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Does the Volatility of Exchange Rate Affect the Economic Performance of Countries in the West African Monetary Zone? A Case of Nigeria and Ghana

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

It has been recognized that sustaining a relatively stable exchange rate is important in boosting economic growth. Volatility of exchange rate induces uncertainty and risk in investment decisions with subverting impact on the macroeconomic performance. This study examined whether the volatility of exchange rate has implications for the economic performance of the countries in the West African Monetary Zone. Nigeria and Ghana were chosen as case studies for the period from 1980 to 2013. Exchange rate variability was measured using the GARCH approach. The empirical results confirm that exchange rate volatility have a significant negative effect on economic growth. This implies that policy that will enhance stability of the exchange rate will promote growth therefore the WAMZ countries must prioritize the enhancement and promotion of a stable exchange rate and interest rate policy that that will encourage investors to invest in sectors if steady economic growth is to be attained. Also adequate steps must be put in place for the fine-tuning of exchange rate dynamics which otherwise can frustrate the impeding monetary integration by WAMZ members.

Keywords: Exchange rate volatility; economic growth; Nigeria; Ghana; GARCH.

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1. THE PROBLEM

Exchange rate is the price of one country's currency in relation to another country, or the required amount of units of a currency that can buy an amount of units of another currency. Its management, has been a contemporary issue among academics and policy makers in recent times. This discourse has surrounded the Bretton Wood system of adjustment peg materialised in 1970 advocating flexible exchange rate and driven by the developing nations. It has been a concern also for those nations carrying out structure reforms in the 1980's as well as in the rouse of the currency crises in developing economies in the 1990's.

Due to its impact on business and the economy at large, investors and businessmen would prefer a stable exchange rate to a volatile one. Persistent fluctuations of exchange rate, which often results in continuous depreciation of the home currency is considered volatile in the exchange rate parlance. It has been recognized in previous studies that sustaining a relatively stable exchange rate is important in boosting economic growth. Volatility of exchange rate induces uncertainty and risk in investment decisions with subverting impact on the macroeconomic performance [1].

Mordi [2] noted that operatives in the private sector are concerned about volatility of exchange rate because of its effects on their investment, which may be capital gains or losses. Exchange rate volatility has asymmetric effects on macro-economic variables. [3] cited that appreciation of exchange rate results in increased imports and reduced export while depreciation would expand export and discourage import. Also, depreciation of exchange rate tends to cause a shift from foreign goods to domestic goods. Hence, it leads to diversion of income from importing countries to those exporting through a shift in terms of trade. This tends to have impact on the exporting and importing countries' economic growth. Exchange rate depreciation has a negative effect on developing countries [4].

In Western Africa, two economic integrations, West African Economic and Monetary Union (WAEMU) and Economic Community of West African Countries (ECOWAS) exist. WAEMU consists of eight French-speaking countries in Africa and issues the unique legal tender, the CFA franc. On the other hand, ECOWAS is the wider economic integration for 15 countries encompassing the entire WAEMU and aims to develop itself into monetary integration as well as custom union. Thus, the plan to introduce a new common currency for the ECOWAS countries including the WAEMU was announced in 2000. It means the ECOWAS is planning to establish a second monetary zone, the West African Monetary Zone (WAMZ) which is consisted of five following countries, The Gambia, Ghana, Guinea, Nigeria and Sierra Leon. The new currency will be known as "ECO" by 2015. One of the pressing criteria of the actualization of this important integration process is for member countries, through effective management of fiscal and monetary policy to 'stabilize the exchange rate process in order to ensure a proper alignment of currency exchange rates in countries involved' [5].

In this study, two countries from the Western Africa are selected namely Nigeria and Ghana to represent WAMZ of the ECOWAS community. The study evaluates the relationship between exchange rate volatility and economic growth in Nigeria and Ghana. These countries are singled out for analysis in the WAMZ due to the observed similarity on the relationship between exchange rate volatility and economic growth. In a previous study, it was found that among the several countries analysed, only in these two countries was endogeneity established between exchange rate volatility and selected macroeconomic variables [5].

