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Remittances, Trade Balance and Economic Growth in West Africa Sub-Region

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Abstract: Owing to the domestic economic wide effect of remittances and trade balances, this study examined their impacts in relation to economic growth in West Africa sub-region with secondary data spanning the period 2007 to 2019 using system generalised method of moment estimation technique. Prior to estimation, reliability and validity of the data set was examined. This was followed by unit root test which shows that variables attained stationarity at their first difference while Co-integration test indicated that there exists a long-run convergence among the variables. The result showed that remittances inflows significantly and positively impact economic growth while trade balance exerted a negative and significant impact on economic growth. The over-identifying restrictions test of J-statistics showed that the instrument of measurement employed is valid. It was recommended among others that policy makers in West Africa should implement policies that continually encourage remittances inflow and export of goods and services.

Keywords*: Remittances, Trade Balances, Economic Growth, Developing Countries, JEL Classification: F24, F32, F43, O55

Introduction

The volume of remittances inflow to most developing countries in the last two decades made it to be considered as a major source of external fund. This assertion was corroborated by World Bank (2014 and 2018) reports on West Africa which showed that there has being a huge inflow of remittances to the sub-region over the last two decades. This was attributed, though not limited, to the growing increase in number of migrant travelling outside the shores of the West Africa sub-region in quest for greener pastures among others. Also, a major determining factor in the external balance of an economy is

trade balance. Trade balance is crucial in the determination of a country's competitiveness in relation to the rest of the world (Topalli and Dogan 2016; Kang and Shambaugh 2016). Though, trade balance could be in positive (surplus) or negative (deficit), UNCTAD (2018) reports showed that virtually all countries in West Africa have being recording significant increase in trade balance especially in the deficit direction over the years.

A cursory look at the literature shows a sort of mixed results with respect to remittances inflow and economic growth (for example Ocharo 2015; Ogundipe et al 2014) on one hand, and on the other hand, most empirical studies that relate trade to growth dwell more on trade openness (Iyoha et al 2012; Leamer & Levinsohn 1995) and the determinant of trade balances (Hong and Siok 2011; Osoro 2013). Thus, owing to the link and domestic economic wide effect of remittances and trade balances, an attempt is made here to tie both in relation to economic growth in West Africa sub-region for the period 2007 to 2019.

Trend in Remittances, Trade Balance and Economic Growth in West Africa

Trend in Remittances Inflow

The lower the average income in a country, the more likely its citizens migrate to other country to seek for greener pastures and this in tune often result to remittance inflows. This is one of the reasons attributed to the relatively larger remittances inflow to most developing countries such as countries of West Africa sub-region. Thus, while remittances inflow served as revenue to government through taxes, it also serves as a direct source of income to household (IMF 2005; Jongwanich, 2007). As stated by World Bank (2014) the inflow of remittances to developing countries grew from about $56 billion in 1995 to $334 billion in 2010 with Asia and the Pacific ranks as the largest recipient region. This was followed by Latin America and the Caribbean, Arab States and Africa in a descending order. However, in terms of growth of remittances inflow, Africa was ranked second just after Asia and Pacific (World Bank, 2014).

Figure 1. **Remittances trend in West Africa for the period 2003 to 2019**
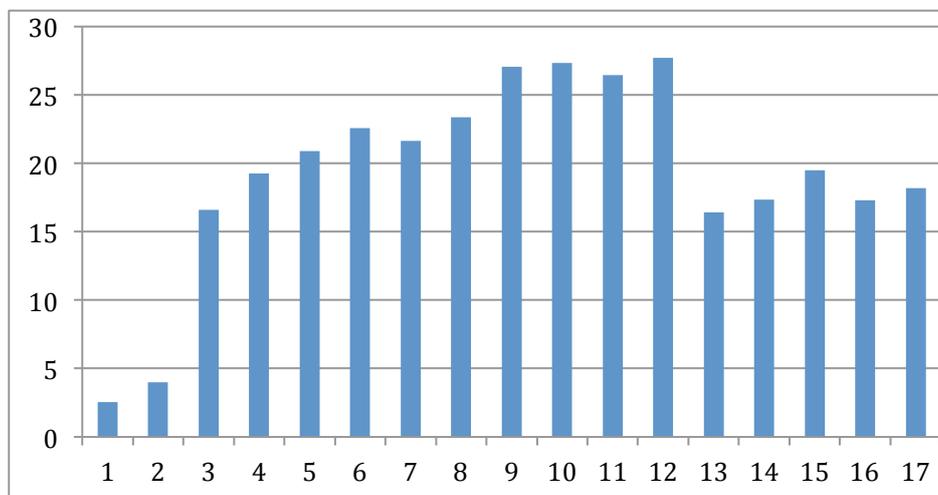
Source: Graphed by author using World Bank WDI (2020)

