Remittances Inflows and Economic Growth in Economic Community of West African States (ECOWAS) Sub-region

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Abstract

This study examined the effect of remittances inflows on economic growth in ECOWAS sub-region using the fifteen member-countries for the period 2000 to 2016. The study utilized secondary data which were obtained from the World Bank (World Development Index), 2018. Diagnostic tests were carried out to ascertain the reliability and validity of the data set. This was followed by stationarity test which indicated that the variables were non-stationary at level; but became stationary at first difference. With the exception of panel ADF statistic, Pedroni's and Kao panel cointegration tests of within-group test and the between-group test revealed that the null hypothesis of no cointegration should be rejected. The results that emanated from System Generalized Method of Moment estimation revealed that foreign aid inflows exerted a positive and significant effect on economic growth in the ECOWAS sub-region. The over-identifying restrictions test determined by the J-statistics revealed that the instrument of measurement used in the model was valid. It was therefore recommended among others that policy that will continually increase and channel remittances inflow to the productive sector of ECOWAS sub-region should be introduced by the relevant authorities within the region.

Keywords: ECOWAS, Remittances, Economic Growth

I.   Introduction

The ECOWAS sub-region is one of the sub-regions within sub-Sahara African countries (SSA) recording positive growth in the number of migrant in the last two decades and this has positive implications for remittances inflow. This position was upheld by Tolentino & Peixoto (2011); OECD (2010 and 2014). The findings of Orozco, (2003) and World Bank (2014) revealed that Nigeria accounts for between 30 and 60 percent of total remittances inflow to ECOWAS sub-region and these inflows competed with some top foreign exchange earners such as foreign aid and foreign direct investment (FDI). Also within the sub-region, available statistics show that about one-third of Cape Verde citizens' live outside the shores of their country and this largely influenced the huge remittances inflow to the country (Carling, 2002; Pop, 2011). Remittances inflow to Senegal more than tripled between 2002 and 2008, rising from about US$ 344 million to about US$ 1.3 billion (Cisse, 2011). In addition, remittances contribute between 6 percent and 11 percent to Senegal's gross domestic product (GDP) and most times surpasses other export products of the economy (Cisse, 2011). It is also widely held that remittances could help

ECOWAS sub-region to reduce poverty, supplement household incomes, provide working capital and above all, create multiplier effects through increased spending with high propensity of reflating the economy in the long-run (UNECA, 2013). This increase in the number of migrants from the sub-region could be attributed to, but not limited to factors such as the sustained increase in the number of the sub-region's citizens travelling/living outside the region in search of greener pastures.

The extant literature however shows mixed results with regards to the effects remittances inflows exert on economic growth. For example, Ocharo (2015), Kumar & Stauvermann (2014) and Kumar (2013) held that there exists a positive effect between remittances and growth. However, Ogundipe, Ojeaga and Ogundipe (2014) opined that remittances affect economic growth negatively. Furthermore, a cursory look at the literature shows that there exist scanty studies that actually combine the fifteen member-countries which make up the ECOWAS sub-region in the examination of the effect of remittances on economic growth for the sub-region. What obtains in most studies in the literature is the use of fewer countries to represent the sub-region. The result that emanated from such studies could be misleading considering the heterogeneous nature of the countries within the sub-region.

Invariably, ECOWAS is a sub-regional economic community in Africa and provides the institutional framework for policy discussion and implementation. Hence, the thrust of the study therefore is to investigate empirically the relationship between remittances and economic growth in the ECOWAS sub-region using the fifteen member-countries for the period 2000 to 2016.

II.   Literature Review

Aboulezz (2015) examined the effect remittances have on economic growth in Kenya from 1993 to 2014. ARDL and granger causality tests were employed and the results that emerged from that study showed that there was a significant bi-directional causal relationship between remittances and economic growth. Similarly, Ocharo (2015) examined the impact of remittances on economic growth in Kenya between 1970 and 2010 using the OLS methodology. The results of that study revealed a positive and significant link between remittances and growth. In the same vein, Imai, Gaiha, Ali & Kaicker (2014) investigated the effects remittances inflow has on economic growth and poverty in 24 Asian and pacific countries between 1980 and 2009 using panel data analysis. Their result showed that remittances affect economic growth and poverty positively in all the countries investigated. In addition, empirical evidence on outward migration revealed that countries with high remittances inflow have the propensity for increased growth and poverty reduction (see, for example, Fajnzylber & Lopez, 2007).

