2.01548	2.255653	2.951012	9.51973	8.914307

Source: Computed and Compiled by the Researcher using E-views 10 (2019)

Correlation of Matrix

For matrix correlation, Pearson's correlation coefficient was employed to examine the extent of relationship between the variables; the correlation matrix shows the magnitude and direction of the relationship between each pair of variables being analyzed. According to the technique, the nearer the correlation coefficient to one (1) the stronger the strength; a negative correlation shows that there is an inverse relationship between the two variables. The correlation matrix is symmetric about the diagonal and the values of the diagonal are 1.000000, since there is a perfect correlation of the variables with itself (Helwig, 2017).

Table 4.2 excavated that FDI (0.356288) and DIV (0.487326) conjugates a positive relationship with dependent variable (GDP); on the other hand, REM (-0.115092) and OPEN (-0.241393) conjugates an inverse relationship with dependent variable (GDP) therefore, it can be concluded that GDP, REM, FDI and DIV has a conjugal and blissful agreement with GDP as expected.

Table 4.2
Matrix Correlation

	LOGGDP	*LOGREM*	*LOGFDI*	*LOGOPEN*	*LOGDIV*
LOGGDP	1.000000	-	-	-	-
LOGREM	-0.115092	1.000000	-	-	-
LOGFDI	0.356288	0.266754	1.000000	-	-
LOGOPEN	-0.241393	0.247660	-0.118741	1.000000	-
LOGDIV	0.487326	0.516824	0.803964	-0.130654	1.000000

Source: ComputedandCompiledby the Researcher using E-views 10 (2019)

Unit Root Tests

Levin, Lin and Chu (2002)andIm, Pesaran and Shin (1997) tests were conducted on the variables, to determine whether they are stationary or non-stationary. The two tests were employed to reinforce one another, to ensure their robustness and to boost confidence in their reliability. The tested null hypotheses for both unit root tests are to determine the presence of a unit root. The decision rule is to reject the null hypothesis when the test-statistical value is less than the probability value or posits higher negative values (William, Hill, and Lim, 2008).

Table 4.3 presents the findings of the panel unit root test. The result indicates that only variable GDP is stationary at level using both method employed i.e. GDP is integrated at I (0). But REM, FDI, DIV and OPEN showed evidence of non-stationarity at level using both methods and their stationary was induced after first difference i.e. REM, FDI, DIV and OPEN are integrated at I (1) therefore, the null hypothesis of unit root is rejected and conclude that there is evidence of order of integration amongst the variables.

Table 4.3
Panel Unit Root Test

Variable	*LEVEL*				*FIRST DIFFERENCE*				*Order of Integration*
	LLC	*Prob.*	*IPS*	*Prob.*	*LLC*	*Prob.*	*IPS*	*Prob.*	
$LOGGDP_{it}$	-1.7817	0.0374**	2.6934	0.0035*	-	-	-	-	I(0)
$LOGREM_{it}$	0.3900	0.6517	2.3150	0.9897	-9.1145	0.0000*	-8.4691	0.0000*	I(1)
$LOGFDI_{it}$	-0.6587	0.2550	0.1973	0.5782	-7.9841	0.0000*	-10.311	0.0000*	I(1)
$LODIV_{it}$	0.3906	0.6520	2.2776	0.9886	-5.6309	0.0000*	-5.9886	0.0000*	I(1)
$OPEN_{it}$	-0.4526	0.3254	-1.3806	0.8370	-4.4293	0.0000*	-7.2259	0.0000*	I(1)

Source: Computed and Compiled by the Researcher using E-Views 10 (2019)

The asterisks *, ** indicate rejection of null hypothesis at 1% and 5% level respectively

Panel Co-integration Test

The current study employed the Pedroni and Kao cointegration test. According to Adusah-Poku (2016), both tests are based on residuals resulting from estimating long-run static regression. Cointegration test is carried out to ascertain the long-run relationship in the model (Iheonu, Ihedimma and Omenihu, 2018). The decision rule is to reject the null hypothesis of no co-integration if probability value is less than 5% (0.05) level of significance. Otherwise, do not reject (William, Hill & Lim, 2008).

Table 4.4
Pedroni Panel Cointegration Test

	Within-Dimension (Panel)	*Between-Dimension (Group)*
v-statistics	-0.167486 (0.5665)	-
rho-statistic	-1.879584 (0.0301)**	-0.986070 (0.1620)***
PP-statistic	-8.425400 (0.0000)*	-13.47167 (0.0000)*
ADF-statistic	-7.591063 (0.0000)*	-5.521671 (0.0000)*

Source: Computed and Compiled by the Researcher using E-Views 10 (2019)
The asterisks *, **, *** indicate rejection of null hypothesis at 1%, 5% and 10% level respectively

Table 4.4 shows that in "within dimension", the v-statistics probability value is insignificant while the rho-statistics probability value is significant at 5%. The PP-statistics and ADF-statistics probability values are significant at 1%. For "between dimension", the rho-statistics probability value proved significant at 10%, but the PP-statistics and ADF-statistics are significant at 1%. This result reveals that only two out of its seven statistics (panel v-statistics and group rho-statistic) do not reject the null hypothesis of no cointegration. Therefore, the overall results revealed that there is long-run relationship amongst the variables in the model. To affirm further about the existence of cointegration relationship in the model, Kao test was conducted.