With particular reference to West Africa sub-region as shown in figure 1, remittances inflows on the average has being in the upward direction for the period though with downward trend recorded in some years such as 2009 and 2015. From figure 1, it can be observed that West Africa sub-region has been part of the rising remittances inflow globally. However, it is worthy to state that remittances inflow to West Africa for the period is mainly influence by Nigeria (the largest economy in the sub-region in terms of GDP and population). Nigeria receives nearly 65% of officially recorded remittance flows to the region and 2% of global flows (Hernandez- Coss and Bun 2006). This was corroborated by World Bank (2014) with the assertion that Nigeria is among the top-remittance receiving country in sub Saharan Africa (SSA).

Trend in Trade Balance

One of the policy trusts of West Africa trade through the instrumentality of Economic Community of West Africa State (ECOWAS) is increase in volume of trade and economic activities in the sub-region. Over the years, countries of the sub-region have continually made effort at increasing local output for export. For example, between 2005 and 2014, the volume of trade in West Africa increased by about 18% (ECOWAS 2016). This was mainly driven by four West Africa countries namely Nigeria, Côte d'Ivoire, Ghana and Senegal and the commodities mainly traded were mining (for example oil resources, iron, bauxite, manganese, gold) and agricultural produce (for example coffee, cocoa, cotton, rubber, cereals) (ECOWAS, (2016).

Figure 2. **Trend in trade balance in West Africa sub-region for the period 2003 to 2019**
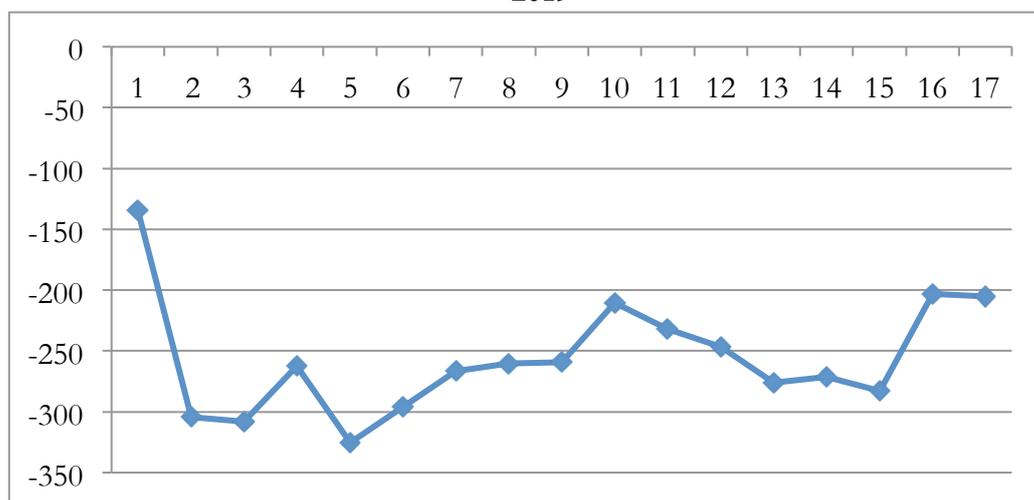
Source: Graphed by author using World Bank WDI (2020)

Figure 2 shows the trend in trade balance in West Africa sub-region from 2003 to 2019. From the Figure, it can be observed that West Africa sub-region recorded negative (deficit) trade balance in virtually all the years. Though some countries may have recorded surplus in trade balance in some years, this was however cancelled/neutralise by the huge deficit values recorded in most of the countries in the sub-region. A cursory look at the figure shows that on the average, West Africa sub-region trade balance for the period fluctuates in the deficit axis. This is not unconnected to the fact that most West Africa countries are marginal players in international market and often export crude produce whose price fluctuates in the international market.