Ramirez (2013) examined the influence of financial and institutional variables on remittances and economic growth in Latin America and the Caribbean countries between 1990 and 2007 with Pedroni panel co-integration and FMOLS. The result of that study revealed that financial and institutional variables significantly and positively influenced remittances and growth. Again, Ramirez (2013) investigated the effect of remittances on economic growth in 23 upper and lower income Latin America and Caribbean countries with FMOLS and co-integration techniques. It was observed from his analysis that besides serving as a substitute for credit, remittances significantly and positively exerted impact on growth. A similar conclusion was held by Hadeel (2012) in the study on the effects of remittances on economic growth in MENA countries between 2000 and 2010 using a panel analysis with fixed-effects method. The result of that

investigation revealed that the rise in remittances inflow into this region was significantly and positively related to growth.

Cooray (2012) investigated the effects of remittances on growth in South Asian countries between 1980 and 2008 using panel data analysis. The result of his study revealed that remittances positively affected economic growth in all the countries investigated. Olubiyi (2014) examined trade, remittances and economic growth in Nigeria using the VECM and granger causality techniques to conduct his analysis. His result revealed that remittances affected economic growth in the positive direction. Salahuddin (2013) examined the relationship between growth and remittance in Bangladesh, India, Pakistan and Philippines using the panel co-integration analysis. The result of his study revealed a positive relationship between growth and remittances in the sampled countries. Kumar (2013) employed the ARDL and cointegration techniques to investigate the nexus between remittances and economic growth in Guyana from 1982 and 2010. His results indicated that remittances and growth were positively related. In addition, Nsiah & Fayissa (2013) investigated the relationship between remittances and growth for 64 African, Asian, and Latin American-Caribbean countries between 1985 and 2007.

Contrariwise, Jouini (2015) using the ARDL co-integration approach found that there was a negative effect between remittances and growth in the long-run when he investigated the effects of remittances on growth in Tunisia between 1970 and 2010. The study further revealed the existence of bidirectional causality between remittances and growth in the short-run. A similar position was re-echoed by Lim & Simmons (2015) in their investigation of the effects remittances had on growth in the Caribbean Common Market in a panel co-integration analysis. Their findings specifically revealed that there was no long-run significant relationship between remittances and growth. Initial study by Rao & Hassan (2011) on growth effects of remittances

in 40 countries between 1960 and 2007 using the panel data analysis held a similar view. Their result revealed that there was no direct effect between growth and remittances; rather, a small indirect effect was observed between growth and remittances. Roa and Takirua (2010) investigated trade, aid and remittances in relation to their effects on economic growth in Kiribati. Their finding showed that foreign aid and remittances exderted negative effect on growth. Barajas, Chami, Fullenkamp, Gapen and Montiel (2008) were of the view that remittances negatively affect growth. This position was held after examining if workers' remittances promoted growth in 84 countries between 1970 and 2004 using the panel regression analysis.

Nyeadi, Yidana and Imoro (2014) investigated the causal relationships between remittances and economic growth in three West Africa countries, namely: Nigeria, Senegal and Togo using time series annual data from 1980 to 2012. Their result revealed a unidirectional causal link between remittances and growth in Nigeria and Senegal, that is, remittances were found to be positively related to economic growth while economic growth was not positively related to remittances inflows. With respect to Togo, their findings revealed that there was no causal link between remittances and economic growth. Ahamada and Coulibaly (2013) investigated the impact of remittances on growth in 20 SSA countries from 1980 to 2007 in a panel granger causality test. Their results revealed that remittances did not exhibit a significant impact on economic growth in countries studied. Also, Saddique, Selvanathan & Selvanathan (2012)opined that remittances inflow did not promote economic growth in Bangladesh. However, they held that a bi-directional causality existed between remittances and growth in Sri-Lanka. This position was held after they investigated the causal link between remittances and economic growth in Bangladesh, India and Sri Lanka in a panel granger causality test using the VAR framework in a time series data spanning 1976 to 2006.

