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FISCAL DOMINANCE IN THE WEST AFRICAN MONETARY ZONE: AN EMPIRICAL INVESTIGATION

Ibrahima Diallo and Isatou Mendy¹

Abstract

This paper investigates the existence or otherwise of Fiscal dominance (non-Ricardian) regime in the West African Monetary Zone (WAMZ) from 1990 through 2017 using a Structural Vector Auto Regressive (SVAR) approach. Following Canzoneri, Cumby and Diba (2000), the study made use of public liabilities and primary balance as the main variables of the model. Our findings confirm the existence of fiscal dominance regime in Ghana, Guinea and Sierra Leone, and monetary dominance regime in The Gambia and Nigeria. The main policy recommendations proffered are that fiscal policy should be based on an active reaction function for countries with fiscal dominant regimes in order to allow primary surplus respond to change in debt thereby ensuring credibility and solvency. For those that exhibit Ricardian regimes phenomena, they should have robust and effective monetary policy re-enforced by strong and efficient institutions, autonomous and devoid of any fiscal interference and policy accommodation that may lead to inflation bias.

Keywords: Fiscal Dominance, Fiscal and Monetary Policy, SVAR, WAMZ

JEL Classification: C32, E58, E62

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The views expressed herein are solely of the authors and do not represent or necessarily reflect that of the West African Monetary Institute (WAMI).

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1.0 INTRODUCTION

Countries facing revenue shortfall are often inclined to finance their fiscal gaps by borrowing from the domestic money market due to narrow fiscal space and difficulty in accessing external finance. Furthermore, owing to underdeveloped financial markets and cheaper central bank financing, governments in developing countries, more often than not, resort to borrowing from the central bank above the statutory limit, due to the limited central bank independence. In such context, government spending could be a critical factor driving growth of money stock and ultimately the price level in such countries.

In pursuit of monetary policy objectives, in a normal situation, a central bank in an open economy acts to contain growth in credits to the government to limit money supply. This neutralises monetary expansion that could indirectly restrain government from excessive expenditure that is inflationary. Central banks that are able to neutralise government financial demands are deemed to be independent and exhibit a monetary dominant regime in which the price level does not seem to be determined by the needs of fiscal solvency and sustainability. This phenomenon is more common in advanced and emerging market economies than in the developing economies (Montiel, 2013).

In the context of monetary dominance² (MD) or Ricardian regime, fiscal policy is passive, implying that the fiscal authority adjust the primary balance by catering for most, if not all debt due, thus helping to reduce debt accumulation and its effects on price level. In this case, primary surplus responds to change in debt to ensure solvency (Bohn, 1998), and monetary authority does not need to react to any budgetary deficit from the fiscal authority. This situation is called Ricardian regime (Woodford, 1995) since there is no policy accommodation by the monetary authorities. In a MD regime, the central bank has the discretion not to add to the debt level through *seigniorage* revenue since government is in a position to adjust the primary balance to limit the growth of debt.

On the other hand, in a fiscal dominant (FD) regime, the fiscal authority prepares the budget, independent of public liabilities levels. This leads to large and persistent fiscal deficits that oblige the central bank to intervene, otherwise the price level would adjust to ensure solvency. In this context, the central bank accommodates most, if not all, government financial demands to ensure that fiscal policy remains solvent while abandoning its price stability role, that is, of keeping inflation at bay. The main focus of central bank is then shifted from price stability to debt stability. Indeed, if Milton Friedman's famous statement that, "inflation is always and everywhere a monetary phenomenon" is correct, it is therefore also true that "rapid money growth is conceivable without an underlying fiscal unbalance but it is unlikely and in consequence, rapid inflation is almost always a fiscal phenomenon" (Fisher and Easterly, 1990). This situation regarding the role of fiscal and monetary policy in price determination has been discussed in the fiscal theory of the price level (FTPL) (Sims, 1994; Woodford, 1995, 1998).

Moreover, in a FD regime, the fiscal authority does not care about the increase in debt since it does not adjust by cutting down expenditure or by raising taxes to bring down level of debt stock, it rather relies on central bank financing to fund the fiscal deficit. McCallum (1984), and Hakkio and Rush (1991) posit that amassing debt that is not discounted for future expenditure creates room for government default. Earlier, Calvo (1978) opines that in such scenario, government may, plausibly, not be able to rule out a default coming from unanticipated inflation due to problem of time inconsistency. The central bank is normally obliged to accommodate fiscal policy in instances where the government does not take into account public debt outstanding by adjusting future expenditures and revenue mobilisations. Central

² Sargent and Wallace (1981) was the first to make the distinction between FD and MD regimes

bank intervention would therefore inflate the debt through an increase in future flows of the monetary base. Such actions by the central bank ultimately, in turn, affect the price level.

Further, the conduct and effectiveness of monetary policy could be greatly influenced by public perception about the credibility of fiscal policy. When the fiscal authority engages in deficit financing that is inflationary, the macroeconomic variables such as monetary aggregates that are under the control of the monetary authority, could go out of control rendering monetary policy ineffective. There would be inflation and exchange rate pressures due to amount of money in circulation. It is from this perceptiveness that the central bank is always keen to monitor the fiscal authority to avoid a situation where it would be obliged to intervene to finance budget gaps, and in so doing renders its policy and independence ineffective. In fact, the autonomy of the central bank can be determined by the size of budget deficits and the way they are financed (Fry, 1998).

The effects of fiscal dominance cannot be underrated given its disruptive tendency on macroeconomic stability. The implications of such negative effects constitute a significant cost to monetary authority given the central bank response's constraint to ensure price stability. This is so because fiscal policy is characterized by a pro-deficit bias and a procyclicality behaviour in most developing countries, on the one hand, and the pro-deficit bias in fiscal policy is transmitted directly into a pro-inflationary bias of the central bank, on the other hand (Montiel, 2013). To prevent these types of biases, most advanced and emerging economies put in place fiscal institutions built on fiscal rules and operating on target-oriented and/or procedure oriented basis (von Hagen and Harden, 1995).

In the WAMZ, the macroeconomic convergence criteria³, such as limit fiscal deficit, debt to GDP ratio, central bank financing of fiscal deficit, inflation, exchange rate variation and a floor on reserves were set for member countries to meet, before the monetary union could commence. In addition, all member countries (except Nigeria) are in a program⁴ with the International Monetary Fund (IMF), which prescribes a set of rules called the Performance Criteria and Indicative Targets (PCIT). All these requirements are set to mainly maintain macroeconomic stability and facilitate and sustain economic growth in the zone. Countries of the WAMZ have been challenged with both domestic and external factors, which have been a drag on both the convergence and performance criteria. Performances in meeting the criteria have been mixed due to diverse macroeconomic fundamentals of the individual countries. For instance, in 2016, The Gambia, Ghana and Sierra Leone met only one of the primary convergence criteria while Guinea, Liberia and Nigeria fulfilled three of the criteria and missed one. Inflation was the most missed criterion in 2016 with only two countries fulfilling it. Challenges of fiscal deficits, increased central bank financing and rising inflation have been, in most cases, attributed to governments' spending outlays and the absence of policy coordination (WAMI, 2016).

Looking at the characteristics of a FD regime highlighted above and its impact on macroeconomic stability, vis-a-vis the challenges that the WAMZ countries are facing in meeting the convergence criteria on a sustained basis, it thus becomes appealing to investigate the possible presence of fiscal dominance in the WAMZ economies and proffer policy recommendations in the event that there is FD so that countries can work towards meeting the criteria for single currency. The study therefore seeks to investigate the presence or otherwise of fiscal dominance regime in the WAMZ. To the best of our knowledge, this is the first attempt to empirically investigate FD or otherwise in the WAMZ. Past studies of FD focused on individual countries: Sanusi and Akinlo (2016), Ekpo et al (2015), Nachega (2005) and Alfredo Baldini and Marcos Poplawski Ribeiro (2011) on Sub-Saharan Africa. Investigating the

³ These criteria are: Fiscal deficit (incl. grants)/GDP: $\leq 3\%$; Inflation (end-period): single digit; Gross external reserves (months of imports): ≥ 3 ; Central bank financing of govt. budget deficit: $\leq 10\%$ of previous year's tax revenue; Exchange Rate Variation: $\pm 10\%$; Public Debt-to-GDP Ratio: $\leq 70\%$

⁴ Under the External Credit Facility (ECF) for Ghana, Guinea and Sierra Leone and the Staff-Monitor Program for the Gambia.

possible presence of FD in the zone would be our contribution to the existing knowledge on FD. By so doing the paper looks at the interaction between fiscal and monetary policy, uses SVAR to empirically test the existence of FD in the WAMZ. Our research, will investigate the existence of FD within the WAMZ economies and look at policy implications for both fiscal and monetary dominant regimes.

