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Research Report

Fiscal and monetary policy coordination in the WAMZ: Implications for member states' performance on the convergence criteria

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**WEST AFRICAN
MONETARY INSTITUTE (WAMI)**

**INSTITUT MONETAIRE DE
L'AFRIQUE DE L'OUEST (IMAO)**



**WAMI OCCASIONAL PAPER SERIES
VOL. 1 NO. 4**

**FISCAL AND MONETARY POLICY COORDINATION IN THE
WAMZ: IMPLICATIONS FOR MEMBER STATES'
PERFROMANCE ON THE CONVERGENCE CRITERIA**

**ACCRA, GHANA
DECEMBER, 2013**

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FISCAL AND MONETARY POLICY COORDINATION IN THE WAMZ: IMPLICATIONS FOR MEMBER STATES' PERFORMANCE ON THE CONVERGENCE CRITERIA

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December 2013

Abstract

The study investigates the level of coordination between the fiscal and monetary authorities in the WAMZ countries and its implications for the attainment of the inflation and fiscal deficit criteria. To achieve this objective, the study utilizes the Set Theoretic Approach (STA) and the vector autoregressive (VAR) modeling to estimate the degree of policy coordination in the Zone. The empirical analysis uses annual data for the period 1980 – 2011. Under the STA, coordination exists when shocks to policy goals elicit prudent policy responses. In the case of the VAR, the strength of coordination is measured by the impulse responses of fiscal and monetary policy variables to innovations in inflation, output gap and exchange rate. The results reveal weak policy coordination in all the WAMZ countries during the period, contributing to the non-compliance with respect to inflation and fiscal deficit criteria. The results of the set theoretic models show that explicit policy coordination scores in the WAMZ countries are less than 50.0 percent, with The Gambia obtaining a coordination score of 46.6 percent, Ghana (34.5), Guinea (31.8), Liberia (37.9), Nigeria (46.6) and Sierra Leone (41.3). Additionally, the monetary authorities in the WAMZ countries tend to implement relatively more prudent policies than the fiscal authorities, except in the case of Guinea, where the two policies are at par in terms of prudence. The results of the impulse response also indicate that there is weak response to shocks induced by different variables. It takes a long period for the variables to convergence to their long-run equilibrium path. The key recommendation is that WAMZ countries should strengthen policy coordination by putting in place formal coordination platforms and institutional arrangements for timely and adequate statistics, binding commitments and effective monitoring and evaluation of policy outcomes.

Key words: *coordination, fiscal policy, monetary policy, WAMZ countries, set theoretic approach, VAR*

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INTRODUCTION

The objective of monetary and fiscal policies is to achieve stable and non-inflationary economic growth. Achieving price stability and economic growth is dependent upon the degree of monetary and fiscal policy coordination. Fiscal policy is essentially related to taxation and spending decisions of government, while monetary policy encapsulates those decisions bordering on money supply and interest rate in a given economy. The overarching objective of fiscal policy is to reduce unemployment by creating an environment where all available resources in the economy will be gainfully employed to produce more output. With regards to monetary policy, the overriding objective is to maintain price and exchange rate stability by ensuring that money supply growth does not go out of control in relation to macroeconomic fundamentals. The ultimate objective of both policies is to maximize the overall welfare of the society which can be achieved by keeping inflation low and employment at its potential level. Economic theory postulates that these two objectives are not mutually exclusive since the attainment of one has implications for the attainment of the other. Thus, strict adherence to “separation of powers” in the management of the economy will cause degeneration in the economy as fiscal and monetary authorities pursue genuinely and rigorously their system-derived objectives. This implies, lack of policy coordination may result in serious economic distortions even when it

appears fiscal and monetary authorities are achieving or close to achieving their objectives.

One of the major challenges facing the countries of the WAMZ is the issue of fiscal dominance, which has resulted in most countries recording huge fiscal deficit to GDP ratio in excess of the WAMZ benchmark. Financing of such deficits over the years had resulted in inflationary spiral, as most countries registered double digit inflation rates, exceeding the single digit criterion. To ensure the satisfactory achievement of the convergence criteria on fiscal deficit/GDP and inflation on sustainable basis, there is need for more policy coordination between the monetary and fiscal authorities. The need for policy coordination arises because individual policy instruments typically have an impact on more than one policy target. Although they can help policy makers achieve a desired value for one policy target, they may disrupt the attainment of a desired value for other policy targets. The interaction between monetary and fiscal policies relates to the fact that both types of policies have an impact on key macroeconomic variables. This, in turn, creates interdependencies in the pursuit of policy objectives. On the one hand, fiscal policy influences price developments, real interest rates, exchange rates as well as aggregate demand and potential output. On the other hand, monetary policy has an impact on exchange rates, inflation

expectations and short-term interest rates, which have a significant impact on debt serving and consequently increases government budget deficit. The reaction function of the government may impair monetary policy implementation. Thus, there is a strong need for coordination of monetary and fiscal policies.

This study, therefore, investigates the level of coordination between the fiscal and monetary authorities, using both country specific and panel estimation for the WAMZ countries. To achieve this objective, the study utilizes the set theoretic approach to compute policy coordination and policy prudence scores for the WAMZ countries. A vector autoregressive (VAR) modeling

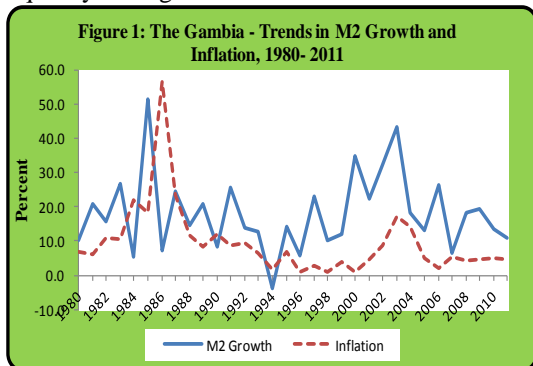
technique is also employed to estimate the impulse response functions that help in assessing the strength of fiscal and monetary policy responses to shocks emanating from inflation, output gap and exchange rate, where fiscal deficit and money supply growth are considered as policy variables.

Following the introduction, the rest of paper is organized as follows: section II discusses the institutional arrangement for policy coordination in the WAMZ. Section III provides a review of the theoretical and empirical literature, while section IV presents the theoretical framework, model specification and data source and type. Section V discusses the empirical results, while section VI provides the concluding remarks and policy implications.

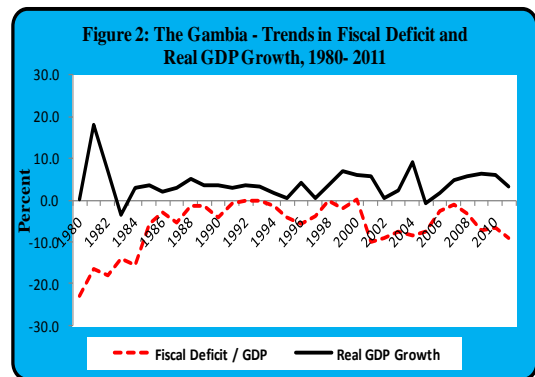
INSTITUTIONAL ARRANGEMENTS FOR POLICY COORDINATION

2.1 The Gambia

Monetary Policy: The primary objective of monetary policy in The Gambia is price stability. Figure 1 shows the trend in money supply growth and inflation during the review period. The Central Bank of The Gambia (CBG) is also mandated to promote and maintain the stability of the local currency as well as regulate the financial system to ensure efficient utilisation of resources and sustainable economic development of the country. The Bank has been granted significant operational but not goal independence in the conduct of monetary policy. It has monetary-targeting framework. The monetary policy decision making function is exercised through the Monetary Policy Committee (MPC) which meets bi-monthly to review developments in the economy and make pronouncements that set the policy and rediscount rates. The CBG primarily uses Open Market Operations (OMO) to manage liquidity in the banking system through the weekly issuance of treasury and central bank bills. Required reserves ratio is also prescribed both for prudential and liquidity management purposes. The primary dealers are the commercial banks through which institutions and individuals could participate in the auctions. Secondary market sales and purchases of the instruments are undertaken at the special window at the CBG. The Bank only intervenes in the foreign exchange market to smoothen short term fluctuations rather than as an explicit tool for liquidity management.



Fiscal Policy: The fiscal policy objective in The Gambia is to encourage public and private sector investment to support high economic growth on the background of fiscal consolidation. The Ministry of Finance and Economic Affairs (MFEA) of The Gambia has the responsibility of defining the Government of The Gambia's overarching macroeconomic policy objectives and the frameworks in pursuit of these objectives. The implementation framework places particular emphasis on transparency in government fiscal operations, debt sustainability, broad-base participation of stakeholders including the CBG, Gambia Bureau of Statistics and development partners such as the IMF and World Bank, and enhancement of capacity in the development of MTDS and the assessment of debt portfolio risks. The MFEA has exclusive responsibility for budget formulation and implementation and domestic debt policy. The main objective of domestic debt management is "to meet the public sector borrowing requirement (PSBR) at a minimum long-term cost and acceptable risk". The debt management strategy is based on the MTDS covering the period 2011 to 2014. The country's macroeconomic programme, the Extended Credit Facility with the IMF, also lays emphasis on containment of the domestic debt.



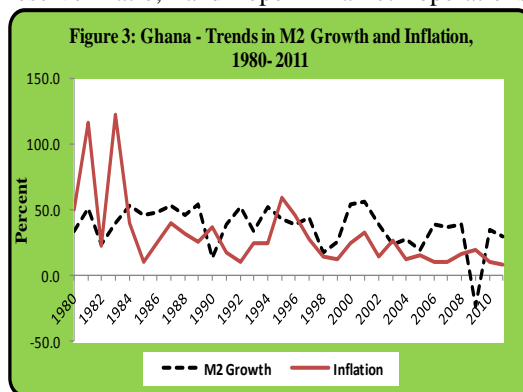
Policy Coordination: Apart from the IMF supported Extended Credit Facility being implemented by the country, coordination of fiscal and monetary policies in The Gambia is

carried out under elaborate institutional arrangements. These are stipulated under a Memorandum of Understanding (MOU) signed between the CBG and MOFEA on the Domestic Debt Management and Monetary Operations in the 2007. The MOU allocates roles and responsibilities to both institutions in order to ensure accountability and responsibility for its actions in their respective areas of responsibility. Thus, the guiding principles include clear lines of responsibility, avoidance of duplication efforts, coordination of policies to ensure synergy, and information sharing. The policy coordination takes place at the different levels under the following committees: (i) the Macroeconomic Committee (MC) which brings together the Minister of Finance and the Governor of the Bank and chaired by the Minister of Finance. It meets on a quarterly basis or as often as necessary at the request of any of the parties; (ii) the Monetary Policy Committee of the CBG (MPC) which meets at two-month intervals to pronounce on the monetary policy stance of the Bank. The MPC is chaired by the Governor of the CBG with Ministry of Finance represented by two officials as ex-officio members. Signalling of the policy stance is communicated through announcements by the MPC regarding changes to its rediscount rate; and (iii) the Treasury Bills Committee of the CBG that meets weekly to conduct the auctions. To assist in the coordination of fiscal and monetary policy and liquidity management in pursuit of its price stability objectives, the MFEA undertook to provide weekly forecasts of the budget deficit financing requirements to the CBG. This also helps the CBG to monitor compliance with respect to the statutory limits set on Government borrowing from the CBG in particular.

2.2 Ghana

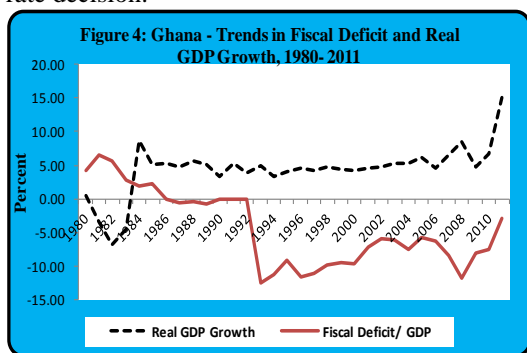
Monetary Policy: The monetary policy objective of the Bank of Ghana (BOG) is to ensure price stability – low inflation – to support other macroeconomic objectives including those for growth and employment (figure 3). Price stability is defined by the Government's inflation target. This target is revised annually and spelt

out clearly in the budget statement for each fiscal year. The BOG has an inflation-targeting monetary framework with clear outlines on policy goals, regime, conduct and communication. The desired inflation target of below 10.0 percent is expressed in terms of an annual rate of inflation based on the Consumer Prices Index (CPI). Although the Bank is not bound by law to explain to the Ministry of Finance or to Parliament if the target is not achieved, the Governor may be summoned to the Finance Committee of Parliament to explain developments within the economy. The inflation targets usually have allowance for minimal deviations resulting from shocks that cause uncertainty and volatility in the economy. Monetary policy conduct is the responsibility of the Monetary Policy Committee (MPC) adjusts interest rates so that inflation can be brought back to target within a reasonable period of time without creating undue instability in the economy. The Bank uses multiple instruments in achieving its policy objectives, which include the monetary policy rate, reserve money, required reserve ratio, and open market operations.



In conducting monetary policy, the MPC meets bi-monthly to review macroeconomic developments and set interest rates that will ensure attainment of the government's inflation target. The MPC is chaired by the Governor of the Bank of Ghana and consists of seven members – five from the Bank of Ghana including the Chairman and two external members appointed by the Minister of Finance. The bi-monthly MPC meetings are for three days, usually beginning on the third Tuesday of the month in which the meetings have been scheduled and ending on the Thursday of that

same week. Decisions are made by a vote of the Committee on a one-person one-vote basis with each member stating clearly the reasons for a particular interest rate decision. This is usually announced on a Monday following the Friday on which meetings normally become conclusive. Though the minutes of the meetings are not published a wide range of economic reports are made available at the Bank of Ghana website two weeks after the announcement of the interest rate decision.



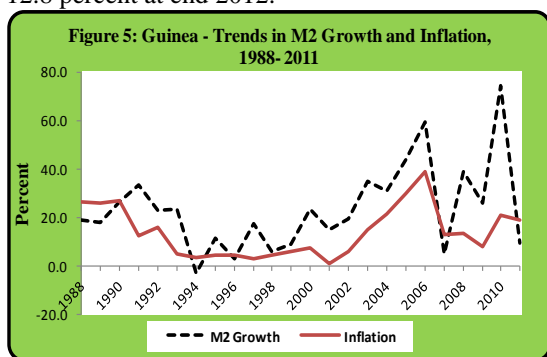
Fiscal Policy: Ghana's fiscal policy goals are, among others, to improve fiscal resource mobilization; allocate and manage financial resources efficiently, effectively and rationally; reduce the debt burden; and strengthen the private sector. Hence, the fiscal policy framework is designed to ensure macroeconomic stability for sustained economic growth and development (figure 3). The key features of the fiscal policy framework include the formulation and implementation of sound financial, fiscal and monetary policies; establishing and disseminating performance-oriented guidelines and accurate user-friendly financial management information systems; and creating an enabling environment for investment. The government fiscal policy stance has reflected the political business cycles experienced since the promulgation of the fourth republican constitution in 1992. Government's fiscal consolidation programmes have been occasionally truncated especially in election years. Although domestic revenue targets are realised most of the times; expenditure overruns, especially, in areas of emoluments and transfers have often led to the continuous deterioration of the fiscal position.

The government debt burden reduced after the completion of the HIPC initiative in 2002/2003. The total stock of debt has hovered around 40.0 percent of GDP and proportionately split between domestic and external sources. However, in recent times, the country's debt profile has been rising with increases in the provision of socio-economic infrastructure. To avoid a relapse into the experiences of the pre-HIPC era, the government is putting emphasis on the use of public-private partnership (PPP) schemes for roads and other infrastructure projects on build-operate- and-transfer (BOT) basis.

Policy Coordination: Although policy coordination has not yet been formalised, there are some platforms for broad policy discussions and consultations. The key committees whose functions have some coordination elements include the Economic Management Team (EMT), Monetary Policy Committee (MPC) and the Treasury Committee. The EMT is chaired by the Vice President of the Republic and comprises the Finance Minister, the Governor of BOG and other economic advisors appointed from outside government. They deliberate on wide issues relating to economic growth and stability but not necessarily harmonisation of policies. Further, the MPC has Finance Ministry's representation which together review macroeconomic fundamentals before taking interest rate decisions that they deem to be consistent with government growth and inflation objectives. The government budget process is broad-based and consultative with inputs from the BOG, business community, academia and civil society organisations. After the formulation of the budget, it is submitted to Parliament (The Legislature) where it goes through the scrutiny of the Parliamentary Select Committee on Finance before final approval by the entire house. However, while a lot of consultations go into the fiscal policy formulation, its implementation is left in the hands of only the officials of the Finance Ministry. The Finance Minister is summoned occasionally by Parliament to explain some fiscal outcomes.

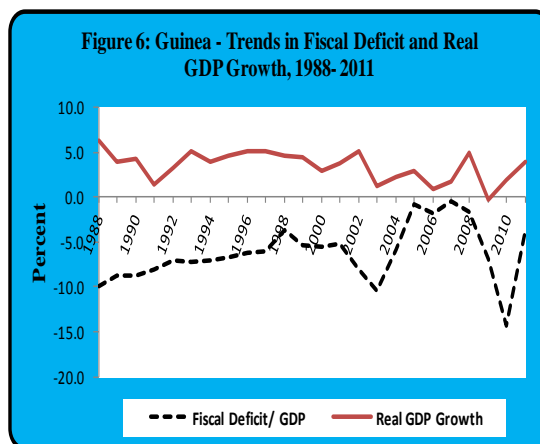
2.3 Guinea

Monetary Policy: The objective of monetary policy in Guinea is price stability to support economic growth (figure 5). The country is currently implementing monetary-targeting framework. The Central Bank of Guinea (BCRG) is independent as enshrined in the Central Bank Act of 1995. There is a Monetary Policy Committee (MPC), comprising only central bank officials, which takes monetary policy decisions. In its policy implementation, the Central Bank focuses on low inflation as its ultimate goal and broad money supply growth as its intermediate target which is to be achieved through adjustments in the reserve money. These targets are set periodically by the MPC and the policy instruments such as the policy rate, required reserves and Open Market Operations (OMO) through both central bank bills and treasury-bills are chosen based on the rate of inflation, banking system liquidity and credit as well as inflationary expectations. The required reserve ratio and the policy rate had been very effective. This is supported by the fact that during the period 2011-2012, the increase in the policy rate and required reserve ratio saw inflation decline from 20.8 percent in 2010 to 12.8 percent at end 2012.