Economic Growth Trend

On the average, growth in West Africa has been stable since mid-1990s. This assertion is based on World Bank (2018) report, which shows that West Africa real GDP growth has consistently hovers around 5% between 2000 and 2014. The report revealed further that as at 2015, the sub-region accounted for about 40%and 28%of SSA and Africa GDP (at current price) respectively. The region was however negatively affected by decline in economic activities in 2016 resulting in a fall in average real GDP growth to the tune of about -0.2% contrary to the 3.1 percent growth recorded in 2015 (ECOWAS 2016). Though most of the countries recorded favorable growth performance, the negative growth was largely attributed to economic recession in Nigeria, which accounts for about 70% of the region GDP (ECOWAS, 2016). Again, Africa Development Bank (2020) revealed that West Africa economy grew by about 3% in 2019, though below the continental average of %. This was mainly driving by Côte d'Ivoire, Senegal, Burkina Faso, Ghana, Benin and Guinea which were ranked among top 10 in Africa in 2018 in terms of real GDP growth.

Figure 3. **Real GDP per capital in West Africa Sub-region (2003-2019)**
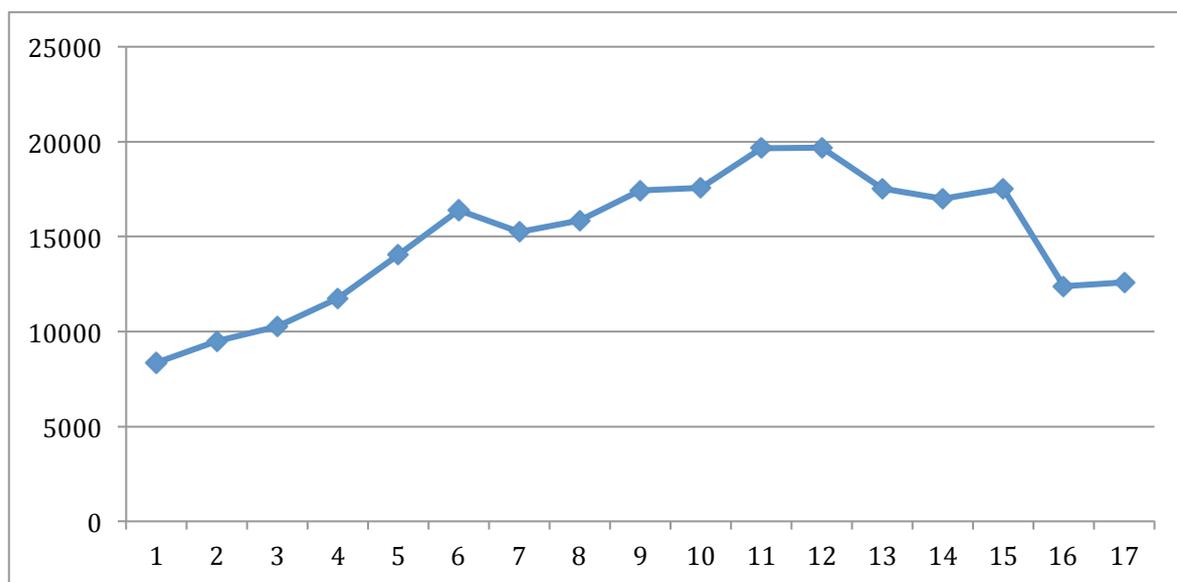
Source: Graphed by author using World Bank WDI (2020)

Figure 3 shows the yearly trends in economic growth in West Africa sub-region between 2003 and 2019. The figure shows that the sub-region experienced a relative yearly increase in growth with the exception of some years such as 2009 and 2016 wherein there was a decline in growth. This could mainly be attributed to the aftermath of the global economic meltdown and sharp reduction in the volume of crude oil production in Nigeria (being the largest economy in the sub-region). However, on the average, there was a relatively upward trend in GDP growth in West Africa sub-region for the period.

