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Does Money Matter in the WAMZ? ARDL Bounds Tests for Neutrality and Superneutrality of Money towards Monetary Integration of West Africa

Peter Kehinde Mogaji
peter.mogaji@sunderland.ac.uk
The University of Sunderland in London, United Kingdom

Abstract
The West African subcontinent (proposing monetary integration) deserves feasibility assessments in aspects of neutrality and superneutrality of money. This study, which is significant for the proposed monetary integration of the West Africa, provided answers to the question on if money matters within the proposed monetary union. The autoregressive distributed lag (ARDL) bound testing cointegration approach developed by Pesaran et al (2001) was employed to test money neutrality and money superneutrality in this research work. This cointegration method is no common in the investigation of neutrality and superneutrality of money. Finding and results generated in this study produced evidence to suggest that money is not neutral in four of the six West African monetary Zone -WAMZ countries. The superneutrality tests (and other sensitivity tests) however reveal more uniform non-superneutrality of money across the WAMZ .

Key words: UK, monetary integration, Monetary neutrality , ARDL model, WAMZ, GDP

INTRODUCTION

One of the many ways through which the effectiveness of monetary policies could be measured is to check the neutrality of money in the economy, and a basic issue in macroeconomics is the possible link between nominal variables (measured in monetary terms) and real variables. A fundamental issue here is whether money has real influence or effects. West African subcontinent proposing monetary integration deserve feasibility assessments in aspects of neutrality and superneutrality of money. Money neutrality is about what the long run relationship between money and price imply for the use of monetary aggregates in the conduct of monetary policy. The argument is that if a single monetary policy is prevalent in a monetary union, it is significant that members of such monetary integration should exhibit similarities in behaviour of money. West African subcontinent proposing monetary integration deserve feasibility assessments in aspects of neutrality and superneutrality of money.

LITERATURE REVIEW

Theory and Model

Monetary neutrality as a concept of classical economics, generally suggests that within an economy, changes in a nominal variable (like money supply) do not impact a real variable (like real GDP and employment). There are two hypotheses that explain the real variable - nominal variable relationship which specify that in the long run: (i) permanent change in the level of money supply has no effect on the level of real variable (this is money neutrality hypothesis); (ii) a permanent change in the growth rate of money supply does not influence the level of real variables (this is money super-neutrality hypothesis). The generally accepted of the two hypotheses is the long run money neutrality (LMN) proposition; and the reason for this acceptance is that apart from standing as a core feature of a huge number of economic models, LMN is the yardstick for monetary policy effectiveness measurement.

Over the decades and centuries, across nations and economies with varied monetary and fiscal policies, literature have been able to establish the monetarists argument in favour of the significance of monetary aggregate in strategising the control of inflation through the robust empirical estimations of low frequency or long run association of money growth and inflation. Going by the dictum of Milton Friedman which states that ‘inflation is always and every time a monetary phenomenon’ (Friedman, 1963). The underlying view of the quantity theory of money that portrays money as the determinant of inflation rate, then, it is appears obvious that inflation control (maintenance of price stability) is a major objective of a central bank. The popular thinking (right from elementary levels) is that a monetary policy that aims at inflation control should bother itself with how modest rate of money supply growth can be maintained. Though, many academic and policymakers are of the view that money does not play a role in the conduct of monetary policy, many schools of thoughts however disagree with this issue of ‘de-emphasising ‘ money growth as a criterion for assessing how sound a monetary policy. A bothering question is if

monetary policy decisions can be based on the models of monetary policy transmission mechanism which fail to take cognisance of the monetary aggregate.

The fundamental principles of 'neutrality of money' (as an economic theory), cast doubts over the theoretical coherence of the 'money-less' monetary policy models (which apparently lacks consistency with the fundamentals of money neutrality'. Woodford (2008) stresses that a model that makes reference to money neutrality (or which leaves the general price level to be indeterminate) should be applied in predicting the consequences of alternative policies for inflation. Monetary economists hold the belief that injections of money into an economy have certain implications because such change in money stock will only change nominal wages and price without any reflection of such change in real output, real wages and real interest rates. The effect of the injection of money into the macro economy is neutral on the long run because most macroeconomic decisions emanate from real factors within the economy; and consequently, there would be no change in economic decisions made because the real variables are unchanged. This is why neutrality of money is a postulation that a change in the stock of money within an economy, affects just only nominal variables, with no such effect on real variables that are inflation-adjusted. Therefore, what money neutrality idea imply is that the central bank does not affect the real economy (size of the GDP, employment, real investment and real consumption) by printing money; and that any increase in money supply would be negated by a proportional rise in price and wages. This is an assumption underlying some macroeconomic theories and models (like the classical model, neo classical model, real business cycle theory).

According to the 'classical dichotomy', there are different powers having different effects on nominal and real variables, thus causing money supply to affect only nominal variables. When the velocity of money is constant while the capacity to supply good constrains the velocity of activity, money supply changes will cause price changes. New classical economists posit that even in the short term, perfectly anticipated monetary policy cannot affect activity, thus supporting the classical concept of long run money neutrality. As a long- run proposition, the classical dichotomy was basic to the views of many pre-Keynesian economists (regarding money as a veil) as well as the new classical macroeconomic theories. Based on the argument that prices are sticky, the classical dichotomy was rejected by the Keynesians and the monetarists. Their thinking was that prices fail to adjust in the short run, so that money supply increase will cause aggregate demand to rise and thereby altering real macroeconomic variables. The view in classical economics and neoclassical economics tends towards the notion that as monetary factors (and not real factors) wholly determine nominal variables, real factors (not monetary factors) purely determine real variables in the economy. Though, Keynesian and monetarist economists rejected this position.

Woodford (2007) points out what the long run relationship between money growth and prices imply for monetary policy conduct. Firstly, with the existence of the well-established empirical relationship, 'money-less' models of inflation are impliedly incorrect. Secondly, the long run money-price relationship provides the basis for the argument on the desirability of a money-growth target. Thirdly, with the cointegration of money growth and inflation rate, one would not need further information in order to forecast average inflation rate over some sufficiently long future horizon since one would already possess the knowledge of what the average rate of money growth will be over such time horizon. These justify the significance of this study on money neutrality

and superneutrality for the assessment of monetary integration of the WAMZ, while providing answers to the question on if money matters within the proposed monetary zone

METHODOLOGY

Sample description and technique

For a detailed investigation of long run money neutrality (LMN) and due to the evidence that monetary neutrality tests are sensitive to the underlying monetary aggregates, quasi money which has properties resembling M1 money was applied for money supply. Given the developing nature of the economy of WAMZ countries in which a high proportion of base money does not pass through the formal banking system, there is justification in laying greater emphasis on results generated for the assessment of cointegrating relationships between real output and M1(which includes physical cash in circulation) in the WAMZ countries. The real variables are real output as proxy by real GDP and inflation as measured by GDP deflator. Annual data collected for the six WAMZ countries for the purpose of this study span over the period between 1980 and 2014. All the variables are expressed in logarithmic transformations.

The autoregressive distributed lag (ARDL) bound testing approach developed by Pesaran et al (2001) was employed to test money neutrality and money superneutrality here. As opposed to the traditional Engle-Granger and Johansen cointegration approaches, the ARDL bound testing cointegration method is very rare in the investigation of neutrality of money. While attention was paid to the integration and cointegration properties of the variables and consequently, unit root tests of the variables was performed in order to assess the stationary properties of the variables. Since the long run relationship between the money stock and real output depends on the integration order of each variable, the Dickey-Fuller GLS (DF-GLS) and Phillips-Perron (PP) unit roots tests were applied so as to establish that none of the variables is I(2) and thus avoid spurious results. The assumption of bound test is that variable employed in the estimation are I(0) or I(1). This therefore makes the Pesaran F-statistics based on I(2) variables to be invalid. ARDL bounds test cointegration procedure will enable the empirical analysis of long run relationship and dynamic interactions between variables of interest.