The paper is structured into five parts. Following the introduction, section II reviews the literature on studies of fiscal dominance in relation to other macroeconomic variables. A brief presentation of the evolution of public debts, liabilities and primary balance in the WAMZ countries is also presented in the same section. The data, model specification and estimation techniques feature in section III. Section IV reports empirical results whilst conclusion and policy recommendations are presented in section V.

2. LITERATURE REVIEW

The literature on fiscal and monetary policy interactions revealed varying views regarding the nature and transmission mechanisms. A significant strand of theoretical literature concedes that the distinction between FD and MD regimes can be obtained from how the government satisfies its intertemporal budget constraint (Bohn, 1998; Taner and Ramos, 2002; and Canzoneri, Cumby and Diba, 2000). On the other hand, a review of literature on how fiscal and monetary policies interact reveal three (3) broad categories. Some researchers look at how fiscal and monetary policies are interconnected in terms of policy action and the effects they exert on each other; others focus their attention on identifying which policy over-rides the other and the effects therein; and the rest examine the importance of policy coordination i.e. the right policy mix, the impact of lack of policy coordination and how damaging that could be to the policy objectives.

2.1 Empirical Literature

Numerous studies have documented the relationship between fiscal and monetary policy, and have theoretically and empirically revealed the conduits linking the two policies. It has been shown that fiscal or monetary dominance is one of the many channels through which the two policies are interconnected. According to Sargent and Wallace (1981), central banks can finance the deficit by printing money and selling bonds to the public thus going against their price stability objective. Besides its effects on inflation, fiscal dominance can be disruptive to economic growth, interest and exchange rates (Reinhart-Rogoff, 2010 and Cecchetti, Mohanty and Zampolli, 2011).

Afolabi and Atolagbe (2018) empirically analyzed fiscal dominance and the conduct of monetary policy in Nigeria, using the vector error correction mechanism (VECM) and cointegration techniques on data from 1986 to 2016. The results show that the variables of interest (domestic debt, budget deficit and money supply) indicate no significant effect on average price level despite domestic debt and budget deficit having significant explanatory powers on money supply. This led to the conclusion that there is no evidence of FD in Nigeria despite seeing a significant variation in money supply being explained by domestic debt and budget deficit.

Shaheen (2018) tests for fiscal dominance in Pakistan using Structural VAR for a data set ranging from 1977-2016. The sample was broken into sub-samples of ten years each to identify the period in which fiscal dominance was prevalent in Pakistan. The findings of the study reveal a positive and statistically significant relationship between real primary deficit (primary balance) and real primary liabilities for the entire sample period. The within sub-samples show prevalence of fiscal dominance during democratic (elected government) regime as opposed to military regime. This supports the fact that democratic regimes tends to have politically induced budgets owing to bigger cabinets and higher administrative costs. In contrast, military regimes have stringent economic policies that reduce fiscal deficits and plausibly ensure autonomy of the central bank.

Bianchi and Melosi (2017) in a simple model show the interconnection between public debt and inflation expectations, and the key mechanisms at play when there is no policy coordination. The results reveal that when fiscal authority disassociates its policy coordination from the central bank, all attempts at reining on inflation by the central bank ends up generating even wider fiscal imbalances leading to heightened inflation paths. This suggests that the monetary authority cannot fight inflation if the fiscal authority is not willing and committed to bring down its debt. In other words, without the support from the fiscal authority, any effort by the central bank to keep inflation at bay would be futile and counter-productive, resulting in heightened inflation and lower growth.

Sanusi and Akinlo (2016), investigate the presence of fiscal dominance in Nigeria, using a bivariate model of budget deficit and base money using data spanning from 1986 to 2013, and discover that shock to fiscal deficits does not lead to growth in base money, implying no fiscal dominance (non-Ricardian regime) within the study period. The results further reveal no causality between fiscal deficit and increase in base money.

Trenovski and Tashevska (2015) examine whether budget balances are set exogenously from public sector liabilities in Macedonia for the period 2000-2011, employing a recursive VAR model. The findings shows that cyclically adjusted balance of central government does not significantly respond to public debt changes, implying that the level of public sector liabilities is not factored much in the design and formulation of current fiscal policy in Macedonia. Results from their impulse response functions further buttresses the lack of consideration of public debt level in setting up of fiscal policy. This indicates the presence of regimes of fiscal dominance which over shadows monetary policy thus rendering it ineffective.

Makoto and Ndedu (2012) employs three scenarios of monetary accommodation to analyze the impact of deficit financing on inflation and determine the policy regime that prevails in Zimbabwe during the period under investigation. Using a VAR model on data ranging from 1980-2007, they establish the central bank's financing of government deficit to be highly inflationary under excessive central bank lending (i.e. far above the statutory credit limit), less significant under net credit position and substantially insignificant when financing is carried out within the bounds of the statutory corridor. This implies that central bank accommodation of government's excessive financial demand gave rise to fiscal dominance that could be inflationary. They, therefore, recommend that central bank should avoid financing fiscal deficits by printing money (restraining government persistent demand) and stick to the legal limit of financing budget gaps in Zimbabwe.

Baldini and Ribeiro (2011), in their investigation of fiscal and monetary determinants of inflation in low-income countries, examine the plausibility of Ricardian and non-Ricardian regimes. They use stochastic approaches of the non-structural VAR model on a large set of data (1980-2005) from Sub-Saharan Africa to determine the causes of fiscal dominance in SSA. The study employs both theoretical and empirical models to underscore the role fiscal policy plays in determining prices in small open economies facing budget constraints. It finds that public liabilities matter for price stability and the differences in the relative importance of the sources of inflation for the SSA economies is a result of the difference in exchange rate regimes. The paper also shows evidence of fiscal dominance amidst monetary policy independence in the case of the CFA.

Tapsoba (2011), using a panel of (22) inflation targeting and (36) non-inflation targeting countries, underscores the effects of inflation targeting IT on fiscal discipline. Applying 2SLS on data spanning from 1980 to 2003, the author estimates the effect of IT on central government fiscal discipline as measured by structural primary fiscal balances and finds that the impact of IT on fiscal discipline have no effect on the total sample, but is significantly positive for the sub-sample on developing countries. This was attributed to the different structural characteristics that negatively impact on central banks' IT

credibility. In order to be at par with developed countries' IT credibility, developing countries must undertake fiscal adjustments and structural reforms to gain public confidence for a successful IT regime. Therefore fiscal discipline is a necessary condition for a credible IT. The results also indicate that the positive effect of IT on fiscal discipline is more robust under a partial IT rather than on a full-fledged IT (FFIT) central bank regime. Thus it is recommended that countries go gradual on IT adoption by maintaining flexible framework and improved fiscal stance. Furthermore, the effect is also diverse, conditional on the degree of central bank independence, the level of financial deepening, trade instability and the extent of exposure to IT which is cumulative over time.

Michael Kumho et al (2008) employs three successive criteria in seeking to find if an aggressive monetary policy response to inflation is realistic in countries that suffer from fiscal dominance. They initially check for determinacy of equilibria and then rule out the determinate equilibria that often disturb the zero lower bound on nominal interest rates before ranking the remaining equilibria by computing their welfare implications. The results indicate that responding to government spending does not increase the set of inflation coefficients that give rise to unique equilibria but it is likely to respond to debt since the set of unique equilibria increased permitting a forceful reaction to inflation. Improvement in welfare that come about with the inclusion of fiscal variables in monetary policy rule is inconsequential. In order to fight inflation head-on and realise greater welfare, fiscal adjustment is undoubtedly essential for inflation targeting countries, as monetary policy alone cannot bring about macroeconomic stability. Thus the importance of policy coordination.

Resende (2007) reports a positive correlation between fiscal and monetary policy variables using cross-country estimates with different sub-periods between 1948 and 2005 for 18 countries in the Organisation of Economic Cooperation and Development (OECD) and 20 developing economies. The study uses the inter-temporal budget constraint to analyse the relationship between fiscal and monetary policies. In an inter-temporal budget constrain, it is assumed that any outstanding debt has to be financed by the present discounted value of current and future primary surpluses and seigniorage revenue. Given this, the author attempts to examine if debt is financed by any of the revenue streams, primary surplus or the printing of money and how important each of these is in influencing prices. The empirical results also showed that fiscal dominance is more evidenced in developing countries than in the OECD countries. The prominence of fiscal dominance in developing countries signifies the lack of independence of the central banks, since central banks respond to fiscal deficits through seigniorage, thus impacting on inflation. In OECD countries, the central banks are not obliged to finance government debt since most if not all debts are funded by the fiscal authority and so debt has a minuscule influence on prices.