III.   Theoretical Framework and Model Specification

The Solow Growth Model of 1956 is adopted to provide the basic theoretical foundation for this study. The Solow model alongside its subsequent extensions has been employed in analyzing the effects of capital inflow on economic growth in the literature. The model explains that capital (in this case, remittances inflow) is vital and that steady state growth rate will be attained at a higher level of GDP per capita. It also explains that the long-term economic growth rate is attained through accumulation of factor inputs such as physical capital (K) and labor (L) with a provision for technical progress (A) which drives capital-labor ratio to converge over time in the direction of equilibrium ratio (Solow,1956). In other words, the long-run per capita growth rate depends entirely on the exogenous rate of technical progress or total factor productivity.

The aggregate Solow (exogeneous) growth model in its general form is given as;

$$Y(t) = F[A(t), K(t), L(t)] \ldots \quad \ldots \qquad (1)$$

Where;

Y is output

A is the level of technology/factor productivity

K is the capital stock

L is the quantity of labor

t is the time trend.

The model relates the growth rate of output to the growth rate of technical change, labor and capital stock. Also, time (t) does not actually enter the production function directly, but via *K*, *L* and *A*. This means that output variation over time is subject to changes in inputs. If we take the growth model to be twice differentiable, subject it to constant returns to scale and that technical change is Hicks-neutral, then the differentiation of equation (1) with respect to time and dividing through by *Y* result in equation (2);

$$\acute{Y}/Y = \acute{A}/A + (F_K K/Y) \cdot (\acute{K}/K) + (F_L L/Y) \cdot (\acute{L}/L) \qquad \dots \qquad \dots \qquad (2)$$

Where;

$\acute{Y}/Y$ = continuous time rate of growth

$\acute{A}/A$ = hicks-neutral rate of change of technological progress

$\acute{K}/K$ = growth rate of capital stock

$\acute{L}/L$ = growth rate of labor force

F_K is the marginal products of capital

F_L is the marginal products of labor

Model Specification

The model for this study is specified based on the Solow Growth Model. In empirical analysis, the modification of this model results in its augmented form wherein the rate of growth depends not only on capital and labor but also on policy variables such as interest rate, trade and inflation (Papenek, 1973; Barro, 1991; Mankiw, Romer and Weil 1992; and Iyoha, Ighodaro and Adamu 2012). The interest variables are usually brought in through total factor productivity (A) in the Solow Growth Model. This therefore implies that total factor productivity is incorporated as a means of explaining the growth process (Udah, 2010). Here, we have expanded the list of policy variables to include remittances and foreign direct investment (FDI).

However, to avoid the problem of over parameterization of variables, the functional form of the model to be estimated in this study is functionally represented as:

$$Y(t) = f[REM(t),\ FDI(t),\ INF(t), TRADE(t),\ HC(t)] \quad \dots \qquad \dots \qquad (3)$$

Where;

Y(Output) = Real GDP per capita (RGDPPC, a measure of economic growth); *REM = remittances inflow*; *INF=inflation (proxy for macroeconomic stability)*; *FDI = foreign direct investment inflow*; *TRADE = Trade*; *HC = human capital, t = time trend.*

In dynamic form, equation (3) is explicitly stated as:

$$lnRGDPPC_{it} = \beta_{1i} + \beta_{2i}lnRGDPPC + \beta_{3i}lnREM_{it} + \beta_{4i}lnFDI_{it} + \beta_{5i}lnTRADE_{it}$$

$$+ \beta_{6i}INF_{it} + \beta_{7i}HC_{it} + \varepsilon_{1it} \qquad ... \qquad ... (4)$$

Estimation Methodology and Validation

System Generalized Method of Moment estimator developed by Blundell and Bond (1998) and Arellano and Bover (1995) for dynamic estimation is adopted. This is because System GMM estimator correct for country-specific effects as well as the bias caused by the inclusion of the lagged dependent variable in studies such as this.

The consistency of the GMM estimator depends on the validity of the instruments and the assumption that the error term does not exhibit serial correlation. Instruments must be correlated with the included endogenous variable(s), and orthogonal to the error process (Baum, Schaffer & Stillman, 2003).