Literature Review

Remittances and Economic Growth

The relationship between remittances and economic growth has been in the front burner among researchers and policy makers in recent times. This could be linked to the increased volume of remittances inflow amidst the quest for fund to attend to myriad development challenges. The existing empirical evidence on the impact remittances have on economic growth is divided among researches. For example, owing to the linkage between financial development and economic growth, Azizi (2019) examined the impacts international remittances has on financial development in developing countries in a panel of 124 developing countries for the period 1990-2015. Using the instrumental variable-fixed effect model, it was found that remittances positively impact financial development and by extension economic growth. Also, with the established positive linkage industrialization has on economic growth, Efobi et al (2019) examined the impact remittances has on industrialization in a panel of 49 African countries for the period 1980 to 2014. It was found that at a giving stage of industrialization, remittances drive industrialization through the financial development mechanism and this enhances growth overtime. The impact remittance has on economic growth in Kenya for the period 1993 to 2014 was examined by Aboulezz (2015). The result from Auto Distributed Lag Model (ARDL) and granger causality test showed that remittances positively and significantly impacted on economic growth and a significant bi-directional causal relationship was established between remittances and economic growth.

Also, Nsiah and Fayissa (2013) examined the nexus that exist between remittances and growth using 64 countries for the period 1985 to 2007. The result from Co-integration and Fully Modified Ordinary Least Square (FMOLS) techniques showed that remittances impact positively on growth in all the countries. Similarly, Nyeadi et al (2014) examined the causal relationships between remittances and economic growth in Nigeria, Senegal and Togo for the period 1980-2012. A unidirectional causality was established between remittances and growth in Nigeria and Senegal, while no causality was established between remittances and economic growth in Togo. Nyeadi and Atiga (2014) examined the impact remittances have on growth in Ghana. Vector Auto-regression (VAR) analysis was employed and it was found that remittances impact positively on household welfare and economic growth. Also, Olubiyi (2014) employed Vector Error Correction Mechanism (VECM) and granger causality analysis in examining trade, remittances and economic growth in Nigeria. It was found that remittances impact positively on growth. Other studies in this light include Ocharo (2015), Bayar (2015).

On the other hand, Sutradhar (2020) examined the impact workers' remittance has on economic growth in four South Asian emerging countries for the period 1977-2016. Pooled Ordinary Least Square (OLS), fixed effects, random effects and dummy variable interaction models were employed and it was found that remittances negatively impact economic growth in three of the four countries vis-a-vis Bangladesh, Pakistan and Sri Lanka. A positive impact of remittances on growth was established only in India. Anetor (2019) examined the relationship between remittances, financial sector and economic growth in Nigeria for the period 1981-2017 using ARDL model. With the establishment of complementarity between remittances and financial sector development, it was found that remittances negative and significant impact on economic growth in the long-run and short-run. It was also established that financial sector development negatively and significant

impact on economic growth in the long-run and short-run. In a panel co-integration analysis, Lim and Simmons (2015) examined the impact remittances have on growth in the Caribbean Common Market. The findings revealed no long-run significant relationship between remittances and growth. Similarly, Koyameh-Marsh (2012) found that remittances exhibited mixed impacts on growth in the Ten ECOWAS countries investigated. Similar findings was upheld by Rao and Hassan (2011) in the examination of growth impacts of remittances in a group of 40 countries spanning the period 1960 to 2007 in a panel data analysis.

Jouini (2015) employed ARDL and Co-integration analysis in the examination of the impacts remittances has on growth in Tunisia for the period 1970 and 2010. It was found that remittances exhibited negative impact on growth. Also, bidirectional causality was established between remittances and growth. Furthermore, the impact remittances has on growth was examined by Ahamada and Coulibaly (2013) using 20 Sub-Saharan Africa (SSA) countries spanning the period 1980 to 2007. Panel granger causality analysis shows that there is no positive and significant relationship between remittances and growth. Similar studies in this light are Chami et al (2018), Roa and Takirua (2010).

Trade Balance and Economic Growth
An attempt is also made here to bring to fore studies that relate trade balance to economic growth. Vikneswaran and Wai (2019) examined the relationship between trade balance and macroeconomic variables in Malaysia for the period 2000 to 2015. ARDL model and granger causality analysis employed showed that domestic income, inflation rates and exchange rates exhibited significant impact on trade balance while impact of money supply on trade balance was found not to be statistically significant. Nicole (2016) examined the main components of balance of payment in sub Saharan Africa (SSA). This was carried out in other to determine how trade affects current account imbalances. It was found that trade in SSA was accompanied by current account deficits driven by net income payments. Gould and Ruffin (1996) employed Benchmark Model and correlation analysis in the examination of the causes and consequences of trade deficits. It was found that weak negative correlation exists between trade imbalances and economic growth when the basic determinants of growth are taking into consideration.