Nachege (2005) adopts multivariate cointegration and vector error correction model on data from 1981 to 2003 to investigate the fiscal dominance hypothesis in the Democratic Republic of Congo (DRC), country characterized by rapid growing money supply, high inflation and hyperinflation, budget deficits and output decline. Inflation in the study is modeled as a fiscally driven monetary phenomenon taking into account economic theory, non-stationarity, cointegration and ergogeneity. The empirical results revealed a statistical significant long-term relationship between budget deficits and seigniorage and between money supply and inflation and this led to the conclusion that there is FD in DRC for the study period. The study also discover that the degree of FD evolved overtime in DRC such that there seemed to be a structural break around 1991 through the behavior of fiscal deficit, money supply and long-run inflation. This is shown with the SVECMs estimations where the FD intensified in about the period 1991-2000.

Blanchard (2004) in his paper drawn from lessons in Brazil on fiscal dominance and inflation targeting, presents a model of the interaction between interest rate, exchange rate, and the probability of default, in a high-debt high-risk-aversion economy such as Brazil. Using a one-period simple model on Brazilian

data from 1995q1 to 2004q1, the author empirically examine the effects of the real interest rate on the probability of default on government debt. The conventional interest rate channel indicates that an increase in interest rate will lead to exchange rate appreciation and fall in inflation while the effects of the real interest rate on the probability of default on government debt reveals depreciation and upsurge in prices. This implies that when fiscal policy is challenged with high debt and debt dominated in foreign currency and high risk averse investors as was the case in Brazil during the period, increasing interest rates would more likely result to depreciation instead of the reverse. Therefore taking austerity measure by the fiscal authority would do the trick in suppressing inflation through real appreciation.

Tanner and Ramos (2002) using monthly fiscal data from 1991-2000, employ a backward-looking and a vector autoregressive (VAR) approach to investigate the inter-temporal solvency and fiscal adjustment in Brazil. That is, to determine the policy regime that obtains during the period. Results indicate presence of both fiscal and monetary policy regimes in Brazil at different periods. A note of caution was flagged on the monetary dominant regime since the huge fiscal adjustment only show small evidence of monetary dominance.

Canzoneri, Cumby and Diba (2000) in seeking to answer whether price level is determined by the needs of fiscal solvency, uses the VAR model in surpluses/GDP and liabilities/GDP on data ranging from 1951 to 1995. Their approach was to first establish the theoretical plausibility of a Recardian regime and proceed to the empirics of the regime. The empirical analysis of the regime was extended by adding the discount factor to the VAR model. The results revealed that both Recardian and non-Recardian regimes are theoretically plausible while the empirics showed that Recardian regimes are more plausible.

Fry (1998), in assessing fiscal dominance and central bank independence in developing countries, utilize three-stage least square (3SLS) and data for the period 1972-1995 and discover that central bank autonomy is determined by the size of budget deficits and the way they are financed. In measuring central bank independence as the ability to neutralise the effects of increasing credit demand from the fiscal authority, the study was able to show that huge fiscal deficits and greater reliance on domestic financing are in tandem with reduced central bank power to rein on the increasing monetary demand by governments. The results however failed to distinguish between an autonomous and accommodating central bank actions.

Scanning through the literature, it could be seen that no research on fiscal dominance has been conducted so far for the WAMZ countries as a block. It is this void that our study intends to fill in order to add to the existing literature.

2.2 -Theoretical framework

The theoretical framework follows the fiscal rule (reaction function) of the fiscal authority that derives from a government inter-temporal budget constraint following Woodford (1995) and Canzoneri, Cumby and Diba (2000).

- The government inter-temporal budget constraint

In order to finance its deficit, the public sector has mainly three (3) options: printing money (*Seigniorage*), use of foreign reserve or borrowing (abroad or local) (Fisher and Easterly, 1990). Writing this constraint (and ignoring the use of foreign reserve but considering running a surplus), the government's budget constraint for period t can be expressed as follow:

$$B_t = (M_{t+1} - M_t) + (T_t - G_t) + B_{t+1}/(1 + r_t) \dots \dots \dots (1)$$

Where B and M are the stock of government debt and base money respectively at the beginning of the period t . $(T_t - G_t)$ is the primary balance (pb) whilst r_t is the interest rate for period t . Rewriting equation (1) in terms of total liabilities $(B_t + M_t)$ and taking it as a ratio of nominal GDP $(P_t y_t)$ with some algebra processing, the following equations are obtained:

$$\frac{B_t + M_t}{P_t y_t} = \left(\frac{M_{t+1}}{P_t y_t} \right) + \left(\frac{T_t - G_t}{P_t y_t} \right) + \frac{\frac{B_{t+1}}{P_t y_t}}{1 + r_t} \dots \dots \dots (2)$$

$$\frac{B_t + M_t}{P_t y_t} = \left[\left(\frac{M_{t+1}}{P_t y_t} \right) \left(\frac{r_t}{1 + r_t} \right) + \left(\frac{T_t - G_t}{P_t y_t} \right) \right] + \left(\frac{B_{t+1} + M_{t+1}}{P_{t+1} y_{t+1}} \right) \left(\frac{y_{t+1}/y_t}{(1 + r_t)(P_t/P_{t+1})} \right) \dots \dots \dots (3)$$

$$liab_t = pb_t + \delta liab_{t+1} \dots \dots \dots (4)$$

The left hand side of equation 4 corresponds to the ratio of total liabilities to GDP that is equal to the ratio of central bank transfers and primary surplus to GDP (pb_t), and the discounted value of future liabilities ($\delta liab_{t+1}$) with δ being the discount factor.

The government inter-temporal budget constraint can be obtained by iterating equation (4) following Woodford (1995):

$$liab_t = pb_t + E_t \sum_{j=t+1}^{\infty} \left(\prod_{k=1}^{j-1} \delta_k \right) s_j \dots \dots \dots (5)$$

Where E is the expectations operator.

2.3 Defining the fiscal and monetary dominant regimes from the government budget constraint

One implication of government's inter-temporal budget constraint is that it can be sufficient to determine whether a government functions under fiscal or monetary dominance. This depends on how the present value constraint (5) is satisfied. To illustrate this, equation (5) can be expressed as a fiscal rule (or reaction function) as follows:

$$pb_t = \alpha liab_{t+1} + \varepsilon_t \dots \dots \dots (6)$$

In a FD regime, primary balance is determined independently of the level of liabilities (α not statistically significant). In such a regime, the constraint is satisfied by the nominal income (Py) and/or the discount factor. On the other hand, in a MD regime, future liabilities play a significant role in adjusting the

primary balance, since the fiscal authority uses its current surplus to reduce future liabilities (α negative and statistically significant).

2.4 Development and Trend Analysis of Public Liabilities and Primary Balance in the WAMZ⁵

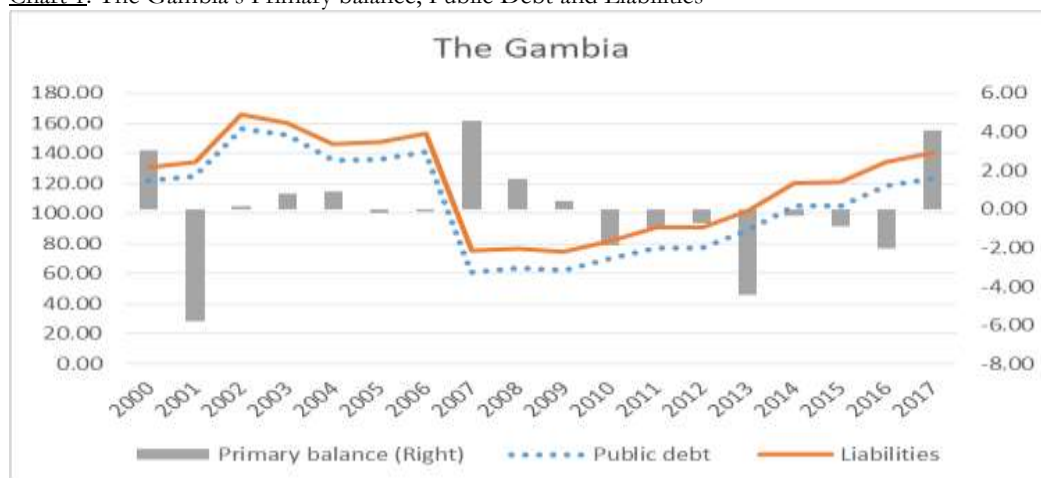
This section aims to briefly discuss recent developments in WAMZ countries and how they impact on the variables of interest. Countries of the zone have gone through various degrees of developments be it economic, social or political and governments of these countries have taken measures to address the economic imbalances characterizing their economies. The efforts of governments are geared toward meeting the convergence criteria for the single currency in the zone. The behavior of the variables of interest (public liabilities and primary balance) are also analyzed to gauge the fiscal stance of countries.