Fiscal Policy: The thrust of fiscal policy is to stabilise the macroeconomic environment and boost economic growth by reducing the fiscal deficit and increasing public investment (figure 6). In terms of debt management, the focus is on finding external funds at concessional rates and limiting domestic borrowing from the BCRG. The key features of the fiscal policy framework are measures to increase revenue mobilisation, expenditure management and improvement to

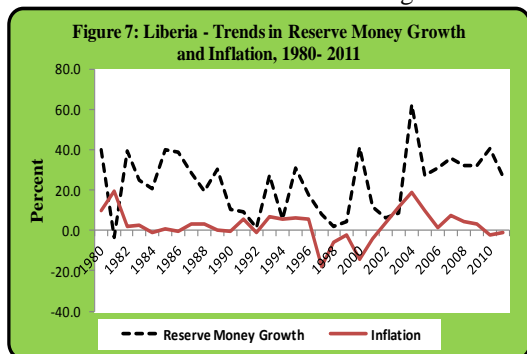
ensure poverty reduction, as well as reducing fiscal deficit and public debt. The revenue mobilisation strategy envisages increased revenue/GDP ratio, increasing the tax base, reinforcing the capacity of small and medium enterprises, reviewing the investment and mining codes, and revising some mining agreements. To reduce expenditure, the authorities planned reducing central bank's net claim on government, limiting borrowing from the commercial banks and putting in place cash budgeting.



Policy Coordination: Although there is a platform for the coordination of monetary and fiscal policies in the country, it has not been formalised. This platform includes a Ministerial Committee involving Ministries of Finance, Mining and Trade and the BCRG and is chaired by the Advisor to the President and meets regularly. The coordination usually takes place at both the formulation and implementation stage of the IMF programme and the policy decisions of the ministerial committee are binding on all the relevant agencies. Coordination at this level has been effective in achieving some results such as the targets relating to the decision and completion points of the HIPC Initiative and the country programme with the IMF. Further, there is a Treasury Committee with BCRG representation and meets periodically. There is also COFIP which is a Fiscal Committee set up with BCRG's representation to monitor or coordinate a country programme with the IMF.

2.4 Liberia

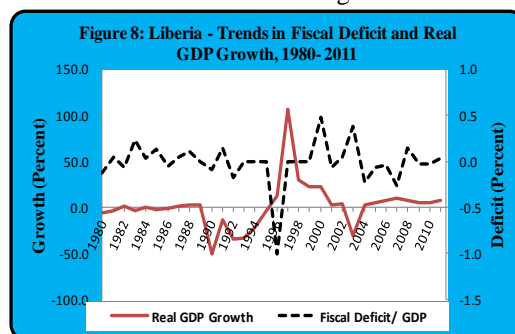
Monetary Policy: The focus of monetary policy in Liberia is on maintaining price stability (figure 7). The Central Bank of Liberia (CBL)’s monetary policy framework is an exchange rate – targeting regime which aims at containing volatility in the exchange rate while building up foreign exchange reserves. As enshrined in the CBL Act of 1999, Part II No. 4 & 5, “The Central Bank shall have functional independence, power and authority” to carry out its functions under the supervisory oversight of its Board of Directors. The policy tools of the Bank include periodic foreign exchange auction and the recently launched Treasury bill market which is intended to widen the monetary policy space. As the major monetary policy tool available to it, the CBL uses its periodic foreign exchange auction to influence fluctuations in the exchange rate. Through weekly auctions and “special window”, banks, registered business institutions and individuals are allowed to participate through their respective banks. The Liberian economy is highly dollarized and cash based with a dual currency system. Thus, while the official currency is the Liberian dollar, the US dollar also remains a legal tender.



Fiscal Policy: Liberia’s fiscal policy aims at achieving strong and sustained economic growth, poverty reduction, efficient service delivery and resource mobilization with the intent to increase public investments and enhance wealth distribution, as stipulated in the “Agenda for Transformation (AfT)”. Liberia has a well developed Medium Term Expenditure Framework (MTEF) as a means of executing a multi-year development plans. The MTEF process has three main objectives: to ensure

fiscal discipline by operating within budget; allocate resources in line with national priorities and; to ensure the efficient and judicious use of resources. The major development in fiscal management in recent years was the successful implementation of a cash-based budget to achieve fiscal discipline, which resulted in the successful achievement of the HIPC completion point in 2007. The key fiscal policy instruments are: taxes, expenditure and deficit financing (debt), grants and contingency funding. The emphasis is on resource mobilization through taxes and grants to finance government programmes.

Policy Coordination: The role of policy coordination is undertaken by several committees including the Economic Management Team (EMT), Debt Management Committee (DMC) and the Money Management and Policy Review Committee (MMPRC). The EMT is the highest body responsible for coordinating fiscal and monetary policies. It is chaired by the President of Liberia and comprises Ministers of Finance, Commerce, and Justice and the Executive Governor of the CBL. The EMT meets once a week to discuss issues on macroeconomic developments, especially, in the areas of fiscal, monetary and exchange rate developments, among others. Decisions of the EMT are implemented by the Central Bank and Ministry of Finance. The DMC is chaired by the Minister of Finance and comprises officials from the CBL, Ministries of Justice and State for Presidential Affairs. It assesses public debt in terms of its sustainability, by ensuring that any new borrowing conforms to the guidelines set by the Debt Management Unit. The Committee also analyses debt in relation to the overall economic strategy, including its impact on inflation, interest rates and debt servicing. The MMPRC is



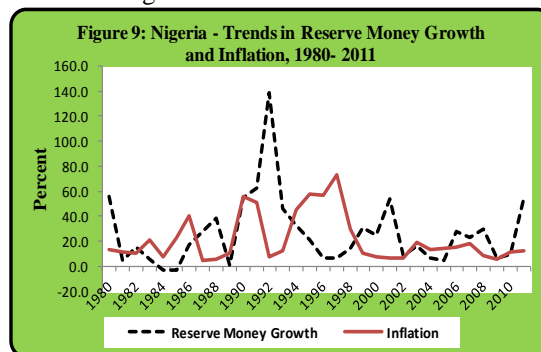
domicile at the CBL and comprises only senior staff from the Central Bank. The committee is responsible for discussing monetary development, exchange rate auction, development of the microfinance industry, capitalization of the CBL and the transition to International Financial Reporting Standards (IFRS).

2.5 Nigeria

Monetary Policy: The monetary policy thrust of the Central Bank of Nigeria (CBN) is to ensure optimal supply of liquidity to the economy to sustain price stability and non-inflationary economic growth (figure 9). In line with this, the CBN has been tightening its monetary policy stance over the last five years in order to moderate inflation expectations, relieve pressure on the exchange rate and improve the returns on domestic financial assets. The CBN's monetary policy framework is a monetary-targeting regime anchored on monitoring of monetary aggregates and inflation developments, liquidity management, fiscal-monetary policy coordination and communication with the market/ public. It has the policy rate as operating target, broad money supply as intermediate target and single-digit headline inflation as the ultimate target. The CBN enjoys operational but no goal independence in the conduct of monetary policy as conferred on it by the CBN Act of 2007. The inflation target is set jointly by the CBN and the Ministry of Finance, while the exchange rate band is set by the CBN. With regard to policy instruments, the CBN deploys instruments including cash reserve requirement, monetary policy rate (MPR), liquidity ratio (LR), net open position limit (NOP), exchange rate and open market operations (OMO). These instruments are chosen individually or combined by the MPC based on the level of liquidity in the market, the pressure on the exchange rate, effectiveness of the instrument in liquidity management, and the purpose of the monetary policy measure whether it is for signalling or for actual injections/withdrawals.

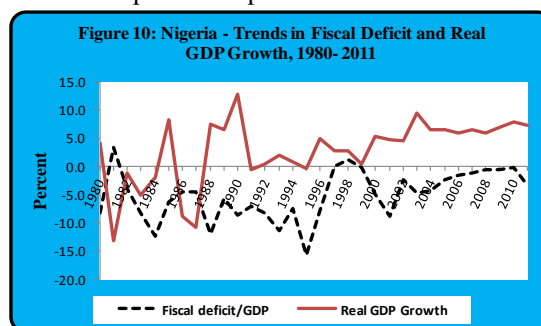
Fiscal Policy: The thrust of fiscal policy in Nigeria is to encourage investment in specific sectors of the economy, boost public sector

revenue, leverage on public sector funding of infrastructure through public-private partnerships (PPP) arrangements, and reduce borrowing. The fiscal policy framework is enshrined in the Fiscal Responsibility Act of 2007 with focus on macroeconomic stability and growth promotion, sustainability of deficit and debt, increased capital spending in proportion of total spending, and servicing of external debt (figure 10). The key fiscal policy instruments are taxation and government expenditure. Targets are set for revenue agencies such as Federal Inland



Revenue Service (FIRS) and Nigerian Customs Service (NCS). As part of government expenditure rationalization strategy, budget envelopes are given to all ministries, departments and agencies (MDAs).

The Federal Executive Council (FEC) in 2010 adopted a more restrictive debt management framework in order to avoid a relapse into debt burden experiences prior to the debt relief of



2005/ 2006. The key features of the debt management framework are medium-term debt management strategy, domestic and external borrowing guidelines, annual borrowing programme and the quarterly debt issuance calendar. The debt management strategy is to ensure efficient public debt management in terms of comprehensive well-diversified and

sustainable portfolio, supportive of government and private sector needs. In this regard, the Debt Management Office (DMO) prepares annual debt sustainability analysis (DSA) as a major debt management tool, using macroeconomic and debt data to assess the country's debt sustainability in line with global debt burden and country specific thresholds.

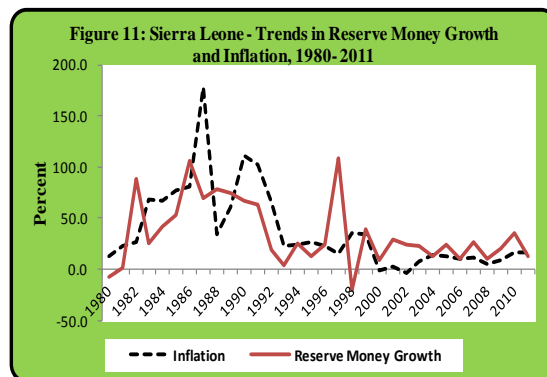
Policy Coordination: Communication between fiscal and monetary authorities is done at various levels: first, bilateral communication between heads of the fiscal and monetary institutions and, secondly, through various formal committee meetings. The policy coordination framework has the fiscal and monetary authorities making inputs into major policy documents/ issues including the budget, DSA, TSA, among others. For instance, the Federal Ministry of Finance is represented on the Monetary Policy Committee of the CBN. There are also formal committees where policy issues are discussed and harmonised where possible. These include Monetary and Fiscal Policy Coordination Committee (MFPCC), Cash Management Committee (CMC) and Fiscal and Liquidity Assessment Committee (FLAC). MFPCC meets on quarterly basis, MPC meets bi-monthly and CMC meets every month, while FLAC meetings are weekly. Further, meetings and other activities such as workshops and seminars are also held on a need basis.

The MFPCC was established on October 13, 2004 for the purpose of creating a platform for the harmonisation of monetary, fiscal and debt policies with a view to promoting stability in the financial system. The Committee is chaired by the Director-General of the Debt Management Office (DMO) or his representative who shall not be below the rank of a Director. The membership of the Committee comprises sixteen Directors or their representatives drawn from seven Ministries, Departments and Agencies (MDAs) namely DMO, CBN, Federal Ministry of Finance (FMF), Office of the Accountant-General of the Federation, Budget Office of the Federation, National Bureau of Statistics (NBS) and National Planning Commission (NPC). Among other things, the MFPCC is to harmonise the objectives of monetary policy, fiscal policy and debt policy towards achieving macroeconomic

stability as well as to identify the activities and responsibilities required for meeting those objectives; ensure that the strategies for achieving fiscal, monetary and debt policies targets are properly synchronised so that they are complementary rather than conflicting; and eliminate distortions such as mismatches in the funding of the budget deficits and other government borrowings.

2.6 Sierra Leone

Monetary Policy: The ultimate policy objective of the Bank of Sierra Leone (BSL) is to achieve and maintain price stability (figure 11). The Bank also seeks to enhance financial sector stability and growth through strengthened supervision and robust regulatory framework. In pursuit of the goal of price stability, the Bank conducts Monetary Policy within the context of a monetary targeting framework, with reserve money used as the operating target while broad money serves as the intermediate target standing between the central bank's ultimate policy goal and the operating target.

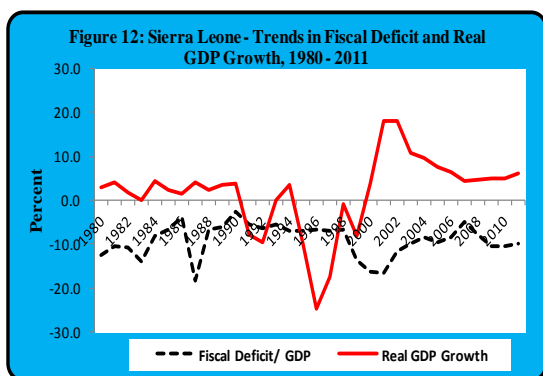


Monetary policy operations are conducted through Open Market Operations (OMO), in the secondary market using repurchase and reverse repurchase transactions to deepen the inter-bank market and maintain interest rates at levels consistent with low and stable inflation. To enhance monetary policy management, the Bank of Sierra Leone (BSL) introduced the Monetary Policy Rate (MPR) in 2011, to signal the Bank's monetary policy stance and to serve as an anchor for all market rates. The Monetary Policy Committee (MPC) sets the MPR based on its

assessment of the monetary and economic conditions, as well as its outlook for inflation. Other instruments used by the bank in its monetary policy operations include: reserve requirements, moral suasion and the Standing Facility. In addition, BSL also engages in weekly auctions of non-cash foreign exchange, primarily design as a mechanism for the Bank to efficiently inject foreign exchange into the market and also serve as a window for the sale of foreign exchange by other economic agents at market rates.

Fiscal Policy: The focus of the current fiscal policy is to achieve sustained economic growth, job creation and enhance the expansion of economic and social opportunities to a broader spectrum of the population, consistent with the priorities set out in the “Agenda for Change”, including:

- i. Sustain spending on infrastructure development in order to spur sustainable economic growth;
- ii. Provision of basic services to make progress towards the attainment of the MDGs.
- iii. improve domestic revenue collection
- iv. mobilizing concessional external support from traditional and non-traditional partners to finance Government’s development agenda
- v. Improve the capacity and productivity of the public service by implementing public sector reforms to ensure effective and efficient delivery of public services.



In order to achieve these objectives, the government took several measures, among which are the following: i) the creation of a high level

Cash Management Committee (CMC) entrusted with the responsibility to improve short-term liquidity management and guide the expenditure commitment process by enhancing budget execution, monitoring and improving co-ordination between fiscal and monetary policy; ii) preparation and execution of monthly cash flow statements reflecting expenditure priorities and financing constraints; iii) renegotiation of payment arrangements with project contractors to ensure that the submission of payment certificates on completed infrastructure projects is aligned with budgetary resources; and v) tightening of the expenditure commitment process to contain non-priority spending.

The primary objective of debt management in Sierra Leone is to ensure that Government’s financing needs and repayment obligations are met at the lowest possible cost, consistent with a prudent degree of risk. Other objectives include the development and deepening of the domestic debt market to facilitate secondary trading of Government securities. To improve the debt management capacity with a view to ensure that new loan commitments are consistent with debt sustainability, the government introduced the following measures: a) the re-assessment of the grant element of any loan prior to signing; b) steadfast adherence to the procedures for recording all stages of external loan contracting; c) preparation of quarterly reports on the stock of debt outstanding, and loan agreements; and d) improved co-ordination and information sharing between all government agencies involved with external debt contracting. The Government continues to meet its debt service payments to all its external creditors.

Policy Coordination: In Sierra Leone, coordination in the implementation of monetary and fiscal policies is achieved through the establishment of committees as platforms for addressing macroeconomic policy issues. The authorities coordinate fiscal and monetary policies to ensure the achievement of non-inflationary growth and broader macroeconomic stability. There are committees that enable the BSL and the Ministry of Finance and Economic Development (MOFED) to be in regular contact, share information on policy issues and also jointly participate in the formulation and monitoring of policy implementation. These committees include the Monetary Policy Committee (MPC), Cash Management Committee (CMC), Foreign Exchange Auction Committee (FEAC), among others. The MPC comprise of representatives from the BSL, MOFED and University of Sierra Leone, and is chaired by the Governor, BSL. The Committee has the following mandates: (i) to formulate and direct the conduct of monetary policy in order to deliver price stability and support government objectives for sustainable growth; (ii) direct the conduct of the financial markets operation; (iii) ensure that liquidity conditions in the money market are consistent with the broad objective of price stability and (iv) review developments in the foreign exchange market and formulate policies to support macroeconomic stability. The Committee meets once every month, and deliberations from such meetings are published in local newspapers. The Bank also host the Monetary Policy Technical Committee (MPTC), which is entrusted with the responsibility to (i) consolidate the inputs from the various Departments on monetary policy related issues (ii) review macroeconomic and monetary developments and their likely impact on the Central Bank's ability to achieve and monitor price stability (iii) review the technical soundness of monetary policy recommendations for the MPC, and (iv) advise the MPC on the stance of monetary policy.

The Cash-Management Committee is chaired by the Financial Secretary, MOFED and includes officials from the BSL, MOFED, National Revenue Authority (NRA) and Accountant General's Office. The committee is largely responsible for the planning of financing requirements, deciding on the volume, timing, type and frequency of borrowing, as well as prioritizing government's weekly expenditure, conditional on projected revenue for the period, in order to minimize government fiscal deficit and long-run cost of debt service. The committee meets weekly to coordinate operating procedures and prioritize Government funding requirements based on revenue projections and expenditure outlays. Recommendations arising from the meetings are presented to the Governor and Minister of Finance and Economic Development for further deliberation and implementation. FEAC, which is the highest administrative authority for the conduct of the foreign exchange auctions, perform the following functions: supervise the foreign exchange auction and the opening of bids; take decisions on the eligibility of submitted bids, including any outlier bids; act as referee between the Bank of Sierra Leone and the participants with a view to instill confidence and promote transparency in the auction process; safeguard the rules of non-disclosure and confidentiality of information related to the proceedings of the auction; and make recommendations on the amount to be put on offer for BSL Management Board's approval. The committee comprises of the Governor of the BSL; Directors of Financial Markets, Banking, Banking Supervision and Research; representative from MOFED; and representatives from the Commercial Banks, Foreign Exchange Bureaux and the Chamber of Commerce. However, the representatives from the Commercial Banks, the Foreign Exchange Bureaux and the Chamber of Commerce serve as observers in the foreign exchange auctions and do not take part in policy decisions.

LITERATURE REVIEW

The issue of macroeconomic policy coordination has had a central place in the literature on the design of macroeconomic policies. The literature on coordination has focused on two basic issues including: the fiscal theory of price level determination (FTPL) and strategic interaction. The FTPL states that the determination of inflation would no longer be a monetary phenomenon, but a fiscal one linked to the predetermined level of public debt. In the FTPL approach, the time paths of government debt, expenditure and taxes do not satisfy the intertemporal solvency constraint, such that, in equilibrium, the price level adjusts in order to ensure government solvency (see Semmler and Zhang, 2003). In other words, the FTPL suggests the consolidated government present value budget constraint is an optimality condition, and it shows how Ricardian and non-Ricardian notions of wealth effects play a role in price determination and household consumption. A basic tenet of the FTPL is that monetary policy alone does not provide the nominal anchor for an economy. Instead, it is the pairing of a particular monetary policy with a particular fiscal policy that determines the path of the price level. A good coordination of monetary and fiscal policies is needed for price determination and control.