Blavasciunaite et al (2020) investigated the impact trade balance has on economic growth in 28 European Union countries for the period 1998 to 2018 using OLS multivariate analysis. The results indicated that trade balance exhibited a negative and lagging impact on growth and that no significant differences was observed in the deficit period. Cosimo (2013) examined current account reversals across different exchange rate regimes in industrial countries. Treatment effects model, Probit model and robustness analysis was employed and it was found that through the treatment effects model, adjustments of current account imbalances were not harmful to growth. Suphian (2018) investigated the determinants of trade balance in East African Countries (EAC). The model was estimated using FMOLS and VECM techniques. It was found that the major determinant of trade balance was FDI. It was then recommended that EAC should concentrate on export-oriented development policies because of the huge volume of FDI inflow into the sector. Also, the nexus between remittances inflows and trade balance in eleven (11) labour abundant MENA countries was examined by Mohammad and Sherif (2015) for the period 1992 to 2012. The result from GMM and fixed effects modeling indicated that remittances inflows were

accompanied by trade deficit. Other similar studies includes; Shah (2015), Osoro (2013), Shawa and Shen (2013).

Methods

Theory and Model Specification
The Solow Growth Model of 1956 provides the basic theoretical foundation for this study. The model holds that over time, growth is attained through factor inputs such as capital stock (K) and labour (L) with a provision for technical progress (A) which drives capital-labour ratio to converge over time in the direction of equilibrium. That is, output variation over time is subject to changes in inputs.

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

$$Y(t) = F[A(t), K(t), L(t)] \tag{1}$$

Where; *Y is output, A is factor productivity, K is the capital stock, L is the quantity of labour, t is the time trend.*

According to Iyoha et al (2012), the differentiation of equation (1) with respect to time *(t)* and dividing through by output *(Y)* result in equation (2);

$$\acute{Y}/Y = \acute{A}/A + (F_K K/Y) \quad (\ /K) + (F_L L/Y) \quad (\ /L) \tag{2}$$

Where; $\acute{Y}/Y$ = continuous time rate of growth, $\acute{A}/A$ = hicks-neutral rate of change of technological progress, $/K$ = growth rate of capital stock, $/L$ = growth rate of labour force, F_K is the marginal products of capital; F_L is the marginal products of labour.

From the above and aligning with the works of Papenek, (1973); Barro, (1991); Mankiw et al (1992); Iyoha et al (2012), the Solow Model provides rooms for further modification wherein interest variables are brought into the model through total factor productivity (A). This is also in line with Udah (2010) that total factor productivity is incorporated to explain the growth process.

Model Specification
With particular reference to Mankiw et al (1992); Iyoha et al (2012) an augmentation of equation (2) is carried out by bringing in variables of interest as shown in equation (3);

$$Y = f[REM, TRAB, INF, FDI, HC, INTR, POR, K, L] \tag{3}$$

Where; Y = Output/Economic Growth; REM = Remittances; TRAB = Trade Balance; INF = Inflation; FDI = Foreign Direct Investment; HC = Human Capital; INTR = Interest Rate; POR = Political Risk; K = Capital; L = Labour.

However to avoid the problem of over parameterization of variables and degree of freedom, we focus variable of interest. Thus, the compact dynamic functional form of the model is presented as;

$$lnRGDPPC_{it} = {}_{1i}lnRGDPPC_{it-1} + {}_{2i}lnX_{it} + {}_{3i}lnZ_{it} + {}_{1it} \tag{4}$$

Where; Real GDP per capita (RGDPPC) =a measure of economic growth/Output; RGDPPC$_{t-I}$ = one period lag value of real GDP per capita; X = vector of variables of interest (remittances (REM) and trade balance (TRAB)); Z = vector of controlled variables (FDI, INF, HC and POR); $_{it}$ = error term which consist of unobserved individual specific effects and observed specific errors; i = each country; $_{1i}$, $_{2i}$ and $_{3i}$ = coefficients which are apriorily indeterminate (they can either take positive or negative values).

Estimation Technique and Data

The system Generalised Method of Moment (sGMM) estimation method associated with Arellano and Bover (1995) and Blundell and Bond (1998) which uses moment conditions based on the level of equation(s) is employed. Besides the amenability of sGMM estimation technique to analysis such as this wherein cross-sectional dimension (fifteen countries) is more than the time series dimension (twelve years), its choice was informed by the need to correct for endogeneity.

