THE DETERMINANTS OF EXCHANGE RATE REGIMES IN WAMZ COUNTRIES: EVIDENCE FROM A MULTINOMIAL LOGIT REGRESSION MODEL

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ABSTRACT

Determining an appropriate exchange rate regime that enhances macroeconomic performance and macroeconomic stability is a viable policy strategy for accelerating greater economic integration, particularly given the current state of affairs, regarding the proposed single currency drive for West Africa. It is against this backdrop that this paper empirically investigates the determinants of the choice of exchange rate regime in the WAMZ over the period 19995-2015. It reviews the key empirical and policy issues associated with it, and assess the state of play in the debate, as well as the costs and benefits of each regime. Adopting a multinomial logit regression model, the empirical results reveal that growth rate of real GDP, domestic openness, foreign reserves, government consumption, inflation rate and inflation variability are significant variables that influence the choice of exchange rate regime in the WAMZ at any point in time or across time. The paper recommends amongst others; the adoption of sound monetary and fiscal policies in the zone in order to enhance macroeconomic performance, increase policy coordination and harmonization, strong political will and commitment, and legal and institutional structures that will facilitate the long-run goal of monetary union in the WAMZ.

Keywords: *Exchange rate regimes, Convergence, Optimum currency areas, Policy coordination.*

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1. INTRODUCTION

The debate over exchange-rate regimes continues to assume a prime position in academic circles and policy discourse in recent times. Given the experience of Latin American and Asian countries in the 1990s reflected in the devastation brought about by the financial contagion during the Asian crisis, and the inglorious role played by the lack of an optimal exchange rate regime in fuelling this crisis, there is no doubt about the explicit importance of the use of an appropriate exchange rate as a nominal anchor. In fact, the determination of an optimal exchange rate regime is critical for attaining external equilibrium and macroeconomic stabilization.

In retrospect, policymakers are concerned with the determination of an appropriate (optimal) exchange rate system that guarantees macroeconomic stability and attainment of long-run policy objectives. Inappropriate exchange rate regime not based on proper identification of the fundamental prevailing economic situation and the goal of the external sector given the subsisting challenges faced, could obviate long-run policy goals and renders macroeconomic stabilization intractable. A primary cause of currency crises is the emergence or anticipation of serious inconsistencies between the exchange rate and domestic macroeconomic policy. Of particular importance is the fact that the optimal monetary policy framework for the West African Monetary Zone (WAMZ) is one where the proposed single currency of the zone floats against major world currencies. Monetary impulses would be transmitted to the real sector primarily via interest rates, and then through the exchange rate (Iyoha, 2004). An appropriate identification and determination of the optimal exchange regime is therefore critical to achieving greater macroeconomic stability, particularly the proposed currency union in the zone.

The experience of past exchange rate crisis has cast doubts on the viability of the so-called soft pegs. The collapse of the relatively rigid fixed-exchange-rate regime in many emerging countries has now spread doubts to the hard pegs as an ideal regime for achieving independent monetary policy and at the same time, achieving external balance objectives, taking cognizance of the ‘’Impossibility Trinity Hypothesis’’ which states that under no circumstance can a country simultaneously maintain a fixed exchange rate, free capital movement and an independent monetary policy. Under any macroeconomic circumstances, only two of these objectives may be simultaneously achieved. Frankel (2004) suggests that the unholy trinity requirement can be met by any combination of exchange rate versus monetary policy adjustment. For macroeconomic viability, floating rates need to be accompanied by appropriate monetary policy rules, among which inflation targeting has been a recent favourite monetary policy strategy among developed and developing countries. Among developing economies, credibility have given rise to the “fear-of-floating’’ syndrome, in which excessive exchange market interventions destabilizes the arrangement

(Calvo and Reinhart, 2002).The diversity of exchange rate arrangements, vacillation and disparity in contemporaneous regimes switches during the last century demonstrate the importance of the issue of alternative exchange rate regimes. Central to this irresolution is the conflict between the desire for national economic sovereignty on the one hand and the externally imposed constraints on economic management in open economies. After the awe-inspiring experience of the persistent disequilibria under fixed rates, and of disconcerting volatility under floating rates, there is increasing acknowledgement that no single exchange rate arrangement is optimal for all times and all places (Fausten,2010).

In terms of fixed exchange rates, there is broad agreement that few, if any West African countries currently satisfy the convergence criteria for a workable currency area. However, failure to satisfy static optimum currency area (OCA) criteria is not sufficient to rule out monetary harmonization and cooperation. New insights from the theory of self-validating or endogenous currency areas suggest that forward-looking monetary cooperation may, over time bring about the changes needed to satisfy OCA criteria. The trick is how to create the dynamics that will generate such an outcome. The answer involves complex issues pertaining to the nature and sequencing of policy coordination in trade, finance, and monetary policy (Hockreiter and Siklos, 2002).

The European approach to currency union provides a visible example, involving a multi-decade process beginning with trade liberalization, followed by market integration, harmonization of standards, and creation of institutional and legal structures and an extended period of policy coordination, before the final step of monetary unification. This may not be the right model for West African countries, where many different conditions exist on account of their economic peculiarities as opposed to those that existed when Europe embarked on its grand enterprise. In West Africa, the initial question is much more one of optimal sequencing, of deciding whether monetary cooperation or market integration might usefully be attempted first. The key concern is to identify the most promising catalyst, the cooperative effort that would be best jump-starting the process of economic, financial and monetary integration (Hochreiter and Silkos, 2002).