The currencies of the selected WAMZ countries have fluctuated on a number of occasions in response to some market fundamentals. This was in a bid to attain a realistic exchange rate that would facilitate improved economic growth, diversification and enhancement of the productive base of the economies. However such fluctuations appear not to have desired effects. For instance the Nigerian economy continued to depend to on a single commodity (oil) for the greater percentage of its foreign exchange earnings while the output of agriculture which was the mainstay of the economy prior to the discovery of oil continues to dwindle. Manufacturing sector's output also declined for a greater proportion of the period. Among the objectives that macroeconomic policy seeks to achieve in any economy is to rapidly grow the economy together with little or no destructive volatility state of its currency.

But the question that comes to the mind of macroeconomists, central bankers, investors and policy makers is how should volatility of exchange rate be in order to grow the economy rapidly? This is because unfavourable state of volatility is capable of disrupting the smooth functioning of an economy by imposing certain costs which inhibit economics growth. In the economy of Ghana, the relationship between exchange rate volatility and economic growth plays out like a delicate mirage to reveal any obvious relationship. This does not in any way tell us precisely what the relationship is like. Hence it is imperative to ask the following questions. Therefore the objective of this study is to examine the short run and long term relationship between exchange rate volatility and economic growth in the selected WAMZ nations in view of the intending monetary integration.

2. REVIEW OF RELATED LITERATURE

In the area of exchange rate volatility and economic growth, [6] use panel data analysis with periods ranging from 1970-2009 to assess the role of real exchange rate on long-run economic growth for a set of 82 advanced and emerging economies. They discovered that more (less) volatile real exchange rate has significant negative (positive) impact on economic growth. The panel estimations for more than 180 countries by [3] found evidence that countries with more flexible exchange rates grew faster. [7] also reveal a strong negative relationship between exchange rate stability and growth for 12 countries over a period of 120 years. They concluded that the result of such estimations strongly depend on the time period and the sample.

In spite of the abundant literature on the effects of exchange rate volatility on macroeconomic variables such as economic growth, studies that specifically focus on Nigerian economy are scanty. In Nigeria, studies have been carried out to estimate the impact of exchange rate volatility on selected macroeconomic variables [8,9,5]. Most of the studies on exchange rate volatility in Nigeria measure the impacts of exchange rate volatility on trade balance with little attention to other internal macroeconomic variable shocks. For instance, [8] explored the exports and imports effects of exchange rate volatility with specific reference to the non Communaute Financiere Africaine (non-CFA) countries of Africa during the period, 1986 – 2006. using the GARCH approach to estimate the yearly exchange rate volatility for selected countries which included Ghana, Lesotho, Malawi, Nigeria, Sierra Leone, South Africa, Uganda and Zambia. The study established a negative effect of exchange rate volatility on exports trade balances in the selected African countries. The hostile effect of exchange rate volatility on exports in the sampled countries, as found in the study suggests the need for policy interventions that will help to curtail and, where possible, eliminate exchange rate volatility.

Also, [10] investigated the relationship between nominal exchange rate volatility and dollarization in Nigeria by applying Granger causality test for the period 1986–2003 using quarterly data. The study showed a bi-causality between them however the causality running from dollarization to exchange rate volatility was stronger and domineering. He suggested that policies that aim to reduce exchange rate volatility in Nigeria should include measures that explicitly address the issue of dollarization. Even though, the particular measure of exchange rate volatility in the study was not stated. Further attempts were made by [11] and employed standard deviation measure of exchange rate volatility based quarterly observation and further assesses the impact of exchange rate volatility on non-oil export flows in Nigeria between 1986 and 2006. Empirical result indicated that exchange rate volatility diminished non-oil exports in Nigeria. In another study, [12] scrutinized the impact of oil price shock and exchange rate volatility on economic growth in Nigeria and measuring exchange rate volatility as the consumer price index based real exchange rate approach. However he was unsuccessful in determining the degree and persistency of exchange rate volatility using standardized econometric.