This is a procedure developed by Pesaran, Shin and Smith (2001). An ARDL regression model, in its basic form, is stated as:

$$y_t = \beta_0 + \beta_1 y_{t-1} + \cdots + \beta_k y_{t-p} + \alpha_0 x_t + \alpha_1 x_{t-1} + \alpha_2 x_{t-2} + \cdots \alpha_q x_{t-q} + \varepsilon_t \qquad 1$$

The lag lengths of both the dependent and independent variables should be carefully determined. In the ARDL modeling, the x terms on the right hand side of the equation is usually referred to as 'q' while the autoregressive lag length of the dependent is usually called 'p'. The most common method of determining the lag lengths in the ARDL process is by information criteria (AIC or BIC). Specifically here, the first stage in the ARDL process in the estimation of money neutrality and superneutrality is to establish if long run relationships exists by applying the unrestricted error correct model (UECM) representation of the ARDL (p,q) thus:

$$\Delta\pi y_t = \alpha_0 + \beta_1 y_{t-1} + \beta_2 lnM_{t-1} + \sum_{i=1}^{p} \delta_i \, \Delta\pi y_{t-i} + \sum_{j=1}^{q} \gamma_i \, \Delta lnM_{t-j} + \varepsilon_t \qquad 2$$

Where α_0 is the constant, β_1 and β_2 are long-run relationships parameters, δ_i and γ_i are the short run relationships parameters, Δ is the difference operator and ε_t is the white noise term. Biased coefficient estimates will result when an ARDL model is estimated by ordinary least (OLS) square method. The OLS will also be an *inconsistent* estimator because of the influence of lagged values of the dependent variable as regressors, if the disturbance term, ε_t, is autocorrelated. This is a reason for the general introduction of instrumental variables in the application of an ARDL models. The model is "autoregressive" because of the part explanations of the dependent variable by its own lagged value; and contains a "distributed lag" component with the successive lags of the explanatory variables on the right hand side of the model. Researchers can efficiently apply the method whether or not the regressors in the model are purely I (0). In this ARDL process, the null hypothesis in Equation 2 above is expressed as: $H_0 = \beta_1 = \beta_2 = 0$ indicating 'no long run relationship' against the alternative hypothesis:$H_0 \neq \beta_1 \neq \beta_2 \neq 0$, using the F-test. The F-test which has a non-standard distribution is applied on lagged values of the variables in the process of determining the existence of long run relationship among the variables. The F-test is conditional upon: (i) if the variables in the ARDL model are I(0) or I(1); (ii) the number of explanatory variables; (iii) if the ARDL model contains an intercept and/or a trend.

The evaluation of the estimated value of *F*-statistic were in line with the critical values tabulated in Table CI (iii) of Pesaran *et al.* (2001). Two bounds of critical values are generated here as benchmarks for the integration orders of the variables. The upper bounds values are for the I(1) variables, while the lower bounds values are for the I(0) variables. Cointegration exists if the computed F statistic exceeds the upper critical value. F-statistics below the lower critical value bound indicate that there is no cointegration. The test is inconclusive when the F-statistic fall in-between the two bounds of critical values. This study applies the bound-test small sample size critical value computed by Narayan (2005) rather than the Pesaran and Pesaran (1997) critical values which were computed for large samples sizes of 500 to 1,000 observations. After the long run relationships are established through the bound tests, at the second stage is the estimation of the estimation of the long run and short run coefficients of cointegration. If the null hypothesis of no cointegration is rejected (that is the cointegration of the variables is ascertained), the long run relationship between the variables would be estimated by setting the error correction component of Equation 2 equal to zero to derive the long run effects by normalising β_2 on β_1. Diagnostic test for serial correlation, misspecification of functional form, normality and heteroscedasticity and parameter stability were performed via CUSUM, CUSUMSQ and other tests on the error correction representation of the ARDL model.

The derivative equation applied in this money neutrality and money superneutrality evaluation are expressed below. For money neutrality:

$$y_t = fm_t \qquad 3$$

For the two tests money super-neutrality:

$$\%\Delta y_t = f\%\Delta m_t \qquad 4$$

and

$$\pi_t = f\%\Delta m_t \qquad 5$$

where y is the real GDP, and m is the quasi money supply, π is inflation and is $\%\Delta m$ money supply growth, all at period t. Taking the natural logarithm of real output and money supply, the

investigation of money neutrality and money superneutrality through the estimations of the relationship between inflation, real output real output growth and money supply aggregates, explicitly specified in the estimable functions in Equations 6 to 8.

For the money neutrality tests:

$$lny_t = \alpha + \beta lnm_t + \varepsilon_t \qquad 6$$

and the following two equations for the money superneutrality tests:

$$\pi_t = \alpha + \beta mg_t + \varepsilon_t \qquad 7$$

$$yg_t = \alpha + \beta mg_t + \varepsilon_t \qquad 8$$

where: yg_t is output growth rate at time t, and mg_t is money growth rate at time t. It is very likely that the estimates of these 'St. Louis Equations' equations may yield results that will provide evidence of non-neutrality of money, for instance, when a strong association between higher growth in money supply and higher output growth would be established, because of the positive estimated parameter.[1] As solution to this problem it is therefore necessary to apply a model that will find solution to possible endogenous explanatory variables. This entails the introduction of instrumental variables which makes ARDL model is more appropriate.

The augmented ARDL model expressed by Pesaran et al (2001) takes to take the following general form:

$$y_t = \alpha_0 + \sum_{t=1}^{k} \beta_i x_{it} + \varepsilon_t \qquad 9$$

where y_t is the dependent variable, α_0 is the constant term and x_{it} is the independent variable and ε_t is the disturbance term. In terms of the lagged levels and difference, we can obtain the unrestricted error correction version of (for instance) an ARDL (1,1) model as:

Neutrality with respect to real output:

$$\Delta lny_t = \alpha_o + \sum_{t=1}^{k} \beta_1 \Delta lny_{t-i} + \sum_{t=1}^{k} \beta_2 \Delta lnm_{t-i} + \gamma_1 lny_{t-1} + \gamma_2 lnm_{t-1} + \varepsilon_t \qquad 10$$

Neutrality with respect to inflation:

[1] This method was used in the 60s by the St. Louis Fed economists Leonall C. Andersen and Jerry Jordan.

$$\pi_t = \alpha_o + \sum_{t=1}^{k} \beta_3 \Delta\pi_{t-1} + \sum_{t=1}^{k} \beta_4 \Delta lnm_{t-i} + \gamma_3 \pi_{t-1} + \gamma_4 lnm_{t-1} + \varepsilon_t \quad 11$$

Super-neutrality with respect to real output growth:

$$\Delta yg_t = \alpha_o + \sum_{t=1}^{k} \beta_5 \Delta yg_{t-1} + \sum_{t=1}^{k} \beta_6 \Delta lnm_{t-i} + \gamma_5 yg_{t-1} + \gamma_6 lnm_{t-1} + \varepsilon_t \quad 12$$

Super-neutrality with respect to changes in inflation rates:

$$\Delta\pi_t = \alpha_o + \sum_{t=1}^{k} \beta_7 \Delta\pi_{t-1} + \sum_{t=1}^{k} \beta_8 \Delta lnm_{t-i} + \gamma_7 \pi_{t-1} + \gamma_8 lnm_{t-1} + \varepsilon_t \quad 13$$

While Equations 10 and 11estimates money neutrality, Equations 12 and 13 estimates money super-neutrality against inflation. All the variables are as defined. β and γ are the parameters of interest to be estimated. The first part of each equations with β_1, β_2, β_3, β_4, β_5, β_6, β_7, and β_8 represent short run dynamics while the second part with γ_1, γ_2 , γ_3 , γ_4 γ_5 ,γ_6 , γ_7 and γ_8 representing the long run relationships. Δ is the first difference operator and ε_t is the 'while noise error term'. Evaluation made in this study was limited to money neutrality tests in respect of real output and money superneutrality tests regarding inflation and real output growth. Thus, the tests of null hypotheses (as against alternative hypotheses) of no long run relationships are:

For Equation 10 – $H_0 = \gamma_1 = \gamma_2 = 0$ – no long run relation

For Equation 12 – $H_0 = \gamma_5 = \gamma_6 = 0$ – no long run relation

For Equation 13 – $H_0 = \gamma_7 = \gamma_8 = 0$ – no long run relation.