The Gambia: In 2017, the new administration came up with the National Development Plan (NDP) which seeks to stabilize the economy, restore growth, and promote good governance and rule of law through public expenditure investments, and institutional public sector reforms. Over the years, revenue and expenditure measures were initiated by the government of The Gambia in collaboration with the IMF such as sale of government land, improving tax administration, expanding the tax bracket, gradual reduction of energy subsidies, reduction of Gambian embassies abroad, securitization of government over-drawn position at market rate to dissuade government from using the central bank financing window, etc.

However, only the revenue measures seemed to have come to fruition as evident in the increase in revenue collection that often surpassed the target. On the contrary, expenditure increased tremendously due to weak implementation of expenditure reforms. Unplanned expenditures, including from the Presidency, fueled expenditure outlays resulting to larger fiscal deficits in the last five years ending 2016. The widening fiscal deficit resulted to mounting public debt levels such that the country is classified as at high risk of debt distress. The central bank largely contributed to financing the deficit during the last years as net claims on government, which was around zero until 2010, rose significantly from D529.5 million in 2012 to D8,952.6 million in 2016.

⁵ Liberia was excluded in this study due data constraints. Our sample spanned from 1990-2017 whilst available data for Liberia starts from 2005.

Chart 1: The Gambia's Primary balance, Public Debt and Liabilities



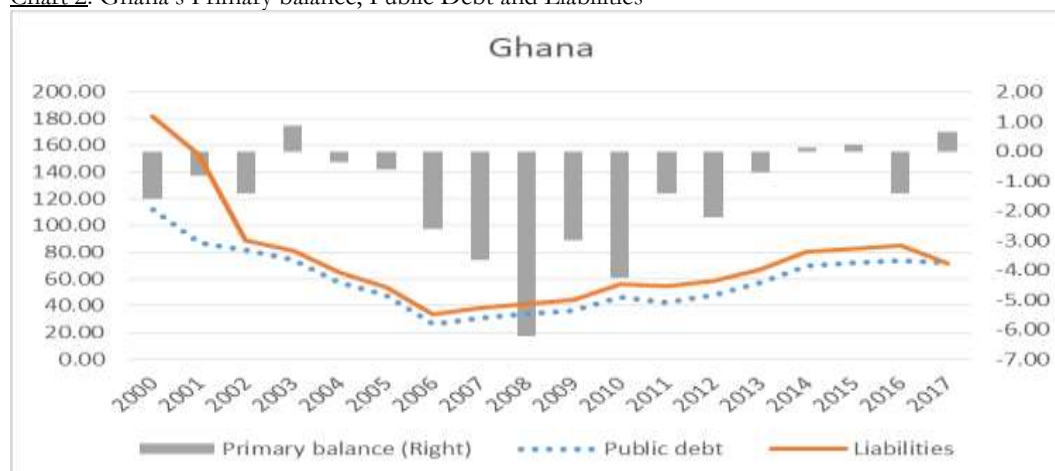
Source: *The Gambian's Fiscal Authority and WAMI*

Chart 1 depicts the trend in public liabilities (i.e. public debt + reserve money) and government primary balance ratios as a percentage of GDP. The ratio of total public liabilities to GDP slightly declined to 74.7 percent in 2009, but rose thereafter and continued to rise and peaked at 134.2 percent in 2017. Meanwhile, the surplus registered for the ratio of primary balance⁶ deteriorated in 2009 by 1.1 percentage points relative to 2008. The ratio continued to decline into negative territories (-1.9 percent in 2010) worsening further to (-4.5 percent in 2013) reflecting excessive domestic borrowing by government to finance the unplanned expenditures, thus worsening government's fiscal position. With the budget support for the new government in 2017, borrowing declined remarkably resulting to net domestic borrowing decelerating by 177.4 percent and the primary balance ratio recording a surplus of 4.0 percent.

Ghana: The main focus of both the fiscal and monetary policies of the government of Ghana is to increase growth and maintain macroeconomic stability. Ghana recorded high level of debt and deficit over a very long period (2004-2016) that pushed the country into high risk of debt distress. Following the change of government in 2016, there was a shift in policy direction by the new administration. The policy focus was towards robust economic recovery through increased revenue mobilisation and broad-based industrialisation agenda of strengthening and promoting local content, revitalising the National Industrial Programme by instituting One-District-One-Factory (1D1F), One-Village-One-Dam (1V1D) to promote industrialisation and implement the National Entrepreneurship and Innovation Plan (NEIP) to boost the technological sector.

⁶ which is overall fiscal balance excluding interest payment of debt

Chart 2: Ghana's Primary balance, Public Debt and Liabilities



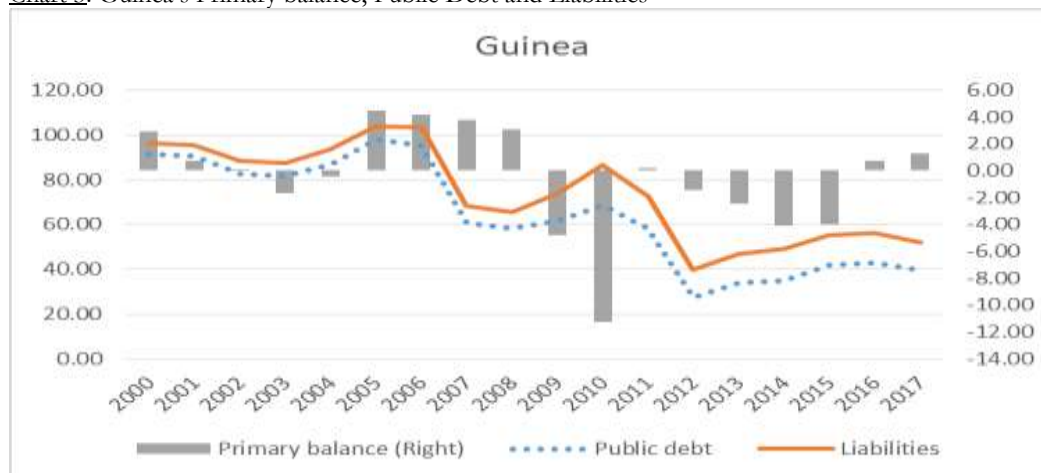
Source: Ghanaian's Fiscal Authority and WAMI

The ratio of total public liabilities as a percentage of GDP in Ghana increased from 33.4 percent in 2006 to 84.7 percent in 2016 mirroring mainly the increase in public debt associated with fiscal slippages relating to compensation and capital investments. The ratio was on an increasing trend right up to 2017 when it declined to 71.4 percent from a peak of 84.7 percent in 2016. According to the World Bank IMF DSA in 2016, Ghana is still rated as a high risk of debt distress. In 2017, government was able to partially stabilise the debt ratio mainly on account of the usage of the 2015 and 2016 Eurobond to repurchase short-term domestic debt.

Ghana's fiscal deficit remained high during 2015 to 2017. The fiscal position, which deteriorated substantially in 2016 due mainly to costs associated with the presidential election in 2016 and disruptions in oil production, markedly improved from a deficit of 10.3 percent to 5.2 percent in 2017 owing to improved fiscal discipline and consolidation. Although revenue underperformed, the fiscal turnaround was realised owing to expenditure cuts and postponement of some payments of the public debt. Consequently, the primary balance, which was in deficit for almost a decade ago, registered an improved surplus position of 0.6 percent in 2017 from a deficit position of 1.4 percent. However, net claims on government by the Bank of Ghana (BoG) increased by more than five hundred (500) percent between 2010 and 2016, suggesting a large reliance on the BoG by the fiscal authority to finance its deficit. This led to elevated inflationary pressures during the period

Guinea: Despite being among the richest countries in terms of natural resources, Guinea has continued to remain a low income country due to political instability and social crises over the years. However, since 2011 with the arrival of the first civilian regime, the country was committed to political and economic stability before it was knocked by the Ebola Virus Disease (EVD) between 2014 and 2015 and the decline in commodity prices.