Nevertheless, among the entire studies on the macroeconomic effects of exchange rate volatility in Nigeria over the past three decades, it is only the study of [13] that is found to investigate the volatility of Naira/Dollar exchange rates in Nigeria using several alternatives of Generalized Autoregressive Conditional Heteroskedasticity (GARCH) models. Using monthly data over the period January 1970 to December 2007 he discovered that all the GARCH family mode indicated that volatility is persistent and stated similar evidence for the fixed exchange rate and managed float rate regimes.

3. METHODOLOGY AND DATA

3.1 Model

This study follows Mundell-Fleming IS-LM BOP Model approach proposed by [14] and [12] in investigating the relationship between exchange rate volatility and economic growth. This demand determined model captures the comprehensive sectors of the economy and the mechanization of the exchange rate in the external sector as it affects other sectors of the economy. This implies that:

$$GDP = f(EVAT, FDI, EXR, RES, INR)$$

Where GDP is the gross domestic product: EVAT is the exchange rate volatility measured in terms of deviation of the rate from i: s mean: FDI is the foreign direct investment EXR is the exchange rate: RES is the external reserve and INR is the interest rate. Hence stating the above as a liner function we have:

$$GDP = \mu_0 + \mu_1 EVAT + \mu_2 FDI + \mu_3 EXR + \mu_5 RES + \mu_7 INR + U_t$$

This study uses annual data for the period 1980-2013. The study sources data from the World Bank's World Development Indicators (WDI) 2013 All the variables are expressed in natural logarithmic form. This transformation is often considered to stabilize the variance of a series. The model will be estimated using the Autoregressive Conditional Heteroskedasticity (ARCH) and GARCH model. The unit root tests will traditionally be investigated using Augmented Dickey-Fuller test or ADF as developed by [15] and/or Phillip and Perron test or PP, which control for serial correlation.

In seeking to analyse causality, Granger assimilated the notion of cointegration into causality. With cointegrated variables, stated that causal relations among variables can be examined within the framework of the ECM. While the short run dynamics are captured by the individual coefficients of the lagged terms, the error correction term contains the information of long run causality. Hence, significance of each explanatory variable lags depict short run causality. On the other hand, a negative and statistical significant error correction term is assumed to signify long run causality [16].

4. PRESENTATION AND INTERPRETATION OF RESULTS

An econometric regression is carried out. In this study, we estimated the model equations using the (ML-ARCH - GARCH) normal distribution method, in order to capture the z-statistic. Before estimating the ARCH-GARCH, we test for variables stationary using the Augmented Dickey-Fuller (ADF) unit root, also we test for the co-integration using the Johansen's co-integration test that yields the log likelihood estimates for the unconstrained co-integration and vectors. The Augmented Dickey Fuller unit root test results are reported in the Table 1.

4.1 Stationarity Test

Unit root tests are conducted for variables of representative countries (Nigeria and Ghana) using the augmented dickey fuller-test and from ADF statistics shown in the Table 1, the result shows that all variables in study for Nigeria (EVO, INT, RES, FDI, GDP, AND EXR) were integrated at order one, that is I(1) or they were stationary at first difference. Comparing the variables levels with their first difference (the ADF unit root statistics) and various probabilities, the test statistics show that the variables are integrated at order of one. All the variables were statistically significant at 1 percent, 5 percent, and 10 percent critical values in first difference. The study found the MacKinnon (1996) critical values for the ADF test using the Akaike information criterion estimation method at 1 percent, 5 percent, and 10 percent significance level for both countries are -3.670170, -2.963972 and -2.621007 respectively.

From the results in the below Table 1 summary, the null hypothesis states that there is an existence of unit root. And from the table summary below this implies that all the series are non-stationary at levels. Therefore the null hypothesis ($\rho=1$) is accepted at levels and the null hypothesis ($\rho=1$) that the series are non-stationary after the first and second difference is rejected for all the series. So it is an I(1) series. We therefore conclude that the series are of order one I(1).

4.2 Analysis of Co Integration Test Results

Next we look at the long run linear relationship using the Johansen cointegrating model, and find out if there is a possibility of an existence of a cointegrating relationship among the variables. The summary of the Johansen' co integration tests are presented below in Table 2.