The test equation of the unit roots tests of variables of interest (money supply, real output, money supply growth and real growth) performed here included trend and intercept as appropriate. The Schwarz Criteria (SC) was applied for the automatic lag selection in the DF (GLS) tests while for the PP tests, the Newey-West Bandwidth Selection was used for the bandwidth automatic selection and the Bartlett Kernel spectral estimation method was applied. ARDL bound tests were performed at 5% level of significance with restricted intercept and no trend. In the first test, there was automatic lag length selection by the SC in which the maximum lag was lag 2 were specified for the dependent and independent variables while lag lengths of both variables were fixed at 1 in the second bounds test.

DISCUSSION AND RESULTS

The results of the unit roots tests and the decision on the order of integration of the variables employed (money supply and real output) highlighted in the lower part of Table 1 below shows that the two macroeconomic variables (money supply and real GDP) for the assessment of money neutrality are integrated to the order of 1 .

Table 1: Results of the Unit Roots Tests of the Money Neutrality Assessment Variables

Statistics						
	Gambia	***Ghana***	***Guinea***	***Liberia***	***Nigeria***	***S/Leone***
Money Supply						
DF GLS (Level):	-2.8260	-1.3779	-1.574	-1.6218	-2.3686	-0.8256
DF GLS (1st Difference):	-6.2948	-6.0036	-5.5292	-3.0759	-4.0560	-5.8731
PP (Level):	-3.1980	-1.407	-1.7849	-1.4928	-1.1521	-0.6780
PP (1st Difference):	-11.9039*	-6.0036*	-5.7842*	-3.0076*	-6.4622*	-6.0092*
Real Output						
DF GLS (Level):	-2.2875	-0.7776	-2.4399	-1.2213	-2.0853	-0.9567
DF GLS (1st Difference):	-5.2149	-5.1525	-5.3009	-5.5173	-4.1206	-4.7293
PP (Level):	-1.8319	-0.4961	-2.3606	-2.2905	-2.7227	-0.8654
PP (1st Difference):	-5.3142*	-4.9935*	-5.5735*	-11.1693*	-4.2442*	-5.0421*
Implications						
	Gambia	***Ghana***	***Guinea***	***Liberia***	***Nigeria***	***S/Leone***
Money Supply						
DF GLS (Level):	I(1)	I(1)	I(1)	I(1)	I(1)	I(1)
DF GLS (1st Difference):	I(1)	I(1)	I(1)	I(1)	I(1)	I(1)
PP (Level):	I(1)	I(1)	I(1)	I(1)	I(1)	I(1)
PP (1st Difference):	I(1)	I(1)	I(1)	I(1)	I(1)	I(1)
Real Output						
DF GLS (Level):	I(1)	I(1)	I(1)	I(1)	I(1)	I(1)
DF GLS (1st Difference):	I(1)	I(1)	I(1)	I(1)	I(1)	I(1)
	I(1)	I(1)	I(1)	I(1)	I(1)	I(1)

PP (Level): *PP (1st Difference):*	I(1)	I(1)	I(1)	I(1)	I(1)	I(1)

Source: Author's Estimation and EViews 9 Output

Note: For the unit roots tests *, ** and *** denote 1%, 5% and 10% levels of significance respectively.

Because none of the variable is integrated to the order of two I(2), there was the conviction towards the appropriateness of the use of the ARDL method in estimating the neutrality and superneutrality of money in the six WAMZ countries. Tables 2 below exhibits the unit roots tests results for the variables employed in the test of money neutrality (super-neutrality) in the WAMZ where it is revealed that all the variables for money neutrality tests are in same integration order of I(1) while those for superneutrality tests have similar integration of I(0).

Table 2: Results of the Unit Roots Tests of the Money Super-Neutrality Assessment Variables

Statistics						
	Gambia	***Ghana***	***Guinea***	***Liberia***	***Nigeria***	***S/Leone***
Money Supply:						
DF GLS (Level):	-4.6849*	-4.7485*	-5.4078*	-4.7389*	-3.4883*	-3.9960*
PP (Level):	-4.9827*	-4.7991*	-5.5721*	-4.9473*	-4.3864*	-4.6980*
Real Output Growth:	4.8408*	5.4106*	2.2455**	-3.0757*	-	-5.4192*
DF GLS (Level):	-8.1234*	-5.3272*	-5.9124*	-3.0076*	2.0476**	-5.5394*
PP (Level					-5.6214*	-
Inflation:	-5.179*	-3.9765*	2.4179**	-4.1326*		2.7938*
DF GLS (Level):	-5.2370	-5.5849	-	-4.1231*	-5.666*	-
PP (Level):			2.746***		-5.6379*	2.508***
DF GLS (Diff.):			-5.7402*			-4.7391*
PP (Diff.):			-6.2360*			12.4090*
Implications						
	Gambia	***Ghana***	***Guinea***	***Liberia***	***Nigeria***	***S/Leone***
Money Supply:						
DF GLS (Level):	I(0)	I(0)	I(0)	I(0)	I(0)	I(0)
PP (Level):	I(0)	I(0)	I(0)	I(0)	I(0)	I(0)
Real Output:						
DF GLS (Level):	I(0)	I(0)	I(0)	I(0)	I(0)	I(0)
PP (Level):	I(0)	I(0)	I(0)	I(0)	I(0)	I(0)

Inflation:						
DF GLS (Level):	I(0)	I(0)	I(0)	I(0)	I(0)	I(0)
PP (Level):	I(0)	I(0)	I(0)	I(0)	I(0)	I(0)

Source: Author's Estimation and EViews 9 Output

Note: For the unit roots tests, *, ** and *** denote 1%, 5% and 10% levels of significance respectively.

Discussions of the Results of Money Neutrality Tests: The results of the SC automatic lag selection ARDL models estimations of money neutrality in of WAMZ economies in Table 3 above reveal that the F-statistics exceed the upper bounds in the cases of The Gambia, Ghana, Guinea, Nigeria and Sierra Leone under the two ARDL bounds tests showing that at 1%, 2.5%, 5% and 10% significance levels, therefore, we cannot accept the null hypothesis of no cointegration (and long-run relationships) between real output and money supply in these five WAMZ countries.

Table 3: Results of the ARDL Bound Tests of Cointegration between Real Output and Money Supply (1980-2014)

Schwarz Criterion Automatic Lag Selection ARDL Model		
	F-statistics	*Cointegration (at 95% Confidence Level)*
The Gambia (ARDL 1,0)	43.4056	Yes: Reject null hypothesis
Ghana (ARDL 1,0)	63.7130	Yes: Reject null hypothesis
Guinea (ARDL 1,2)	5.2423	Yes: Reject null hypothesis
Liberia (ARDL 1,0)	3.3566	No: Accept null hypothesis
Nigeria (ARDL 2,0)	5.5360	Yes: Reject null hypothesis
S/Leone (ARDL 1,0)	29.0469	Yes: Reject null hypothesis
Fixed Lag Selection ARDL (1,1) Model		
	F-statistics	*Cointegration (at 95% Confidence Level)*
The Gambia ARDL (1,1)	22.4078	Yes: Reject null hypothesis
Ghana ARDL (1,1)	33.1111	Yes: Reject null hypothesis
Guinea ARDL (1,1)	3.5385	No: Accept null hypothesis
Liberia ARDL (1,1)	3.5194	No: Accept null hypothesis
Nigeria ARDL (1,1)	22.2421	Yes: Reject null hypothesis
S/Leone ARDL (1,1)	26.7385	Yes: Reject null hypothesis
ARDL Critical Values Bounds		