Given the implications of previous exchange-market crises which are still being distilled by economists and policymakers, a critical lesson is that no regime or monetary unification will survive if the rules that make it work are systematically violated (Hochreiter and Silkos 2002). It is well understood that violation of the rules governing monetary policy will obviate a soft peg. The experience of some countries in Latin America, e.g., Argentina and Mexico, provide ample evidence of where violation of the rules governing fiscal policy will undermine a hard peg. The experience also showed that improper identification of the determinants of the choice

of exchange rate regime, the empirical and policy issues, and costs and benefits associated with each regime could precipitate the exchange rate crisis.

Several studies have considered exchange rate dynamics and its relationship with macroeconomic variables in country-specific studies, but there is paucity of empirical evidence on determinants of the choice of an exchange regime at cross-country and regional level, particularly, the WAMZ sub-region, given the current state of affairs regarding the proposed single currency drive in which sound exchange rate policy management is relevant. It is this gap in the literature that has made this study important. The specificity of this paper is thus, to empirically investigate the determinants of exchange rate regime, and in particular, examine the empirical and policy issues associated with exchange rate choices in the WAMZ, for greater economic and monetary integration.

Against this background, the study raises the following research questions:

(i) What are the critical variables that influences (determine) the choice of an exchange rate regime at any point in time or across time in the WAMZ?

(ii) What are the key empirical and policy issues associated with the choice of an exchange rate regime?

In line with the research questions, this paper has the following objectives:

(i) Empirically examine critical variables influencing the choice of an exchange rate regime at any point in time or across time in the (WAMZ).

(ii) Examine the key empirical and policy issues associated with the choice of an exchange rate regime.

Following this introduction, the paper is organized as follows. Section two consists of literature review which considers key theoretical, empirical and policy issues associated with the choice of an exchange rate regime. Section three contains methodology, model specification and data, while section four contains the empirical results and analysis. Section five contains conclusion and policy recommendations.

2. REVIEW OF LITERATURE

2.1 Theoretical Review

2.1.1. Optimum Currency Areas (OCAs): Static and Dynamic Considerations

The OCAs credited to the celebrated works of Mundell (1961), and Mckinnon (1963) draws heavily on contemporary debates about fixed versus flexible exchange rates,

creating a common currency as the extreme case of a fixed exchange rate. The theory argues that the optimal area for a system of fixed exchange rates, or common currency, is one that is highly economically integrated. It specifies that the decision to join a currency area involves the relinquishment of an independent national monetary policy to follow a unified one or the fixity of the national mutual exchange rate (Cohen, 1992). Accordingly, if the countries specific monetary policies are highly correlated, it will be less costly to delegate monetary policy to one central bank (through monetary union). Nevertheless, where each country surrenders her national monetary policy to join a monetary/currency union, the use of fiscal stabilization as a tool by each member country to achieve macroeconomic stabilization may become imperative. Nevertheless, as timely as the need for monetary union and single currency in West Africa, the synchronization of business cycles of the participating countries and the attainment of optimal macroeconomic policy has become imperative (Tirelli, 2010, cited in Opueetal, 2017).

The recent discussion and resurgence in currency union by the countries of the WAMZ is partly invigorated, at least by the completion of the European Monetary Union (EMU). The apparent success of the European experiment has impelled countries around the world to take stock of their exchange-rate regimes and to ask whether currency union offers a superior prospect. In investigating this issue, economists and policymakers typically compare the microeconomic benefits with the microeconomic costs (Hochreiter and Silkos, 2002). The microeconomic benefits are well-known and include lower transactions, elimination of currency risk and efficiency and scale economies from integration of markets and increase correlations among members' business cycle (Frankel and Rose, 1998). The major costs are foregoing seigniorage and loss of policy independence. Economic costs and benefits are nevertheless, the principal drivers of trade and financial integration. In the European grand enterprise, for example, political considerations as well as institutional and legal structures played key roles, and, enabled the unification process to continue even when the economic justification was weak (Hochreiter and Silkos, 2002).

A major criticism of floating rates is that their perceived high volatility and sustained misalignments discourage trade, and hence economic growth and that currency union offers a superior alternative from this perspective alone. Excessive volatility is perceived to be potentially threatening to emerging economies with significant external debt, where it contributes to the ''fear of floating'' and encourages destabilizing foreign exchange market intervention (Calvo and Reinhart, 2002). This deleterious effect from volatile exchange rates under the floating regime can result into pronounced macroeconomic instability, which undermines the monetary union. Belke and Gros (2007) empirically examine the effects of exchange rate volatility on investment and employment on this issue and find that exchange rate variability

negatively affects investment, output and employment and obviates monetary union. In the same vein, Willet (2004), maintains that for countries that are more integrated with international capital markets, intermediate regimes (mainly soft-pegs and tightly-managed floating regimes) have been more crisis-prone on account of destabilizing short-term capital flows. On the other hand, Bubula and Otker-Robe (2003) asserts that pegged regimes have been characterized by a higher incidence of crises than floating regimes. Hard pegs were popular partly because it was believed that it constitutes the most visible means of signalling adherence to a rule that will ensure macroeconomic stability.