Table 1. Summary of results of unit root tests

Series	Prob.		Order of integration		ADF t-stat	
	Nigeria	Ghana	Nigeria	Ghana	Nigeria	Ghana
EVO	0.0000	0.0000	I(1)	(1)	-8.378203	-6.070291
INT	0.0000	0.0000	I(1)	I(1)	-6.598735	-6.559445
RES	0.0001	0.0001	I(1)	I(1)	-5.699394	-5.697441
FDI	0.0005	0.0000	I(1)	I(1)	-4.823182	-5.911517
GDP	0.0023	0.0023	I(1)	I(1)	-4.257833	-4.255114
EXR	0.0025	0.0001	I(1)	I(1)	-4.219724	-5.703268

Source: Authors' computation from data analysis

Table 2. Cointegration test results

Unrestricted cointegration rank test (trace)								
Hypothesized	Eigenvalue		Trace statistic		0.05 Critical value		0.01 Critical value	
No. of CE(s)	Nigeria	Ghana	Nigeria	Ghana	Nigeria	Ghana	Nigeria	Ghana
None **	0.822776	0.893908	121.9266	139.9479	94.15	94.15	103.18	103.18
At most 1 *	0.619114	0.822198	70.01634	86.10509	68.52	68.52	76.07	76.07
At most 2	0.525176	0.667082	41.05868	44.65502	47.21	47.21	54.46	54.46
At most 3	0.357232	0.393480	18.71437	18.25843	29.68	29.68	35.65	35.65
At most 4	0.166157	0.226549	5.455210	6.257998	15.41	15.41	20.04	20.04
At most 5 *	0.000130	0.003850	0.003904	0.092582	3.76	3.76	6.65	6.65

*For Nigeria: *(**) denotes rejection of the hypothesis at the 5%(1%) level; Trace test indicates 2 cointegrating equation(s) at the 5% level*

*For Ghana: *(**) denotes rejection of the hypothesis at the 5%(1%) level; Trace test indicates 2 cointegrating equation(s) at both 5% and 1% levels*

Source: Authors' computation from data analysis

Table 3 shows the estimation of the Johansen co-integration relation among the variables. From the table, the maximum Engen test indicates one (1) co-integrating equations at the 5 percent level. This differs from the Trace statistic which indicates two (2) co-integrating equation at 5 percent level. However, according to Gujarati (2003), if such situation arises, the Trace Statistic supersedes the Maximum Engen. Thus we reject the null hypothesis of no long-run relationship, in order words there exist a long run relationship amongst the identities of study.

4.3 Causality Tests

The results of the bivariate Granger causality test are presented in the Table 4. As shown in the results in the tables in section three below, for the relationship between GDP and exchange rate volatility in Nigeria and Ghana, we accept the null hypotheses in both cases that exchange rate volatility does not granger cause GDP and reject the null hypothesis that GDP does not granger cause exchange rate volatility in Ghana while accepting the null hypothesis for Nigeria. Hence for Ghana a unidirectional causality is observed as Causality runs from GDP to EVO. This is obvious, given the insignificance of their respective probability values in the granger causality table.

In this situation, we conclude that there is no form of causal relationship between exchange rate and economic growth in Nigeria and Ghana. This implies that no form causality between economic growth and exchange rate volatility is found in the long-run period. Nevertheless with the result of the cointegration, we observe that if the system is exposed to a shock, it will converge to the long-run equilibrium at a relatively high speed for economic growth and exchange rate volatility. This observed lack of direction of flow between economic growth and exchange rate volatility presupposes the fact that the Nigerian economy is capable of attaining significant economic growth without much significant impact emanating from fluctuations from its exchange rate and vice versa. This is true given the fact that the mainstay of the Nigerian economy has been oil revenue and significant fluctuations in the revenue base of the country has been largely due to the rise and fall in the international price of crude oil as against fluctuation in the exchange of the naira to the dollar.

4.4 GARCH Analysis

Next we look at the short run linear relationship of variables in both countries using the (ML-ARCH-GARCH) normal distribution method, and the result of the empirical analysis with respect to gross domestic product (GDP), which is our proxy for economic growth, is presented in Table 6.