Bounds	***1%***	***2.5%***	***5%***	***10%***
Lower Bound	4.94	4.18	3.62	3.02
Upper Bound	5.58	4.79	4.16	3.51

Source: Author's Estimation and EViews 9 Output

It is consequently evident that apart from Liberia (in which money is neutral), there are no empirical evidences and proof of money neutrality in The Gambia, Ghana, Guinea, Nigeria and Sierra Leone. What these imply is that the proposed common central bank for the WAMZ can affect the real side of the economy (real output, consumption, unemployment etc.) as well as the nominal side of the economy (exchange rate, price, wages etc.) with the level of money supply in these WAMZ (apart from Liberia) because the equilibrium values of variables in the real side of the economies of these countries are independent of money supply. Furthermore, the results of the estimation of the parsimonious fixed lag selection ARDL (1,1) model for the six WAMZ countries reveal money neutrality in Guinea and Liberia, implying that in these two countries, money supply does not have influence on the real variables and consequently, the printing of more money would not cause the effect on the real economic activities of the two WAMZ countries. This is because the proportional increase in the nominal side of the economy of the country will offset money supply increase that may be put in place.

Table 4: Coefficients of Long Run Relationship and Error-Correction in Money Neutrality

Schwarz Criterion Automatic Lag Selection ARDL Model						
Dependent Variable: Real Output						
	Gambia	***Ghana***	***Guinea***	***Liberia***	***Nigeria***	***S/Leone***
Money Supply (Long Run Coefficient)	5.0085* (0.2921)	2.3975 (8.8301)	5.8342* (1.1809)	1.8609 (4.0640)	5.1086* (1.0890)	0.9083 (10.1573)
Error Correction Term (Coint. Coefficient)	-0.1498* (0.0177)	-0.0162* (0.0016)	-0.2663* (0.0640)	0.0236* (0.0070)	-0.0485* (0.0129)	-0.0144* (0.0016)

Fixed Lag Selection ARDL (1,1) Model						
Dependent Variable: Real Output						
	Gambia	***Ghana***	***Guinea***	***Liberia***	***Nigeria***	***S/Leone***
Money Supply (Long Run Coefficient)	4.8670* (0.3984)	2.7590 (8.5242)	6.0484* (1.4936)	1.2948 (2.998)	-29.8040 (968.694)	1.4991 (10.6138)
Error Correction Term (Coint. Coefficient)	-0.1376* (0.0016)	-0.0171* (0.0016)	-0.2197* (0.0644)	0.0291* (0.0087)	0.0017* (0.0002)	-0.0143* (0.0015)

Source: Author's Estimation and EViews 9 Output

Note: The standard errors are in parenthesis.

Table 4 above shows the coefficients of the long run relationship and error correction terms in the ARDL models estimations. For the SC lag selection ARDL model, the coefficients of long-run relationship which are positive for all the WAMZ countries are only significant at 5% level of significance only for The Gambia, Guinea and Nigeria in which there are implied long run relationship. Only The Gambia and Guinea exhibit significant long run relationship in the estimated fixed lag model. For the error correction model of short run relationship estimation results of the SIC lag selection model, all the estimation coefficients are significant at 5% level and are negative as expected except for Liberia at 0.0236. The Gambia and Guinea exhibit significant long run relationship in the fixed lag ARDL model. Only Nigeria displays negative long run coefficient of -29.80. The short run relationship estimation results show that with the SIC automatic lag selection ARDL model all the coefficient are significant at 5% level and are negative (as expected) except for the positive figures yielded by Liberia and Nigeria for 0.029 and 0.0017 respectively.

For the assessment of money neutrality ARDL model discussed above, the outcome of the three diagnostic tests for normality, serial correlation and heteroscedasticity of the residuals are given in Table 5 below. For the SC automatic lag selection model estimations, the assumption of normality of the residual holds for all the WAMZ countries (except for Ghana) where the Jarque-Bera (JB) statistics are insignificant at 5% level of significance at which we cannot reject the null hypothesis of normality.

Table 5: Results of Post-Estimation Diagnostic Tests for Monetary Neutrality ARDL Model Estimations

Schwarz Criterion Automatic Lag Selection ARDL Model						
Tests	***Gambia***	***Ghana***	***Guinea***	***Liberia***	***Nigeria***	***S/Leone***
JB Statistics for Normality	1.4925 (0.4741)	6.4186 (0.0404)	0.5742 (0.7504)	4.2141 (0.1216)	0.3251 (0.8499)	4.2072 (0.1220)
Breusch-Godfrey Serial Correlation LM	0.0036 (0.9524)	0.3253 (0.5727)	5.0197 (0.0372)	0.3701 (0.5479)	0.7439 (0.3757)	0.4995 (0.4865)
White Heteroscedasticity	2.0498 (0.1021)	1.6046 (0.1914)	1.6757 (0.1805)	1.9700 (0.1168)	0.8858 (0.5520)	2.6135 (10.0463)
Fixed Lag Selection ARDL (1,1) Model						
	Gambia	***Ghana***	***Guinea***	***Liberia***	***Nigeria***	***S/Leone***
JB Statistics for Normality	1.8286 (0.4008)	6.9352 (0.0312)	0.2469 (0.8839)	3.9354 (0.1400)	1.0623 (0.5879)	4.3364 (0.1144)
Breusch-Godfrey Serial Correlation LM	0.0069 (0.9344)	0.3340 (0.5661)	1.5235 (0.2314)	0.1833 (0.6720)	2.5933 (0.1181)	0.4352 (0.5147)
White Heteroscedasticity	0.3541 (0.9458)	0.9103 (0.5324)	2.3788 (0.0720)	1.7390 (0.1393)	0.8309 (0.5949)	1.5433 (0.1895)

Source: Author's Estimation and Eviews 9 Output

Note: The p-values are in parenthesis.

The deviation from normality of the residual may be caused by the presence of outliers in the residual. In the Breusch-Godfrey Serial Correlation test including 2 lags, there is residual autocorrelation in the case of Guinea where the null hypothesis of serial correlation is rejected. For all other WAMZ countries, there is the absence of serial of the disturbance terms. However, for the fixed lag selection model, the null hypothesis of serial correlation cannot be rejected for all the WAMZ countries.

Discussions of the Results of the Money Super-neutrality Tests with respect to Inflation: Results of the ARDL bounds tests of cointegration of inflation rates and money supply growth results are highlighted in Table 6 below for the SC automatic lag selection and the fixed lag selection ARDL

models. Because the estimated F-statistics obtained from the tests are I(1), falling outside the upper bound for the all the WAMZ countries at 5% significance level, we reject the null hypothesis of no cointegrating relationships between inflation and money supply growth rate of all the six WAMZ countries, thus suggesting a long run relationship between these variables in the countries. What these results of the two estimated ARDL model tell us is that for the WAMZ, money is not 'long run super-neutral' in the entire future monetary zone. Consequently, growth in money supply can influence inflation as a real economic variable in the WAMZ, suggesting that the future single monetary policy money supply tool can impact the real economy. However, these findings for these West African developing economies fault the views of the 'classical' and the 'neo-classical' schools of thought.