The theoretical literature on optimal stabilization in open economies shows that it will sometimes be desirable to allow short-run inconsistencies develop between exchange rate and domestic macroeconomic policies. Using reserves fluctuations to maintain a stable exchange rate under certain circumstances (such as temporary shocks and exogenous shifts in asset preferences) can help smooth out the effect of shocks better than either exchange rate or domestic policy adjustments. Thus, for example, fixed rates may operate as automatic stabilisers in the face of domestic demand disturbances. Likewise, where shocks are reversible, maintaining fixed rates may avoid unnecessary adjustments. From this optimal policy perspective, where adjustment is the optimal response, the proportion that should be placed on exchange rate versus domestic policy actions should depend on the factors enumerated in the theory of optimum currency areas. These, in turn, depend on the patterns of shocks and the institutional and structural characteristics of the countries in question (Willett, 2004). Although OCA theory has traditionally been considered relevant for the choice of whether a country should adopt a fixed or flexible exchange rate, it is generally much more general.

In the debate on asymmetries, floating rates are generally considered particularly suitable for countries with idiosyncratic economic structures. The literature suggests that at least four elements are critical to the viability of currency union in the presence of asymmetric structures and shocks. They are labour mobility: the free movement of labour smoothens regional disparities in unemployment rates: capital mobility: savings and investment will seek out the most profitable opportunities while barriers to capital movement prevent this; openness and regional interdependence: it is worthwhile to use the same currency if goods move freely between the regions and if a significant portion of trade is done within a specific region; wage and price flexibility; resources can only be allocated to their best uses if wages and prices are sufficiently flexible. Otherwise, the exchange rate must perform those functions. As opined by Hochreiter and Siklos (2002), the inability to satisfy the static criteria of traditional OCA theory does not, however, obliterate the potential for currency unification. They posited that consideration would shift the focus to questions concerning the optimal

mix and sequencing of regional policies designed to fulfil the OCA criteria at some future date. This is the fundamental concern in the budding literature on self-validating or endogenous currency areas.

2.1.2 Varieties of Currency Unions

In the context of this paper, the two main options under currency unification are unilateral currency union, which includes dollarization, and coordinated currency union. Dollarizationbasically takes two forms. The first is market or informal, in which private parties elect to transact their business in U.S dollars. In this case, the dollar becomes a unit of account, a medium of exchange and store of value, even when the domestic currency is the only legal tender. The second is formal or policy dollarization, in which a country's government officially adopts the dollar as a parallel currency or as the only currency. In such situation, the adopted foreign currency (Dollar in this case) becomes a legal tender and plays the three fundamental roles of domestic currency, namely, medium of exchange, unit of account and store of value. Under official dollarization, the country gives up all seignorage and monetary independence. In a coordinated currency union, several countries either adopt a large member's currency or create entirely new money (Berg and Borensztein, 2000, cited in Hochreiter and Silkos, 2002).

A considerable disagreement on the costs and benefits of dollarization exist in the empirical literature. While some argue that it is a sensible option only in the most extreme conditions such as persistent economic mismanagement (Buiter, 1999), others are sceptical about the ability of dollarization to cure systematic ills (Eichengreen, 2001, 2002). The crux of the issue is that dollarization, as well as other fixed-rate systems provide an inflation anchor, but they do not ensure resolution of deep-seated structural and institutional problems. Dollarization may be too rigid for countries with emerging markets and evolving economic conditions structures (Hochreiter and Silkos, 2002).

The collapse in Argentina of a relatively rigid exchange-rate regime provides ample evidence that no fixed-rate regime, including dollarization, is sustainable if the authorities choose to violate the rule that sustains it or if the regime imposes constraints that are incompatible with existing institutional structures and practices. The feature that was believed to make currency boards and dollarization superior to soft pegs was the promise that the rules of the game would be extremely difficult to violate. The Argentina experience has shown that the rules of the exchange-rate regime are meaningless unless there is a national ability and commitment to abide by them. The experience has explicitly shown that costs of exit from a hard peg are indeed high ex-post, but evidently not high ex-ante to keep private behaviour and public policy in check. The alternative to dollarization is formal, coordinated currency

integration, which is economically and politically more intricate, as the European experience has shown. It is more complex in part, because it requires more encompassing institutional and political adjustments. It also raises questions about the timing and sequencing of monetary unification relative to economic integration more generally.

2.1.3 Nature of Aggregate Shocks

The choice of exchange-rate regime must take into cognizance the existence of asymmetries among countries. The existence of significant differences in economic structure and shocks reinforce the case for floating rates, unless there is sufficient flexibility of wages and prices and mobility or resources to accommodate adjustment. An important advantage of flexible rates is their ability to react to shocks and disturbances and thereby ease the burden of adjustment that needs to be absorbed by wages, prices and employment. This is the well-known buffer function of floating rates, particularly with the reality that ECOWAS countries are prone to vulnerabilities and external shocks. The floating rate also allows domestic monetary policy more room and flexibility to respond to disturbances, mostly idiosyncratic macroeconomic shocks not only in developed countries but in developing countries (Berg, and Borensztein, 2000).

Shock asymmetry refers to the distribution of the impact of some economic shock (i.e. sharing of macroeconomic risks) across the participating economies in a potential monetary union. If shocks are highly asymmetric-read uncorrelated-then, the required policy responses will differ across countries, andfloating exchange rate serves as a shock absorber and provides room for differentiated policy reactions. If the exchange rate is fixed, domestic monetary policy cannot move out of line with policy in partner countries, and hence the burden of adjustment must be absorbed in other ways Hochreiter and Siklos, 2002).