The regression result of both countries in the above table indicates partial conformity of the apiori expectation. In the analysis for Nigeria the coefficients of EVO, EXR, RES, and INT present the apriori expected signs with RES and the lag of GDP being significant. Foreign direct investment is not rightly signed. This in explicit terms indicates that all the variables in study are however not significant with the expectation of RES and the lagged GDP variable. Thus as evidenced by the result, gross domestic product is negatively responsive to exchange rate volatility. This is in conformity with the works of [17,15] that affirm that exchange rate volatility may affect growth positively or negatively, though statistically insignificant in explain the variation in the dependent variable. In this regard, we conclude that the null hypothesis is accepted. This corroborates [18] on the effect of exchange rate volatility on the growth in 73 countries. They concluded that the effect of exchange rate volatility hidden in other variables, pushing up interest rate. This indirectly reduces investment, tax revenues, economic growth, and the ability of producers to exporters to produce and sell goods abroad.

Table 3. Unrestricted cointegration rank test (maximum eigenvalue)

Hypothesized	Eigenvalue		Max-Eigen		5 Percent		1 Percent	
No. of CE(s)			Statistic		Critical value		Critical value	
	Nigeria	Ghana	Nigeria	Ghana	Nigeria	Ghana	Nigeria	Nigeria
None *	0.822776	0.893908	51.91031	53.84282	39.37	39.37	45.10	45.10
At most 1	0.619114	0.822198	28.95766	41.45007	33.46	33.46	38.77	38.77
At most 2	0.525176	0.667082	22.34430	26.39660	27.07	27.07	32.24	32.24
At most 3	0.357232	0.393480	13.25916	12.00043	20.97	20.97	25.52	25.52
At most 4	0.166157	0.226549	5.451306	6.165417	14.07	14.07	18.63	18.63
At most 5 *	0.000130	0.003850	0.003904	0.092582	3.76	3.76	6.65	6.65

*For Nigeria: *(**) denotes rejection of the hypothesis at the 5%(1%) level; Max-eigenvalue test indicates 1 cointegrating equation(s) at the 5% level; Max-eigenvalue test indicates no cointegration at the 1% level*
*For Ghana: *(**) denotes rejection of the hypothesis at the 5%(1%) level; Max-eigenvalue test indicates 2 co-integrating equation(s) at both 5% and 1% levels*
Source: Authors' computation from data analysis

Table 4. Bivariate granger causality for Nigeria

Pairwise granger causality tests
Date: 07/13/13 Time: 15:06
Sample: 1980 2011
Lags: 10

Null hypothesis:	Obs	F-statistic	Probability
EVO does not granger cause GDP	22	0.57431	0.78360
GDP does not granger cause EVO		4.10740	0.36763

Source: Authors' computation from data analysis

Table 5. Bivariate granger causality for Ghana

Pairwise granger causality tests
Date: 07/13/13 Time: 02:39
Sample: 1980 2011
Lags: 10

Null hypothesis:	Obs	F-statistic	Prob.
EVO does not granger cause GDP	22	1.64873	0.5459
GDP does not granger cause EVO		144567.	0.0020

Source: Authors' computation from data analysis

Table 6. Summary of GARCH results

Variables	Coefficient		Std. error		Prob.	
	Nigeria	Ghana	Nigeria	Ghana	Nigeria	Ghana
C	1.132208	2.651727	1.325221	1.742520	0.3929	0.1281
	(0.854354)	(1.521777)				
GDP(-1)	0.743904	0.728409	0.039457	0.072483	0.0000	0.0000
	(18.8533)	(10.04937)				
EXR	-0.020703	-0.037962	0.079136	0.061255	0.7936	0.5354
	(-0.261620)	(-0.619740)				
EVO	-0.004784	0.009778	0.007326	0.015622	0.5137	0.5314
	(-0.653056)	(0.625903)				
EVO(-1)	-0.005159	-0.014677	0.009465	0.012002	0.5857	0.2214
	(-0.545120)	(-1.222943)				
RES	0.256342	0.206506	0.067683	0.067983	0.0002	0.0024
	(3.787383)	(3.037617)				
INT	-0.027606	-0.127733	0.153733	0.115977	0.8575	0.2707
	(-0.179572)	(-1.101365)				
FDI	-0.028012	-0.005300	0.065127	0.000318	0.6671	0.0000
	(-0.430112)	(-16.65497)				
GARCH	1.258631	1.288359	0.226727	0.273414	0.0000	0.0000
	(5.551303)	(4.712116)				