The fifteen West Africa countries comprises Benin, Burkina Faso, Cabo Verde, Cote d Ivoire, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone and Togo. This was informed by the need to have a representation that approximate West Africa sub-region. Secondary annual time series data for the estimation period spanning 2007 to 2019 (twelve years) were sourced from the World Bank, World Development Indicator and International Country Risk Guide (ICRG) country data base online.

Findings

Descriptive Statistics

Table 1. **Descriptive Statistics for Pooled Sample**

	Mean	Max.	Min.	Std. Dev.	Skewness	J-B stat	Prob.
RGDPPCG	4.57	15.14	-9.49	16.05	-0.68	228.28	0
FDI	6.01	89.48	-0.26	10.31	5.34	12326.49	0
REM	5.47	29.72	0.15	5.06	1.53	173.40	0
TRAB	75.19	321.63	30.73	44.18	3.35	1975.22	0
INF	6.98	103.82	-9.82	11.15	4.86	11350.38	0
HC	65.70	81.50	46.80	7.84	-0.22	1.95	0.38
POR	9.13	11	5.96	1.23	-0.41	8.74	0.01

Source: Author's Computations

Table 1 reports descriptive statistics for variables. From the Table, real per capita income average growth rate is about 4.57 percent and it is highly variable across sections in the study (country groups) over time. This is shown by the high standard deviation value of 16.05. The skewness is however low and negative indicating that the real per capita income growth rate figures for the sub-region lie to the right (are more than) of the mean value. The J-B value of about 228.28 is significant at 1 percent. This indicates that density function of series is non-normally distributed. Similar explanations hold for other variables

excluding remittances, human capital and political stability whose standard deviations fall below 10 percent indicative of relative stability across sections.

Correlation Plots

Cross-relationships between independent variables provide useful analysis with respect to their influence on each other and the dependent variable. This is presented in the correlation plot below.

Figure 4. **Correlation Plots with Initial Equation for Remittances and Trade Balance**
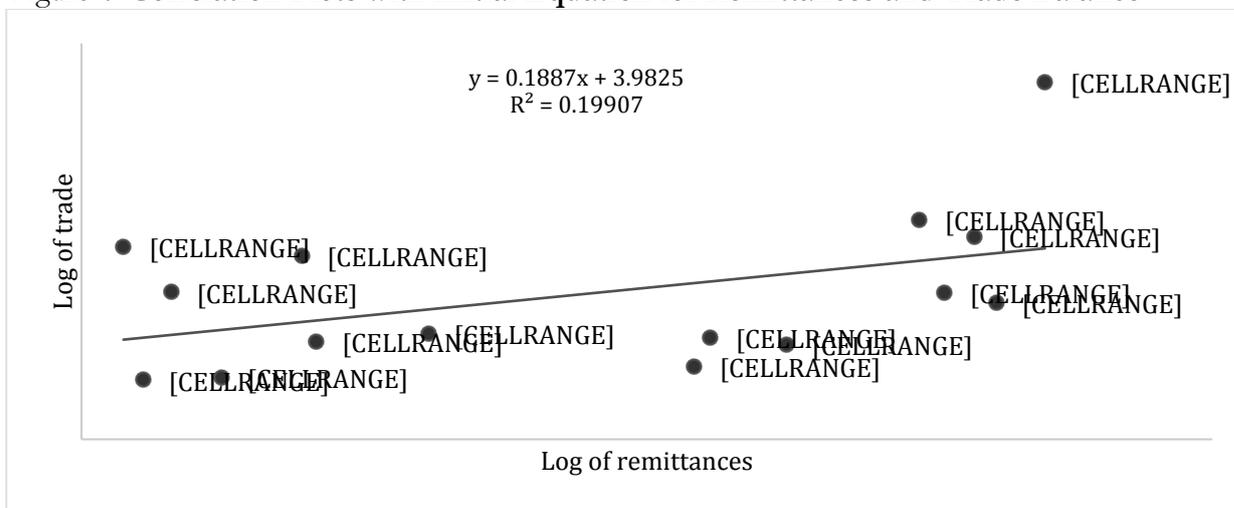
Source: Graphed by Author

Figure 4 shows the relationship between remittances and trade balance. The regression line shows upward movement suggesting a positive relationship between both variables (remittances and trade balance). This is shown in the slope coefficient of about 0.19 in figure 4 above.