The test for the validity of selected instruments is carried out using J-statistics. It ascertains the instruments' independence from unobservable error process (J-statistics test) by Hansen (1982). It is performed with the instruments chosen from lagged endogenous and explanatory variables in the model. When this test is carried out, no further checks are practically required for evaluating the GMM estimates (Baum, Schaffer and Stillman, 2003; Roodman, 2009).

IV.   Empirical Analysis

Table 1: Descriptive Statistics for Pooled Sample

	Mean	Max.	Min.	Std. Dev.	Skewness	J-B stat	Prob.
RGDPPCG	5.55	11.14	-6.59	17.12	-0.54	210.15	0
FDI	6.01	89.48	-0.26	11.31	5.34	12446.49	0
REM	5.47	29.72	0.15	5.06	1.53	173.40	0
TRADE	87.25	401.63	30.73	44.18	3.35	1975.22	0
INF	8.18	111.82	-9.82	11.15	4.86	12310.38	0
HC	51.72	82.54	45.81	11.04	-0.22	1.86	0.18

Source: Author's computations

Table 1 report a descriptive statistics for the combined data. It could be observed from the table that real per capita income average growth rate is about 5.55 percent for the period. Also, the real per capita income is highly variable across sections in the study (country groups) over time. This is demonstrated by the high standard deviation value of 17.12. The skewness is however low and negative indicating that the real per capita income growth rate figures for most of the countries lie to the right (are more than) of the mean value. The J-B has a high value of about 210.11 and it passes the significance test at the 1 percent level. This indicates that the density function of the series is non-normally distributed. Similar position can also be held for all other variables excluding remittances whose standard deviations falls below 10 percent indicating fair stability across sections and over time.

Table 2: Panel Unit Root Test Result

	Homogeneous Unit Root Process				Heterogeneous Unit Root Process			
	Level		1st Diff		Level		1st Diff	
Variables	**LLC**	**Breitung**	**LLC**	**Breitung**	**IPS**	**ADF-Fisher**	**IPS**	**ADF-Fisher**
GDPPC	11.05	4.12	18.20	-3.11**	4.22	74.56	-18.07**	403.19**
REM	-3.01	-1.26	-9.11**	-11.85**	-2.61	101.8	-20.18**	425.40**
FDI	-2.17	-2.35	-21.22**	-17.40**	-1.44	95.51**	-27.51**	602.10**
TRADE	-3.32	-3.17	-34.33**	-20.21**	-3.16	117.12	-33.82**	890.95**
INF	0.54	2.34	-22.15**	-14.16**	0.86	71.32	-19.41**	434.17**
HC	-7.04	6.21	-18.54**	-17.21**	-6.21	156.44	-22.11**	664.89**

Source: Authors Computation
*Note: ** indicates significant at 5%; IPS=Im, Pesaran& Shin; LLC=Levin, Lin & Chu*

The stationarity properties of the panel data was determine by means of homogenous panel unit root tests and heterogenous panel unit root tests. The results as shown in Table 2 indicate that all the variables employed are non-stationary at level but attained stationarity at their first differences. This is as revealed by homogenous and heterogenous panel unit tests.

Table 3: Panel Cointegration Test Results

Within Dimension			Between dimension		Kao (ADF)
	Statistic	**Weighted Statistic**		**Statistic**	
Panel v	-3.42**	-2.29**	Group rho	16.17**	-2.75***
Panel	2.82**	4.22***	Group PP	-1.66*	---
Panel PP	-2.82***	-3.36**	Group ADF	6.55**	---
Panel ADF	2.88	1.71			---

Source: Authors Computation
*Note: ***, **, * indicates significant at 1%, 5% & 10%*

Table 3 shows result of cointegration test conducted. The column labeled within-dimension contains the computed value of the statistics based on estimators that pool the autoregressive coefficient across the countries for the unit root tests on the estimated residuals. The columns labeled between-dimension are computed value of the statistics based on estimators that average individually calculated coefficients for each country. The results inclusive of residual based (Kao) test shows that the null hypothesis of no cointegration should be rejected.