	Nigeria	Ghana
R-squared	0.964972	0.967824
Adjusted R-squared	0.954311	0.958031
S.E. of regression	0.142862	0.136902
Durbin-Watson stat	2.066005	2.111561

Source: Authors' computation from data analysis

Also the study is in line with that of Dickson [15] that spanned out to determine the impact and relationship of exchange rate volatility and economic growth of Nigeria. They concluded that exchange rate volatility has a negative impact to the economic growth of Nigeria. They also recommended an enhanced state of stability of exchange rate for improvement of economic growth. Also the insignificance of FDI in the short-run analysis is an indication that the over reliance of the economy on possible FDI channels, at the expense of improving local content structure, to generate a desired level of economic growth has not produced the desired result. This is not surprising however, due to the non-utilization of local content policy strategy, alarming levels of interest rates and disturbing state of political instability has hampered the ability of FDI to improve upon other sectors of the economy.

In the study analysis for Ghana, the coefficients in study even though displaying quite a number of similar feature to that of Nigeria, also has its own peculiarities. A keen look at the coefficients of analysed variables shows that EVO, INT, RES AND EXR are in conformity with the apriori expectations of the study. However the effect of EVO on GDP for Ghana stands to be positively inclined unlike that of Nigeria that is of a negative impact on GDP. The coefficient of FDI on the other hand falls short of expected outcome because of its negative coefficient. It is however noteworthy to state that all the variables in study with the exception of RES and the lagged coefficient of GDP through its probability levels has indicated that they are not significant enough to explain the dynamics of economic growth in Ghana.

Furthermore, an examination of the result shows a good fit in terms of the standard error of the parameters (stdμ0>stdμ7), which indicate a non-negative constant term for the growth no matter the changes in the independent variables and apriori expectation and statistical significance of the explanatory variables. The z-statistics, which is computed as the ratio of an estimated coefficient to its standard error is used to test the hypothesis that a coefficient is equal to zero. To test our hypothesis, we used the probability (p-value) of observing the z-statistics given that the coefficient is equal to zero. For this study, we are performing the test at the 1 percent, 5 percent and 10 percent significance level, that is a p-value that ranges between 0.00 -0.10 are taken

as evidence to reject the null hypothesis of a zero coefficient. From the result of the estimated model, the probability value for (RES) and GDP lagged by one period ranges between 0.00 and 0.05. Thus, we are rejecting the null hypothesis and accept the alternate hypothesis. The result showed that the FDI variable fell short of the aprior expectation.

The R sqaured, value for both countries indicated as 0.9649 and 0.967824 respectively, shows that the variables in the regression equation explains 96 per cent of all the variation in economic growth (GDP) in Nigeria and 97 percent in Ghana for the period 1980 to 2011. The Durbin-Watson (DW) test statistic (d*) for both countries show the absence of first order serial correlation between the error terms. From the result d* is greater than 2, that is 2.066005 > 2 for Nigeria and 2.111561 > 2 for Ghana. We therefore accept the null hypothesis (H0), which says that there is no positive autocorrelation of the errors' terms; we reject the alternative hypothesis (H1), which says that there is positive weak autocorrelation of the errors' terms.

The overall GARCH probability identity that indicates the level of significance of the whole empirical analysis of the impact of exchange rate volatility on economic growth of the selected countries indicates that the whole model for analysis is highly significant in explaining the dynamics of volatile on economic growth. Looking critically at the numerical value of the coefficients and their corresponding signs a 1 percent increase in volatility will cause GDP in Nigeria decrease by 0.00478 percent and GDP in Ghana to increase by 0.009778 percent. Theoretically, there is no agreement.