The second approach studies the interactions between monetary and fiscal policies from a strategic perspective in a game theory framework between the government and the central bank. Sargent and Wallace (1981) suggest that, if the central bank is independent from the fiscal authority and takes the lead in setting the path of inflation, then the fiscal authority, should select a sequence of primary surpluses (and debt) that is consistent with the order of money supplied by the monetary authority in terms of satisfying the government's consolidated intertemporal budget constraint. In such a situation, fiscal variables do not matter for price determination and, consequently, central banks committed to price stability can certainly deliver price stability regardless of fiscal policy. On the other hand, under a fiscal dominance regime, the fiscal

authority will take the lead and move first by defining the path of the primary surplus/ deficit. In such a situation, any adjustments by the authority to avoid explosive debt paths must come in the form of seigniorage revenues. Given the predetermined path for the primary surplus, tight monetary policy can potentially result in higher, instead of lower inflation. Standard monetary policy responses to inflationary shocks will have perverse effects: monetary tightening today prompts higher interest rates, increases interest payments on the government's debt, and requires expansionary monetary policy in the future to generate additional seigniorage revenue.

Numerous empirical studies have examined the coordination between monetary and fiscal policies. For instance, Sargent and Wallace (1981) established that, a persistent budget deficit in a fiscally dominant regime will ultimately be financed through monetization, which will cause inflation in the economy. The study by Tabellini (1986) analyzes the coordination of monetary and fiscal policies in the context of a differential game modeled for a single country, where the target variable is the path of government debt across time. Tabellini shows that policy coordination increases the speed of convergence to the steady state and leads the economy closer to the planned target as compared to the outcome of the non-cooperative game. Similarly, Lambertini and Rovelli (2003) also investigated the relationship between monetary and fiscal policy in the process of macroeconomic stabilization within a Stackelberg equilibrium framework. They identified three cases each assigning the initiative to treasury, government and central bank respectively in conduct of policy measures. The study concluded that the preferable and probable outcome is the one in which the fiscal authority appear as the leader in macroeconomic policy game

Muscatelli et al. (2002) estimated VAR models with both constant and time varying parameters for G7 countries and found that monetary and

fiscal policies were used as strategic complements. Their results indicate that the form of interdependence between fiscal and monetary policies was asymmetric across countries. Monetary policy was found to act in response of fiscal expansion in the US and the UK but no evidence of the same kind is found for France, Italy, and Germany. In another study, Nordhaus (1994), demonstrated that, under certain assumption, government and monetary authorities in the US economy acting independently and non-cooperatively will produce an outcome, in which budget deficit and real interest rate will be higher than wishes of the either authority. Melitz (1997) uses pooled data for 15 member states of the European Union (EU) to investigate the coordination between monetary and fiscal policies. The study revealed that coordinated macroeconomic policies are in practice in the region. Specifically, they conclude that “easy-fiscal” policy leads to “tight-monetary” policy and “easy-monetary” policy, to “tight-fiscal” policy

In an empirical investigation of a group of emerging market countries, Zoli (2005) found that there is fiscal dominance in case of Brazil and Argentina. He explored that, fiscal policy actions appeared to have contributed to movements in the exchange rates more than unanticipated monetary policy maneuvers, establishing the fact that fiscal policy does affect monetary variables. Fialho and Portugal (2009) studies the interactions between monetary and fiscal policies in Brazil using a Markov-switching vector autoregression model and applying the fiscal theory of the price level. Their result indicated that there is a relationship between public debts (a measure for fiscal policy) and Selic (their measure for monetary policy), and that the nature of macroeconomic coordination between monetary and fiscal policies in Brazil follows a “substitution-approach”, with a dominant monetary regime, in opposition to the non-Ricardian policies of the fiscal theory of the price level. In the case of six South Asian countries, Hasan and Isgut (2009) using data for the period 1980 to 2008, found that fiscal policy responded to economic slowdown promptly, while the response of monetary policy was mixed.

Andlib et al (2012) investigated the coordination of fiscal and monetary policy in Pakistan using unrestricted VAR model. The model consists of four variables, two macroeconomic variables (output /unemployment and inflation) and two policy variables describing the monetary and fiscal policy stance. Using time series data from 1975 to 2011, they find that there is a weak coordination between monetary and fiscal authorities. Agha and Khan (2006) also concluded that inflation in Pakistan is a fiscal phenomenon, showing that fiscal policy significantly influences monetary policy conduct, and for better performance of the economy there needs to be coordination in the policy makers. In a related study, Nasir et. al (2010), using VAR model for the period 1975 to 2006 in Pakistan, also find weak co-ordination among the two policies. However, the study by Arby and Hanif (2010) found contradictory result that the two policies have been executed independently in Pakistan, but the co-ordination between them was weak.

Despite the vast literature on monetary and fiscal policy coordination, empirical studies on the WAMZ economies are limited in coverage. The most recent study was done by Chuku C.A (2012), using quarterly data to explore the monetary and fiscal policy interactions in Nigeria for the period 1970 to 2008. Using vector autoregression (VAR) and a State-space model with Markov-switching, the result indicates that monetary and fiscal policies in Nigeria have interacted in a counteractive manner, establishing the existence of weak coordination.

Stages in monetary and fiscal policy coordination

As alluded to previously, the overriding objective of macroeconomic policy is to achieve sustainable economic growth in a context of price stability and viable external sector. To achieve this, it is essential to maintain a close degree of coordination among decision makers in the areas of monetary and fiscal policy. The effective implementation of monetary and fiscal policies requires strong coordination between the respective authorities.

The form of coordination of monetary and fiscal policies varies according to the institutional setting in which monetary and fiscal policies take place. In an underdeveloped system with no market for government debt and where the central bank finances almost entirely any fiscal deficit, the reason for coordination will be to reduce fiscal-induced inflationary pressure. In this environment, monetary policy tends to be subservient to fiscal policy. To achieve policy coordination, formal rules in a form of broad money programming framework must be set to constrain excessive expansion of domestic credit. As the financial system develops and money market instruments are developed such that the central bank can issue securities on behalf of government to finance the deficit, the rationale for policy coordination will be to avert excessive high interest rates, rising cost of debt and crowding out of the private sector. At this stage, although interest rates are controlled, actions of the central bank affect government debt service costs. Here, coordination becomes possible if conducted within remits of rules based on broad money programming framework.

In a relatively developed financial system with interest rates achieving significant signalling role in the economy and where the central bank has less control over broad money, coordination becomes feasible within rules set out in a reserve money programming framework. At the stage where the financial system is fully developed and there is secondary market for government debt instruments, fiscal deficits impact not necessarily inflation but interest rates and economic growth. Here, the goal of policy coordination will be to forestall high interest rate and debt management problems as well as maintain credible and stable market conditions. Policy coordination in this environment becomes market-driven with no formal rules as the two policy institutions seek to achieve credibility in the economy.

In brief, the reasons for coordination depend on the development of the financial markets. In the initial stages of financial market development, coordination is required to avoid excessive inflation rates. However, with the development of the financial market and independence of the central bank, coordination is desirable to avoid

high interest rates, which may harm economic growth. In addition, with full central bank independence and its ability to maintaining price stability, the main risk of failing to coordinate monetary and fiscal policies becomes the impact of high fiscal deficits on interest rates and economic growth.

At any stage of financial development, lack of policy coordination and its attendant challenges pose a threat to short- and long-run economic growth of a country. Without efficient policy coordination, financial instability could ensue, leading to high interest rates, exchange rate pressures, rapid inflation, and adverse impact on economic growth. A weak policy stance in one area burdens the other area and is unsustainable in the long run. Thus, the overarching objective of fiscal and monetary policy coordination will be to achieve stable and non-inflationary economic growth and thereby increasing the material welfare of the citizens (Arby and Hanif, 2010).

Monetary and fiscal policy coordination is aimed at achieving the following interrelated objectives:

- i. To set internally consistent and mutually agreed targets of monetary and fiscal policies with a view to achieve non-inflationary stable growth.
- ii. To facilitate effective implementation of policy decisions to achieve the set targets of monetary and fiscal policies efficiently through mutually supportive information sharing and purposeful discussions.
- iii. To compel both the central bank and government to adopt a sustainable policy

According to Worrell (2000) the monetary and fiscal authorities should co-ordinate and agree on the size of the deficit and its financing mode. They should co-ordinate operating procedures, clarifying for themselves and the public who has the responsibility for debt management, cash management and liquidity forecasting as well who is responsible for observing rules insulating the central bank from the government's borrowing requirements. There is the need for designing fiscal policies to be consistent with monetary targets.

Policy Functions and Coordination

There are two key policy agents namely the fiscal authorities and the monetary authorities. The fiscal authorities include the finance ministries, the treasury and debt management units which are usually housed in the finance ministries. The monetary authorities include the central bank and monetary policy committees as pertained in most Member States of the WAMZ. The overarching objective of fiscal policy is to reduce unemployment rate by creating an environment where all available resources in the economy will be gainfully employed to produce increased output. With regard to monetary policy, the overriding objective is to maintain price and exchange rate stability by ensuring that money supply growth does not go out of control in relation to macroeconomic fundamentals. Although the two institutions have their biases, in a fully developed financial system, monetary authorities have no preference for any specific level of deficit, while neither of the two institutions has a specific preferred level of interest rate (Raj *et al*, 2011).

The basic instruments for delivering fiscal objectives are taxation and government spending. The outcomes of these tools culminate into fiscal balance (surplus or deficit). In the face of inadequate revenue mobilization, the government can embark on fiscal deficit creation for the realization of its spending outcomes. Thus, the overall government performance is summed up in the kind and level of fiscal balance. For monetary authorities, the choice of policy instruments depends on the level of financial development of the country. While the interest rate is the key policy variable in fully developed financial markets, the reserve money is the key operating target with broad money supply growth as intermediate target in less developed financial markets.

According to the Tinbergen's rule, for the realization of policy goals, the number of policy instruments should be at least equal to the number of policy objectives. Going by this, it is clear that the two key macroeconomic policy objectives of price stability and full employment

(reduction in unemployment) require at least two policy instruments for their realization (Tinbergen, 1952, 1956; Theil, 1964). For simplicity, one can consider the fiscal balance and the interest rate (reserve money) as the two key policy instruments that could be deployed to hit the policy targets. Where these instruments are in the hands of independent policymakers, the Tinbergen's rule becomes only necessary but not sufficient for delivering on policy targets. Both the fiscal and monetary authorities are confronted with policy constraints which must be factored into their policy functions.

For the fiscal authorities, debt stability and sustainability become critical factors that enter into fiscal policy constraint. In a closed economy setting, the domestic debt, especially, short-term debt becomes the overbearing factor, while the external debt and the country's ability to service it become critical factors in an open economy. This will limit the fiscal space available for new borrowing to finance the fiscal deficit. Exchange rate depreciations will generate cost implications for servicing the external debt, while concentration of maturities at a point may adversely affect debt servicing ability of the country in the absence of debt restructuring. Besides, the existence of contingent liabilities in the form of local government debt and debt of parastatals (state owned enterprises) may impinge on the creditworthiness of the country and may affect the cost of new borrowings to finance deficit. Overall, as far as fiscal policy target is concerned, inadequate fiscal space, large concentration of maturities at a point and contingent liabilities will limit government ability to roll over its debt (Hasan & Isgut, 2009).

The constraints facing the monetary authorities emanate largely from fiscal dominance in a closed economy but also from exchange regime and administration in an open-economy setting. In a fixed exchange rate regime, the monetary authorities will lose control over monetary policy entirely and may import the level of inflation in the country of the pegged currency. In a flexible exchange rate regime with complete capital account liberalization, the monetary authorities have full control over monetary policy but may experience severe fluctuations in the exchange

rate which may adversely impact price stability, the ultimate target of monetary policy. Thus, in addition to inadequate fiscal space, the level of short-term external inflows and possibility of their reversals will constrain the conduct of monetary policy.

It must also be noted that policy coordination becomes paramount when the two policy institutions are at least operationally independent of each other. Where the move of one institution depends on the actions of the other as in sequential-move games, coordination may be inherently assured (Arby and Hanif, 2010) but this may be in opposite directions. For instance, in fiscal dominance regime, the fiscal authorities move first and define the path of primary surpluses. In the case of deficits, fiscal adjustments in a form of increased debt or monetary adjustments in a form of seigniorage revenues may compel the monetary authorities to embark on tight monetary policy, resulting in an economy with expansionary fiscal policy and tight monetary policy stance. More often than not, the fiscal dominance may be so strong that whatever the monetary authorities do, they will not realise their policy objective of price and exchange rate stability. This is a case where fiscal dominance has drowned monetary policy effectiveness.

On the other hand, monetary authorities can take the first move to determine the level of seigniorage revenue that could be raised by setting its policy prior to the fiscal policy. In this case, discipline can be imposed as fiscal authorities are compelled to select a sequence of surpluses or debt that is consistent with money supply within the government's consolidated

inter-temporal budget constraint (Andlib, *et al*, 2012). Where there is adequate fiscal space, the first mover advantage of the monetary authorities may not necessarily impose discipline on the fiscal authorities. However, a central bank committed to price stability can deliver low inflation notwithstanding the fiscal policy stance since fiscal variables are not arguments of price determination in fully-developed financial system. Again, here, the economy may be characterised by tight monetary policy and expansionary fiscal policy stance.

However, in a coordinated simultaneous move games, the two independent institutions can engage in coordination that will see both policies move in the same direction as either expansionary fiscal and expansionary monetary policies or contractionary fiscal and contractionary monetary policies. These are essentially the results of explicit policy coordination which may be attained in two basic ways. According to Hasan and Isgut (2009), one way of explicit policy coordination is arrangement for physical interactions between fiscal and monetary policymakers to determine and set both fiscal and monetary targets. The other way of achieving explicit policy coordination is through establishment of rules and procedures regarding how each policy institution should set its own target with reference to the targets of the other. This essentially calls for transparency in policy formulation and implementation. Empirically, it is not very easy and clear-cut testing for either implicit policy coordination as in sequential-move games or explicit policy coordination as in simultaneous-move games.

THEORETICAL FRAME WORK AND METHODOLOGY

Theoretical Model Specification

The most commonly used utility functions for fiscal and monetary authorities in the literature (Andlib, *et al*, 2012, Raj, *et al*, 2011) are usually functions with three arguments namely unemployment, inflation and potential output growth. The difference between the utility functions of the two policy institutions stems from the fact that while the fiscal authorities assign more weight to unemployment than inflation, monetary authorities are biased towards inflation by assigning greater weight to it than unemployment. The utility functions are specified as follows:

$$U^F = f(\hat{\mu}, \pi, \theta) \dots \dots \dots (1)$$

$$U^M = f(\mu, \hat{\pi}, \theta) \dots \dots \dots (2)$$

where U^F and U^M are the utility functions of fiscal and monetary authorities respectively; and μ, π & θ are unemployment rate, inflation rate and potential output growth respectively. The hat on μ implies greater weight is assigned to unemployment and, in the same way, a hat on π implies greater weight is assigned to inflation. However, unemployment can be modeled as a function of interest rate and fiscal deficit (r, s).

That is, $\mu = f(r, s)$. Thus, equations (1) and (2) can be restated as

$$U^F = f(r, s, \pi, \theta) \dots \dots \dots (3)$$

$$U^M = f(r, s, \hat{\pi}, \theta) \dots \dots \dots (4)$$

Equations (3) and (4) state that the utility functions of both fiscal and monetary authorities depend on policy instruments and policy targets. When policy instruments enter the utility function in place of unemployment rate, the fiscal authorities' bias shifted to potential output growth, hence, the hat on θ in equation (3).

While the fiscal authorities are to solve a growth maximisation problem subject to constraints emanating from monetary and external sectors of the economy, monetary authorities are faced with inflation minimisation problem with constraints

from the fiscal and external sectors. The constraints of the two policy institutions can be formulated as reaction functions as follows:

$$s = f(m, \theta, g, d) \dots \dots \dots (5)$$

$$r = f(s, \pi, e, \varpi) \dots \dots \dots (6)$$

where m, g & d in equation (5) are defined as reserve money/GDP growth, government expenditure/ GDP growth and public debt/GDP growth, respectively; and e & ϖ in equation (6) refer to exchange rate depreciation/ appreciation and external reserves/GDP growth. In the fiscal policy reaction function, the reserve money/GDP growth is expected to capture seigniorage revenue that is generated from adjusting the monetary base, while public debt/ GDP captures the fiscal space available to the fiscal authorities. Government expenditure/GDP growth is also considered a key determinant of fiscal deficit assuming that government revenue/ GDP growth remains fairly constant since revenue mobilisation depends largely on existing tax laws and structures which do not change much over the years. On the other hand, exchange rate and external reserves fluctuations are also issues of concerned to the monetary authorities especially in a managed-float regime, hence, they are factored into the monetary policy reaction function. In developing economies such as those in the West African Monetary Zone with relatively less developed financial systems, the interest rate (s) does not play a significant signalling role. Thus, the interest rate may be replaced by reserve money/GDP growth in equations (3), (4) and (6).

Maximising the utility functions of the fiscal and monetary authorities with respect to potential output and inflation, respectively, and subject to the fiscal and monetary policy constraints (reaction functions) gives

$$\theta = f(m, s, \pi, d, \lambda) \dots \dots \dots (7)$$

$$\pi = f(m, s, \theta, e, \varpi, \lambda) \dots \dots \dots (8)$$

Equation (7) states that the equilibrium potential output growth in the economy is a function of base money supply growth, fiscal deficit,

inflation, and public debt. According to equation (8), the equilibrium inflation rate has its arguments as base money supply growth, fiscal deficit, potential output growth, exchange rate depreciation and external reserves. Lambda (λ) in both equations (7) and (8) represents constraint coefficient which captures the marginal utility of adjusting policy instruments. It must also be noted that while adjustments in the arguments of equation (7) are expected to maximise potential output growth, those of equation (8) are expected to minimise the rate of inflation. Writing both equations as minimisation problems, equation (7) can be transformed by writing potential output growth as output gap. In this way, the problem reduces to how to choose growth of monetary base, fiscal deficit, inflation and public debt changes to minimise the output gap (that is, minimising fluctuations in output gap so as to keep output (GDP) close to its potential level).

Empirical Model Specification

Explicit Policy Coordination

In specifying the empirical model, attempt is made to first test for operational independence of the fiscal and monetary authorities. The question of coordination between monetary and fiscal policies arises only if the two institutions are independent, at least operationally.