Figure 5. **Correlation Plots with Initial Equation for Remittances and FDI**
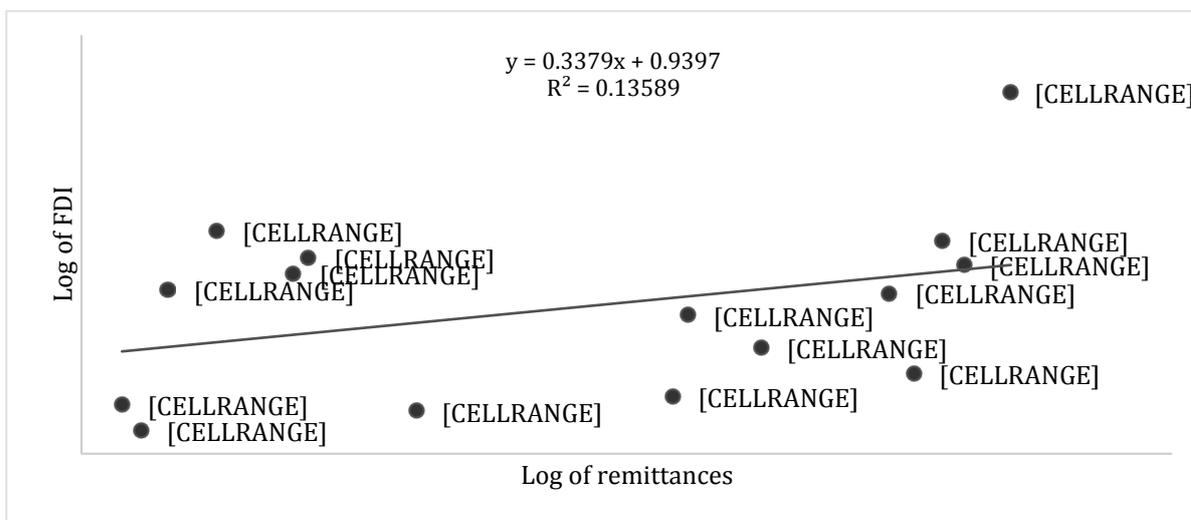
Source: Graphed by Author

Also, Figure 5 shows the correlation plot (relationship) between remittances and FDI. From the Figure, it can be observed that there is a positive relationship between remittances and FDI; FDI rises by about 0.34 per cent as a result of every one percent increase in remittances.

Stationarity Test

Table 2. **Panel Unit Root Test**

	Homogeneous				Heterogeneous			
	Level		1st Diff		Level		1st Diff	
Variables	LLC	Breitung	LLC	Breitung	IPS	ADF-Fisher	IPS	ADF-Fisher
RGDPPC	11.11	5.32	18.19	-3.00**	4.32	74.56	-16.07**	400.09**
REM	-3.01	-1.19	-9.69**	-11.85**	-2.45	101.8	-20.18**	475.40**
FDI	-2.37	-2.30	-20.32**	-17.40**	-1.64	93.50**	-24.51**	602.00**
TRAB	-3.42	-3.99	-23.53**	-20.00**	-3.80	127.82	-27.82**	890.95**
INF	0.63	2.58	-21.05**	-12.16**	0.76	64.37	-19.41**	454.07**
HC	-8.60	-7.33	-22.59**	-15.81**	-7.56	185.47	-27.11**	654.89**
POR	-7.11	-5.45	-18.22**	-13.12**	6.41	168.18	-21.01**	623.11**

Source: Authors Computation; (= significant @ 5%)**

Table 2 shows the stationarity test estimate of variables. The results shows that all the variables are non-stationary at level rather they all attain stationarity at their first differences in both homogenous and heterogenous unit root tests as presented in Table 2.

Co-integration Test

Table 3. **Panel Cointegration Test Results**

Within Dimension			Between dimension		Kao (ADF)
	Statistic	Weighted Statistic		Statistic	
Panel v	-3.42**	-2.02**	Group rho	15.87**	-2.78***
Panel	2.92**	4.32***	Group PP	-1.89*	---
Panel PP	-2.82***	-3.68**	Group ADF	7.36**	---
Panel ADF	2.88	1.61			

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

Table 3 shows the result of cointegration test conducted. With the exclusion of panel ADF statistic, the results shows that there exist a long-run inter-temporary convergence between the dependent variable and the independent variables.