Table 6: Results of ARDL Bound Tests of the Super-Neutrality of Money (Inflation and Money Supply Growth)

Schwarz Criterion Automatic Lag Selection ARDL Model				
	F-statistics	*Cointegration (at 95% Confidence Level)*		
The Gambia (ARDL 1,0)	9.756	Yes: Reject null hypothesis		
Ghana (ARDL 1,0)	10.1327	Yes: Reject null hypothesis		
Guinea (ARDL 1,0)	5.1849	Yes: Reject null hypothesis		
Liberia (ARDL 1,0)	4.8911	Yes: Reject null hypothesis		
Nigeria (ARDL 1,0)	10.2977	Yes: Reject null hypothesis		
S/Leone ARDL 1,0)	20.6803	Yes: Reject null hypothesis		
Fixed Lag Selection ARDL (1,1) Model				
	F-statistics	*Cointegration (at 95% Confidence Level)*		
The Gambia ARDL (1,1)	9.2182	Yes: Reject null hypothesis		
Ghana ARDL (1,1)	9.9146	Yes: Reject null hypothesis		
Guinea ARDL (1,1)	8.3989	Yes: Reject null hypothesis		
Liberia ARDL (1,1)	4.3911	Yes: Reject null hypothesis		
Nigeria ARDL (1,1)	10.0686	Yes: Reject null hypothesis		
S/Leone ARDL (1,1)	23.7039	Yes: Reject null hypothesis		
ARDL Critical Values Bounds				
Bounds	***1%***	***2.5%***	***5%***	***10%***
Lower Bound	4.94	4.18	3.62	3.02
Upper Bound	5.58	4.79	4.16	3.51

Source: Author's Estimation and Eviews 9 Output

Vol 3 Issue 2 (Jul-Dec 2019) ISSN 2516-3051 http://emidjournals.co.uk/2019-volume-3-issue-2

Table 7: Coefficients of Long Run Relationship and Error-Correction ARDL Models of Super-Neutrality of Money (Inflation and Money Supply Growth)

Schwarz Criterion Automatic Lag Selection ARDL Model						
Dependent Variable: Inflation						
	Gambia	***Ghana***	***Guinea***	***Liberia***	***Nigeria***	***S/Leone***
Money Supply Growth	-0.4246	-0.1701	0.2142*	0.0073	-0.1021	0.2137***
	(0.4773)	(0.1904)	(0.0717)	(0.04231)	(0.2941)	(0.1228)
(Long Run Coefficient)	-0.9767*	-0.9433*	-1.8341*	-0.6900*	-1.0261*	-1.4085*
	(0.1820)	(0.1673)	(0.4384)	(0.1834)	(0.1808)	(0.1068)
Error Correction Term (Coint. Coefficient)						
Fixed Lag Selection ARDL (1,1) Model						
Dependent Variable: Inflation						
	Gambia	***Ghana***	***Guinea***	***Liberia***	***Nigeria***	***S/Leone***
Money Supply Growth	-0.8343	-0.1533	0.1441**	-0.0161	-0.0265	0.4548**
	(0.6113)	(0.2555)	(0.0574)	(0.0634)	(0.3631)	(0.2035)
(Long Run Coefficient)	-0.9465*	-0.9437*	-1.2243*	-0.6882*	-1.0248*	-1.4435*
	(0.1739)	(0.1673)	(0.2320)	(0.1824)	(0.4803)	(0.1654)
Error Correction Term (Coint. Coefficient)						

Source: Author's Estimation and EViews 9 Output**.** Note: The standard errors are in parenthesis.

The coefficients of money supply growth and the error correction terms exhibited in Table 7 reveal that only Guinea and Sierra Leone have significant and positive long run coefficients in the two lag selection methods. The ECT coefficients are significant for all the countries at 5% level of significance and all negative as theoretically established.

The post-estimation diagnostic results in Table 8 below reveal that in the SC automatic lag selection estimations, with the statistical significance of the Jarque-Bera (JB) statistics at 5% level of significance, we reject the null hypothesis of normality of the residuals in the ARDL model estimated for the six WAMZ countries, except Sierra Leone. However, there are no evidence of serial correlation in the results generated by the Breusch-Godfrey serial correlation LM tests with

all the countries and the null hypothesis that no residual serial correlation cannot be rejected as the estimated models generating statistical insignificant coefficients in this test. The White heteroscedasticity tests results suggest the variance of the error terms differs across observations and the null hypothesis that the variance of the residual is constant (homoscedasticity) cannot be rejected in cases of the countries assessed except only in the case of Ghana. When the lag selection was fixed at ARDL (1, 1), we can reject the null hypothesis of normal distribution of residuals only for Guinea and Sierra Leone given the insignificance of the tests statistics. Again, there are no autocorrelation problems in the estimation as evident by the insignificant coefficients yielded by the serial correlation LM tests. Nevertheless, The Gambia and Ghana display heteroscedasticity problem in the White heteroscedasticity test performed.

Table 8: Results of Post-Estimation Diagnostic Tests for ARDL Models of Super-Neutrality of Money (Inflation and Money Supply Growth) Estimations

Schwarz Criterion Automatic Lag Selection ARDL Model						
Tests	***Gambia***	***Ghana***	***Guinea***	***Liberia***	***Nigeria***	***S/Leone***
JB Statistics for Normality	399.1780 (0.00)	117.203 (0.00)	23.0540 (0.00)	14.0599 (0.00)	27.6388 (0.00)	2.1249 (0.31)
Breusch-Godfrey Serial Correlation LM	0.5353 (0.59)	0.0166 (0.98)	0.3627 (0.70)	0.6464 (0.53)	0.1045 (0.90)	1.4401 (0.25)
White Heteroscedasticity	0.9963 (0.44)	3.2953 (0.02)	3.5081 (0.40)	0.1552 (0.98)	0.3619 (0.87)	0.3702 (0.86)
Fixed Lag Selection ARDL (1,1) Model						
	Gambia	***Ghana***	***Guinea***	***Liberia***	***Nigeria***	***S/Leone***
JB Statistics for Normality	271.3881 (0.00)	119.093 (0.00)	3.4843 (0.17)	11.6190 (0.00)	28.2664 (0.00)	0.1362 (0.93)
Breusch-Godfrey Serial Correlation LM	1.0603 (0.36)	0.0132 (0.99)	1.0889 (0.36)	0.5565 (0.58)	1.5698 (0.23)	1.7790 (0.19)
White Heteroscedasticity	5.2196 (0.00)	2.8549 (0.02)	0.5713 (0.80)	0.2113 (0.99)	0.5005 (0.86)	0.6804 (0.72)

Vol 3 Issue 2 (Jul-Dec 2019) ISSN 2516-3051 http://emidjournals.co.uk/2019-volume-3-issue-2

Source: Author's Estimation and EViews 9 Output. Note: The p-values are in parenthesis.

***Discussion of the Results of Money Super-neutrality Tests with respect to Real Output Growth*:**

Results presented in Table 9 below indicating the outcomes of the cointegration relationship tests of money supply growth rate and real output growth. The outcome of the tests of the estimated SC automatic lag selection ARDL model suggest that apart from Liberian's case in which the test is inconclusive (because the test statistic falls in-between the lower and the upper bounds), money is not super-neutral in the WAMZ. When lag lengths were fixed and an ARDL (1, 1) was estimated for the six countries, the diagnostic tests reveal autocorrelation of the disturbance terms in the cases of The Gambia, Ghana and Liberia. In order to eliminate these serial correlations, the lag length of the dependent variable (output growth) of the affected countries were increased as shown in Table 9. The results under this estimation show that the null hypothesis of no long run cointegration can be rejected only in the case of Liberia, implying money supernuetrality in the country. These denote that the growth rates of money supply in the WAMZ countries (except Liberia) have impacts on changes in the real variable (in the five countries). These results have further implications for the application of money supply as monetary policy instrument under the future common monetary policy by the expected common central bank in the proposed monetary integration.