This is done by conducting Granger-causality test on indicators of fiscal and monetary policies, i.e. between fiscal deficit-GDP ratio and money supply-GDP ratio, and also explores the existence of co-integration between the two

indicators. While the Granger causality test determines the impact of past information in one variable on the current value of the other, the cointegration test establishes if there is an equilibrium relationship between the two variables over the long run. The two institutions are considered independent if there is no cointegration and no pair-wise causality in the indicators of their respective policy stances. In this case, one has to find empirically if there is any existence of explicit policy coordination between the two policy institutions. Once the independence between the two institutions is observed, the next step is to determine the extent of coordination between them given different economic shocks. This study adopts two different approaches to finding out the existence of explicit policy coordination. The first approach is essentially a set theoretic approach based on the methodology adopted by Arby and Hanif (2010). The second approach makes use of a VAR framework following the works of Hasan and Isgut (2009) and Raj et al (2011).

Modelling Explicit Policy Coordination - Set Theoretic Approach

The set theoretic approach of modeling explicit policy coordination makes use of a set theory. To ascertain the existence and effectiveness of explicit policy coordination, a macroeconomic environment matrix and policy response matrix are constructed with possible outcomes paired and compared in a set theoretic form. A policy target matrix is constructed as follows:

Table 4.1: Macroeconomic Environment Matrix

Target		Shocks to Monetary Policy Target (Inflation)	
		Positive (P)	Negative (N)
Shocks to Fiscal Policy Target (Growth)	Positive (P)	P, P	P, N
	Negative (N)	N, P	N, N

In Table 4.1, the economic environment may present four possibilities of fiscal and monetary policy shocks. One possibility is a situation where shocks to both inflation and growth are positive, implying economic environment represented by (P, P); while another possibility is

where negative shocks hit both inflation and growth giving rise to a policy environment (N, N). However, there may be conflicting shocks to inflation and growth, which will present either (P, N) or (N, P) policy environments.

It must be noted that cell (P, P) defines an overheating economy with increasing output growth and rising inflation, while cell (N, N) represents an economic trough or recession with rapidly declining output growth (or economic contraction) and deflation. . These two scenarios are normal cyclicalities associated with the growth path of an economy. However, cell (N, P) defines an unstable economic environment with low output growth and high inflation which necessarily requires active policy intervention to get to normality. Cell (P, N) also defines an unstable economy but more of expansion which may be ignited by bringing into the productive stream underutilized resources.

Thus, generally policy inaction may be the best policy in this case. To avoid any ambiguity arising from benign policy environment requiring no serious policy intervention, the shocks that are identified in Table 4.1 should be those that cause output growth and inflation to deviate substantially from their long run (steady state) path. Thus, the shock to growth (i.e. the output gap) is deviations of actual output from potential output, while shock to inflation is defined as difference between observed inflation from threshold level of inflation for the WAMZ. In the light of the foregoing representations, the responses of the fiscal and monetary authorities to the policy shocks are presented in Table 4.2.

Table 4.2: Policy Response Matrix

Policy Direction		Monetary Policy Response	
		Contraction (C)	Expansion (E)
Fiscal Policy Response	Contraction (C)	C, C	C, E
	Expansion (E)	E, C	E, E

The responses of fiscal and monetary policies to the shocks to the policy targets are depicted in Table 4.2. In reaction to the policy environment (P, P), the most likely policy responses will be contractionary fiscal and monetary policies as depicted by (C, C) in Table 4.2. Cell (E, E) will be the response pair to the policy environment cell (N, N). Similarly, cells (C, E) and (E, C) are the responses to the shocks in cells (P, N) and (N, P), respectively. It must be noted that a policy response may come with a lag as policymakers first observe the impact of the

shocks before taking action. Where policymakers fully anticipated the nature and likely impact of the shocks by taking remedial action well ahead, the impact of the shocks may be neutralized or reduced. Once the impact does not deviate substantially from the steady state path to warrant continued policy intervention, this situation may not be considered as requiring coordination.

Thus, the strength of coordination is defined as follows:

$$spc_t = \{n(P_{t-1}P_{t-1} \cap C_tC_t) + n(P_{t-1}N_{t-1} \cap C_tE_t) + n(N_{t-1}P_{t-1} \cap E_tC_t) + n(N_{t-1}N_{t-1} \cap E_tE_t)\} / T \dots (9)$$

Where $spc \equiv$ strength of policy coordination, $t \equiv$ time period and $T \equiv$ total number of time series observations. If spc attains a value close to one ($0.5 < spc < 1$), policy coordination is considered strong, otherwise ($0 < spc < 0.5$), policy coordination is described as weak. Note,

there would be perfect coordination if the four quadrants of macroeconomic environment matrix and policy response matrix are congruent (or equivalently $spc=1$ and no coordination if $spc=0$)

Modeling Explicit Policy Coordination – A Vector Autoregressive Technique

The strength of system-derived explicit policy coordination can also be ascertained using a vector autoregressive (VAR) approach. As noted by Hasan and Isgut (2009), a VAR model provides a simple means of explaining or predicting the values of a set of economic time series at a particular time period. Thus, it provides a powerful statistical forecasting tool for analysing historical data. The advantage of a VAR framework over structural modeling is that it avoids all structurally-induced restrictions or coefficient exclusions in order to get the model

exactly or over-identified for a solution to be found. It also permits the capture of empirical regularities in the data using fewer key macroeconomic time series variables and, thereby, providing insight into channels through which the different policy variables operate in an economic system. Besides, the VAR framework also provides a more convenient and comprehensive way of analyzing the impact of unanticipated shocks to the macroeconomic variables by way of impulse response function analysis.

The empirical VAR model is based on the variables identified in the theoretical framework above. The five-equation VAR model is specified as follows:

$$GAP_t = \delta_1 + \sum_{s=1}^p \alpha_{1s} GAP_{t-s} + \sum_{s=1}^p \beta_{1s} RMG_{t-s} + \sum_{s=1}^p \lambda_{1s} FSG_{t-s} + \sum_{s=1}^p \gamma_{1s} INF_{t-s} + \sum_{s=1}^p \phi_{1s} EXR_{t-s} + \varepsilon_{1t} \quad (10A)$$

$$RMG_t = \delta_2 + \sum_{s=1}^p \alpha_{2s} GAP_{t-s} + \sum_{s=1}^p \beta_{2s} RMG_{t-s} + \sum_{s=1}^p \lambda_{2s} FSG_{t-s} + \sum_{s=1}^p \gamma_{2s} INF_{t-s} + \sum_{s=1}^p \phi_{2s} EXR_{t-s} + \varepsilon_{2t} \quad (10B)$$

$$FSG_t = \delta_3 + \sum_{s=1}^p \alpha_{3s} GAP_{t-s} + \sum_{s=1}^p \beta_{3s} RMG_{t-s} + \sum_{s=1}^p \lambda_{3s} FSG_{t-s} + \sum_{s=1}^p \gamma_{3s} INF_{t-s} + \sum_{s=1}^p \phi_{3s} EXR_{t-s} + \varepsilon_{3t} \quad (10C)$$

$$INF_t = \delta_4 + \sum_{s=1}^p \alpha_{4s} GAP_{t-s} + \sum_{s=1}^p \beta_{4s} RMG_{t-s} + \sum_{s=1}^p \lambda_{4s} FSG_{t-s} + \sum_{s=1}^p \gamma_{4s} INF_{t-s} + \sum_{s=1}^p \phi_{4s} EXR_{t-s} + \varepsilon_{4t} \quad (10D)$$

$$EXR_t = \delta_5 + \sum_{s=1}^p \alpha_{5s} GAP_{t-s} + \sum_{s=1}^p \beta_{5s} RMG_{t-s} + \sum_{s=1}^p \lambda_{5s} FSG_{t-s} + \sum_{s=1}^p \gamma_{5s} INF_{t-s} + \sum_{s=1}^p \phi_{5s} EXR_{t-s} + \varepsilon_{5t} \quad (10E)$$

Where P is the optimal lag length and its value is determined using lag length test based on the following criteria: Sequential Modified Likelihood Ratio (LR), Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Information Criterion (SC) and Hannan-Quinn Information Criterion (HQ). The impulse responses of RMG and FSG to inflation, exchange rate and output gap shocks are examined to see whether there is any system-derived explicit coordination.

Data and variable definition

The key variables for the VAR model are changes in output gap (GAP) representing shock to output)- measured as the difference between

actual output and potential output, broad money/ GDP (M2G), fiscal deficit/ GDP (FSG), inflation (INF) and exchange rate depreciation (EXR). All the variables are in growth rate. The study uses annual time series data for the period 1980 to 2011 for all countries. Secondary data were obtained from Member Countries and WAMI data base. Output Gap was obtained by de-trending real GDP, using the Hodrick-prescott (H-P) filter from Eviews 7.0, while shock to inflation is defined as difference between observed inflation from threshold level of inflation for the WAMZ. The H-P filter is a method used to separates the cyclical component of a time series from the raw series.

PRESENTATION AND ANALYSIS OF EMPIRICAL RESULTS

Set Theoretic Model Results

The results of the set theoretic models indicate that explicit policy coordination in each of the WAMZ countries is weak (Table 5.1) as all the scores are less than 50.0 percent. In addition, the results revealed that the monetary authorities in the WAMZ tend to implement relatively more prudent policies than the fiscal authorities, except in the case of Guinea, where the two policies were at par in terms of prudence. The results showed that The Gambia obtained a coordination score of 46.6 percent. This implies, out of the 30 pairs of policy instruments and goals observed during the sample period, 14 pairs suggest some form of policy coordination in each of these countries. The country also recorded fiscal and monetary prudence scores of 50.0 and 63.3 percent, respectively. This implies that monetary authorities tend to implement relatively more prudent policies than does the fiscal authorities.

Ghana achieved a coordination score of 33.0 percent, implying only 10 pairs out of the 30 pairs of policy instruments and goals suggest some level of coordination. The prudence scores are 44.8 and 55.3 percent for the fiscal and monetary authorities, respectively, meaning that the BOG has undertaken relatively more prudent policies than their fiscal counterparts. Guinea has a coordination score of 31.8 percent, implying only 7 out of the 28 pairs of policy instruments and goals indicate some level of coordination. The policy prudence score of 47.6 percent for each of the policy institutions in Guinea

indicates that both fiscal and monetary policies were at par in terms of prudence. The policy coordination score for Liberia is 37.9 percent, which indicates that only 11 out of the 29 pairs of policy instruments and goals confirmed some degree of coordination. A prudence score of 41.4 percent was recorded for the fiscal authorities while a score of 61.3 was registered for the Central Banks, an indication of prudent monetary implementation relative to fiscal policy during the review period. Nigeria had a policy coordination score of 46.6 percent during the review period. This implies, out of the 30 pairs of policy instruments and goals observed during the sample period, 14 pairs suggest some form of policy coordination in each of these countries. The country also recorded a weak fiscal prudence score of 46.6 percent but a relatively strong monetary prudence score of 58.4. The policy coordination score for Sierra Leone is 41.4, implying that of the 29 pairs of policy instruments and goals, 12 suggested some level of coordination. Sierra Leone recorded a relatively weak fiscal prudence score of 43.3 but a strong monetary prudence of 55.5 percent. Using panel data, the policy coordination score for the WAMZ countries is 38.6 percent, denoting that 68 out of the 176 pairs of policy instruments and goals confirmed some level of coordination. Given that the coordination scores for both country specific and pooled data for the WAMZ were less than 50.0 percent, it is therefore evident that fiscal and monetary policy coordination in the WAMZ countries remained relatively weak during the study period.

Table 5.1: Strength of Fiscal and Monetary Policy Coordination in the WAMZ Countries

Country	Policy Coordination Score (%)	Fiscal Prudence Score (%)	Monetary Prudence Score (%)
The Gambia	46.6	50.0	63.3
Ghana	34.5	44.8	55.3
Guinea	31.8	47.6	47.6
Liberia	37.9	41.4	61.3
Nigeria	46.6	46.7	58.4
Sierra Leone	41.4	43.3	55.5
WAMZ	38.6	44.3	57.4

Source: Authors' computation

VAR MODEL RESULTS

The study adopted the explicit policy coordination VAR model for estimation. The impulse responses based on the VAR results are generated using the generalised decomposition approach which is preferred to the Cholesky decomposition technique because it does not require that the model variables are specified in a particular order.

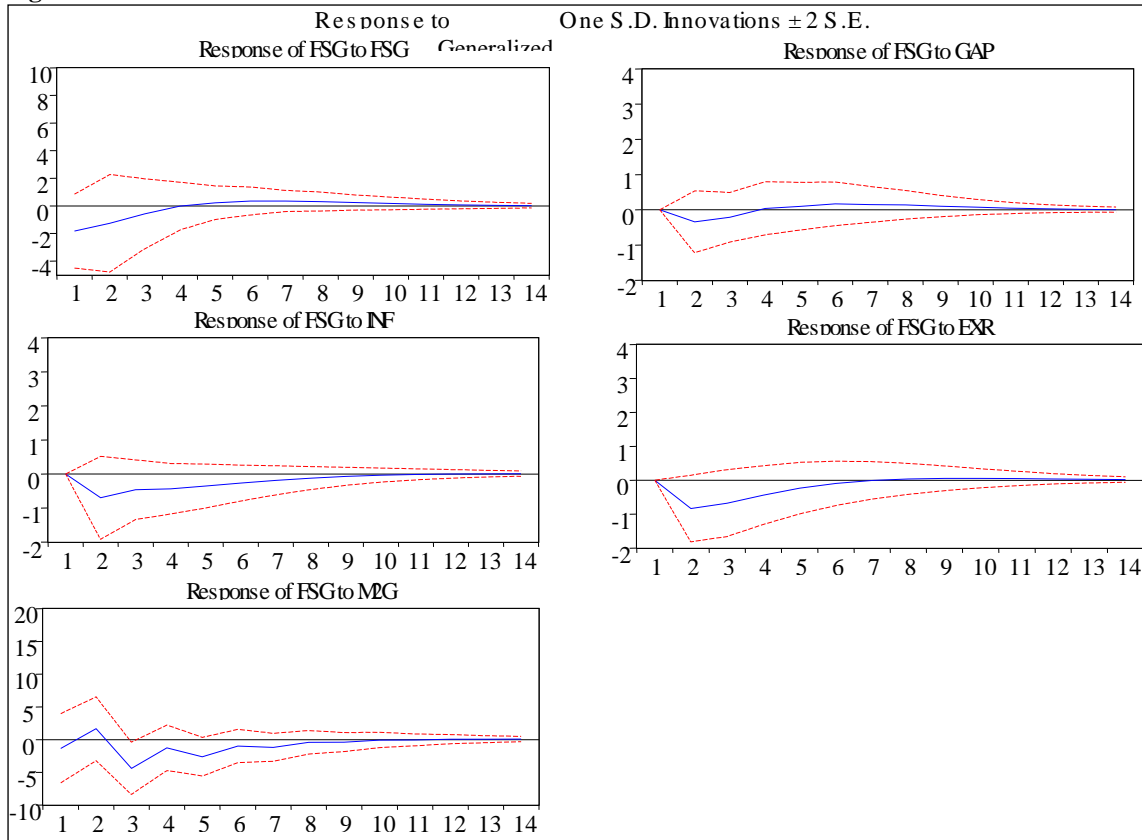
Results for the Gambia

Response of FSG: - The time paths of the response of fiscal deficit to shock in different variables are presented in Figure 1. For a shock in fiscal deficit, i.e. expansionary fiscal policy, the response to own shock is positive. This implies that fiscal deficit initially worsens due to own shock, but improved after the fourth year. It however tapers off gradually to zero after twelve years. This could be explained by the fact that fiscal authorities try to reduce the deficit after it has worsened beyond its mean level. To a monetary policy shock (expansionary monetary policy), fiscal deficit increased initially in the first year, but became positive in the second year. The deficit however widens in the third

year, and wanes gradually to its long run equilibrium path after eleven years. Increase in money supply creates more government spending, resulting to a widening of the deficit.

The response of fiscal deficit to a positive shock to output gap remains pro-cyclical, increasing in the second year, but improved after the fourth year, before tapering off after twelve years. This pro-cyclical behaviour could follow as increase in revenue buoyancy of the government during the upswing of a business cycle makes the Gambian government to spend even more and remain downward inflexible during downswing of the business cycle. The response of fiscal deficit to a shock in inflation is again pro-cyclical as it increases through the second forecast horizon before it begins to taper off. It takes eleven years for the fiscal response to inflation shock to completely wane. This increase in fiscal deficit due to inflation could follow from price rise leading to increase in government expenditure more than that of revenue receipts. To an exchange rate depreciation shock, fiscal deficit immediately jumps to a negative range, implying deterioration in fiscal position. However, deficit improves from the second forecast horizon and eventually tapers off after seven years.

Figure 1: RESPONSE OF FISCAL DEFICIT - THE GAMBIA



Response of M2G: To a shock in fiscal deficit, money supply growth immediately jumps up as monetary authorities are compelled to accommodate the rise in the fiscal deficit. The response however declines to a negative range through the second year of the forecast period before eventually waning during the eleventh year. This suggests that after initially accommodating the rise in fiscal deficit by increasing money supply, monetary authorities begin to mop up the excess liquidity created in the system leading to a contraction in money supply.