In determining exchange rate policy, it is important to consider the country's economic structure and institutional characteristics. For instance, WAMZ countries are characterized by the following:

(i) Heavy reliance on primary commodity production and export, sometimes a single commodity or narrow range of commodities;

(ii) Structural weakness reflected in heavy dependence on the external sector for essential imports, especially intermediate goods and raw materials;

(iii) Significant capital flows; and

(iv) Relatively low coefficients of price elasticity of domestics and foreign demand for imports and exports, respectively.

On account of these underlying features, the economies are usually subjected to internationally generated and transmitted shocks arising from volatility in commodity prices which provokes economic vacillations, particularly in terms of exchange rate volatility, and in the extreme, lead to exchange rate crises.

2.2 Review of Empirical Studies

Bosco (1987) used binomial and multinomial logit regressions to test the determinants of the exchange rate regime in developing countries. He concludes that the propensity of a fixed exchange rate is higher when the country is more open and domestic inflation is not far from world inflation. In the same vein, Savvides (1990, cited in Ziky et al. 2013) adopts a model to simultaneously determine countries with real exchange rate variability and the choice of an exchange rate regime. He maintains that countries with real exchange rate variability are more likely to adopt a flexible exchange rate regime, while greater capital mobility is associated with exchange rate regimes.

Klein and Marion (1994) were particularly concerned with the estimation of the determinants of the duration of a fixed exchange rate. They used the logit model for estimating the monthly probability of leaving an exchange-rate peg, particularly for developing countries. Using a logit model which focuses on the roles of structure, misalignment and political costs of exchange-rate changes can provide new insights into the factors that influence the decision to maintain peg month by month. A number of important conclusions can be drawn from this postulate. First, when a country's government is concerned about its country's competitive position, its decision about how long to stay on a peg will be influenced not only by the degree of real exchange misalignment but also by the structure of the economy. Structure affects the cost of a given misalignment. Openness and trade concentration, which have long been considered to influence the choice of exchange-rate regime, influence its duration as well. The findings by these authors reveal that greater openness reduces the monthly probability of leaving a peg in the sample of countries studied. Increased trade concentration with the trading partner to whom the country is pegged increases the monthly probability of leaving a peg, though this result is not robust across all specifications and samples. Political factors are also relevant. The probability of a devaluation increases immediately after a regular or irregular executive transfer (Klein and Marion, 1994). In general, all of the empirical papers use cross section data, with the clear disadvantage that they cannot capture the recent dynamics of the economy at the moment when the regime choice is made (Ziky et al., 2013).

Odedokun (1997) using a sample of 38 African countries examine the impact of macroeconomic policies, devaluation and fundamentals on real exchange rate. The findings show that public sector fiscal deficits, growth of domestic credit, domestic

absorption-GDP ratio, government consumption-GDP ratio, private consumption-GDP ratio, improvement in terms of trade, income per capita influence exchange rate.

Murray, 2000) use logit regression sought to investigate determinants of the choice of an exchange rate regime. The findings show that countries where agriculture or resource sectors make up a significant share of GDP, may prefer floating rates as a buffer against movements in world commodity prices A negative commodity price shock causes the exchange rate to depreciate, thereby easing downward pressures on domestic commodity prices. However, the depreciation also allows prices to rise throughout the economy and thus contributes to domestic price inflation.

Kurtner and Fibla (2001) employs binary choice model to investigate the determinants of exchange rates regime in of some EU countries before joining the EU. The findings reveal that output per capita, openness to trade, government consumption, foreign reserves, inflation and degree of structural shock have significantly influenced their choice of exchange rate regime. Drine and Rault (2003) investigate the determinants of exchange rate in the Middle East and North Africa (MENA) countries. The empirical results show that output per capita, government consumption, real interest rate differentials, and the degree of openness of the economy are critical to the choice of exchange rate regime.

Siklos and Hochreiter (2002) using theoretical and empirical review approach considers the key issues and state of play in the debate on optimal exchange rate regime in the context of monetary union. They established that despite convergence criteria, strong political will and commitment and increased policy coordination and harmonization are critical to the long-run goal of monetary union.

In a similar study, Hochreiter et al. (2002) investigate the annual date relevant for a number of countries to achieve the convergence for monetary union. They compared the convergence data for the Americas and the Antipodes with Euro-zone, Canada, as well as New Zealand and Australia in terms of whether they satisfy the convergence criteria. The exchange rate criterion is not applicable since all three countries are classified as having freely floating rates. The empirical evidence suggests dramatic improvements in inflation control, but minimal success in reducing the nominal interest rate (interest rate convergence criterion). The available debt and fiscal deficit data present a mixed picture, with some countries within or close to the limits, while others significantly exceed them. Von Hagen and Zhou (2002) examine the potential variables in influencing the choice of exchange rate regime in some transition economies. They employed multinomial regression model. The findings show that it is mainly influencedbythe authorities' economic objectives, the structural characteristics of the economy and the nature of shocks to the economy.

Takaendesa (2006) examines the behaviour and fundamental determinants of exchange rate in South- Africa. The empirical results show that real interest rate differential, domestic credit, openness and technological progress have a significant impact. On his part, Stancik (2006) found that the factors that explain real exchange rate volatility among the new EU members include: level of output, openness of an economy, inflation, interest rates, domestic and foreign money supply, the exchange rate regime and central bank independence.