Chart 3: Guinea's Primary balance, Public Debt and Liabilities



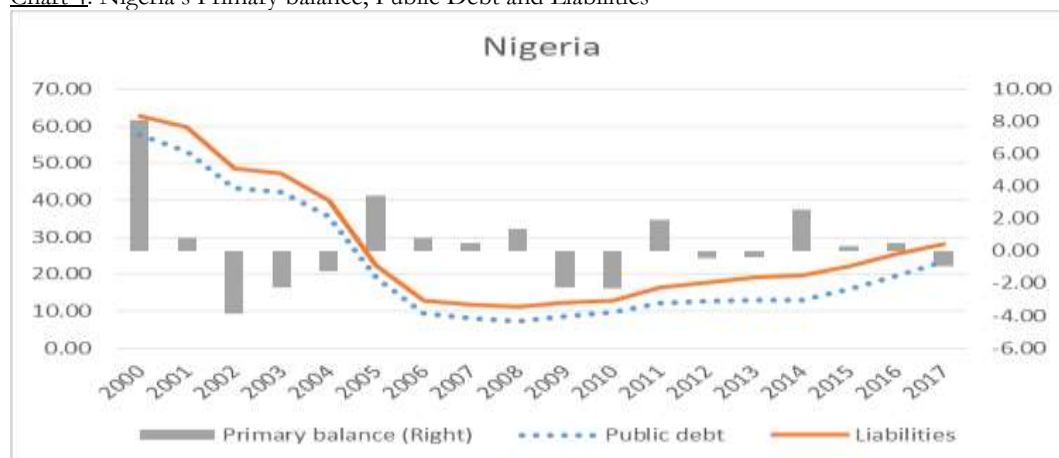
Source: Guinean's Fiscal Authority and WAMI

Guinea's total liabilities at a peak of 104.5 percent in 2006 took a dip dive the following year, falling by 35.6 percentage points before inching up to 86.6 percent in 2010. In 2012, the country completed the Heavily Indebted Poor Countries (HIPC) Initiative with the IMF and public liabilities fell significantly from 74.7 percent in 2011 to 39.65 percent in 2012, picking up gradually to 39.7 percent in 2017. Similarly, primary balance also fell sharply in 2010 to a deficit of 11.3 percent, from a surplus of 3.1 percent in 2008 and rose instantaneously to a surplus of 0.2 percent in the subsequent year. The ratio then took a reverse trend declining to a deficit of 4.1 percent in 2015, before improving to a surplus of 1.7 percent in 2017. Guinea has kept record of high level of central bank financing of its deficit with net claims on government increasing consistently years over years.

Nigeria: The effects of global commodity price shock impacted negatively on Nigeria's fiscal balance from 2015-2017. The ratio of primary balance improved from a deficit of 2.3 percent in 2010 to a surplus of 1.9 percent in 2011. In 2014, the primary balance registered a surplus of 2.5 percent but this could not be sustained in the subsequent years due to the effects of the global commodity price shock. The ratio deteriorated to a deficit of 1.0 percent in 2017. Total liabilities increased from 11.23 percent in 2008 to a high of 14.1 percent in 2012 before sliding marginally by 1.2 percentage points in 2013. The ratio surged to an elevated high of 23.4 percent in 2017 due to increased domestic borrowing.

In 2017, the Nigerian authorities initiated a medium term Economic Recovery and Growth Plan (ERGP) 2017-2020 on the backdrop of accelerating the pace of economic growth, strengthening economic diversification and social inclusion. The plan's objective was to achieve macroeconomic stability and boost investment in social infrastructure through fiscal incentives.

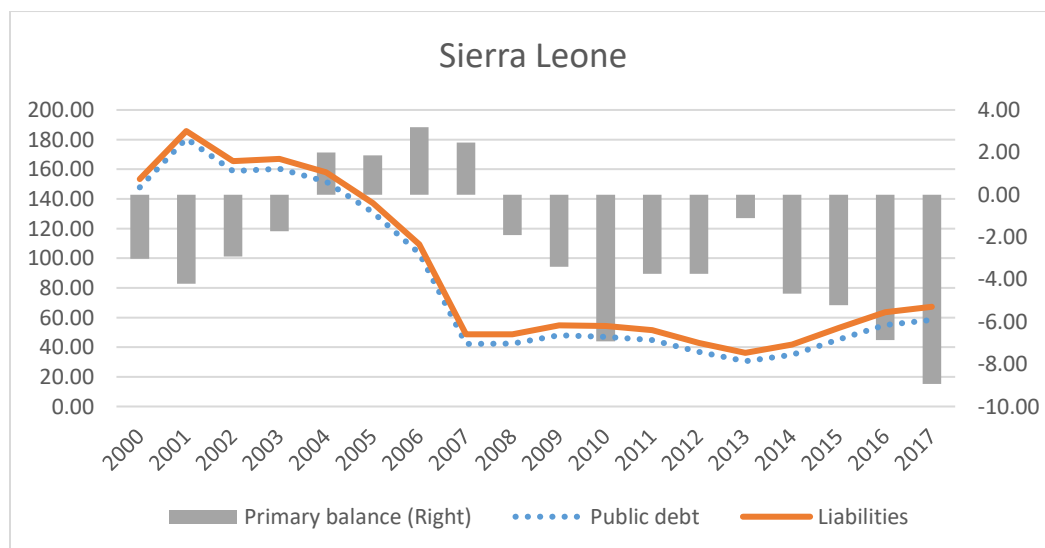
Chart 4: Nigeria's Primary balance, Public Debt and Liabilities



Source: The IMF and WAMI

Sierra Leone: In 2017, the fiscal and monetary policy objectives of the government of Sierra Leone was to sustain macroeconomic stability by ensuring that fiscal deficits and debt levels are maintained at reasonable levels, growth is enhanced, inflation is contained and gross official international reserves are boosted. Measures to increase revenue mobilisation and rationalise expenditures were highlighted in the 2017 budget.

Chart 5: Sierra Leone's Primary balance, Public Debt and Liabilities



Source: The IMF and WAMI

When the effects of the twin deficits were waning, and the economy started picking up in 2016, but it was again struck by the natural disaster (mudslide) in 2017 disrupting the sound economic policy initiated to efficiently manage finance for growth. Fiscal deficit improved in 2012 owing to measures

adopted to cut down on expenditure and strengthen fiscal policy. As a result, the ratio of primary balance narrowed to a deficit of 1.1 percent in 2013, from 6.9 percent in 2010, before deteriorating to 8.9 percent in 2017. Total liabilities decelerated to a low of 36.2 percent in 2013, largely on account of the financial support received during the Ebola crisis. The country's liabilities, however, picked up in 2015 and have remained on an accelerated trend reaching 67.2 percent in 2017. The country's external debt rating is at moderate risk of debt distress in the medium to long-term whilst domestic debt is tilting towards an unsustainable level.

3.0 MODEL SPECIFICATION, DATA AND ESTIMATION METHODOLOGY

Following Canzoneri, Cumby and Diba (2000), and Tanner and Ramos (2002), the empirical strategy consists of estimating a Structural Vector Autoregression (SVAR) model for primary balance and liabilities of each member country of the WAMZ. We computed the Impulse Response Functions (IRF) and the Forecast Error Variance Decomposition (FEVD) which are preceded by the specification and estimation of the SVAR model.

III.1- Data and Properties

Our estimation consists of a bivariate VAR system of vector $z_t = [pb \ liab]'$ after establishing the order of integration of the elements of z . The variables in z are observed annually for the period 1990 through 2017 due to data constrain. Like many developing countries, high frequency economic indicators are not available over a long period for the WAMZ member countries. The variable pb is the primary balance in percentage of GDP. Primary balance is measured as the total revenue (T) minus total expenditures (E) net of interest payments (R): ($PB = T - (E - R)$). $Liab$ corresponds to liabilities (general government gross debt + reserve money) in percentage of GDP. Our data are sourced from WAMI Database and from the World Economic Outlook (April 2018) of the IMF. The six WAMZ member countries consist of The Gambia, Ghana, Guinea, Liberia, Nigeria and Sierra Leone. However, as stated above, given the lack of data for Liberia, we exclude it in the study and estimations are done for each of the remaining five (5) countries.

As a first step, we examine the long-run properties of the variables by conducting unit root tests using the Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) tests. The results of both tests are presented in Table 1.

III.2- Model Specification, Identification and Estimation

It is known that estimating the single equation (6) may result in inconsistent results, stemming from endogeneity and causality issues.⁷ One way to deal with these drawbacks is to estimate a vector autoregressive (VAR) model following Canzoneri, Cumby and Diba (2000), and Taner and Ramos (2002):

$$\Delta Z_t = c + \sum_{j=1}^p R_j \Delta Z_{t-j} + \mu_t \dots \dots \dots (7)$$

Where ΔZ_t is a covariance stationary vector representing the two variables of interest pb and $liab$, c is the vector of constants, R is a matrix valued polynomial whilst p represents an optimal lag selected

⁷ In addition, the Fiscal Theory of Price Level (FTPL) also plays an important role in this model since a reduction in future liabilities may come from a rise in price level.

by some information criteria to make μ_t a vector of white noise innovations in the two (2) elements of ΔZ_t .