To an own shock, money supply growth increases initially before declining to its long run equilibrium after the ninth year. A shock to output gap causes money supply growth to initially declines before rising through the fourth period horizon. The response tapers off during the seventh forecast period. Also, the response of monetary policy to a shock to inflation increases

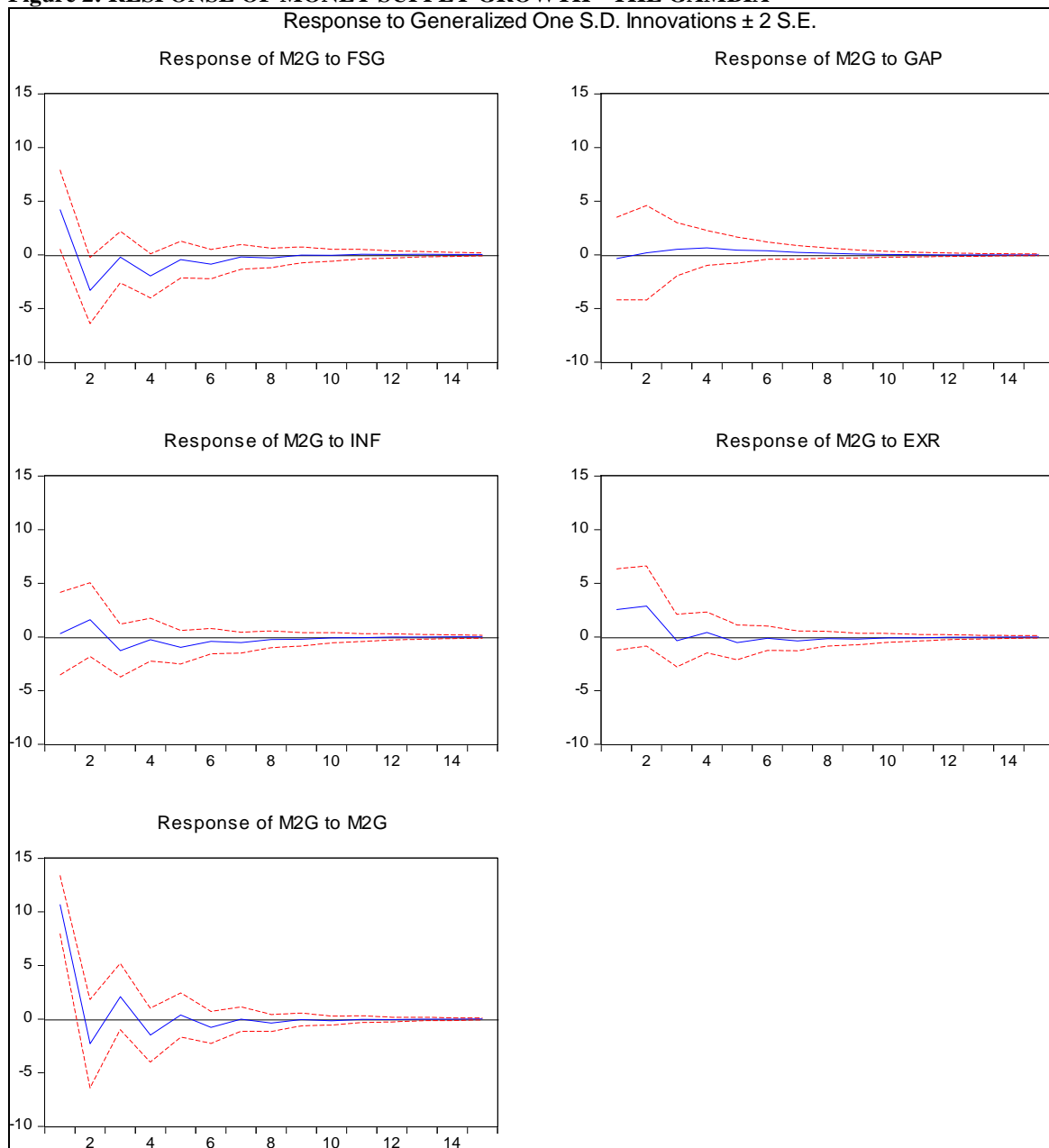
during the first year, but decline during the second year and completely wanes out after the eighth year. By way of responding to shock in exchange rate depreciation, money supply growth jumps in the year following the shock and remains constant through the second year of the forecast horizon. It returns close to the zero line in the third year before tapering off in an oscillating manner. It takes 14 years for the monetary response to exchange rate shock to die out completely. The full response to the exchange rate depreciation shock takes money supply growth above its equilibrium path.

Overall, it appears that in the Gambia, monetary policy adjusts to neutralize the effect of fiscal dominance but with a lag. Further, money supply adjustments are consistent with price stability objectives of the Central Bank of the Gambia. Monetary policies also responded adequately to wane off shocks to output gap. Fiscal policy also adjusted appropriately to money supply shock,

which appeared to be supportive of monetary authorities' desire to maintain price stability. Thus, empirically, there is some level of coordination between fiscal and monetary authorities in the Gambia. This coordination is however weak as it takes a long time for full adjustments to be effected. Though there is

weak coordination, the results revealed that monetary authorities responded adequately to dampen the effect of fiscal deficit shock. Similarly, fiscal policy responded appropriately to wane off shocks from monetary authorities. Hence there is little threat to both the fiscal deficit and inflation criteria in the Gambia.

Figure 2: RESPONSE OF MONEY SUPPLY GROWTH - THE GAMBIA

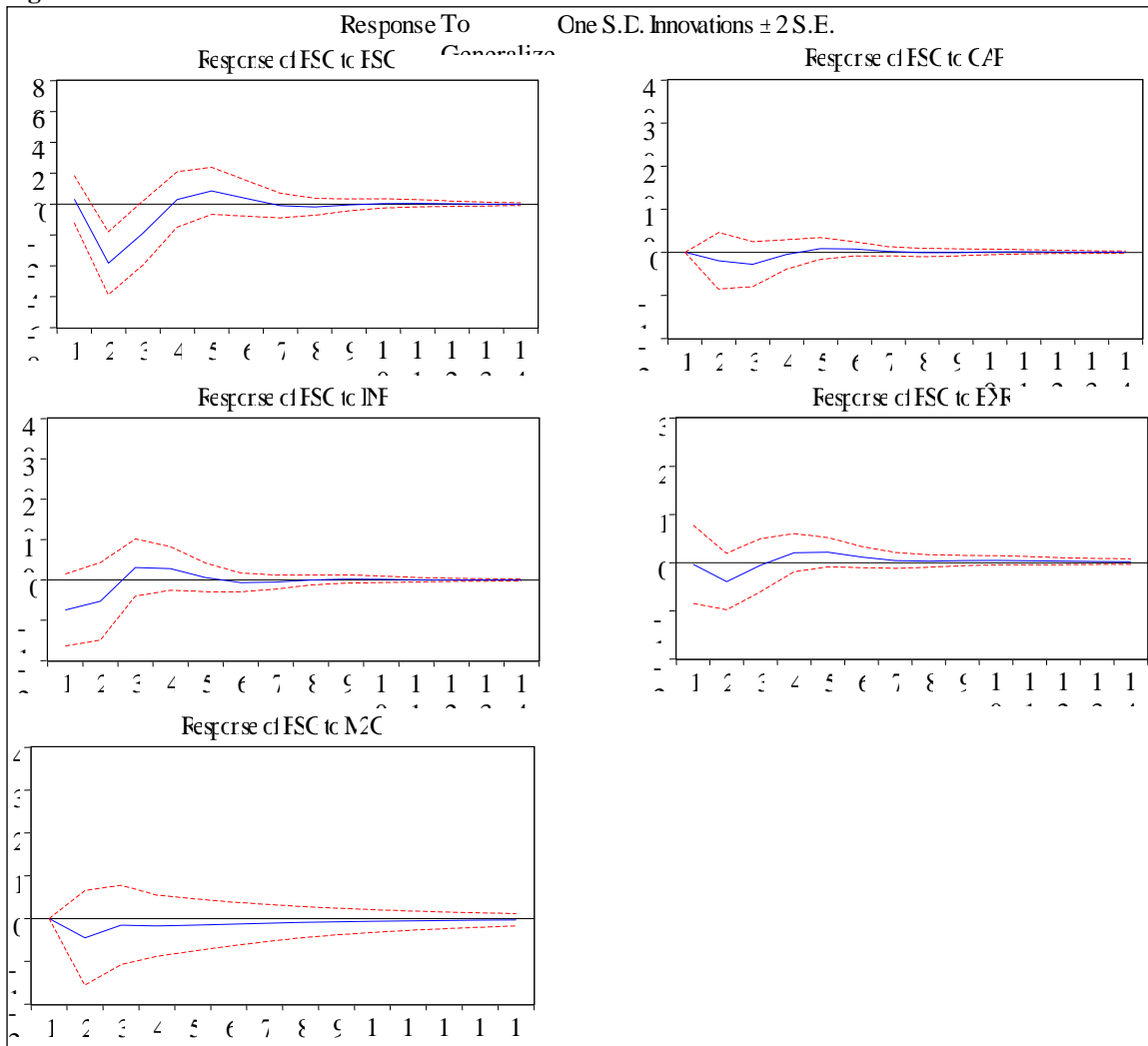


Results for Ghana

Response of FSG: The response of fiscal deficit to own one standard deviation shock is pro-cyclical, increasing during the first year, but gradually decline thereafter until it converge to its equilibrium after seven years (see figure 3). A shock to monetary policy causes fiscal deficit to increase in the first year. However, the deficit decline through the second year and achieve its long run equilibrium level after twelve years. By way of responding to a shock in output gap, fiscal deficit worsen during the second year, but the response tapers off quickly and disappears completely in the eighth year of the forecast horizon.

Fiscal policy responds to inflation shock in a pro-cyclical manner. A shock to inflation causes fiscal deficit to increase up to the second year of the forecast horizon. The response however improves in the third quarter before reverting to its long run equilibrium after seven years. There was deterioration in fiscal deficit in response to a shock in the exchange rate up to the third year, before improving in the fourth year. However, from the fifth year, the surplus decreases gradually and converges after eight years.

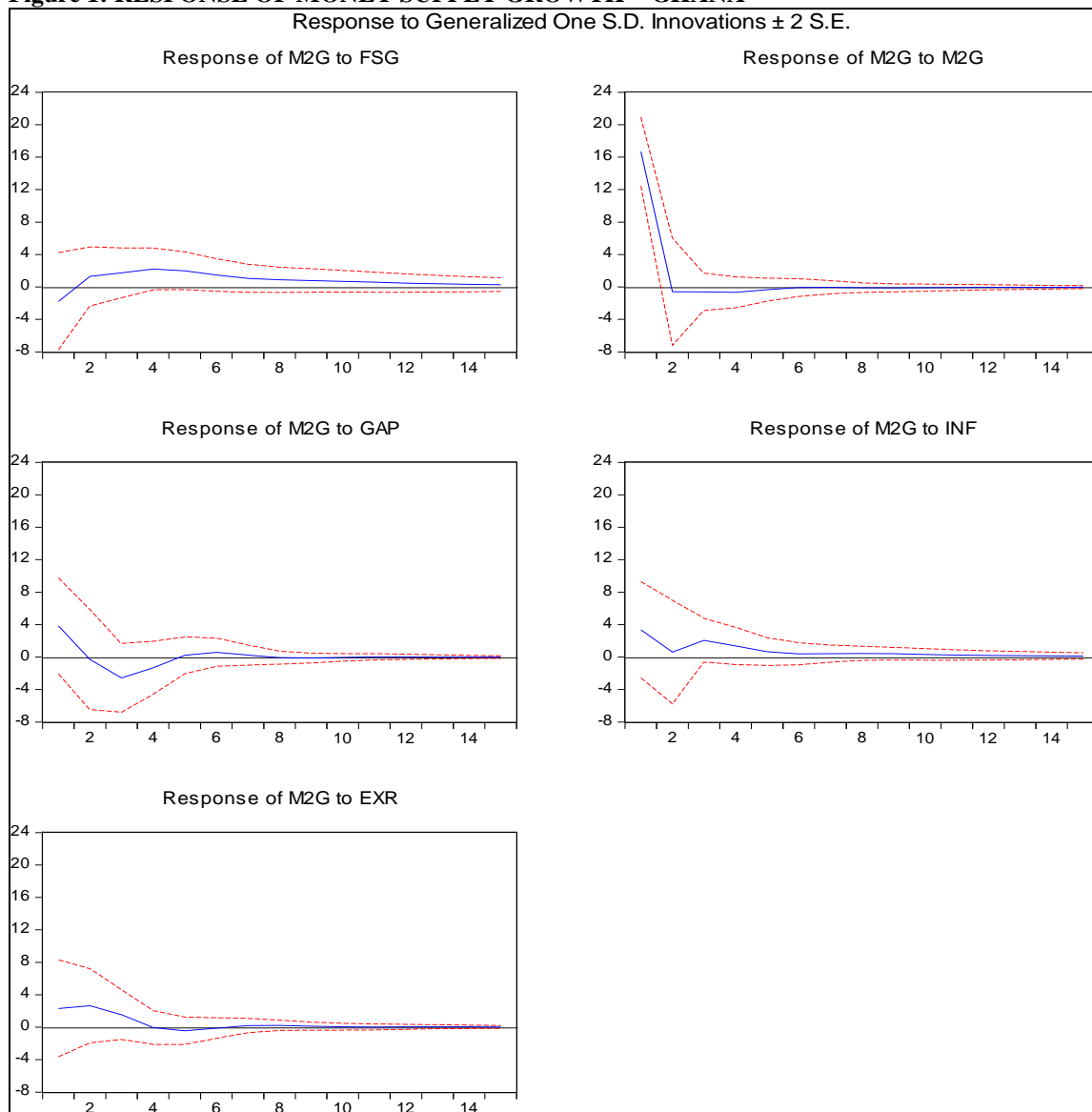
Figure 1: RESPONSE OF FISCAL DEFICIT – GHANA



Response of M2G: The response of money supply growth to a shock in fiscal deficit is negative initially but turns positive from the second year of the forecast period. That is, as fiscal deficit deteriorates, the monetary authorities reduce money supply growth in order to avert the translation of the widening fiscal deficit into prices. However, this is short lived as from the second year money supply growth

begins to rise through the fifth year before declining gradually to zero in the fourteenth year of the forecast period. The response of money supply growth to its own innovations is positive in the first year of the forecast period. It, however, declines sharply in the second year turning negative before gradually tapering off completely in the thirteenth year of forecast.

Figure 1: RESPONSE OF MONEY SUPPLY GROWTH – GHANA



To a shock in output gap, money supply growth initially increases before declining to a negative range through the third year of the forecast horizon. It thereafter rises again, turning positive in the sixth year, but tapers off completely in the tenth year. The response of money supply growth to inflationary shock is pro-cyclical, increasing in the first year following the shock. The response however, declines in the second year but rises again in the third year before it asymptotically approach its long run equilibrium after nine years. A shock to exchange rate causes money supply growth to increase up to the second year, but decline gradually to its equilibrium path after six years.

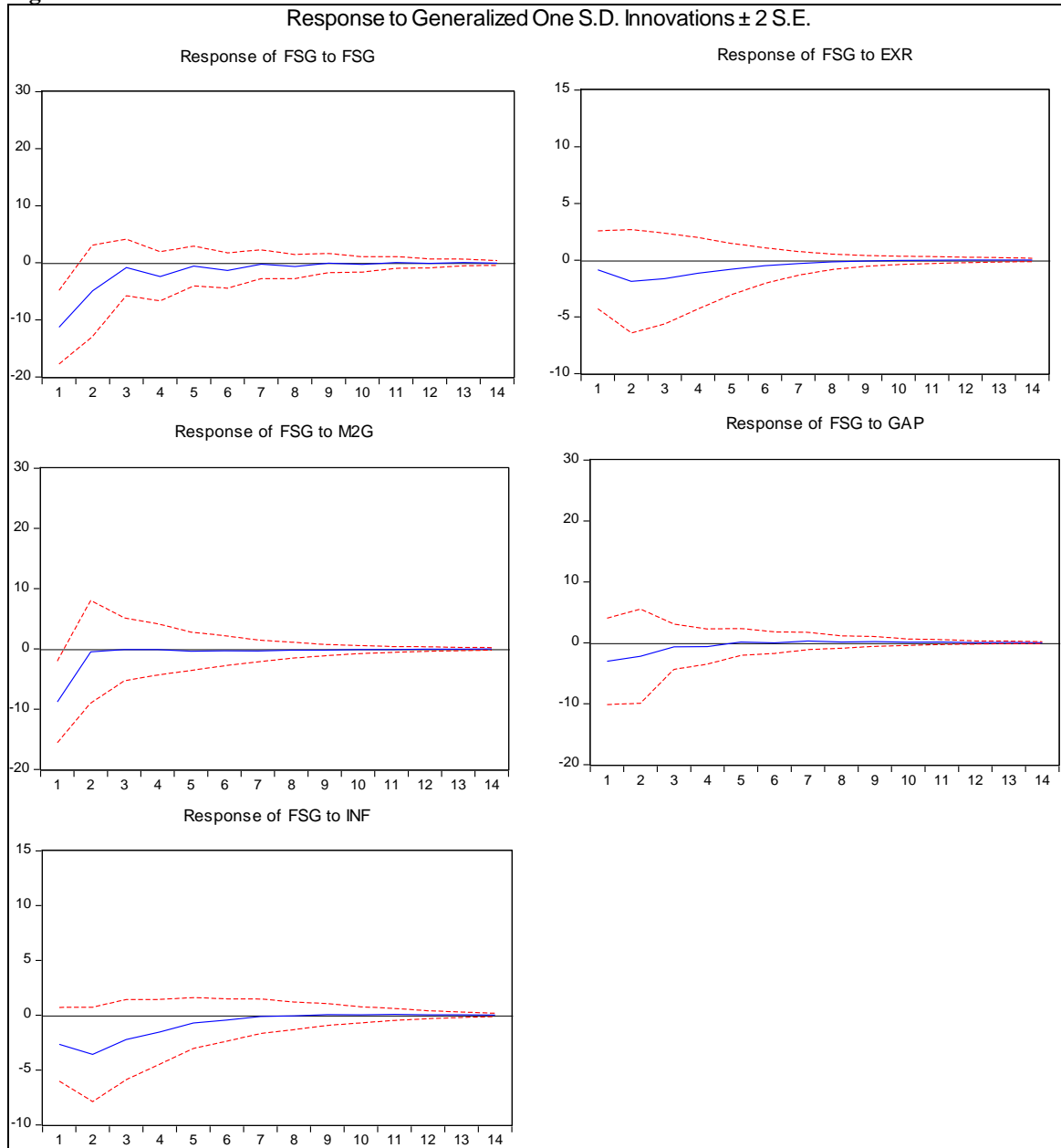
Overall, monetary policy responded adequately to dampen the effect of output gap and exchange rate shocks, but its response to inflation and fiscal deficit remained weak and takes a longer period to revert to its equilibrium level. Fiscal policy on the other hand, tends to respond appropriately to inflationary shock, but its response to monetary and exchange rate shock remained poor. In sum, there appears to be very little coordination between fiscal and monetary authorities in Ghana as far as policy goals are concerned. It is evident from the results that the shock to fiscal deficit caused money supply growth to increase. Also, shock to money supply growth worsened the fiscal deficit. The implication of the results is that it may exacerbate the fiscal deficit position and caused inflationary pressure on the Ghanaian economy.

Results for Guinea

Response of FSG: The response of fiscal deficit to its own shock is positive. A one standard deviation shock worsens the fiscal deficit during the first year, but the deficit declines gradually and converges to its long run equilibrium path after year twelve. The response of fiscal deficit to a money supply growth shock is negative in the first year following the shock. This means that fiscal deficit widens in the face of money supply growth shock. However, the deficit decline significantly in the second year and gradually attains zero value after eight years. The response of fiscal deficit to a shock in inflation is negative in the year immediately following the shock, suggesting that fiscal policy tends to be irresponsive to inflation spikes. However, from the second year, the deficit declined gradually until it achieves its long run equilibrium path after nine years.

Owing to a shock in output gap, fiscal deficit widens in the first year, implying deterioration of the fiscal position in the first year of the forecast horizon. The response wanes sharply through the second and third years, and significantly improves from the fourth to tenth period, but dissipates fully in the eleventh year. A shock to exchange rate, leads to an initial deterioration of the fiscal deficit. However, from the second year, fiscal deficit wanes gradually through the ninth year.