Table 9: Results of the ARDL Bound Tests of the Super Neutrality of Money with respect to Real Output Growth

Schwarz Criterion Automatic Lag Selection ARDL Model		
	F-statistics	*Cointegration (at 95% Confidence Level)*
The Gambia (ARDL 2,0)	13.2137	Yes: Reject null hypothesis
Ghana (ARDL 1,0)	7.2698	Yes: Reject null hypothesis
Guinea (ARDL 1,0)	5.0951	Yes: Reject null hypothesis
Liberia (ARDL 1,0)	3.7345	Inconclusive
Nigeria (ARDL 1,0)	8.2360	Yes: Reject null hypothesis
S/Leone (ARDL 1,0)	9.4097	Yes: Reject null hypothesis
Fixed Lag Selection ARDL Model		
	F-statistics	*Cointegration (at 95% Confidence Level)*
The Gambia (ARDL 2,1)	14.3932	Yes: Reject null hypothesis
Ghana (ARDL 2,1)	6.3177	Yes: Reject null hypothesis
Guinea (ARDL 1,1)	4.4007	Yes: Reject null hypothesis
Liberia (ARDL 2,1)	2.8959	No: Accept null hypothesis

Nigeria (ARDL 1,1)	6.952	Yes: Reject null hypothesis		
S/Leone (ARDL 1,1)	8.2998	Yes: Reject null hypothesis		
ARDL Critical Values Bounds				
Bounds	***1%***	***2.5%***	***5%***	***10%***
Lower Bound	4.94	4.18	3.62	3.02
Upper Bound	5.58	4.79	4.16	3.51

Source: Author's Estimation and Eviews 9 Output

Table 10: Coefficients of Long Run Relationship and Error-Correction (Super Neutrality of Money with respect to Real Output Growth)

Schwarz Criterion Automatic Lag Selection ARDL Model						
Dependent Variable: Real Output Growth						
	Gambia	***Ghana***	***Guinea***	***Liberia***	***Nigeria***	***S/Leone***
Money Supply Growth	0.0520***	-0.0009	-0.0031	-0.0209	-0.0039	-0.0224
	(0.0276)	(0.0381)	(0.0089)	(0.1703)	(0.0995)	(0.0613)
(Long Run Coefficient)	-17071*	-0.7684*	-0.9277*	-0.5715*	-0.8454*	-0.8657*
	(0.2513)	(0.1674)	(0.2438)	(0.1580)	(0.11789)	(0.1754)
Error Correction Term (Coint. Coefficient)						
Fixed Lag Selection ARDL Model						
Dependent Variable: Real Output Growth						
	Gambia	***Ghana***	***Guinea***	***Liberia***	***Nigeria***	***S/Leone***
Money Supply Growth	0.0629***	-0.0564	-0.0040	-0.1255	0.0211	-0.1052
	(0.0366)	(0.0421)	(0.0144)	(0.2277)	(0.1227)	(0.0755)
(Long Run Coefficient)	-1.7046*	-0.7829*	-0.9270*	0.5623*	-0.8439*	-0.8934*
	(0.2503)	(0.1735)	(0.2432))	(0.1823)	(0.1782)	(0.1732)
Error Correction Term (Coint. Coefficient)						

Source: Author's Estimation and Eviews 9 Output**.** Note: The standard errors are in parenthesis.

The SC lag selection ARDL model estimation results in Table 10 above show that the long run relationship coefficients of money supply growth are negative and insignificant for all the WAMZ countries, except for The Gambia where it is positive (0.0520) and significant at 10% level of

significance. The short run error correction term coefficients are negative (as expected) and are all significant at 5% level. For the fixed lag ARDL models, all the coefficients of money supply are growth are insignificant and negative for Ghana, Guinea and Nigeria. As expected, the short run relationship error correction term (ECT) coefficients are significantly negative for all the WAMZ countries assessed.

Table 11 below show the results of the diagnostic tests of the ARDL models of super-neutrality of money. As obtained in the results of the diagnostic test of monetary neutrality estimations of the SC lag selection ARDL model, the hypothesis of normality of residual was rejected at 5% significance level of J-B statistics in the case of Ghana, Liberia and Sierra Leone. For the fixed lag ARDL model, we can only reject the null hypothesis of normality for Liberia and Nigeria. On serial correlation tests, there is autocorrelation problem for only Nigeria where the Breusch-Godfrey Serial Correlation LM tests (including 2 lags) indicate significance at 5% level in both lag selection ARDL models estimations. The null hypothesis of heteroscedasticity is rejected only for Nigeria at 5% significance level in the White heteroscedasticity diagnostic test conducted for the two lag selection ARDL models estimations. White heteroscedasticity test is often seen as general test in which null points to the conjecture that the variance of the error term is constant.

Table 11: Results of Post-Estimation Diagnostic Tests for Super Neutrality of Money ARDL Model Estimations (Real Output Growth and Money Supply Growth)

Schwarz Information Criterion Automatic Lag Selection ARDL Model						
Tests	***Gambia***	***Ghana***	***Guinea***	***Liberia***	***Nigeria***	***S/Leone***
JB Statistics for Normality	1.3940 (0.50)	10.2970 (0.00)	2.1190 (0.35)	219.275 (0.00)	145.307 (0.00)	6.1007 (0.05)
Breusch-Godfrey Serial Correlation LM	0.0943 (0.91)	5.9848 (0.01)	0.1933 (0.83)	0.0980 (0.91)	0.8981 (0.42)	2.4942 (0.10)
White Heteroscedasticity	1.3130 (0.29)	0.5542 (0.73)	0.8387 (0.54)	0.1219 (0.99)	0.1471 (0.98)	0.1085 (0.99)
Fixed Lag Selection ARDL (1,1) Model						
	Gambia	***Ghana***	***Guinea***	***Liberia***	***Nigeria***	***S/Leone***

JB Statistics for Normality	1.5694 (0.46)	0.5090 (0.76)	1.6759 (0.43)	150.5912 (0.00)	138.69 (0.00)	5.7104 (0.06)
Breusch-Godfrey Serial Correlation LM	0.1843 (0.85)	1.7365 (0.20)	0.2943 (0.75)	0.0116 (0.99)	1.0122 (0.38)	1.3662 (0.27)
White Heteroscedasticity	1.6752 (0.16)	0.4216 (0.95)	1.7864 (0.16)	15.1452 (0.00)	0.1075 (0.99)	0.6060 (0.78)

Source: Author's Estimation and Eviews 9 Output.
Note: The p-values are in parenthesis.

A general important note to make at this point is that long run coefficients in the estimated ARDL models are statistically insignificant does not denote misspecification since indications of cointegration are revealed in the results of the cointegration bounds tests. If the variables fail to affect each other in the long run, they are doing that in the short run when the ECM coefficients are expected to be negative and significant in order to establish the model convergence which is indirect connotation of significant long run relationship.

The closeness of these ECT coefficients (which should be significant) to -1is the indication of how strong the equilibrium is. For all the estimated ARDL models, the plots of the residual stability cumulative sums (CUSUMS) and the cumulative sums of square (CUSUMS SQ) of the deviation of the value from targets at 5% significance levels are displayed in Figure 1 below. These give information about the stability of the estimated models. The plots reveal parameter instability (or otherwise) in the ARDL model estimations performed. In spite of the charts, Table 12 below summarises the outcomes of these model parameter stability.