We estimate our model using a SVAR⁸ that can be represented by equation (7):

$$\Delta Z_t = c + \sum_{j=1}^p R_j \Delta Z_{t-j} + \mu_t \dots \dots \dots (8)$$

Where ΔZ_t is a covariance stationary vector representing the two variables of interest⁹, pb and $liab$; c is the vector of constants, R is a matrix valued polynomial whilst p represents an optimal lag selected by some information criteria to make μ_t a vector of white noise innovations in the two (2) elements of ΔZ_t . Then, the reduced form VAR can be written as follow (ignoring the vector c):

$$R(L)\Delta Z_t = \mu_t \dots \dots \dots (9)$$

And given that ΔZ_t is a covariance stationary process, the Wald Representation Theorem ensures the existence of at least one Vector Moving Average (VMA) representation with its reduced form as follow:

$$\Delta Z_t = R(L)^{-1}\mu_t = F(L)\mu_t \dots \dots \dots (10)$$

With F a 2×2 matrix in lag polynomial L and $E(\mu_t \mu_t') = \Omega_\mu \neq I$ but $F(0) = I$.

Next, we estimate the following structural VMA that can be obtained from converting equation (9) using a structural identification:

$$\Delta Z_t = A(L)\varepsilon_t \dots \dots \dots (11)$$

where A is a 2×2 matrix and $\varepsilon_t = [\varepsilon_t^{pb} \ \varepsilon_t^{liab}]'$ is a vector of structural disturbances namely: primary balance shock and liabilities shock respectively. $A_0 \neq I$ in general and assuming that the structural disturbances, by construction, are orthogonal such that $E(\varepsilon_t \varepsilon_t') = \Omega_\varepsilon = I$.

Given that A is a 2×2 matrix, the estimation of the VMA requires only one (1) restriction.

Finally, the structure of the model including the restriction is as followed:

$$\begin{bmatrix} \Delta pb_t \\ \Delta liab_t \end{bmatrix} = \begin{bmatrix} . & 0 \\ . & . \end{bmatrix} \begin{bmatrix} \varepsilon_t^{pb} \\ \varepsilon_t^{liab} \end{bmatrix}$$

This restriction states that shocks on liabilities have no immediate impact on primary balance meaning that it is rather future liabilities that affect the current primary balance¹⁰. The rationale of making this restriction is straightforward. First, the fiscal rule (reaction function) of the fiscal authority can be written such that the current fiscal behavior is a function of the past debt (Woodford, 2001). While this fiscal rule is mostly a characteristic of monetary dominant regime, the restriction is still valid under FD by assuming that the fiscal balance is exogenous (Canzoneri, Cumby and Diba, 2000). In other words, the interest payment of public debt is essentially based on the stock of debt of the previous period.

⁸ We follow Pedroni (2013) Structural VAR Specification.

⁹ $\Delta Z_t = [pb_t \ \Delta liab_t]'$ for the Gambia, Guinea and Nigeria, and $\Delta Z_t = [\Delta pb_t \ \Delta liab_t]'$ for Ghana, and Sierra Leone according to their integration level.

¹⁰ This structural identification in fact is not very different to a Cholesky identification where pb is the least endogenous variable of the model.

4.0 EMPIRICAL RESULTS

4.1 Unit roots test

The results in Table 1 in the Appendix indicate that at level, for the variable *pd*, we reject the null hypothesis of the presence of a unit root for The Gambia, Guinea, and Nigeria at 5 percent level whilst we fail to reject the null hypothesis for Ghana and Sierra Leone at five (5) percent level. Hence, we conclude that the variable *pb* is stationary at level ($I(0)$) for the first three countries and stationary at first difference for the rest of the countries. Further, the results indicate that, for the variable *liab*, we fail to reject the null hypothesis of the presence of a unit root for all countries at five (5) percent level. Hence, we conclude that the variable is stationary at first difference as shown by the results.

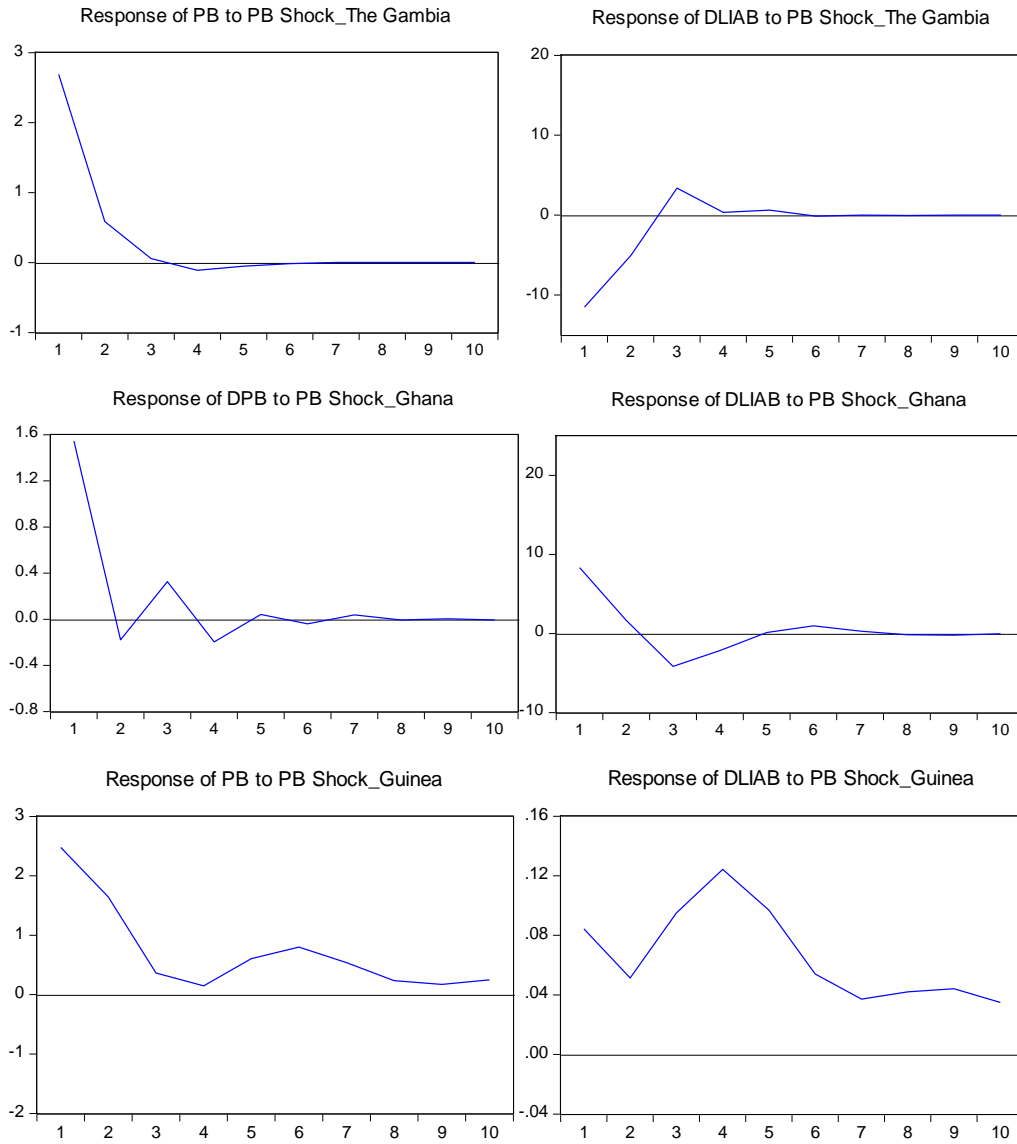
4.2 Impulse Response Functions and Forecast Error Variance Decomposition

As stated above, the empirical evidence of the fiscal versus monetary dominance regimes for the WAMZ countries is arrived at by using SVAR. The difference between a fiscal dominant and a monetary dominant regime is obtained using the impulse response functions (IRF) and the Forecast Error Variance Decomposition (FEVD) of the VAR from the responses of both primary balance and future liabilities to a positive shock to the primary balance. If future liabilities fall whilst current primary balance rises (a surplus) in response to a positive *pb* shock, then we have a MD regime. This implies that the current surplus pays off some of the debt leading to a fall in future liabilities. If, however, *pb* responds positively to the shock but future liabilities either increase or do not significantly react to the shock, then we have a FD regime.