Similar findings were reported by [19] study on emerging Europe and East Asian countries and in small open economies at the EMU periphery. This result is at variance with [3] study on impact of oil price shock and exchange rate volatility on economic growth in Nigeria. Exchange rate stability is generally recognised as the pillar behind the Asian miracle and the World Bank saw a link between decline in growth in Asia and their move towards flexible exchange rate system. This, we believe, stems from the perceived positive impact of exchange rate stability on economic performance of the East Asian economies prior to 1997/1998 when economic crisis engulfed the region. [19] emphasize the role of low transaction costs for international and intra-regional trade and capital flows.

The unexpected sign of foreign direct investment indicates that a 1 per cent increase in foreign direct investment reduce economic growth by 0.028 per cent in Nigeria and 0.0053 in Ghana. This is inconsistent with our apriori expectation and is line with [15] work on the Nigerian economy. The striking similarities of the economies of the WAMZ can be a resulting factor to the negative effect of foreign direct investment in relation to the works of [20].

In the early stage of market economy, foreign direct investments may produce some externalities in the form of higher employment rates and technology transfers, often filling the "idea gaps" between old and emerging market economies. Nevertheless, they often cause a lot of harm too as not a charity but the aspiration to earn more via cheaper resources- land and labor is the primary aim of investors. Foreign investors can reduce employment by dismissing local workers, by crowding out local businesses that cannot compete with multinationals. In addition, technology transfers may not occur if the degree of market integration is insufficient. Also, positive capital flows often turn to negative if investors use cheap local raw materials and resources and sell expensive final goods [20]. Finally, this is enhanced by the weak market structure argument of the developing and under developed economies such as those found in the WAMZ region.

Also from indications in the above table the coefficient of EXR for both countries indicate that everyone per cent increase in the exchange rate value against the trading countries currency, will cause a reduction in GDP in Nigeria by 0.020703 percent and 0.0379672 percent in Ghana. The dynamics of this exchange rate is known from theory, that high valuation of the currency of a country affects its ability to export efficiently. However both countries under study, characteristically are import dependent. This results from the lack of extensive technological know-how needed for the production of needed goods and services thus causing a large percentage of imports to be that of consumer goods. This on the long run affects the productive state of such economy in turn harming economic growth in the process.

Also looking at the coefficient of interest rate, which is in line with the aprior expectation, a one per cent increase in interest rate will decrease economic growth in by 0.027606 in Nigeria and 0.127733 per cent in Ghana. The effect in

magnitude of that of Nigeria is higher than that of Ghana. Thus we can infer that interest rate state of these varying magnitudes through its extensive dynamics can be responsible for the negative magnitude effect of foreign direct investment in both economies. The reserve coefficient is significantly positive in nature thus in line with presumed expectation, and this can be attributed to the increased revenue from the sale of crude oil products.

5. CONCLUSION AND RECOMMENDATION

The study examined the impact of exchange rate volatility on economic growth in WAMZ countries, Nigeria and Ghana, from 1980 to 2013. Exchange rate variability was measured using the GARCH approach. The empirical results confirm that exchange rate volatility have a significant negative effect on economic growth. This implies that policy that will enhance stability of the exchange rate will promote growth. In this regard, the import content of both public and private expenditures can be controlled. One way of achieving this, is to stop importation of goods and services that can be produced locally as an avenue for reducing demand for foreign exchange. When the current increasing importation of petroleum products halts, coupled with concerted efforts to improve electricity supply, the positive income effect of increasing international oil price will be felt in the economy, while the negative output effect, experienced as a result of importation of petroleum products, will disappear, the end result is economic growth. The countries should put up measures to stop unviable trips abroad by political office holders that have no economic value further, the countries should encourage and enhance policies to stop its citizens from storing wealth in the U.S dollars. This will reduce demand for foreign exchange. The countries in the WAMZ must prioritize the enhancement and promotion of a stable exchange rate and interest rate policy that that will encourage investors to invest in sectors if steady economic growth is to be attained. Also adequate steps must be put in place for the fine tuning of exchange rate dynamics which otherwise can frustrate the impeding monetary integration by WAMZ members.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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