Table 4: Dynamic Effect of Remittances on Economic Growth

	Without political stability		
Variable	*Coefficient*	*t-Statistic*	*Prob.*
GDPPC(-1)	0.740	104.54	0
REM	3.953	3.20	0
FDI	0.440	0.75	0.45
TRADE	0.674	2.70	0.01
INF	5.991	22.11	0
HC	6.643	1.68	0.10
J-statistic	94.599		
Prob(J-statistic)	0.111		

Source: Authors Computation

Table 4 shows the effects of remittances on economic growth. The effect of remittances on economic growth was found to be positive and significant at one percent. From the Table, a one percent increase in remittances results in over 3 percent increase in growth. Other variables such as trade and human capital exhibited statistical significant and positive relation to growth as well

as conform to '*apriori*' specification. However, FDI was observed to be statistically insignificant though conform to '*apriori*' specification while inflation exhibited significance but did not conform to '*apriori*' specification. The probability value of J-statistics of 0.11 is impressive and it shows that the moment restrictions are valid and that the models are well specified.

V. Conclusion and Recommendations

This study carried out an empirical investigation of the effects of remittances inflows on economic growth in ECOWAS sub-region for the period 2000 to 2016. In doing so, the Generalized Method of Movement estimator was utilized to capture the requisite variables of the study. The descriptive and diagnostic tests were conducted in order to ascertain the quality and properties of data set. The series for all the explanatory variables had a relatively high J-B values indicating that the series are not normally distributed. This was also the case for the dependent variable in the sample for the study. The unit root test result indicated that the variables were non-stationary at levels but became stationary at first differences. Panel cointegration test was also carried out in order to ascertain the existence of long-run relationship among the variables. The results of that test revealed that there existed a long-run relationship among the variables in the model.

The results that emanated from System GMM estimation technique showed that remittances inflows exerted positive and significantly impact on economic growth in the ECOWAS Sub-region. In addition, all the variables were positive and significant at one percent except for FDI. The J-statistics revealed that the instruments of measurements used in the model were valid and that the model was well specified.

In the light of the foregoing findings, the following recommendations are proffered:

1. Remittances inflow should be seen as a viable external source of capital that affect growth positively in ECOWAS sub-region.

2. Necessary policies that attract remittances inflows to ECOWAS sub-region should therefore be put in place by relevant authority.

3. Effort should also be made through policy to channel remittances inflow to the productive sectors of ECOWAS sub-region.

4. ECOWAS should use its instrumentality as a regional economic community in Africa to coordinate and enhance remittances inflow to the sub-region.

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APPENDIX I

Table 5: Annual Growth Rate (AGR) of Remittances (REM) Flows to ECOWAS Sub-region between 2000 and 2016 (in billions of current US$)

Years	REM	AGR %
2000	2.234	0
2001	2.135	-0.044
2002	2.252	0.055
2003	2.543	0.129
2004	3.975	0.563
2005	16.623	3.182
2006	19.266	0.159
2007	20.892	0.084
2008	22.586	0.081
2009	21.639	-0.042
2010	23.348	0.079
2011	27.069	0.159
2012	27.343	0.01
2013	26.461	-0.032
2014	27.701	0.047
2015	16.404	0.295
2016	17.349	0.315

Source: World Bank Development Index, (WBDI), 2019.

Table 5 shows yearly growth rate of remittances for the period 2000 to 2016 in ECOWAS sub-region. The Table shows a relatively positive growth rate for the period under review also revealed though with some negative growth rates in years such as 2001, 2009 and 2013. This could be as a result of slump occasioned by some distorting factors (economic and political factors) of the major recipient countries in the sub-region such as Nigeria, Senegal, Ghana, Cote d' Ivoire, Burkina Faso and Mali. However, on the average, the growth rate of remittances inflow to ECOWAS sub-region was positive.

APPENDIX II

Table 6: Remittances Inflow as a percentage of GDP in ECOWAS Sub-region (2000-2016)

Year	ANG	FRA	LUS
2000	4.773	18.291	18.284
2001	4.115	21.677	16.934
2002	4.511	24.464	17.941
2003	4.312	27.752	18.189
2004	5.241	26.607	17.479
2005	14.116	29.804	17.45
2006	12.987	32.935	16.643
2007	13.239	35.042	15.359
2008	10.574	34.622	14.393
2009	12.741	33.409	13.904
2010	7.487	35.304	13.283
2011	12.43	33.787	14.201
2012	11.321	36.649	14.917
2013	7.342	36.472	16.313
2014	10.154	33.45	14.761
2015	9.022	30.884	16.003
2016	9.306	31.51	15.851
Total	153.671	522.659	271.905