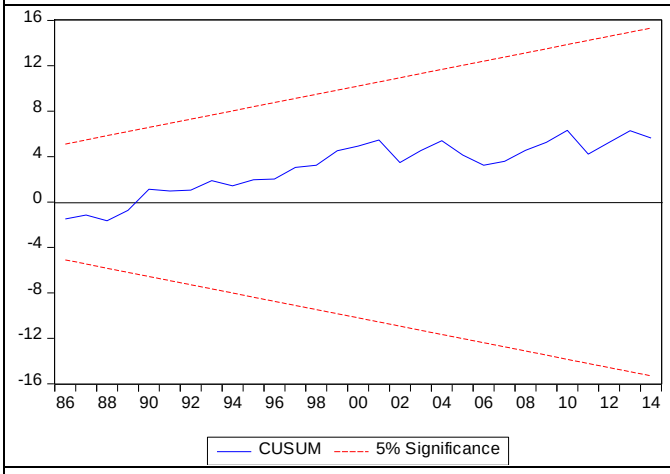
Table 12: Results of the Parameter Stability Tests

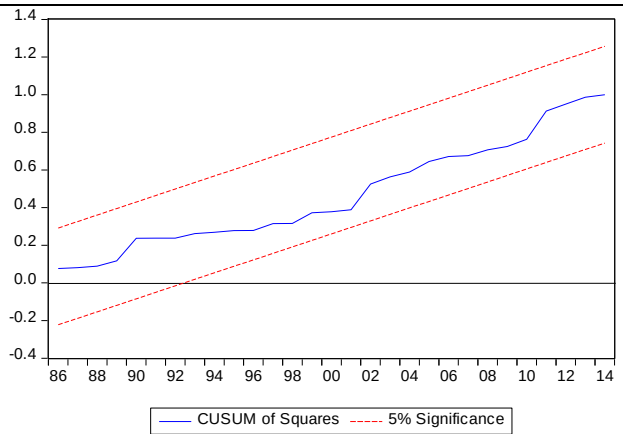
Money Neutrality in respect of Real Output						
	Gambia	***Ghana***	***Guinea***	***Liberia***	***Nigeria***	***S/Leone***
CUSUM:						
Schwarz:	ST	ST	ST	ST	ST	ST
Fixed:	ST	ST	ST	ST	ST	ST
CUSUMSQ:						
Schwarz:	ST	ST	NST	NST	ST	ST
Fixed:	ST	ST	NST	NST	NST	NST
Money Superneutrality in respect of Output Growth						
	Gambia	Ghana	Guinea	Liberia	Nigeria	S/Leone
CUSUM:						
Schwarz:	ST	ST	ST	ST	ST	ST
Fixed:	NST	ST	ST	ST	ST	ST
CUSUMSQ						
Schwarz:	ST	ST	NST	NST	NST	ST
Fixed:	ST	ST	NST	NST	NST	ST
Money Superneutrality in respect of Inflation Rates						
	Gambia	Ghana	Guinea	Liberia	Nigeria	S/Leone
CUSUM:						
Schwarz:	ST	ST	ST	ST	ST	NST
Fixed:	NST	ST	ST	ST	ST	NST
CUSUMSQ						
Schwarz:	NST	ST	NST	ST	ST	NST
Fixed:	NST	ST	ST	ST	ST	NST

Source: Author's Estimation and EViews 9 Output. Note: ST stands for 'Stable' while NST denotes 'Not Stable'. The parameter stability tests are with 5% significance lines

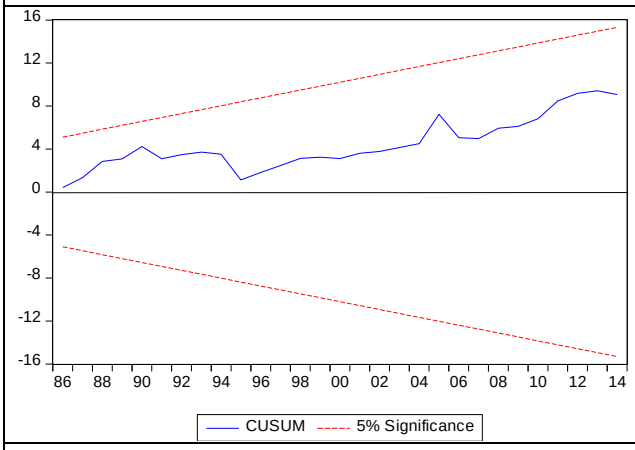
Figure 1: Charts of the CUSUM and CUSUM Square Charts of Parameter Stability in ARDL Estimations of Money Neutrality of Nations