Ziky et al (2013) using theoretical and empirical evidence found that no single economic theory alone and structural economic characteristics explain the choice of an optimal exchange rate regime but that it is best explains by a combination of authorities' economic objectives, country-specific structural economic characteristics, optimum currency area, nature and size of shocks, openness of the economy and economic integration, financial integration and trade-off between credibility and flexibility by monetary authority, etc. Furthermore, the importance of each consideration tends to change over time. They concluded that the choice of an exchange rate regime depends on the nature and size of shocks, the structure of the economy, and a continuous revision of the economic targets of the policymakers.

2.2.1 The Role of Fiscal Policy

Although monetary policy receives much of the central attention in the discussion of exchange-rate, the role of fiscal policy is important. This is because much of the exchange-rate crisis has been attributed to fiscal management (Mussa, 2002). The role of fiscal imprudence in perpetuating exchange rate crisis and macroeconomic disequilibrium in many West African countries has, in particular, necessitated the need for sound fiscal management, through cautious fiscal policy and fiscal prudence.

While the importance of fiscal discipline is not in contention, it is difficult to find compelling empirical evidence on the existence of a systematic relationship between fiscal policy and the exchange-rate regime, as Obstfeld and Rogoff (1995). Crow (1999) argues that the floating currencies prevent fiscal irresponsibility on the ground that it cannot be floated off by depreciation. Grubel (1999) and Courchene (1999) maintain that a common currency would have a positive impact on fiscal discipline through the external constraint on debt and deficit spending. As enunciated earlier, however, it is probably not realistic to expect any exchange-rate regime on its own to impose fiscal discipline. A key role falls upon domestic statutes and institutions. The relationship between fiscal policy and the exchange rate takes on additional complexities in the inter-temporal context, as Tornell and Velasco (1995) point out. In such a setting, slipshod fiscal policy today can generate fears of future devaluation, and thereby destabilize the system. In such circumstances, the advantage of floating rates is that they allow bad fiscal policy to be reflected more quickly in current

exchange-rate movements, whereas pressures are allowed to build and accumulate under fixed rates until they overwhelm the system.

One key issue under discussion concerns the role of fiscal policy as a shock absorber during cyclical swings. Some critics have asserted that the function has been largely emasculated, while others maintain that within the context of a medium-term goal of rough fiscal balance or surplus, there is enough flexibility to offset "normal shocks" (Hochreiter and Silkos, 2002).

Eichengreen and Von Hagen (1996) raised a related issue by pointing out that too much fiscal discipline in a monetary union can impede coordination of stabilization policies. It may prevent members from cooperating in the defence of a partner in trouble, for fear of violating the pact and/or undermining system-wide credibility. Unlike the United States, the EU is not designed for union-wide tax transfers and so risk-sharing at the fiscal level is rather limited (Gramlich & Wood, 2001). Counter-cyclical fiscal transfers are thus confined to the level of nation states.

2.2.2 Business Cycle Synchronicity

In addition to asymmetries in shocks, differences in the timing of business cycles may undermine the viability of currency union. A critical issue in this respect is, whether business cycle synchronicity is a necessary pre-condition for the adoption of currency union or whether the currency union contributes to synchronization. Frankel and Rose (1998) suggest that fixed exchange rates, including currency union, promote economic integration and thereby increase correlations among member's business cycles (Rose and Engel, 2000). However, evidence by Ballabriga, Sebastian and Vales (1999) shows that common currency area in Europe has not led to synchronized business cycles across Europe.

Krugman (1993) and Bayoumi and Prasad (1996) make the opposite case. To the extent that economic integration fosters specialization among members, as traditional trade theory would suggest the member countries will become more diverse and asymmetric in production structure and, hence, more exposed to dissimilar industry-specific shocks. This will tend to make business cycles more idiosyncratic and asymmetric. These arguments, however, are relatively traditional and disregard recent innovations in trading patterns and cross-border production sharing. If countries of a monetary union participate in cross-border production sharing, sector-specific shocks will cross (transcend) borders as well. While the severity of the repercussions may vary with the importance of the affected sector in each member's overall economic activity, the result will nevertheless be to increase cyclical symmetries (Arndt, 2002). While the theoretical debate continues, the empirical evidence on the cyclical convergence is rather mixed. Lafrance and St-Amant (1999) find that business cycles

may become more symmetric if demand shocks dominate, countries are subject to common external shocks, or intra-industry trade dominates. As a result, monetary union between Canada and the U.S. appears more costly from the point of view of shock asymmetry than from the perspective of business cycle asymmetry. A possible explanation is that the U.S business cycle is quickly transmitted to Canada, due to the size of the U.S economy and the strong economic relationship between the two countries. Hence, the two countries' business cycles are more correlated than before. Berg, Bornsztein and Mauro (2000) conclude that cycles between any pair of Latin American countries are no more correlated than cycles between emerging countries, generally, under whose ambit the countries of WAMZ fall.

Corsetti and Pesenti (2002) develop an alternative version of the endogenous optimum currency areas (OCA) argument by showing that firms adapt pricing strategies in ways that allow currency areas which are sub-optimal *ex-ante* to become *ex-post.* In particular, depending upon the exchange-rate regime in place, firms choose the optimal pass-through, and this dictates whether shocks render business cycles symmetric across countries. For instance, if there is zero pass-through, there are no costs in giving up an independent monetary policy, and monetary union may then be a feasible option. At both ends of the spectrum, therefore, exchange-rate regimes can be self-validating (Hochreiter and Silkos, 2002).

