

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

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Abstract

There have been persistent high fiscal deficits, inflation and interest rates in Member States of the West African Monetary Zone (WAMZ). Thus, inflation and fiscal deficit criteria are the most difficult to satisfy in the Zone. This study, therefore, seeks to investigate the level of coordination between the fiscal and monetary authorities in each of 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) modelling to estimate the degree of policy coordination in the Zone. Under the STA, coordination exists when shocks to policy goals elicit prudent policy responses. In 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. Both the STA and VAR estimations made use of annual data for the period 1980 – 2011. The study finds that there were weak policy coordination and insufficient policy prudence in all the WAMZ countries during the study period, contributing to the non-compliance with inflation and fiscal deficit criteria. 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: Fiscal and monetary policies, policy coordination, set theoretic approach, vector autoregressive model, West African Monetary Zone

1.0 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 rate by creating 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. The ultimate objective of both policies is to maximize the overall welfare of the society which can be achieved by keeping the inflation rate 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 dislocations 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 ratios 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, there is a need for policy coordination between the monetary and fiscal authorities. This arises because individual policy instruments typically have an impact on more-than-one policy targets. Although they can help policymakers achieve a desired value for one policy target, they may disrupt the attainment of a desired value for other policy targets. This 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. Thus, increase in budget deficit may affect overall policy credibility. 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 interest rate expenditure 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, seeks to investigate the level of coordination between the fiscal and monetary authorities in each of 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) modelling 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 and output gap, where fiscal deficit, money supply growth and exchange rate depreciation are considered as policy variables.

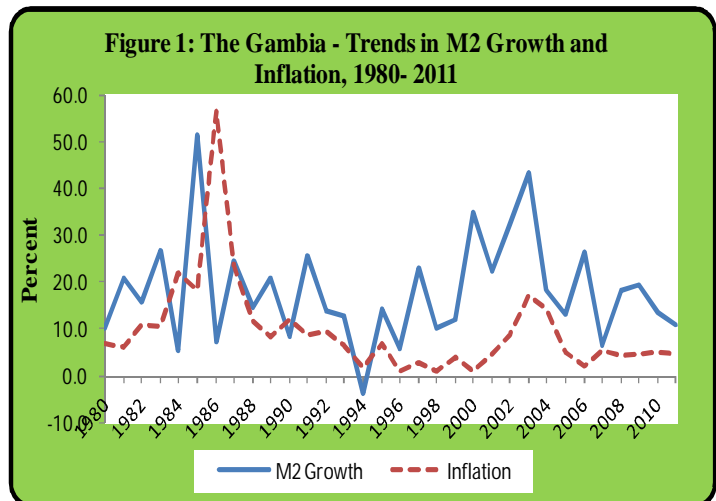
Following this introduction, the rest of paper is organized as follows: section two presents the background to the study by discussing the institutional arrangements for policy coordination in the WAMZ. Section three provides a review of the theoretical and empirical literature, while section four presents the theoretical framework, model specification and data description. Empirical results are presented and discussed in section five, while section six summarises the findings and proffers policy recommendations.

2.0 BACKGROUND: INSTITUTIONAL ARRANGEMENTS IN THE WAMZ

2.1 The Gambia

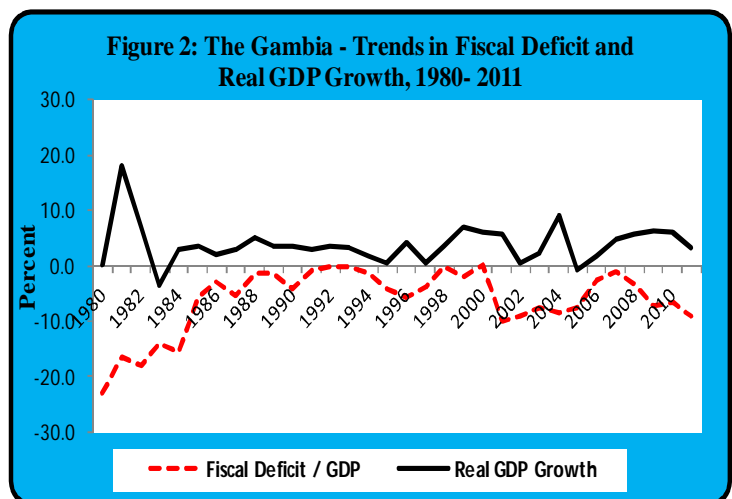
Monetary Policy: The primary objective of monetary policy in The Gambia is price stability. The Central Bank of The Gambia (CBG) is also mandated to promote and maintain the stability of the local currency as well as regulate the financial system to ensure efficient utilisation of resources and sustainable 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 of 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