Table 4.5
Kao panel Cointegration Test

ADF t-statistic	*Probability*
-8.048928	0.0000*

Source: Computed and Compiled by the Researcher using E-Views 10 (2019)
The asterisks *, **, *** indicate rejection of null hypothesis at 1%, 5% and 10% level respectively

Table 4.5 presents the result of Kao residual cointegration test. The result confirmed the existence of cointegration amongst the variables in the model as the ADF t-statistics probability value is significant at 1%. The current study therefore, rejects the null hypothesis and concludes that a long-run relationship exists.

4.3. FMOLS-DOLS Long-Run Cointegrating Parameter Estimates

The results of both Pedroni and Kao cointegration test presented in table 4.4 and table 4.5 supported the existence of long-run equilibrium relationships amongst the model's variables. Hence, the next step is to estimate the long-run cointegrating parameter elasticity using dynamic ordinary least square (DOLS) and fully modified ordinary least square (FMOLS) methods. Therefore, in order to determine the long run relationship between FDI, Openness, Domestic Investment and Economic growth in some selected Sub-Saharan African countries as specified in objective of the paper, the study relies on the FMOLS and DOLS long-run parameter estimates.

Table 4.6
FMOLS-DOLS Long-Run Cointegrating Parameter Estimates

Dependent Variable: LOGGDP

Variable	*FMOLS*	*DOLS*
LOGFDI	0.688865	0.849784
	(1.340520)	(1.150218)
	[0.1822]***	[0.2533]
LOGDIV	1.233046	0.751177
	(1.255686)	(0.565942)
	[0.2113]	[0.5729]
LOGOPEN	-5.891959	-4.819347
	(-3.415603)	(-2.413585)
	[0.0008]*	[0.0180]**
LOGREM	0.692187	0.600802
	(1.659065)	(1.036362)
	[0.0993]**	[0.3030]

Source: Computed and Compiled by the Researcher using E-views 8 (2019)
Note: *, **, *** denotes significance at 1%, 5% and 10% respectively.
Figures in ( ) and [ ] are t-statistics and p-values respectively

Table 4.6 presents the estimating results from both FMOLS and DOLS analysis. The result of FMOLS indicates that (1.8%) increase in FDI causes (6.8%) increase in GDP, while the DOLS result shows that (2.5%) increase in FDI leads to (8.4%) increase in GDP. The results from both the two models also suggest a positive effect of DIV variable on GDP, results from FMOLS shows that (2.1%) increase in DIV causes (12.3%) increase in GDP, whereas, the result of DOLS indicates that (5.7%) increase in DIV variable leads to (7.5%) increase in GDP. The result of OPEN variable indicates that a unit change in OPEN on average decreases GDP variable as indicated by FMOLS and DOLS estimators respectively; from the results, FMOLS indicates that (8%) increase in OPEN, causes (58.9%) decrease in GDP. While the result of DOLS indicates that (1.8%) increase in OPEN will lead to (44.1%) decrease in GDP. The result

of the variable REM, indicates that unit change in REM on average increases GDP as suggested by the FMOLS and DOLS techniques respectively. From the FMOLS results, (9.9%) increase in REM, will lead to (6.9%) increase in GDP while the results of DOLS suggested that (3.0%) increase in REM will lead to (6.0%) increase in GDP.

5.1. Conclusion and Recommendation

The study employed econometrics analytical techniques including descriptive statistics and matrix correlation of variables andLLC and IPS unit root test, Pedroni co-integration test and Granger causalitymodel.From the long-run cointegrating parameter estimates of FMOLS and DOLS, results opined that an increase in remittances, foreign direct investment trade openness and domestic investment, increases economic growth of SSA countriesproxied by GDP.Therefore the study recommends that there is the need for Sub-Saharan African countries to design policies, programs as well as the institutional reform that will encourage the productive use of remittances.

References

Aboulezz, N. (2015). Remittances and Economic Growth Nexus: Empirical Evidence from Kenya. *International Journal of Academic Research in Business and Social Science*. (5)2: 12.DOI:10.6007/IJARBSS/V5-i12/1958.

Adarkwa, M. (2015). Impact of Remittances on Economic Growth: Evidence from Selected West African Countries, *African Humane Mobility Review,* (1)2. 169-185.

Adusah-Poka, F., (2016). Which form of foreign capital inflows enhance economic growth?Empirical evidence in Sub-Saharan Africa. *Asian Economic and Finacial Review. 6(10)Pp.557-570*

Agung, I. N. (2004). Statistica: Multivariate Model Econometrics. Bhakti, Jakarta.

Al-Khathalan, K. (2012). The Link between Remittances and economic Growth in Pakistan: A Boon to Economic Stability. *British Journal of Economics, Management AndTrade.* 2 (3): 167 – 185.