Model Estimation Result

Table 4. **Model Estimation Result**

Variable	Segment One			Segment Two		
	Coefficient	t-Statistic	Prob.	Coefficient	t-Statistic	Prob.
RGDPPC(-1)	0.707	57.55	0	0.740	104.54	0
REM	2.785	2.60	0.01	3.953	3.20	0
FDI	0.754	1.56	0.12	0.440	0.75	0.45
TRAB	-0.764	-3.47	0	-0.674	-2.70	0.01
INF	-5.156	-15.69	0	5.991	22.11	0
HC	14.65	3.36	0	6.643	1.68	0.10
POR	22.8	7.99	0			
J-statistic	78.692			94.599		
Prob(J-statistic)	0.457			0.111		

Source: Authors Computation

Table 4 shows model estimation result categorised into two segments. Segment one comprises result when political risk is considered along with other variables while segment two shows result without political risk. The essence of this is to show if the introduction of political risk in the model influences the impact remittances and trade balance has on economic growth in West Africa sub-region. This became expedient owing to the high rate of political risk factors such as; insurgency, religious and ethnic tensions, internal conflict, corruption, weak democratic accountability amongst others in West Africa sub-region.

From Table 4, remittances positively and significantly impact on growth (at one percent) in both segments. A one percent rise in remittances results in over two percent rise in growth (in segment one) and a one percent rise in remittances results to over three percent rise in growth (in segment two). This is in line with empirical findings by Azizi (2019), Efobi et al (2019), Nsiah and Fayissa (2013). The implication of the above findings is that remittances inflow has a far reaching positive effect on the economy of West Africa sub-region. Trade balance exhibited a negative and significant impact on growth in both cases (segment one and two). Trade balance rise by one percent results in approximately 0.8 percent fall in growth (segment one) and a one percent rise in trade balance results in approximately 0.7 percent fall in growth (segment two). This is also in line with studies by Blavasciunaite et al (2020); Mohammad and Sherif (2015). This also implies that though the volume of trade in West Africa may have increase over the years, however, growing trade deficits act as a drag on the economy particularly when the deficits are as a result of increase imports of consumer goods that can be produced domestically which is often the case with most countries in West Africa owing to weak productivity base. Also, from the result as presented in segment one and two above, it can be held that the inclusion of political risk as a control variable in the analysis did not exert major influence on the impact remittances and trade balance has on economic growth in West Africa. For the control variables, while FDI exhibited positive impact on economic growth in both segments (though not

statistically significant), inflation rate was statistically significant in both segments. Also, human capital and political risk were statistical significance and exhibited positive impact in relation to growth. Lastly, the probability value of J-statistics of approximately 0.5 shows that the moment restrictions are valid and that the model(s) are well specified.

Conclusion

Owing to the increasing inflow of remittances and trade balance to West Africa countries, an attempt was made to investigate their impact on economic growth in West Africa sub-region. Based on Neoclassical growth theory, a model was drawn and estimation conducted using system GMM technique. The result revealed that remittances positively and significantly impact on growth while trade balance negatively and significantly impact on growth in line with previous empirical analysis. J-statistics probability value of approximately 0.5 shows that the moment restrictions are valid and that the model(s) are well specified. The implications of the empirical findings are that remittances inflow and trade balance has far reaching impact on economic wide management in West Africa sub-region and thus calls for relevant policy options.

In the light of the above, the following policy options could be considered;

i. Policy that continually attracts remittances inflow to West Africa sub-region should be implemented. This could be in the areas of procedural requirements for remittances.
ii. Also, in line with (i) above, this could also be seen in the areas of strengthening critical infrastructure (such as power and road infrastructure). This no doubt has huge implication not only on remittances inflow but also on investment in the domestic economy.
iii. The components of current account in West Africa countries should be carefully analysed in other to determine and address the drivers of trade deficit in the sub-region.
iv. In furtherance to (iii), West Africa countries should strive to maximize gains of trade by increasing their export base and faithful implementation of restrictive import in favour capital/productive goods.

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