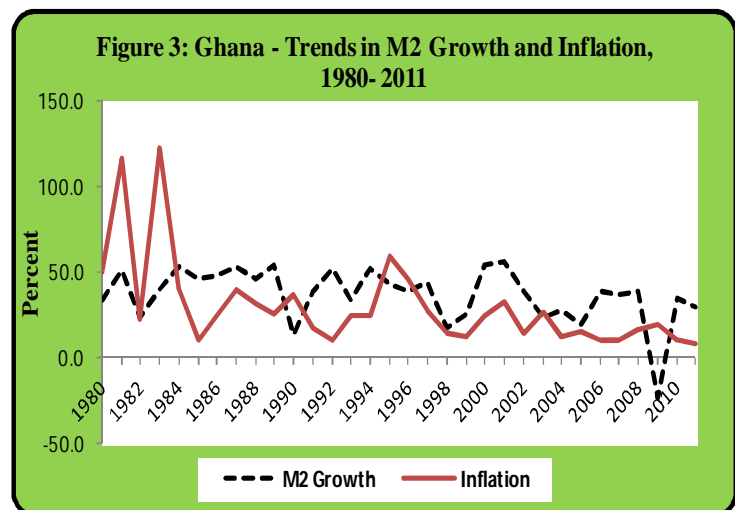
government fiscal operations, debt sustainability. broad-base participation of stakeholders including the CBG, Gambia Bureau of Statistics and development partners such as the IMF and World Bank, and enhancement of capacity in the development of MTDS and the assessment of debt portfolio risks. The MFEA 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. 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

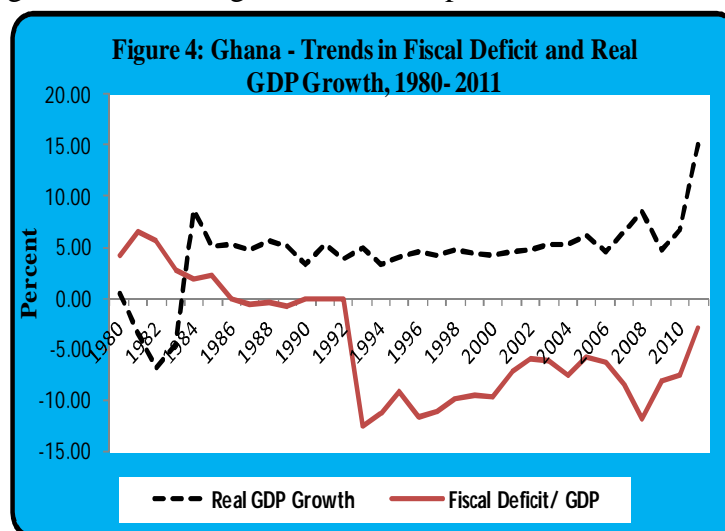


percent is expressed in terms of an annual rate of inflation based on the Consumer Prices Index (CPI). Although the Bank is not bound by law to explain to the Ministry of Finance or to Parliament if the target is not achieved, the Governor may be summoned to the Finance Committee of Parliament to explain 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. 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.



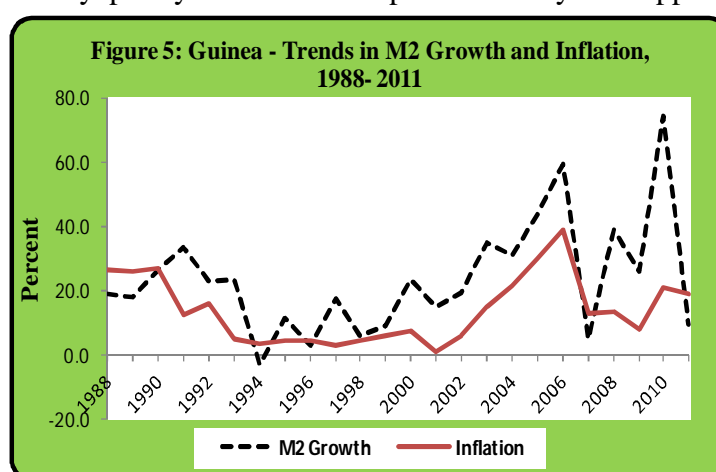
and disseminating performance-oriented guidelines and accurate user-friendly financial management information systems; and creating an enabling environment for investment. The government fiscal policy stance has reflected the political business cycles experienced since the promulgation of the fourth 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 economic 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.