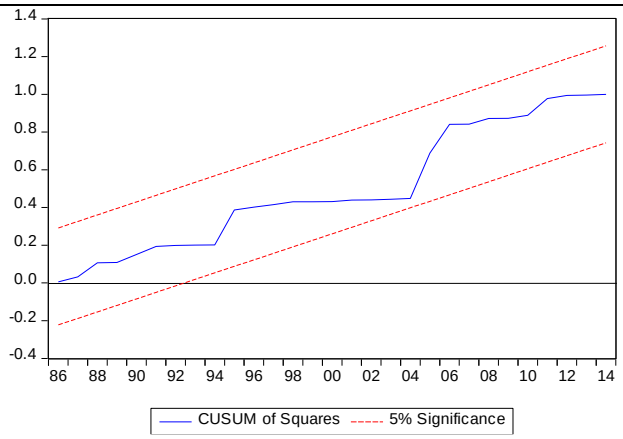
Gambia



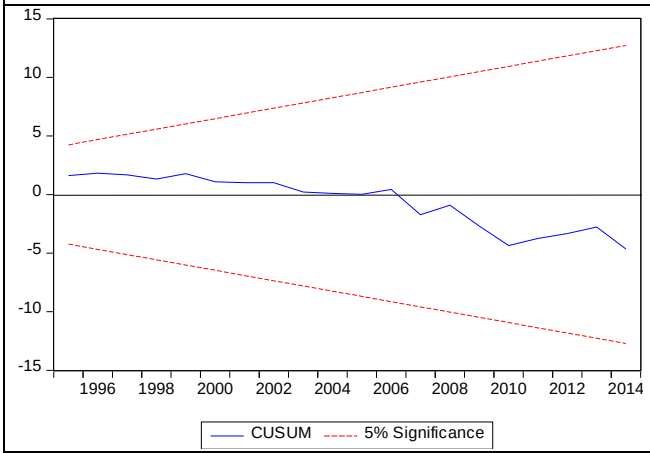


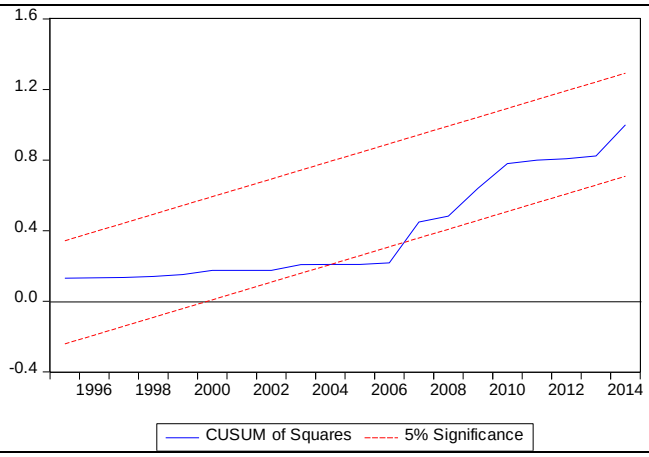
Ghana



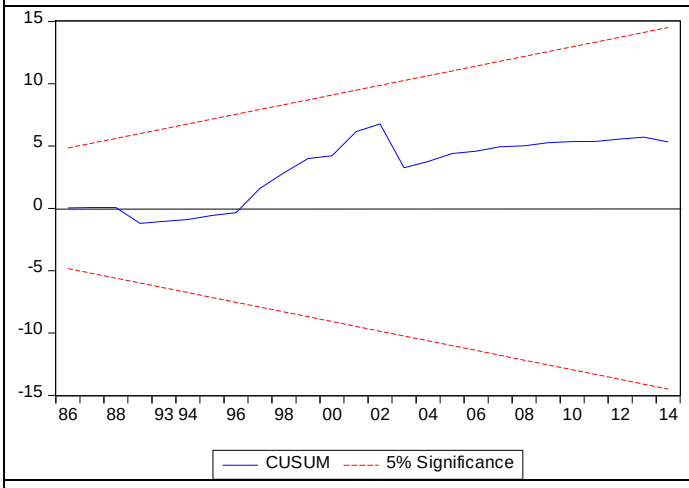


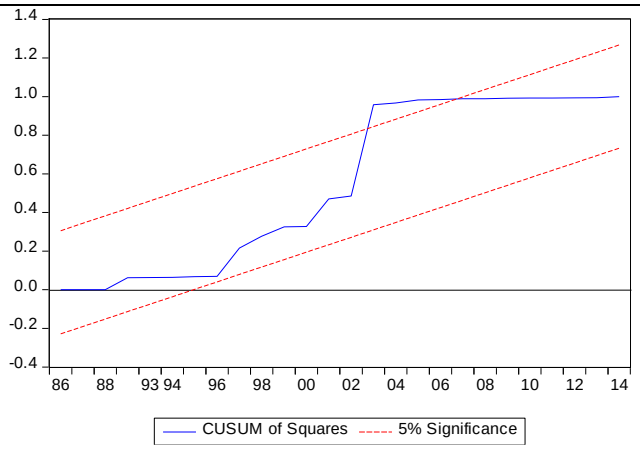
Guinea



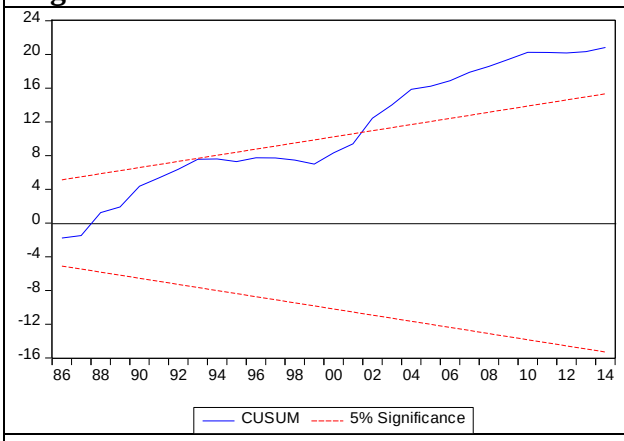


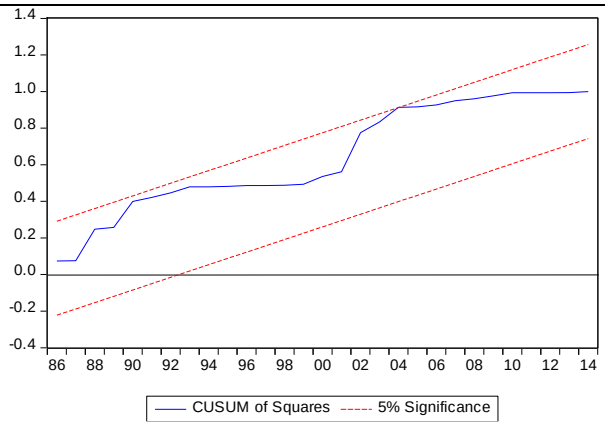
Liberia



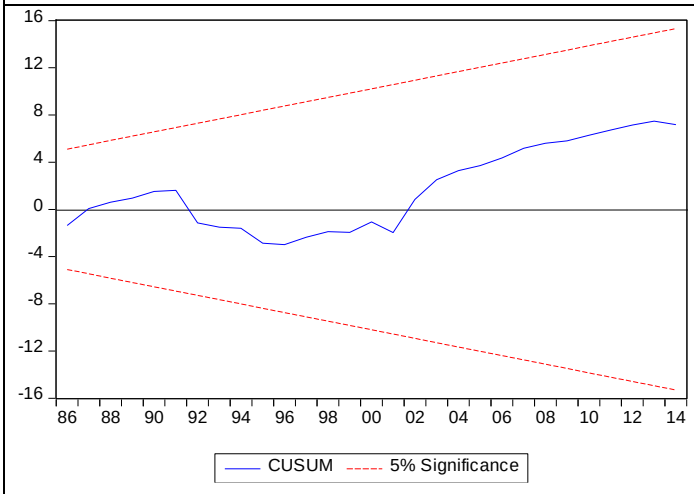


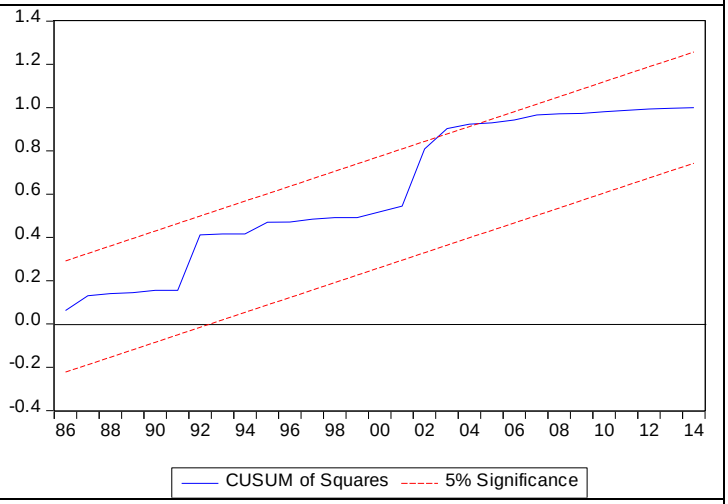
Nigeria





Sierra Leone





The observation at this point is that for some WAMZ countries in the three categories of assessments of money neutrality (and money superneutrality), the SIC automatic lag selection procedures performed poorly and failed to fix lags for the independent variables (money supply and money supply growth); and due to this, at this point this study discards with the outcomes of the SC automatic lag selection ARDL model estimations and consequently draws its major conclusions and inferences from the fixed lag selection ARDL models.

The implications of the results of the fixed lag model estimations for the WAMZ countries are highlighted in Table 13 below.

Table 13: Summary of Outcomes of Money Neutrality and Superneutrality Assessments of the WAMZ

Money Neutrality		
With respect to:	***Real Output***	
The Gambia	Not neutral	
Ghana	Not neutral	
Guinea	Neutral	
Liberia	Neutral	
Nigeria	Not neutral	
S/Leone	Not neutral	
Money Superneutrality		
With respect to:	***Inflation Rate***	***Output Growth***
The Gambia	Not super-neutral	Not super-neutral
Ghana	Not super-neutral	Not super-neutral
Guinea	Not super-neutral	Not super-neutral
Liberia	Not super-neutral	Super-neutral
Nigeria	Not super-neutral	Not super-neutral
S/Leone	Not super-neutral	Not super-neutral

Source: Author's Estimation and EViews 9 Output.

Vol 3 Issue 2 (Jul-Dec 2019) ISSN 2516-3051 http://emidjournals.co.uk/2019-volume-3-issue-2

RECOMMENDATIONS

What these results generally denote for the Anglophone West Africa and Guinea is that money is neither neutral nor super-neutral in these West African countries (except for Liberia which less than 1% in economic size of the entire sub-continent). For monetary integration of West Africa, this implies that within the context of these non-West African Economic and Monetary Union (the non-CFA) countries evaluated in this study, a future common central bank with unified monetary policy can through money supply (as monetary policy instrument) affect real macroeconomic variables to achieve economic objectives and the stability within West Africa, in support of the past and current influence of the West African CFA countries' common central on economic and financial stability of the Francophone West African monetary union.

CONCLUSION

There is the argument that if a single monetary policy is prevalent in a monetary union, it is important for member countries within such monetary integration to exhibit similarities in behaviour of money. Consequently, the West African region proposing monetary integration deserve feasibility assessments in aspects of neutrality and superneutrality of money within the region. This study is significantly, this study provided useful answers to the question on if money matters within the proposed monetary union. The ARDL bounds tests was employed to tests money neutrality in the Anglophone West Africa and Guinea, the WAMZ and there are evidences to suggest that money is not neutral in four of the six (except for Liberia and Guinea) WAMZ countries. The superneutrality tests (and other sensitivity tests) however reveal more uniform non-superneutrality of money across the WAMZ (apart from the inconclusiveness of the tests in the cases Liberia and Guinea when real exchange rate change was applied as a well as the non-superneutrality of Liberia when real output growth served in the determination of money super neutrality). Proving the classical economists wrong, these have the future consequences for the use of the common currency (eco) to influence real macroeconomic variables across the WAMZ and the West African subcontinent towards achieving economic objectives and the stability of the monetary zone.

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