Source: Author's using World Bank Development Index (WBDI), 2019.
Note: ANG(Anglophone Countries), FRA(Francophone Countries), LUS(Lusophone Countries)

Table 6 is aimed at showing the disparity in remittances inflow to ECOWAS sub-region when they are grouped by colonial heritage. That is, Francophone (French speaking countries), Anglophone (English speaking countries), and Lusophone countries (Portuguese speaking countries). Table 2 shows that Francophone countries have the highest value of 522.659. This was followed by Lusophone and Anglophone countries with 271.905 and 153.671. This clearly shows that, Francophone countries have a higher average even when Anglophone and Lusophone countries are put together. This high value recorded in Francophone countries could be attributed to the fact France shares common currency with its former colonies. This has the potency of easing remittances inflows. Also, the Francophone countries are more in numbers (eight) while Anglophone countries are five (5) and Lusophone countries two (2).

APPENDIX III

Table 7: GDP at market prices (current US$) in ECOWAS Sub-region from 2000 to 2016

Year	Amount
2000	83.567
2001	83.386
2002	102.406
2003	121.202
2004	148.249
2005	177.343
2006	223.735
2007	259.579
2008	318.5
2009	277.196
2010	485.23
2011	543.87
2012	599.23
2013	669.907
2014	721.097
2015	320.97
2016	336.79
Average	321.8975
Total	5472.257

Source: World Bank Development Index (WBDI), 2019.

Figure 1: GDP (market prices at current US$) in ECOWAS Sub-region (2000-2016
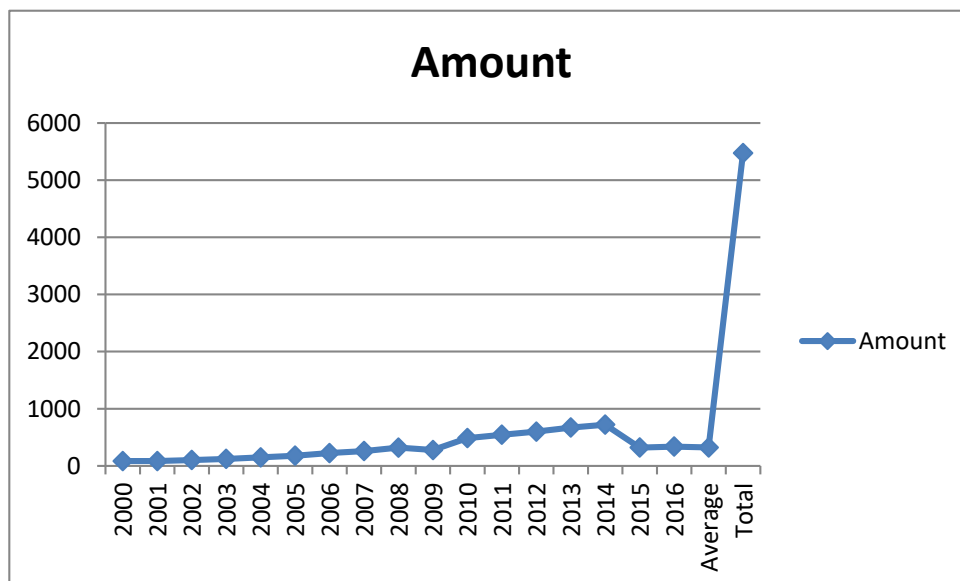
Source: World Bank Development Index (WBDI), 2019.

Table 7 and Figure 1, also shows the yearly trends in economic growth in ECOWAS sub-region between 2000 and 2016. The figure shows that the sub-region experienced a relative yearly increase in the volume of economic growth with the exception of 2001, 2009 and 2015 wherein there was a drop in the volume of economic growth. This could mainly be attributed to the aftermath of the global economic meltdown of 2006/2007, sharp reduction in the volume of crude oil production in Nigeria (being one of the largest economies in the sub-region) due to the heightened activities of militancy coupled with the fall in price of crude oil in the international market. However, on the average, the trend in GDP in ECOWAS sub-region was relatively stable.