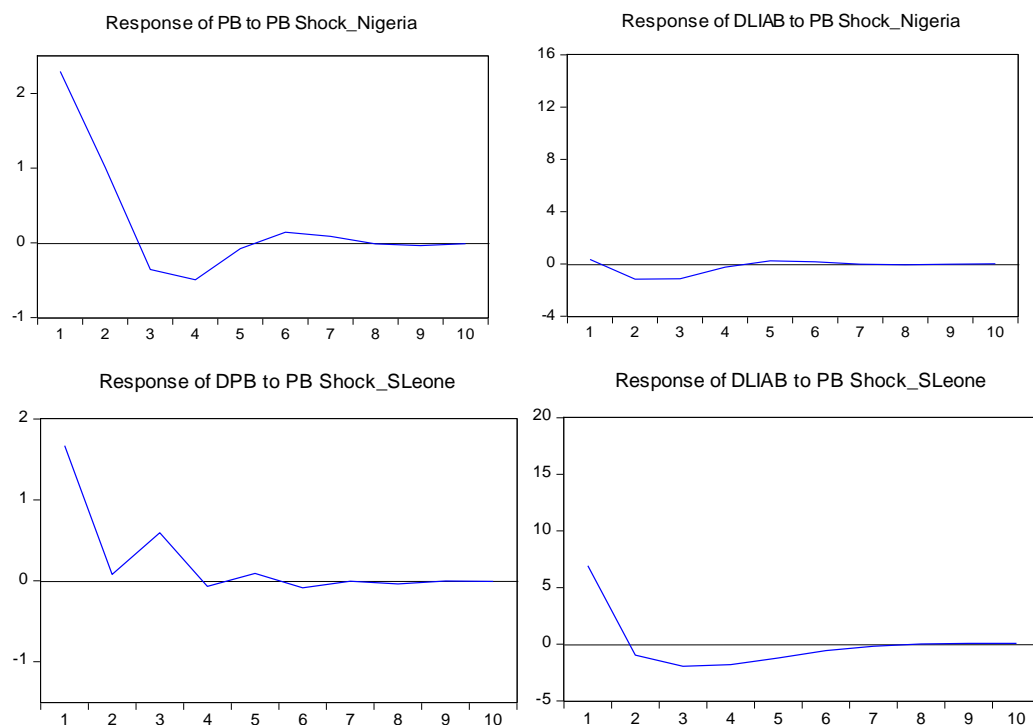
The IRF and FEVD results enable us to consider which of the regime is dominant as well as to measure the size of the effect and the importance of the shocks. The lag length selection criteria used is the general to specific (step down) testing method. Chart A1 presented in the appendix section shows that the estimated SVAR models for all the sampled countries are stable.

Chart 6 presents the IRF for each of the five (5) countries with the vertical axis showing the responses of the variables whilst the horizontal axis indicates the time horizon after the shocks hit. More specifically, the graphs on the left column show responses of primary balance (*pb*) to its own shock (*pb* shocks), whereas the graphs on the right column display responses of liabilities (*liab*) to *pb* shocks. The five (5) countries are presented by row alphabetically (The Gambia corresponds to the two (2) top graphs whilst Sierra Leone, the two graphs on the bottom). Table 1, on the other hand, presents the FEVD which captures the importance of the shock to the fluctuations in the variables.

Chart 6: Impulses responses of **Pb** and **Liab** to **Pb** Shocks¹¹



¹¹ For convenience, we have not showed the IRF of Liab shocks



The results of the IRF indicate that the response of primary balance to a *pb* shock is positive (a surplus) meaning that the contemporaneous effects of a *pb* disturbances are positive for all the countries and so for the following period except for Ghana and Sierra Leone. This positive reaction of the primary balance is very important since it rules out any identification problem. On the other hand, a *pb* shock is associated with next period liabilities (t_{+1}) with a fall for The Gambia and Nigeria and a rise for Guinea and Ghana, but no significant impact for Sierra Leone. The dynamic responses of each country is analyzed in more detailed in the following section.

The Gambia - a *pb* shock that result to a contemporaneous surplus (increase of the primary balance) is associated with a fall of the next period liabilities in the Gambia. The impact of the shocks vanishes after three (3) periods for both variables. Specifically, a one (1) standard deviation structural innovation to *pb* is associated with an immediate increase in primary balance by 2.69 percent and an accumulated increase of 3.27 over the first two years before the impact vanishes in the third year. On the other hand, in response to the same shock, the immediate effect to change in liabilities was a fall by 11.51 percent and by 5.50 percent in the following year. The variance decomposition shows that more than 90 percent of the variance of primary balance is due to its own disturbances for all the periods. As for fluctuations to liabilities, the FEVD indicates that around 33 percent of its variance are due to primary balance disturbances over the five periods after the shocks hit.

Ghana - the IRF indicate that a *pb* shock that result to a contemporaneous surplus leads to an increase in growth in liabilities for the first two periods after which it declines. Precisely, a one (1) standard deviation structural innovation to *pb* is associated with an immediate increase of primary balance by 1.54 percent and a slight decrease in the next period. The estimates also indicate that response to liabilities correspond to a significant increase (8.32 percent) as an immediate effect and a slight increase (1.66 percent) the next period. The variance decomposition, on the other hand, shows that 87 percent

and more than 75 percent of the fluctuations of primary balance are attributed to its own disturbance in period 1 and the following periods, respectively, while the remaining percentage to liabilities shocks. The FEVD shows that 10 percent on average of the variance in liabilities are due to primary balance disturbances and the remaining 90 percent to its own shocks.

Guinea - the results point out that an unanticipated disturbances of the primary balance lead to a surplus permanently. The same disturbances are associated with a permanent rise in liabilities. In terms of fluctuations, the results reveal that more than 80 percent of the variance of primary balance come from its own disturbances and the remaining from liabilities shocks. On the other hand, estimates show that primary balance disturbances are an important determinant of fluctuations in liabilities as their relative contribution to the movements in liabilities is about 19 percent in the first year and more than 20 percent in subsequent periods.

Nigeria - a *pb* shock that results to a contemporaneous surplus (increase in the primary balance), is associated with a fall in liabilities in periods 2 and 3. Specifically, a one (1) standard deviation structural innovation to *pb* is associated with an immediate surplus of 2.29 percent and an accumulated surplus of 3.30 over the first two years after which a deficit ensues for the next periods. On the other hand, in response to the same shock, the immediate effect to change in liabilities was not significant whilst it leads to a fall by 1.17 percent in the following period. This is confirmed by the variance decomposition which shows that fluctuations to liabilities due to primary balance disturbances account for less than 1 percent over the first two periods and 9 percent during the next period.

Sierra Leone - the IRF indicates that a *pb* shock is associated with a permanent surplus until the impact vanishes in the fourth period with a maximum peak at the first period. In response to the same disturbances, liabilities increases contemporaneously followed by a return to its steady state level in the next period. However, despite the permanent surplus on the primary balance, the estimates show that liabilities disturbances are also an important determinant of primary balance fluctuations as they account, on average, for 40 percent and the remaining 60 percent due to primary balance shock. Finally, the FEVD shows that *pb* shock accounts for 11 percent in contemporaneous variance of liabilities but not significant in the next period.

Table 1: Forecast Error Variance Decomposition

Variables		<i>pb shock</i>	
		<i>pb</i>	<i>liab.</i>
The Gambia	<i>period 1</i>	94.38	32.06
	<i>Period 2</i>	92.15	35.43
	Period 5	91.87	35.81
Ghana	<i>period 1</i>	87.12	11.52
	<i>Period 2</i>	75.47	10.38
	Period 5	76.11	12.48
Guinea	<i>period 1</i>	85.22	19.35
	<i>Period 2</i>	88.09	21.22
	Period 5	77.94	23.96
Nigeria	<i>period 1</i>	95.27	0.07
	<i>Period 2</i>	89.47	0.96
	Period 5	91.22	8.78
S. Leone	<i>period 1</i>	62.11	11.27
	<i>Period 2</i>	58.85	10.93
	Period 5	61.27	10.26

4.3 Identification of Dominance Regime: Fiscal vs Monetary

As mentioned above, we follow Canzoneri, Cumby and Diba (2000), and Tanner and Ramos (2002) to identify the dominant regime. The plausibility of the presence of FD regime or MD regime is based on the responses of current primary balance (in t) and future liabilities (in t_{+1}) to a structural primary balance shock. Table 2 highlights the main findings and the regime associated with each finding.

Table 2: Dominant regime of the WAMZ Countries

Country	Responses of		Regime
	Pb_t	$Liab_{t+1}$	
The Gambia	Positive	Negative	MD
Ghana	Positive	Positive	FD
Guinea	Positive	Positive	FD
Nigeria	Positive	Negative	MD
Sierra Leone	Positive	NS	FD

Note: NS – Not Significant

Our findings reveal existence of a fiscal dominance, that is, Non-Ricardian regime in Ghana, Guinea and Sierra Leone, and a monetary dominance, that is, Ricardian regime in The Gambia and Nigeria.