2.2.3 Measuring the Likely Costs of Monetary Union

As an approach to measuring the likely costs of monetary union, we apply the model developed by Alesina and Grilli (1992, cited in Hocheiter and Siklos, 2002), which focus on the volatility of output growth among countries. The approach employs a standard official loss function, with inflation variability and output variability as the arguments. As the difference in output variances rises between two countries and the correlation between output growth falls, the costs of monetary union rise. These two factors are combined to define '' economic distance in the following way:

$$\{(\sigma c/\sigma T)^2 + (1+\rho_i)^2\}^{1/2}$$

Where σc is the standard deviation of output growth in the candidate country, σT, the standard deviation of output in the target country, and ρ_i is the simple correlation for output growth between the candidate and target economies. Rising economic distance increases the cost of monetary union (Hockreiter et al, 2002). An implication of this position is that the more the inflation variability and output variability in the zone, the greater the cost of monetary union. Hochreiter and Silkos (2002) using this approach plots the relationship (correlation) between inflation variability and output volatility to measure the likely costs of monetary union with respect to the Euro-zone. The

findings show that higher output and inflation variability constrains the push towards economic and monetary integration.

3. METHODOLOGY

3.1 Model Specification

In what follows, we specify an empirical model of the determinants of an exchange rate regime since the choice of an exchange rate regime in any country at any point in time or across time is driven by the fundamental prevailing economic situation/dynamics of the economy, degree of shock and the goal of the external sector given by the subsisting challenge faced by the country. Since the WAMZ is made up of small, open economies with similar structural peculiarities and shocks, we take them as similar with respect to correlations between, size, dynamics, structural economic peculiarities and shocks, and as such, do not vary much vary from what is observed for the overall zone.

To identify the determinants of exchange rate regime in the WAMZ, this paper specifies and estimates a multinomial logit regression model. A logit model is essentially a binary choice model that assumes an entity, in this context a country is faced with two alternatives-fixed exchange rate regime and flexible exchange rate regime which at any point in time or across time is dependent on some country-specific characteristics, nature and degree of shocks and the goal of the external sector. Following Guobadia (2010), who in turn adapt Iyoha and Udegbunam's specification, the binary variable (a univariate dichotomous dependent variable) which denotes the occurrence of two alternative outcome-fixed and flexible exchange rate regimes is specified as a function of a vector of country structural economic peculiarities, degree of shocks, the goal of the external sector and other determinants of exchange rate regime in line with the extant literature. A logit model is based on the cumulative logistic probability function. A detailed description of the logit model used in this study is presented in equation (1) through (4) below:

$$P_i = F(Z_i) = F(\alpha + \beta X_i) = \left(\frac{1}{1 + e^{-zi}}\right) \quad (1)$$

Where P_i = probability that fixed exchange rate regime will be adopted by WAMZ

e = base of the natural logarithms

X = vector of independent variables (structural economic characteristics, degree of shock and the goal of the external sector and other determinants)

β = vector of parameters to be estimated

α = constant term in the model

Z_i =desirability/non-desirability indicator (D/ND) i.e the logarithm of the likelihood that WAMZ countries would adopt a given exchange rate regime, and in particular, a fixed exchange rate regime, anchored on monetary union

Z_i is hypothesized to be a linear function of D/ND state of country:

$$Z_i = \alpha + \alpha X_i \quad (2)$$

From equation (1) and in line with Pindyck and Rubinfeld (1991), let

$$e^{Zi} = \left(\frac{Pi}{1 - Pi}\right) \quad (3)$$

Taking the natural logarithm of both sides gives

$$Z_i = \log \quad = \alpha + \beta X_i \quad (4)$$

Therefore, the estimated logit model describing the likelihood/desirability of a fixed exchange rate in a WAMZ country is:

$$Z_i = \log \left(\frac{Pi}{1 - Pi}\right) = \alpha + \beta X + e_i \quad (5)$$

Where Z_i = is the indicator of the desirability/choice of exchange rate regime of country i, and is the logarithm that country i is in an economic integration, and therefore proposes a single currency; P_i is the probability /likelihood that the country would adopt fixed-rate regime, which is favourable and congenial to currency union; â is a vector of parameters to be estimated; X is a vector of independent variables (determinants of exchange rate regime); á is a constant term, and $e_i$is the error term. The model is estimated for the period 1995-2015. The dependent variable (EXRR) is a binary choice variable assuming the value of 1 for a fixed exchange rate regime and the value of 0 otherwise. The explanatory variables used are: growth rate of RGDP,(GRGDP)-a measure of real economic output, government consumption (GCONS) - a measure of fiscal policy, openness of the domestic economies of WAMZ- measured: as sum of exports [(X) + imports (M)]/GDP, Real interest rate differential (RIRD), Foreign reserves (FRES), Domestic inflation in the economy (INF) and INFV=Inflation variability, made to capture the effect of structural shock) - Inflation volatility is computed as the standard deviation of the logarithm of inflation rate. It can also be generated using the Generalized Autoregressive Conditional Heteroskedasticity (GARCH) from the annual inflation rate.