Assaf, A. A. (2015). Workers remittances and economic Growth: Evidence from Jordan. *European Scientific Journal,*(2)25. 267-185.

Chami R. and Samir J. (2005). Are Immigrant Remittance Flows a Source of Capital for Development? *Journal of Economic Literature*(52)1, 55-81.

Balde, Y. (2009). Migrants Remittances and Economic Growth in Sub-Saharan Africa.Laboratoire d'Analyseet de Prospective Economique (LAPE) Universite'' de Limoges, France Working Paper 200905.

Barajas, A; Gapen, M.T., Chami. R., Montial, P., and Fullenkamp, C. (2009). DO workers remittance promote economic growth? IMF Staff paper, 52(1), 55-82.

Fayissa, B. and Nsiah, C. (2008). The Impact of Remittances on Economic Growth and Development in Africa. Department of Economics and Finance, middle Tennessee State University Working Paper 200802.

GiulianoPaola, and Ruiz-Arranz Marta (2005). Remittances, Financial Development, and Growth. IMF Working Paper WP/05/234.

Helwig, N. E. (2017). Data Covariance, Correlation Matrix. University of Minnesota (Twin Cities).

Iheke, O. (2012). The effect of remittances on the Nigerian Economy, *international Journal of Development and Sustainability* 1 (2): 614 – 621.

IheohuIhedima and Omerihu (2018). A pool mean group estimation of capital inflows and growth in Sub-Saharan Africa. *The Romanian Economic Journal*, 20(65). 1540-1550

Im, K.S. Pesaran, M.H., and Shin, Y. (1997). Testing for Unit Roots in Heterogeneous panels, MsDepartments of Applied Economics, University of Cambridge.

IMF (1999). Balance of Payments Manual 5th Edition, Washington DC: International Monetary Fund.

Jhingan, M.C. (1997). The Economics of Development and Planning.39th Revised and Enlarged Edition.Vrinda publication (P) ltd.

Kaasschieter, J. (2014). Remittances, Economic Growth and the Role of Institutions and Government Policies (Master Thesis). Erasmus School of Economics.Erasmus University. Rotterdam.

Kapur, D. (2004). Remittances: The New Development Mantra? G-24 Discussion Paper 29 New York and Geneva: United Nations.

Karamelikli, H. and Bayar, Y. (2015). The Relationship between Economic Growth and Remittances in the Presence of Cross-Sectional Dependence. *The Journal of Developing Areas* (49)1. 187-200.

Lopez H. and Pablo A. (2007). The Impact of Remittances on Poverty and Human Capital: Evidence From Latin American Household Surveys. *Journal of Population Economics* 19(2)557-573

Levin, A.; C. F. Lin & C. S. Chu (2002). "Unit root tests in panel data: Asymptotic and finite sample properties", *Journal of Econometrics*, 1 (24), 108.

Koyameh-Marsh, R.O. (2012). The Impact of Workers remittances on Economic Growth: Evidence form ECOWAS countries. *Journal of third world studies*, (24)2. 287-310.

Lubambu (2014). The Impact of Remittances on Developing countries. Policy Department Directorate-General for Policies. Policy Department European parliament's Committee on Development.

Matuzeveviciute, K. and Butkas, M. (2016). "Remittances Development level, and Long-run Economic growth" *Economies* (4) 28. 100-130

Nyeadi, J.D. and Atiga, O. (2014). "Remittances and economic growth: Empirical Evidence from Ghana," *European Journal, of Business and Management* (6) 25. 130-162

Qayyum, A; Javid M. and Arf, U. (2008). Impact of Remittances on Economic Growth and Poverty. MPRA paper No. 22941.

Ratha, D. (2003). Workers Remittances: An Important and Stable Source of External Development Finance. In Global Development Finance: Striving for Stability in Development Finance, Washington, DC: World Bank. 157 – 175.

Salahuddin, M. (2013). Empirical Link between Growth and remittances: Evidence from Panel Data, *Journal of Applied Business and Economics* (14)15. 611-628.

Salahuddin, M. and Gow, J. (2015). The Relationship between Economic Growth and Remittances in the Presence of Cross-Sectional Dependence.*The Journal of Developing Areas* (49)1. 159-180.

Abu-Siddique, A., Selvanathan, E.A. and Selvanathan, S. (2012). Remittances and Economic growth: Empirical Evidence from Bangladesh, India and Sri-Lanka. *Journal of Development studies*: 48 (8): 1045 – 1062 DOI: 10.1080/00220388.2012.663904

Stark, O., and Levhari, D. (1985). On migration and risk in LDCs, Economic Development and Cultural change, (31)1, pp. 191-196.

Todaro, M.P. and Smith, S.S. (2011). Economic Development.11th edition Pearson ltd Harlow, England.

William E.; Hill C.; Lim C. (2008). Using Eview for Principles of Econometrics. Third Edition.

World Bank (2006). Global Development Finance, April. Washington, D.C.: World Bank.

Yaseen, H.S. (2012). The positive and negative impact of remittances on economic growth in MENA Countries. *Journal of International Management Studies*, (7)1, 222-242.