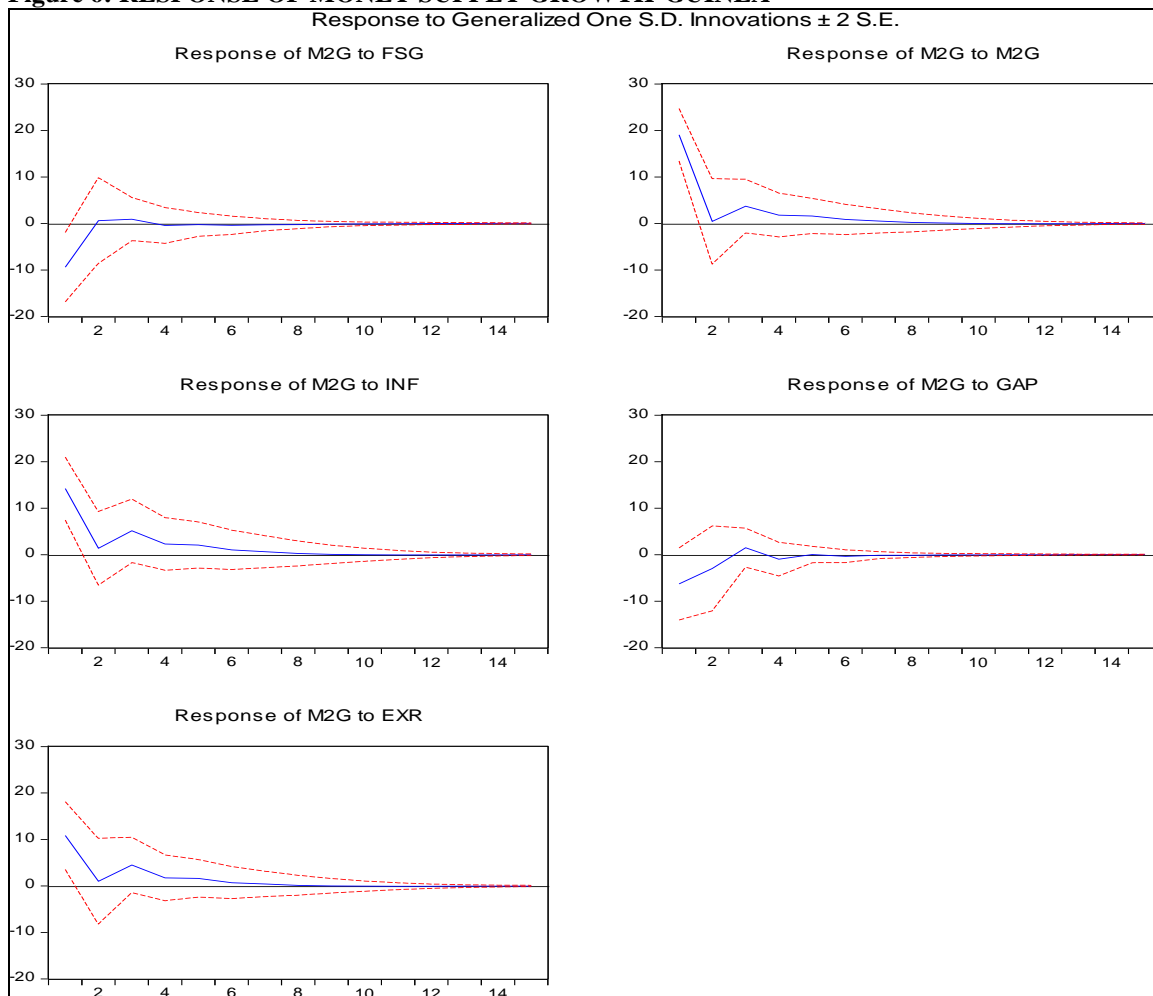
Figure 5: RESPONSE OF FISCAL DEFICIT- GUINEA.



Response of M2G: To a one standard deviation shock in fiscal deficit, money supply growth immediate jumps downwards in the year following the shock. This suggests that monetary authorities initially try to restrict money supply in the face of widening fiscal deficit. From the second year, however, money supply growth increases, assuming positive values through the third year before turning negative again. The

response of money supply growth wanes entirely in the thirteenth year of the forecast horizon. To a one standard deviation own shock, money supply growth increases in the first year following the shock before declining sharply in the second year. It increases again in the third year before declining gradually through the ninth year of the forecast period.

Figure 6: RESPONSE OF MONEY SUPPLY GROWTH-GUINEA



The response of money supply growth to a one standard deviation shock in inflation is positive. Money supply growth jumps in the first year following the inflation shock but declines sharply in the second year. It rises again in the third year before assuming downward trend towards the zero line. It takes more than fifteen years for the response to completely tapers off. This suggests that monetary policy in Guinea does not respond adequately to astabilise inflationary spiral in the country. Responding to a one standard deviation shock in output gap, money supply growth declines in the year immediately following the shock. From the second through the third years, money supply growth increases but remains virtually close to

the zero line. However, it takes about twelve years for the response to completely die out. Thus, it appears that monetary policy in Guinea adjusts in a counter-cyclical manner to smoothen the output growth path.

In response to exchange rate depreciation shock, money supply growth rises initially before declining in subsequent years. It takes more than fifteen years for the response to completely die out. It thus appears that money supply does not adjust to arrest exchange rate depreciations in Guinea.

In a nutshell, the response of fiscal policy to shocks emanating from both money supply and

output gap was adequate to counter the impact of the shocks. However, fiscal policy response to inflation and exchange rate shocks remained relatively weak. Monetary policy on the other hand responded appropriately to shocks from fiscal deficit and output gap. However, its response to inflation and exchange rate shock remained relatively weak. Based on the above results, it is evident that there is weak coordination between monetary and fiscal authorities. Given the weak response of monetary and fiscal policies to inflation, revealed that inflation remained a threat to the Guinean authorities. On the other hand, monetary policy responded adequately to fiscal deficit shock. Similarly, fiscal policy responded appropriately to dampen the effect of money supply shock. The results revealed that, achievement of fiscal deficit criterion does not pose serious challenge for the monetary authorities.

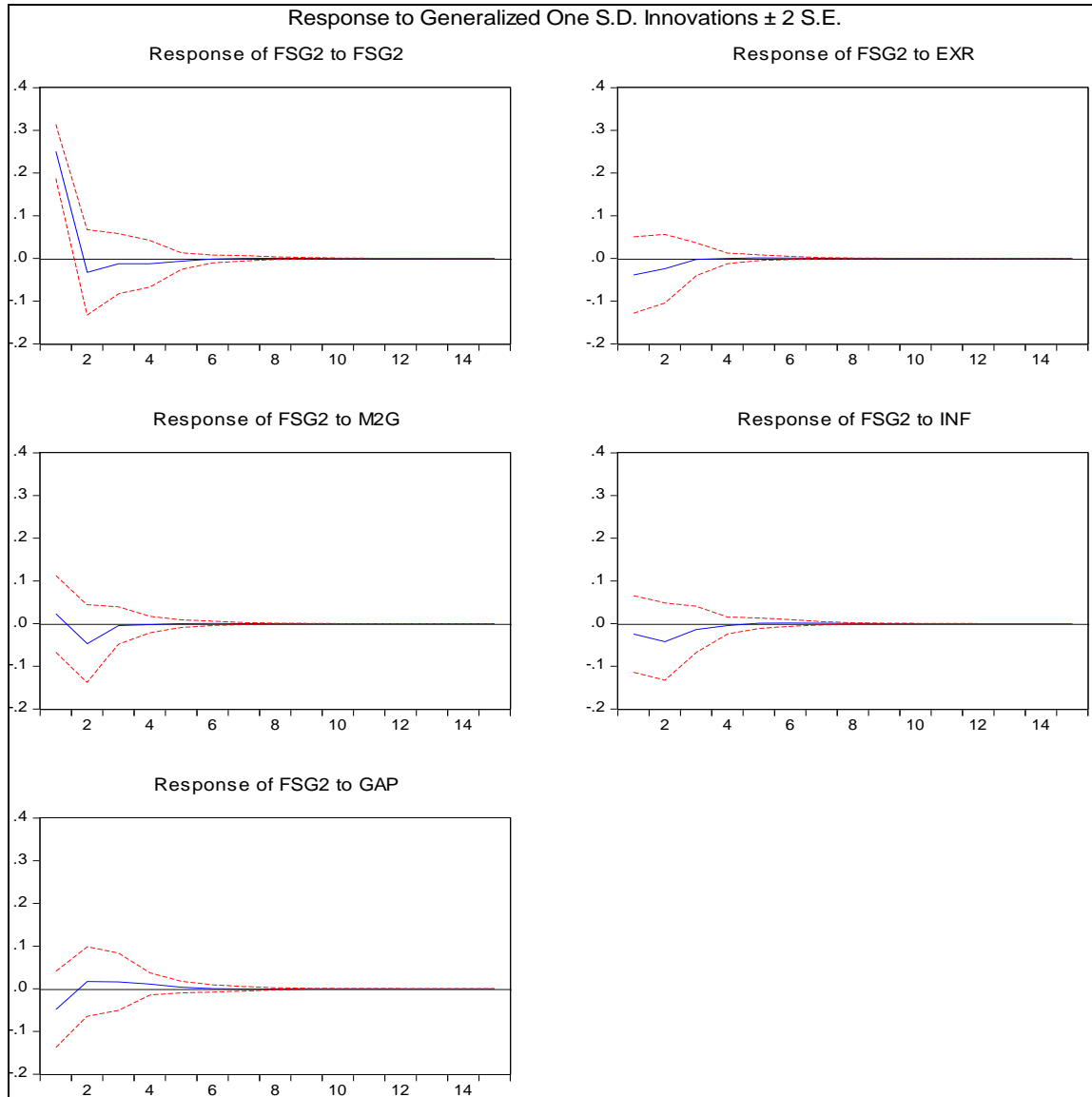
Results for Liberia

Response of FSG: Fiscal deficit takes about seven years to completely absorb its own shock. A shock to fiscal deficit causes the deficit to jump to the positive quadrant in the year immediately following the shock. This means that as fiscal deficit deteriorates by one standard deviation, the next response is an improvement

in the fiscal position. In the second year of the forecast period, however, the response becomes negative implying deterioration in the fiscal position. The response wanes quickly and dies out by the end of the seventh year. To an exchange rate depreciation shock, fiscal deficit immediately jumps down, indicating deterioration in fiscal position in the year immediately following the shock. The responses, however, wanes quickly and dies out by the sixth year of the forecast period. Fiscal deficit responds to a monetary policy shock by jumping up initially but falling quickly to assume negative values in the second year of the forecast horizon, implying worsening fiscal position. It takes six years for the response to die out completely.

A shock in output gap causes fiscal deficit to jumps below the zero line, implying worsening of the deficit in the year immediately following the output gap shock. The response rises and assumes positive values in the second year before declining towards the zero line. It takes seven years for fiscal deficit response to completely die out. To an inflation shock, fiscal deficit deteriorates in the first-two years following the shock. The response wanes thereafter and dies out completely by the end of the eight year of the forecast period.

Figure 7: RESPONSE OF FISCAL DEFICIT- LIBERIA.



Response of M2G: The response of money supply growth to a shock in fiscal deficit resulted to a jump above the zero line in the first year, but declined thereafter, and returned to its long run equilibrium after eight years. An own shock causes money supply growth to increased significantly in the first year. However, the response decline gradually during the second year and tappers off during the eight year. A shock to inflation resulted to an increase in money supply growth during the first year.

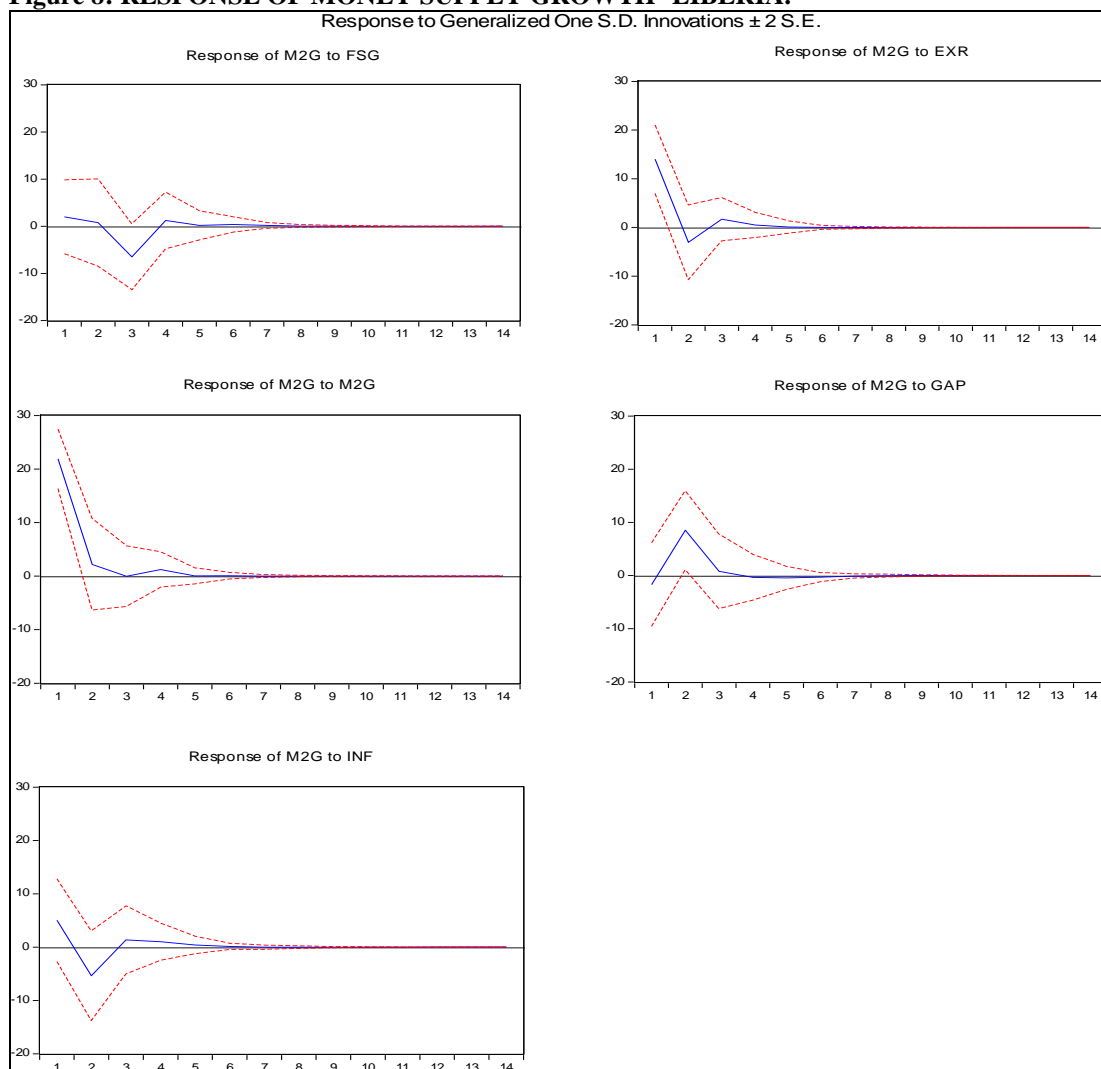
However, during the second year, the money supply response appropriately by declining, but increased gradually until the full impact phased out in year eight. Exchange rate depreciation resulted to a sudden increase in money supply growth in the first year, but significantly decline during the second year. This implies that, money supply responds to appropriately to dampen the effect of exchange rate depreciation. Though money supply growth increased in year three, it gradually decline to its long run equilibrium in

year seven. The initial response of money supply growth to shock in output gap is to decline in the first year, but increased in the second year. The response decline gradually in the third year and attain its zero value in year seven.

The results revealed that, money supply responded appropriately to fiscal deficit and exchange rate shocks, but does not respond adequately enough to shocks emanating from inflation and output. On the other hand, fiscal policy adjustments in Liberia were appropriate in

responding to smooth the output expansion path and maintaining exchange rate stability, but do not help to contain inflationary spiral and money supply growth. Thus, although it takes a shorter period for the responses of fiscal deficit and money supply growth to return to their long run equilibrium levels, these policies seems not to be implemented in a manner that delivers adequate interventions in the economy to tackle inflationary pressures. This poses serious threat for the achievement of the inflation criterion.

Figure 8: RESPONSE OF MONEY SUPPLY GROWTH- LIBERIA.



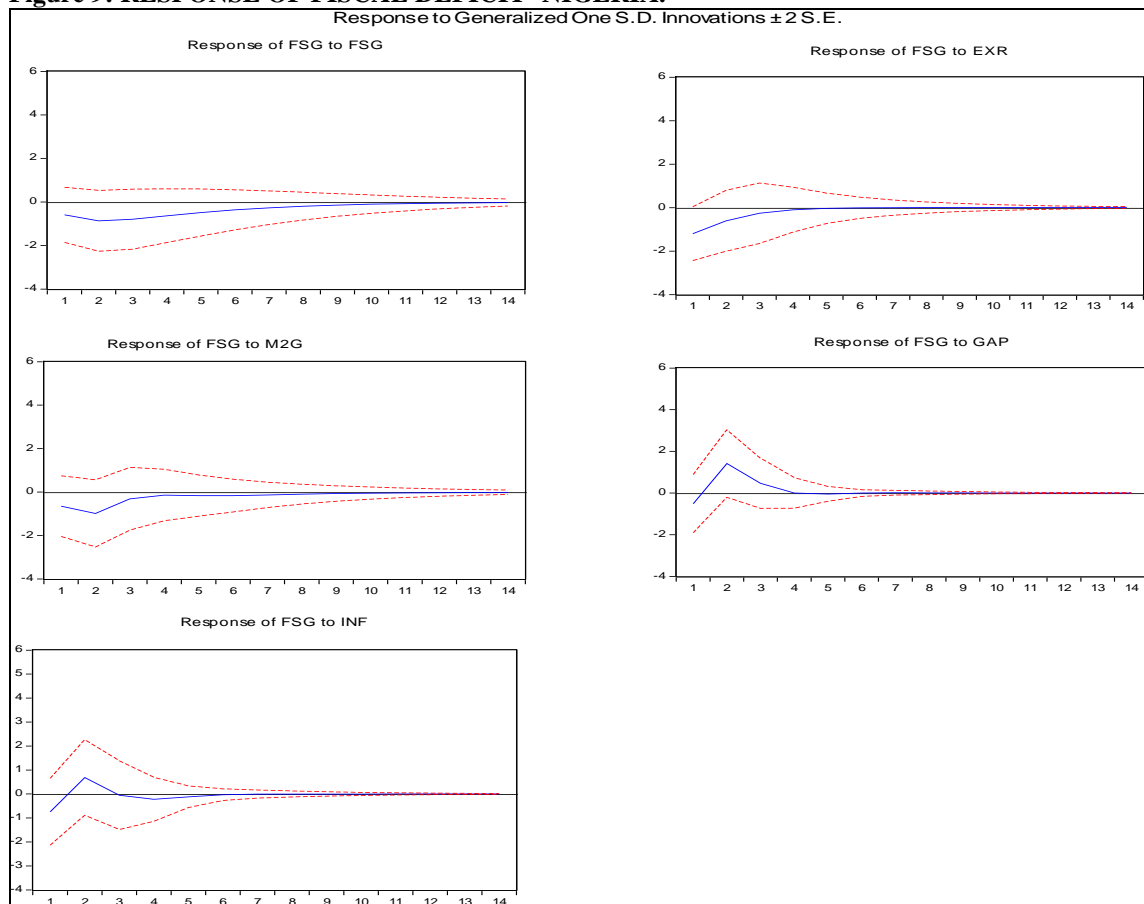
Results for Nigeria

Response of FSG: The response of fiscal deficit to a one standard deviation own shock worsens the deficit. Fiscal deficit widens in the year immediately following the shock and deteriorated further in the second year. However, the response improves in the third year as the deficit decline gradually in the fourth year and completely dies out after the thirteenth year. As a result of a shock emanating from money supply growth, fiscal deficit jumps to a negative level, implying deterioration. The deficit declined gradually after year two and disappears completely after twelve years. This suggests that fiscal policy does not adjust appropriately to curb excessive money supply growth in Nigeria. A shock in output gap causes deterioration in

fiscal position in the year immediately after the shock. However, fiscal deficit improves in the second year before petering out in the tenth year of the forecast horizon.