In the case of Nigeria, this result, which is in line with Sanusi and Akinlo's (2016) findings, is not surprising. By taking advantage of the huge oil and gas revenues, the country has kept records of low level of liabilities (less than 20 percent of GDP) over the past decades, although public debt has increased significantly in the past three years mainly on account of impact of the global commodity price shock. In addition, the central bank's net claims on government has remained in negative territory (the government deposit being above the total claims on government) since 2003 implying that the central bank is instead indebted to government and no need for central bank bailout in the form of central bank financing.

In The Gambia, the findings could raise some questions, given the fact that there has been rising high levels of debt from 2011 when the economy was severely hit by drought, which saw growth contracting to 4.3 percent in that year, from 6.5 percent in the preceding year. The rising levels of debt persisted in recent years, reaching above 100 percent of GDP in 2015. Government fiscal deficit was heavily monetized by the central bank, thus undermining its price stability mandate in which inflation was seen picking up to a high single digit. This is evident in the central bank's net claims on government which was a net repayment to government in 2011 before growing significantly from 2014 resulting to Gambia been assessed in 2016 as being at high risk of debt distress.

Our findings in the case of Ghana for a non-Ricardian regime is also in line with the results of Ekpo et al (2015). Guinea and Sierra Leone also exhibit characteristics of a non-Ricardian regime and these countries together with Ghana have undergone lots of challenges regarding price stability and debt management, compared to the other two WAMZ countries. Despite the existence of the convergence criteria at the zonal level, these countries still have some challenges in terms of managing their debt accumulation and financing. In Ghana, the monetary authority has adopted inflation targeting as the monetary policy regime since 2007 but with significant challenges to achieve the target (8 percent \pm 2 percent bands). This failure could be explained in part by the lack of effective monetary policy of the central bank which accommodates fiscal policy in Ghana.

5.0 CONCLUSION AND POLICY IMPLICATIONS

The objective of the paper is to investigate the existence or otherwise of fiscal dominance in WAMZ countries during the period 1990 to 2017. The methodology used consist of estimating a SVAR

framework and a derivation of the IRF and FEVD to differentiate the dominant regime between MD and FD. Our findings confirm the existence of FD regime in Ghana, Guinea and Sierra Leone, implying that not much attention is paid to public liabilities during budget preparation and implementation. In The Gambia and Nigeria, findings reveal a MD regime in which primary balance is a determinant of liabilities, as these countries' respective fiscal authorities relied less on the central bank to finance their deficits.

The main policy recommendations are that Ghana, Guinea and Sierra Leone, where fiscal dominance regime has been evident, should put in place effective and strong fiscal and monetary institutions aim at achieving macroeconomic stability and sustainable growth. In the case of The Gambia and Nigeria, where there is no evidence of fiscal dominance, they should maintain the fiscal and monetary stance of their various institutions and also improve on the budgetary process in order to sustain the absence of fiscal dominance.

For an effective and sound fiscal policy, it should be based on an active reaction function, such that fiscal rules are strictly adhered to ensure credibility and effectiveness of the policy. A "Target-oriented" rule that is obtained by imposing numerical constraints on outcomes of certain variables such as the budget or the debt could be an effective fiscal rule that these countries could explore in their fiscal operations. The fiscal rules must be legally backed by the laws of the land for accountability and enforceability.

Other fiscal rules countries with FD regimes could explore is specifying a maximum for deficit and minimum for surplus or a debt ceiling. For instance, for oil producing countries like Ghana and Nigeria and mining countries in the likes of Ghana, Guinea, and Sierra Leone should specify a non-oil balance and a non-mining balance respectively to limit the negative impact of raw materials fluctuations on their solvency and sustainability. Generally, respective governments could run a minimum structural surplus e.g. a surplus adjusted to the oil/mining revenues arising from abnormally high or low prices.

On the side of monetary policy there is a need for an effective monetary institution with a real central bank autonomy in terms of policy and operations devoid of any fiscal interference that could result to a pro-inflation bias. Central banks of WAMZ countries should be completely autonomous to be able to enforce the borrowing limit from the fiscal authority and also carry out other operations within their mandate such as price and liquidity management. A credible inflation targeting (IT) regime which goes in peer with an independent monetary institution is a commitment device that could aid the later to deliver the objective of price stability for WAMZ countries especially for IT targeting countries like Ghana in the zone. This would help the country achieve the targeted inflation, build confidence and credibility of the monetary policy regime and ensure macroeconomic stability.

Finally, we recommend effective and strong policy coordination between fiscal and monetary authorities so that each would know the limit to which their various policies can go and what a good policy mix could yield for the entire economy. Fiscal and monetary policies cannot be devoid of each other and the excess of one can be harmful for the other and the rest of the economy. Therefore, working together to achieve the right policy mix would be crucial for macroeconomic stability and growth.

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APPENDIX

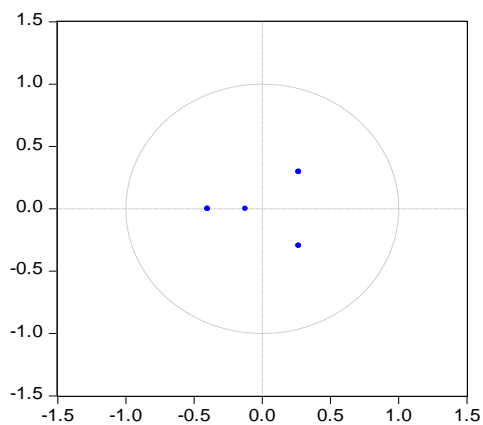
Table 3: Unit roots tests

Variables		ADF		PP	
		Level	1 st Diff.	Level	1 st Diff.
The Gambia	<i>pb</i>	-3.85**	-	-3.74**	-
	<i>liab</i>	-1.73	-5.00***	-1.77	-4.90***
Ghana	<i>pb</i>	-1.43	-6.78***	-1.91	-6.52***
	<i>liab</i>	-2.95	-3.56**	-1.98	-3.42**
Guinea	<i>pb</i>	-3.02**	-	-3.03**	-
	<i>liab</i>	-0.86	-4.50***	-0.88	-4.55***
Nigeria	<i>pb</i>	-3.96**	-	-11.87***	-
	<i>liab</i>	-1.76	-4.25***	-1.70	-4.39***
S. Leone	<i>pb</i>	-0.76	-5.13***	-1.01	-5.10***
	<i>liab</i>	-0.77	-3.41**	-1.31	-3.41**

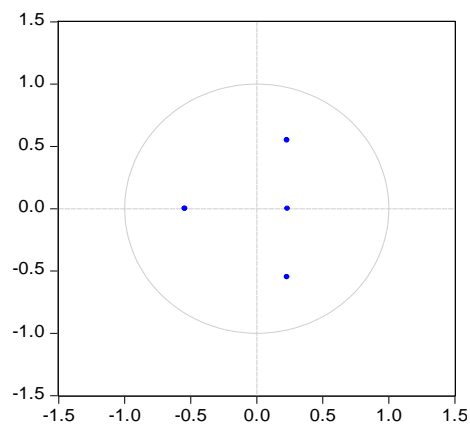
Notes: ** and *** significant at 5 percent and 1 percent level respectively

Chart A1: Stability Test of the VARs

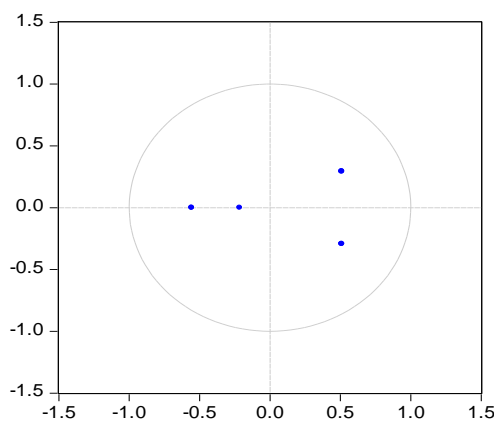
I.R of AR Characteristic Polynomial_The Gambia



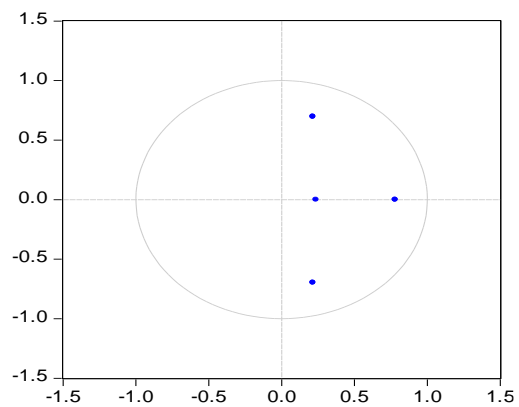
I.R of AR Characteristic Polynomial_Ghana



I.R of AR Characteristic Polynomial_S Leone



I.R of AR Characteristic Polynomial_Guinea



I.R of AR Characteristic Polynomial_Nigeria