GRGDP, OPN and INF are made to capture the symmetry (similarity or correlations) between the countries of the WAMZ in terms of economic dynamics and structural characteristics, while INFV is used to capture peculiar structural shocks in the zone.

The empirical specification of the model to be estimated is therefore:

$$EXRR_{2i,t} =, \alpha_0 + \alpha_1 GRGDP_{i,t} + \alpha 2GCONSi_{,t} + \alpha_3 OPN_{i,t} + \alpha 4RIRDi_{,t} + \alpha_5 FRES_{i,t} + \alpha_6 INF_{i,t} + \alpha_7 INFV + \varepsilon_{i,t} \ldots (6)$$

Where *i* represent country (i.e. 5 countries of WAMZ) and *t* represents the period (1995-2015).
Given the nature of this study, a dichotomous (binary) multinomial regression technique is adopted in which the adoption of a fixed exchange rate regime anchored on monetary union takes the value of 1 and 0 in the case of flexible exchange rate regime; this including the variances between them. In this case, a binomial logit model is adopted since the logistic model which uses a logistic cumulative distribution frequency (CDF) is widely believed to be superior to the probit model which uses the cumulative normal distribution for the critical transformation.

3.2 Data

This study employed a balanced panel data covering the period 1995-2015 for the five (5) countries of the West African Monetary Zone (WAMZ). The West African Monetary Zone is made up of five countries in West Africa; made up of The Gambia, Ghana, Guinea, Nigeria and Sierra-Leone, with the objective of attaining full economic and monetary integration, through the coordination and harmonization of monetary and fiscal policies, and their convergence. These countries are members of the Economic Community of West African States (ECOWAS). ECOWAS is a regional economic grouping of 15 countries formed in 1975 to accelerate the economic integration, industrialization and economic development of participating member countries (Iyoha, 2004). The relevant data were obtained from the World Bank's World Development Indicators (WDI) and various publications by ECOWAS.

Table1. Definition of Variables and Measurement

Variable	Definition and Measurement
Regressand: Exchange rate Regime	Firmly Fixed or Flexible (floating) exchange rate. A fixed regime is one in which the currency is fixed at a specified rate of exchange to other currencies. The variants are: currency union, dollarization and currency board. A floating exchange rate, on the other hand, is largely market-determined without an ascertainable or predictable path for the rate. It consists of managed floating and independent floating. Fixed exchange rate regime, therefore, takes a value of 1 and the value of 0 otherwise.
Regressors: Growth rate of real GDP	Annual real GDP growth
Inflation rate	Inflation rate is measured as changes in consumer price index (in dollar equivalent)
Inflation volatility	Volatility is computed as the standard deviation of the logarithm of inflation
Foreign Reserve	Foreign reserve is the nation's foreign exchange reserves (in Dollars equivalent)
Openness	OPN= Ratio of total imports plus exports to the GDP (i.e Import + Export/GDP (in Dollars).
Government Consumption	Government Consumption is ratio of government consumption expenditure to the GDP (in Dollars)-It is made to capture the systematic relationship between fiscal policy and the exchange-rate regime
Real Interest Rate Differential	Interest rate differentials refer to the difference between the country's lending rate and the world interest rate (captured by the United States interest rate), while real interest rate is nominal interest rate divided by consumer Price index

Source: Author's compilation (2017).

From economic theory, growth rate of real GDP, trade openness, foreign reserves, government consumption (proxy for fiscal policy), inflation and inflation variability are expected to be critical in determination of exchange rate regime. For instance, countries whose production and exports are not diversified will be more vulnerable to shocks and require exchange rate flexibility to facilitate adjustment to shocks. This is because an exchange rate can get seriously misaligned under a peg. However, a diversified economy (i.e. with increased production capacities) may be in a better

position to float, since the exchange rate is likely to be more stable where it floats in such a context (IMF, 2005). The more open the economy to trade and the greater the degree of integration of the economy's with its trade partners, the stronger is the case for fixed exchange rate as exchange rate variability may discourage trade and investment. A fixed exchange rate is viewed as a means to promote trade through reductions in exchange rate variability and the associated transaction costs (IMF, 2005, cited in Ziky et al., 2013). In line with Frenkel and Azienman (1982) if shocks are foreign and real domestic shocks, such as a shift in demand of domestic goods, and even foreign nominal shocks, a greater degree of exchange rate flexibility is preferable, but when the country experiences nominal domestic shocks, an exchange rate adjustment is not necessary. In countries where monetary shocks are more important than real shocks, a fixed exchange rate will be more effective in stabilizing output. In these cases, a high degree of capital mobility makes the fixed exchange rate more potent.

In countries where real shocks are more significant, a fixed exchange rate provides better insulation of output if capital mobility is low. However, under a fixed-rate regime, high capital mobility will amplify the destabilizing effects of a real shock. Thus, in countries where real shocks are more important and capital mobility is high, flexible exchange rates will be preferable (IMF, 2005). In advanced economies, growth and economic resilience has benefited from flexible exchange rate regimes in environments where central banks had credibility in maintaining price stability and the financial sector infrastructure was strong. In contrast, developing countries with institutional weaknesses and difficulties in maintaining low inflation and its stability may find pegged exchange rates optimal. Thus, countries with high inflation and underdeveloped financial sectors could benefit from pegging their exchange rates. The main argument in favour of fixed rates is their ability to induce discipline and make monetary policy more credible because the adoption of lax big monetary and fiscal policies would eventually lead to an exhaustion of reserves and the collapse of the fixed exchange rate system, implying big political costs for policymakers. Finally, the more vulnerable an economy is to external shocks, particularly exchange rate shock, the stronger is the case for an accumulation of high reserves to serve as precautionary buffer. In this case, accumulations of reserves become stronger in the case of flexible exchange rate regime. Low level of reserves, on the other hand, is compatible with fixed-rate, as insulation from external shocks may not be pronounced, making exchange rate adjustment not necessary.