The response of fiscal deficit to a shock in inflation is negative in the initial year after the shock, implying worsening fiscal position. The response increases to a positive zone in the second year of the forecast period, but deteriorated after year three. It however improves after year four and tapers off until it dies out completely in the eighth year. A shock to exchange rate depreciation resulted in an immediate widening of the fiscal deficit. The response gradually improves after the second year before tapering off through the twelfth year of the forecast horizon.

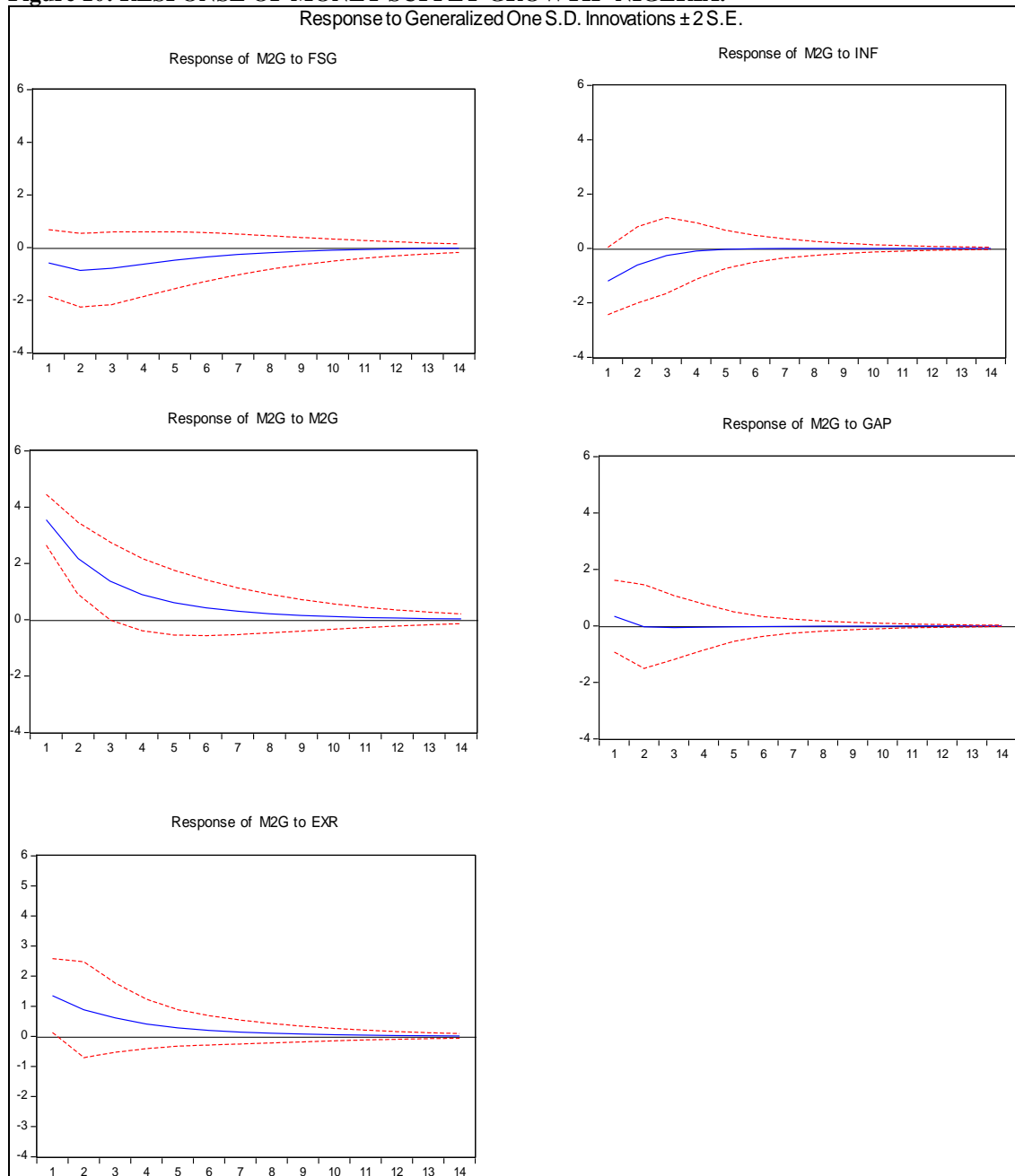
Figure 9: RESPONSE OF FISCAL DEFICIT- NIGERIA.



Response of M2G :To a one standard deviation shock in fiscal deficit, money supply growth immediately decrease, but gradually increased after the second year and attains its equilibrium value after year thirteen. This suggests that

monetary authorities in Nigeria tend to embark on contractionary monetary policy in the face of fiscal deficit shock to the economy, but it takes a longer period for the effect to completely return to its equilibrium level.

Figure 10: RESPONSE OF MONEY SUPPLY GROWTH- NIGERIA.



To own shock, money supply growth increases initially before declining steadily through the thirteenth year of the forecast horizon. This explains the continued growth in money supply to accommodate overall growth in the economy. A money supply growth response to a shock in output gap is to increase initially in the first year of the shock. The response however declined in the second year and fade out after year eleven. This could be due to the fact that money supply increases in line with expansion in economic activity. A shock in inflation will cause money supply growth to decrease during the first year following the shock, but increase gradually through the fourth year before attaining its equilibrium level after year twelve. This suggests that money supply growth respond appropriately to inflationary spike in the Nigerian economy.

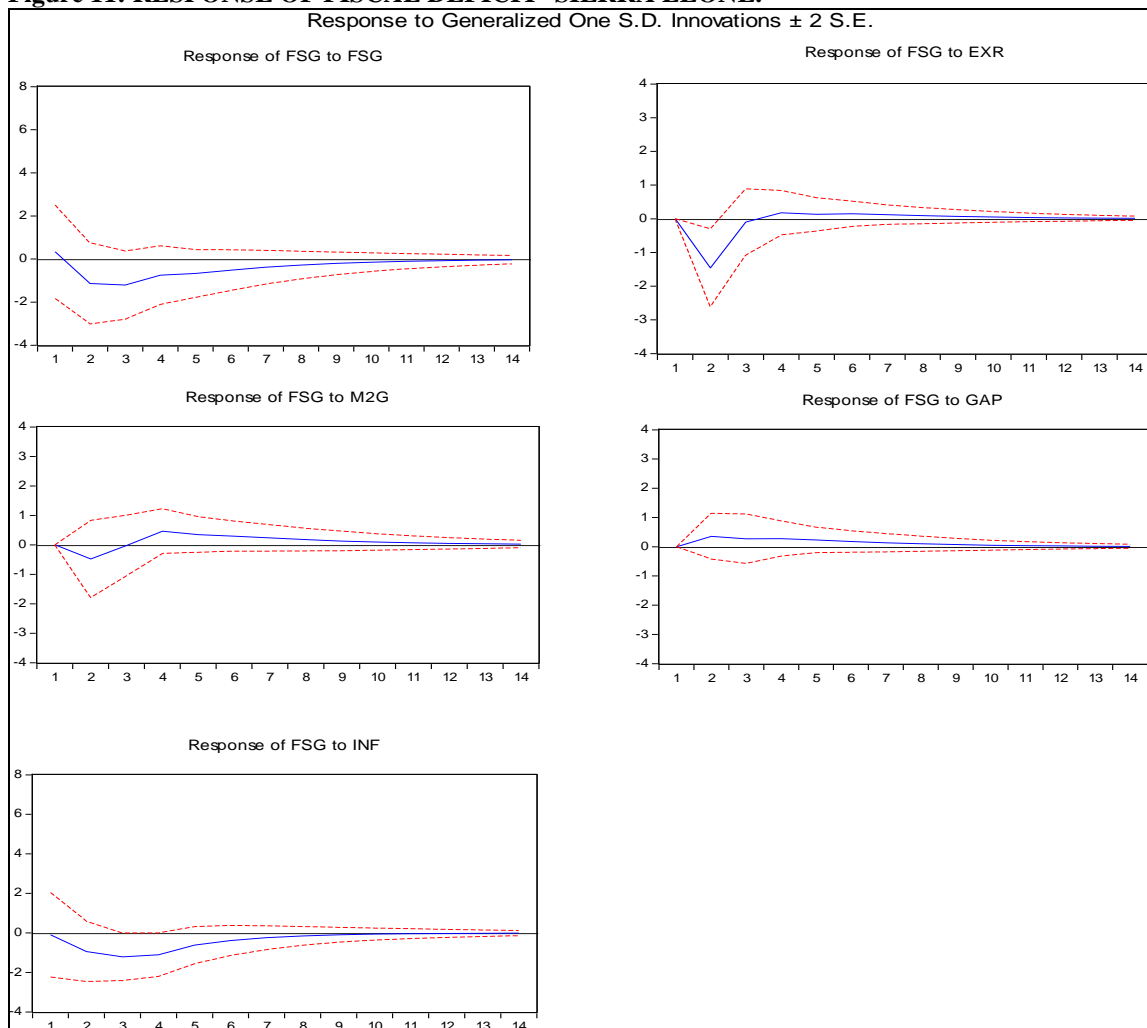
The response of money supply growth to exchange rate depreciation is to jump up in the first year after the shock. It thereafter declines gradually and taper off through the thirteenth year of the forecast horizon. This implies that, during the review period, money supply growth is not adjusted adequately enough to arrest shocks emanating from the exchange rate front. In summary money supply growth adjust appropriately to shocks emanating from inflation and output gap, but does not respond adequately to address shock from exchange rate depreciation, and fiscal deficit during the period under review. Fiscal operations on the other hand, do not seem to arrest inflationary spikes and halt depreciation of the naira. It does not adjust fully either in response to output gap shock. Thus, aside the long period taken for responses to die off, fiscal policy does not respond appropriately to macroeconomic shocks to the economy, implying weak coordination of fiscal policy with other policies, and poses a threat to inflation and exchange rate stability.

Results for Sierra Leone

Response of FSG: In Sierra Leone, the response of fiscal deficit to a one standard deviation owns shock is positive as fiscal position improves in the first year following the shock. However, the fiscal deficit widens in the second year following the own shock, and dwindles gradually from the third year until it dies out completely after the fourteenth period horizon. To a monetary policy shock, fiscal deficit remain irresponsive in the first year, but the deficit increased during the second year. The deficit however decreases during the third year and goes into surplus in the fourth year, and attains its equilibrium position after thirteen years. Fiscal deficit jumps up, implying improvement, in response to a one-time shock in output gap in the first year after the shock. The response tapers of gradually and finally dies out in the fourteenth year of the forecast horizon. Thus, it appears the Sierra Leonean authorities adjust the fiscal position so as to smooth the output growth path.

During the first year, fiscal deficit remain irresponsive to a shock to inflation. However, in the second and third years of the forecast period, the fiscal deficit widens, before the response begins to dwindle and die out completely in the fourteenth year. This implies fiscal policy response was inadequate to dampen the effect of inflationary shock. To an exchange rate depreciation shock, fiscal deficit remain irresponsive in the first year. The response shows worsening fiscal deficit in the second year of the forecast horizon before improving through the fifth forecast period. The response eventually tapers off after fourteen years. This shows some delayed response of fiscal authorities in Sierra Leone to an exchange rate shock.

Figure 11: RESPONSE OF FISCAL DEFICIT- SIERRA LEONE.



Response of RMG

To a shock in fiscal deficit, money growth immediately jumps up as monetary authorities are compelled to accommodate the rise in fiscal deficit. The response however declines in the second year of the forecast horizon before rising again in the third year. The response dies out completely after fifteen years. This suggests that monetary authorities in Sierra Leone accommodate fiscal expansion by the government. Money growth responded to own shock by increasing initially before declining in the second year of the forecast period. It increases again in the third year after which it

tapers off and dies out completely after the fifteenth year. To a one standard deviation shock in output gap, money supply growth initially declines before rising through the third year of the forecast horizon. The response tapers off and dies out after the fifteenth year. This confirms the views that money supply grows to accommodate expansion in economic activity in Sierra Leone.

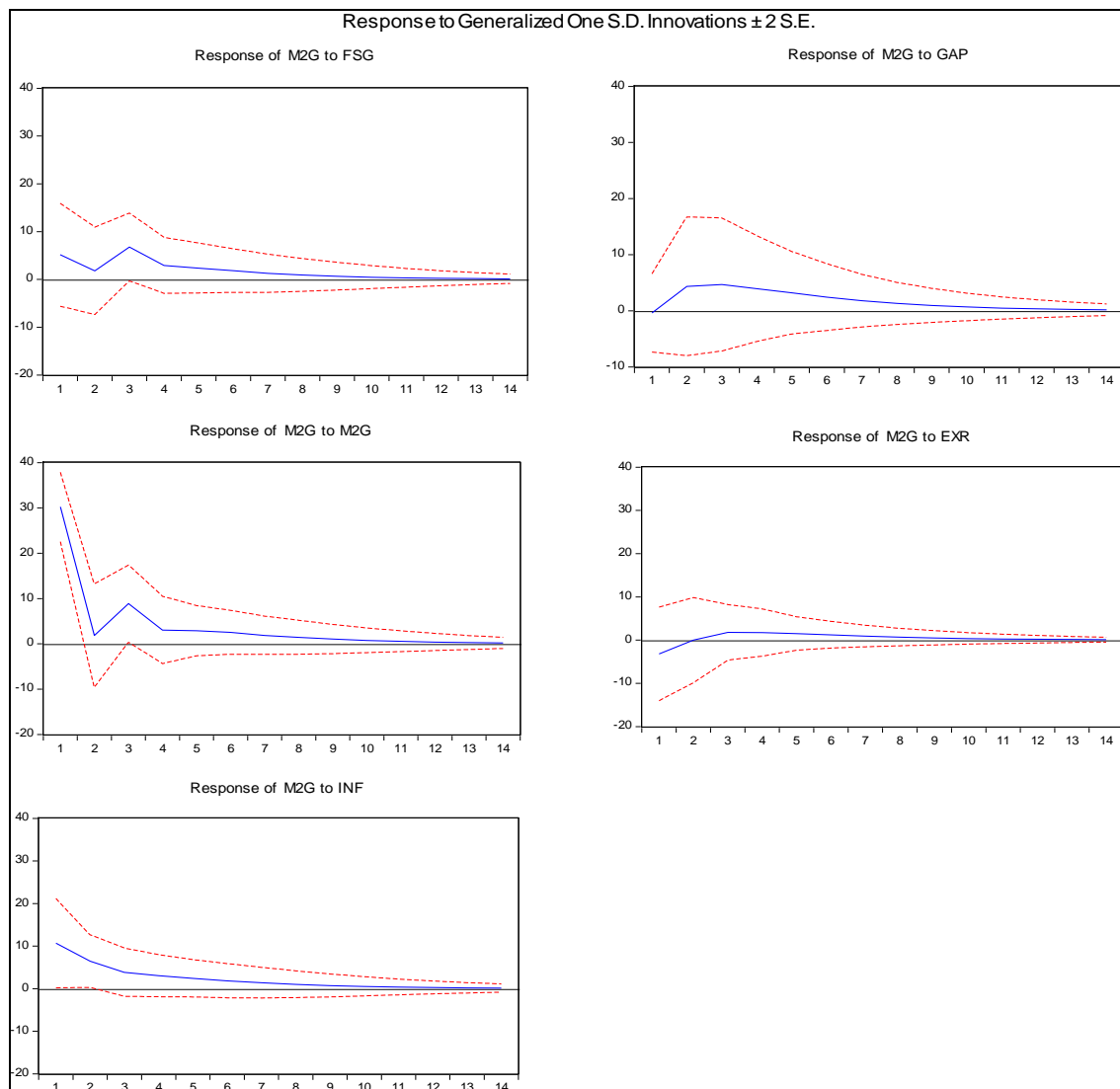
A shock to inflation causes money growth to jump up in the first year following the shock. It thereafter declines gradually and peters out completely after the fifteenth year of the forecast

period. This implies it takes a longer period for money supply growth to completely dampen inflationary shocks. The response of money growth to exchange rate depreciation is to jump down in the first year following the shock. It however rises through the second and third years of the forecast period before petering out completely after fifteen years. Thus, money supply adjust appropriately to address depreciation of the domestic currency

Overall, monetary policy responded appropriately in maintaining exchange rate stability, but has a delayed response to shock

emanating from inflation. In addition, monetary policy did not respond adequately to address fiscal deficit shock. Fiscal policy on the other hand, responded appropriately to output shock, but there was a delayed response to exchange rate shock. It however took a longer period to return to its equilibrium path. The response of fiscal policy to shock emanating from inflation remained inappropriate. The implication of the results is that achievement of the inflation and fiscal deficit criteria poses a threat to the Sierra Leonean authorities.

Figure 12: RESPONSE OF MONEY SUPPLY GROWTH- SIERRA LEONE.



Results of the panel Vector Auto regression

Response of FSG: From the panel VAR impulse response functions, fiscal deficit responds to its own shock by jumping down, implying worsening of the fiscal position in the first year following the shock. The response gradually wanes in an oscillatory manner until it dies out after ten year of the forecast horizon. This suggests that within the WAMZ, fiscal authorities do react to fiscal shocks by widening the deficit in the years immediately following the shock. The response of fiscal deficit to money supply growth is to jump down, implying widening of the fiscal deficit in the first-two years after the shock. The response then tapers off and dies out in the twelfth year of the forecast horizon. This means that fiscal position continues to deteriorate in the face of money supply shocks in the WAMZ. Thus, it appears fiscal policy does not support curtailment of excessive money supply growth in the WAMZ countries.

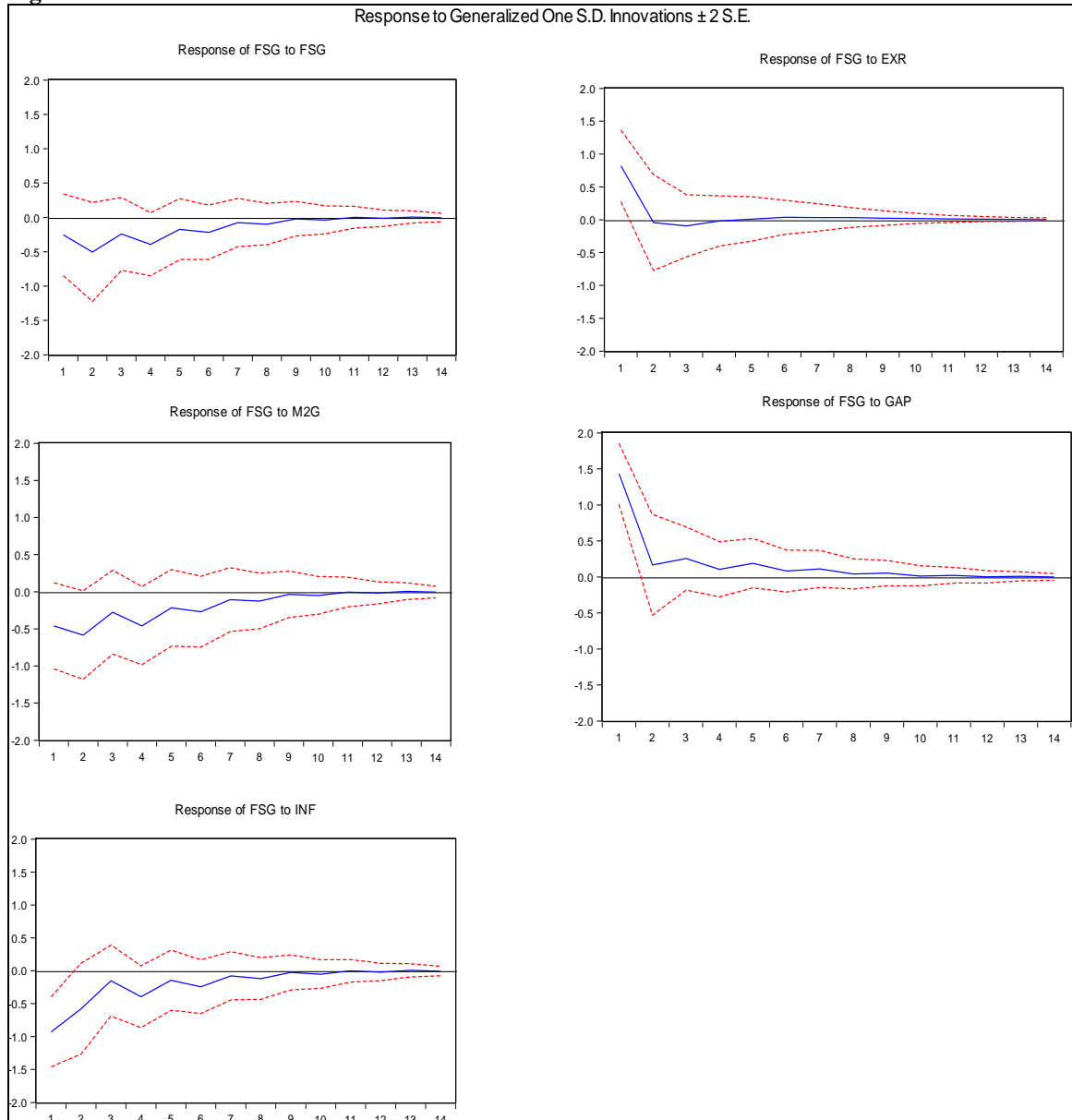
With regard to exchange rate depreciation shock, fiscal deficit jumps above the zero line, denoting a fiscal surplus following the depreciation. However, in the second year of the exchange rate

shock, the WAMZ economies recorded a fiscal deficit, but the response peters out completely in the tenth year.. It does appear therefore that fiscal deficit adjust to arrest any rapid rate of depreciation in the WAMZ countries.

Responding to inflation shock, fiscal deficit jumps down, implying worsening deficit in the first year of the forecast period. The response dwindles and dies out in the fourteenth year. This suggests that fiscal policies are responsive but not supportive of price stability efforts in the WAMZ countries. To a one standard deviation shock in output gap, fiscal deficit jump above the zero line, thus recording a fiscal surplus in the first year of the shock. The response gradually decline and attain its equilibrium level after ten years. This suggests that fiscal policy in the WAMZ countries tend to be implemented in a way to smooth the growth path.

In sum, fiscal policy appears to be self-corrective in the WAMZ countries as fiscal authorities take steps to improve the fiscal position in the years following an output shock. However, fiscal policy is found not supportive of price stability drive in the member countries as fiscal deficit continues to worsen even in the face of inflationary spikes.

Figure 13: RESPONSES OF FISCAL DEFICIT- WAMZ



Response of M2G: The response of money supply growth to fiscal deficit shock is to jump down in the year immediately following the shock. The response begins to wane during the second to tenth year of the forecast horizon. This implies that money supply shrinks in response to fiscal shocks in a form of widening fiscal deficit in the WAMZ countries. Money supply responds to its own shock by jumping up in the first year

of the forecast period. It falls sharply in the second year before petering out gently afterwards until it dies out after the fifteenth year of the forecast horizon. This implies money supply continues to register high growth rates even after own shock in WAMZ member countries.

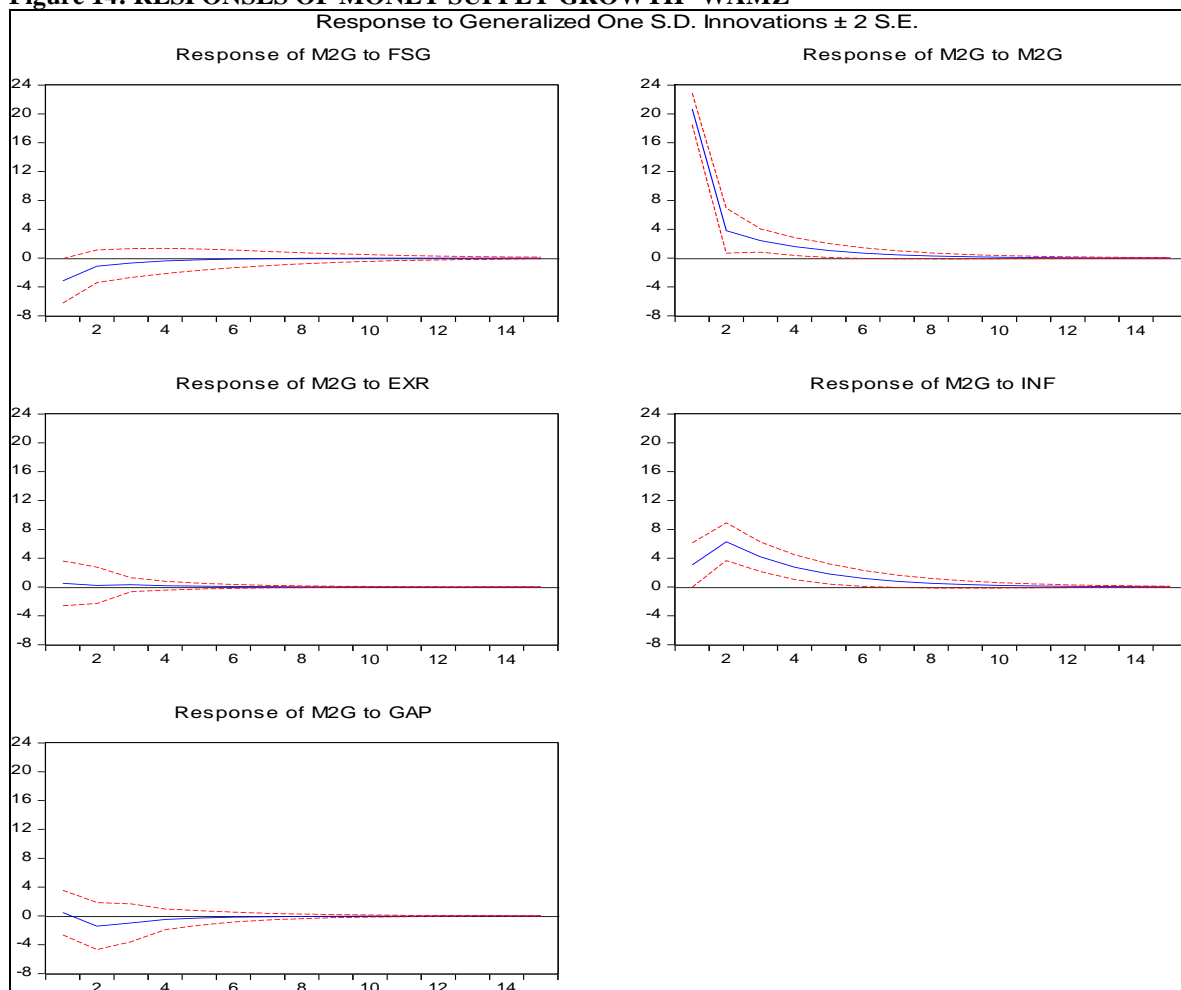
Regarding exchange rate shocks, money supply growth does respond but only marginally positively from the first year to the eleventh year of the forecast horizon. This implies that money supply growth is supportive of halting excessive exchange rate depreciation in the WAMZ countries.

Responding to a one standard deviation inflationary shock, money supply growth jumps up in the first year and further increases in the second year of the forecast period. The response, thereafter, declines gradually until it dies out after year fifteen. This indicates that adjustments in money supply are not supportive of halting inflationary spiral in the WAMZ countries.

With regard to output gap shock, money supply growth, in response, jumps down in the second year of the forecast horizon. The response peters out completely in the thirteenth year. Thus, monetary policies are supportive of smoothing the growth process in the WAMZ countries.

In summary, monetary policy is not accommodative and supportive of inflationary spikes and depreciation shocks in the WAMZ. This could be explained by the fact that inflation and exchange rates are more of structural phenomena than monetary phenomena. Hence, adjustments in money supply appeared to be ineffective in curtailing inflationary spiral and excessive depreciation of the local currencies in the WAMZ.

Figure 14: RESPONSES OF MONEY SUPPLY GROWTH- WAMZ



SUMMARY AND POLICY RECOMMENDATIONS

Summary

The study assesses the level of coordination between monetary and fiscal policy in the WAMZ in achieving the convergence criteria in particular, the fiscal deficit and inflation criteria. Specifically, it investigates the monetary and fiscal policy responses to shocks in key macroeconomic variables such as fiscal deficit, output, inflation, money growth and exchange rates. The set theoretic computation and the vector autoregressive (VAR) model were employed, using time series and panel data for the period 1980 to 2011.

The results showed that policy coordination in the WAMZ (both at individual and zonal level) was weak during the study period. Results from the set theoretic coordination scores revealed that all the countries had scores less than the 50.0 percent benchmark for minimum policy coordination. For instance, Gambia had a coordination score of 46.6 percent. Ghana, Guinea, Liberia, Nigeria and Sierra Leone had coordination scores of 34.5, 31.8, 37.9, 46.6 and 41.4 percent, respectively. In addition, the results also revealed that the monetary authorities in the WAMZ countries tend to implement relatively more prudent policies than the fiscal authorities during the review period, except in the case of Guinea, where the two policies were at par in terms of prudence. In the case of the Gambia, the fiscal and monetary prudence scores were 50.0 and 63.3 percents, respectively. Ghana had a fiscal prudence score of 44.8 and monetary score of 55.3, while in Guinea fiscal and monetary prudence score were at par at 47.6 percent. Liberia registered a fiscal prudence score of 41.4 and a monetary score of 61.3, Nigeria had a fiscal prudence score of 46.7 and a monetary score of 58.4 percent, while Sierra Leone registered a fiscal prudence score of 43.3 percent and a monetary prudence score of 55.5 percent during the review period. The results revealed that monetary authorities in the WAMZ countries tend to implement more prudent policies than the fiscal authorities during the review period.

The results of the impulse response also showed that there is weak response to shocks induced by different variables; consistent with that of the set theoretic coordination. The variables converge to their original values after a very long time, which shows that there is evidence of weak responses of policy makers to different shocks, reaffirming the weak coordination between monetary and fiscal policies. The impulse response functions for the individual countries are summarized as follows:

The results for **The Gambia** indicated that, monetary policy adjusts appropriately to neutralize the effect of fiscal dominance and output gap during the review period. Furthermore, money supply adjustments are consistent with price stability objectives of the Central Bank of the Gambia. Similarly, fiscal policy also adjusted appropriately to money supply shock, which appeared to be supportive of monetary authorities' desire to maintain price stability. Thus, empirically, there is some level of coordination between fiscal and monetary authorities in the Gambia. This coordination is however weak as it takes a long time for full adjustments to be effected. Though there is weak coordination, the appropriate response of the monetary and fiscal authorities' to shocks emanating from the different variables revealed that there is little threat to both the fiscal deficit and inflation criteria in the Gambia.

In **Ghana**, monetary policy responded adequately to dampen the effect of output gap and exchange rate shocks, but its response to inflation and fiscal deficit remained weak and takes a longer period to revert to its equilibrium level. Fiscal policy on the other hand, tends to respond appropriately to inflationary shock, but its response to monetary and exchange rate shock remained weak. The results showed little coordination between fiscal and monetary authorities in Ghana during the review period. It is evident from the results that shock to fiscal deficit caused money supply growth to increase. Also, shock to money supply growth worsened the fiscal deficit. The results posit that fiscal

deficit and inflationary pressure remained a challenge to the Ghanaian authorities.

An assessment of the results for **Guinea** showed that fiscal policy responded appropriately to counter shocks emanating from both money supply growth and output gap. However, the response of fiscal policy to inflation and exchange rate was inadequate to dampen the effect of the shocks. Monetary policy on the other hand responded appropriately to shocks from fiscal deficit and output gap. However, its response to inflation and exchange rate shock remained relatively weak. It also took a longer time for the response to return the economy back to its long run equilibrium. Based on the above results, it is evident that there is weak coordination between monetary and fiscal authorities. The results revealed that, achievement of the fiscal deficit criterion does not pose serious challenge for the authorities, based on the fact that fiscal policy responded adequately to monetary policy shock, and in a similar pattern, monetary policy responded appropriately to fiscal deficit shock. However, inflation remained a threat to the Guinean authorities given the weak response of monetary and fiscal policies to inflation shock.

In the case of **Liberia**, money supply responded appropriately to fiscal deficit and exchange rate shocks, but does not respond adequately enough to shocks emanating from inflation and output. On the other hand, fiscal policy adjustments in Liberia were appropriate in responding to smooth the output expansion path and maintaining exchange rate stability, but do not help to contain inflationary spiral and money supply growth. Thus, although it takes a shorter period for the responses of fiscal deficit and money supply growth to return to their long run equilibrium levels, these policies seems not to be implemented in a manner that delivers adequate interventions in the economy to tackle inflationary pressures. This poses serious threat for the achievement of the inflation criterion.

In **Nigeria**, money supply growth adjusted appropriately to shocks emanating from inflation and output gap, but does not respond adequately to address shock from exchange rate depreciation, and fiscal deficit during the period

under review. Fiscal operations on the other hand, do not seem to arrest inflationary spikes and halt depreciation of the naira. It does not adjust fully either in response to output gap shock. Thus, aside from the long period taken for responses to die off, fiscal policy does not respond appropriately to macroeconomic shocks to the economy, implying weak coordination of fiscal policy with other policies, and poses a threat to inflation and exchange rate stability during the period under review.

The results for **Sierra Leone** revealed that monetary policy responded appropriately in maintaining exchange rate stability, but has a delayed response to shock emanating from inflation. In addition, monetary policy did not respond adequately to address fiscal deficit shock. Fiscal policy on the other hand, responded appropriately to output shock, but there was a delayed response to exchange rate shock. It took a longer period for fiscal policy response to return to its equilibrium path. The response of fiscal policy to shock emanating from inflation remained inappropriate. The implication of the results is that there is evidence of weak coordination between fiscal and monetary authorities, and achievement of the inflation and fiscal deficit criteria poses a threat to the Sierra Leonean authorities.

Generally, these findings are consistent with those of Chuku (2012) that reveal weak coordination in Nigeria, Andlib et al (2012), Aghan and Khan (2006), Nasir et al (2010) and Arby and Hanif (2010), all of which point weak policy coordination in Pakistan. A major message from the study is that the achievement of macroeconomic policy goals requires a careful combination of fiscal and monetary policies

Policy Recommendations

General:

To achieve effective monetary-fiscal policy coordination, countries are encouraged to strengthen contacts between the monetary and fiscal authorities to decide jointly on aspects relating to policy design and implementation.

Unless member countries are on IMF Programme, policy decisions emanating from

coordination meetings are not followed through most of the time since they are not binding on the stakeholders. To solve this challenge, the authorities should endeavour to establish (or strengthen) rules and procedures, which should be binding on both the fiscal and monetary authorities.

There is need for the WAMZ countries to prioritise policy goals and objectives in order to address the challenges of multiple and conflicting policy objectives.

The policy coordination processes in most member countries have not been formalized. Countries are encouraged to put in place a formal coordination platform that will bring the two policy institutions together.

There is lack of adequate data to ensure effective coordination of fiscal and monetary policies in most member countries. To address this challenge, statistical bureaux/ offices should be strengthened in terms of capacity and resource allocation to be able to produce quality high frequency data on their respective economies that will form the basis of policy coordination deliberations.

Policy institutions in some member countries have weak monitoring and evaluation units that monitor policy implementation. Thus, authorities in member countries should strengthen monitoring and evaluation units in all relevant policy institutions to monitor policy implementation and track deliverables agreed on at policy coordination meetings.

Country specific

Although the achievement of inflation and fiscal deficit criteria does not pose serious threat to the **Gambian economy**, however, the result revealed weak coordination between monetary and fiscal policies. Thus, to improve coordination there is need to deepen fiscal consolidation through further enhancement in revenue mobilization and expenditure management. This would gradually reduce the domestic debt burden to more sustainable levels and ease the pressure on monetary authorities.

To address the fiscal deficit and inflationary pressure in **Ghana** and ensure strong coordination, the fiscal authorities are encouraged to be prudent in fiscal management especially in election year. Also, the Government is urged to enforce relevant legislations to ensure that domestic transactions are quoted in cedi to avoid inflationary pressures arising from excessive exchange rate depreciation.

To achieve the inflation criterion, there is need for strong policy coordination between the monetary and fiscal authorities in **Guinea** to address the issue of excess liquidity and supply side shocks. In addition, the Guinean authorities are also encouraged to strengthen their medium-term projection framework and alignment of budget to sectoral policies.

To strengthen coordination in **Liberia**, there is need to expand the membership and mandate of the Money Management and Policy Review Committee (MMPRC) to include representatives from the Ministry of Finance and other key stakeholders. Also, in order to curb the inflationary pressure, the authorities are encouraged to address the issue of excess liquidity and supply side constraints.

In **Nigeria**, the fiscal authorities are encouraged to address supply side constraints in order to complement the effort of the monetary authorities in tackling inflation and exchange rate stability. Hence there is need to strengthen coordination between the monetary and fiscal authorities.

In order to strengthen coordination and contained the rising fiscal deficit and inflationary pressure in **Sierra Leone**, the fiscal authorities are urged to deepen collaboration with the monetary authorities to complement each other's efforts. Also, the fiscal authorities are encouraged to ensure strict compliance with fiscal responsibility laws in order to avoid fiscal slippages. There is need to further strengthen the Cash Management Committees and the decisions of the committee should be binding on all stakeholders.

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