4. EMPIRICAL RESULTS AND ANALYSIS

The empirical result of the logit regression estimation is presented in Table 3 below. An examination of the results shows that all the explanatory variables contribute to explaining the systematic variation in the dependent variable. The goodness of fit is impressive with 93 percent, while the Pseudo- $R^2$is stands at 81 percent.

Table3. Logit Maximum Likelihood Estimation

Dependent Variable: ERR

Variable	Coefficient	T-Ratio
Constant	1.013	1.803
RGDPPC	0.224	2.143
GCONS	0.103	1.875
OPN	0.337	2.011
RIRD	-0.018	-1.650
FRES	0.227	2.015
INF	-0.1602	-1.980
INFV	-0.127	-2.002
Goodness of Fit = 0.9315, Pseudo - R-Squared = 0.813, Log likelihood = -5.40		

In terms of the significance of the explanatory variables in determination of exchange rate regime, the significance of the individual coefficients of the variables (t-values) is considered. From the results, the coefficients of real GDP growth (a measure of real economic output), foreign reserves, openness and government consumption are found to be very significant in the determination of exchange rate regime. The coefficients of per capita output and foreign reserves are significant at the 1 percent level, implying that both variables are strong determinants in the consideration of exchange rate and by implication, monetary union. Countries whose production and exports are not diversified will be more vulnerable to shocks and require exchange rate flexibility to facilitate adjustment to shocks. This is because an exchange rate can get seriously misaligned under a peg. However, a diversified economy may actually be in a better position to float since the greater flexibility is required in the exchange rate to accommodate external shocks and vulnerability and facilitate adjustment process (IMF, 2005). The coefficient of openness and government consumption are also shown to be statistically and economically significant at the 5 percent level in explaining the choice of exchange rate regime per time. In particular, the more open

the economy to trade and the greater the degree of integration of the economy's trade with its partners, the stronger is the case for fixed exchange rate as exchange rate variability may discourage trade and investment. A fixed exchange rate is viewed as a means to promote trade through reductions in exchange rate variability and the associated transaction costs (IMF, 2005, cited in Ziky et al., 2013). Bosco (1987) finds that the propensity of a fixed exchange rate is higher when the country is more open to trade, and there is greater degree of integration of the economy's trade with its partners.

Real interest rate differential is significant only the 10 percent level, implying that its impact in the determination of the choice of exchange rate in WAMZ is not very strong. This result confirms the findings of Petersson (2005). The coefficients of inflation rate and inflation variability are both significant at the 5 percent level, implying their strong influence in the determination of exchange rate regime. Since inflation is a proxy for macroeconomic policy environment and its variability-a measure of structural shock, it invariably implies that the optimal choice of an exchange regime depends on the structure of the economy, as well as the nature and size of macroeconomic shocks. Frenkel and Azienman (1982) argue that if disturbances are foreign and domestic real shocks and even foreign nominal shocks, a greater degree of flexibility is preferable. However, when the country experiences domestic nominal shocks, the fixity of exchange rate becomes desirable. In the same vein, if monetary shocks are more important than real shocks, a fixed exchange rate will be more effective in stabilizing output. In such situations, a high degree of capital mobility makes the fixed exchange rate desirable and more effective. In countries where real shocks are more important, a fixed exchange rate provides a better insulation of output if capital mobility is low. However, under a fixed exchange rate, high capital mobility will intensify the destabilizing effects of a real shock. Thus, in countries where real shocks are more important, and capital mobility is high, flexible exchange rate will be desirable (IMF, 2005, cited in Ziky et al., 2013).

5. CONCLUSION

This paper has empirically examined the determinants of exchange rate regime in the WAMZ countries. The empirical results show growth of real GDP (a measure of real economic output), foreign reserves, openness, inflation, inflation variability and government consumption are the most important variables influencing the choice of exchange rate regime at any point in time or across time.

Given the empirical findings of this study, the basic conclusion is that the choice of an exchange rate regime in any country, particularly the WAMZ at any point in time or across time is driven by the fundamental prevailing economic situation (structural economic characteristics), nature and degree of shocks, economic objectives of the

policymakers and the goal of the external sector (external policy objective), given the subsisting challenge faced by the country.

The determination of an appropriate exchange rate regime that minimizes undue vacillation and which is well targeted to promote growth and macroeconomic stability, will, accelerate the proposed push for greater economic and monetary integration in the countries of the WAMZ. Against this backdrop, the economic criteria for currency unification (successful launch of a single currency) in the WAMZ would require sound macroeconomic performance, determination of appropriate (optimal) exchange rate regime, through sound exchange rate management policies, strong political will and commitment, as well as institutional and legal structures. In order words, monetary unification in the WAMZ can only be achieved by a combination of sound macroeconomic policies, appropriate exchange rate policy, policy coordination and harmonization, strong political will and commitment, and legal and institutional mechanisms which are imperative.

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