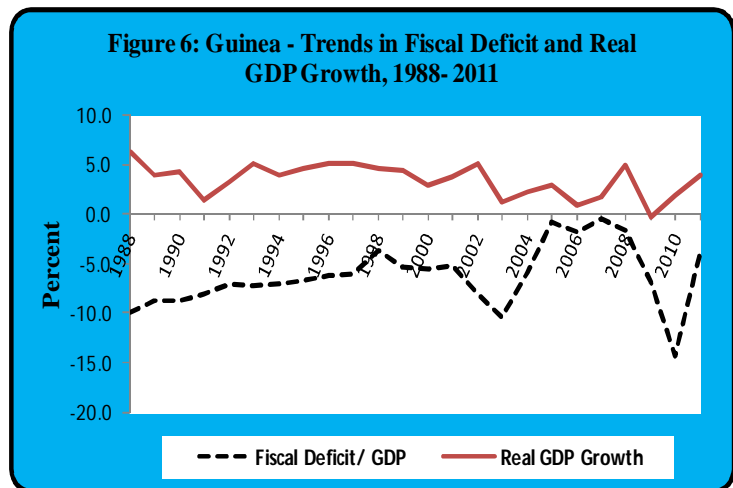
2.3 Guinea

Monetary Policy: The objective of monetary policy in Guinea is price stability to support economic growth. 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. 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

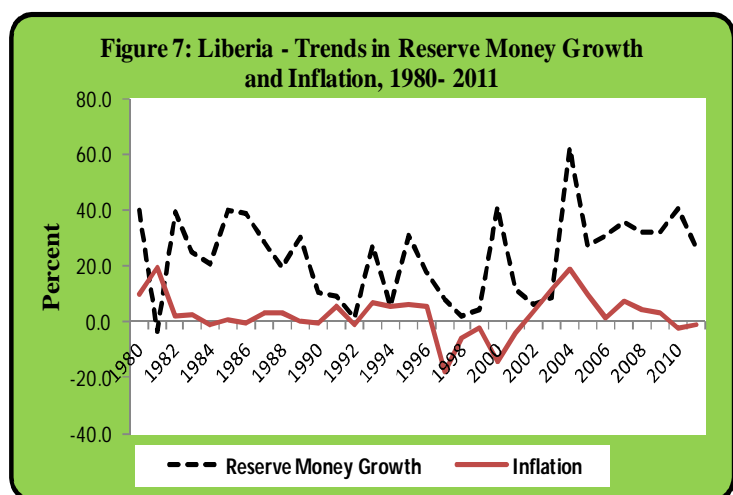
measures to increase revenue mobilisation, expenditure management and improvement to ensure poverty reduction, as well as reducing fiscal deficit and public debt. The revenue mobilisation strategy envisages increased revenue/GDP ratio, increasing the tax base, reinforcing the capacity of small and medium 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

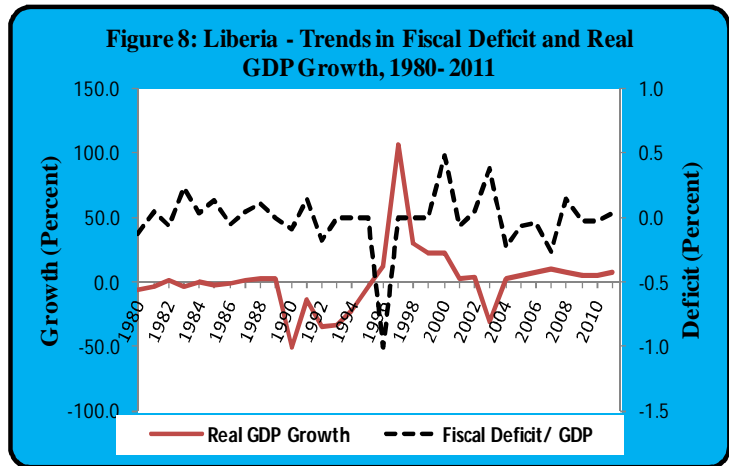
Monetary Policy: The focus of monetary policy in Liberia is on maintaining price stability. The Central Bank of Liberia (CBL)'s monetary policy framework is an exchange rate – targeting regime which aims at containing volatility in the exchange rate while building up foreign exchange reserves. As enshrined 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 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 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 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.

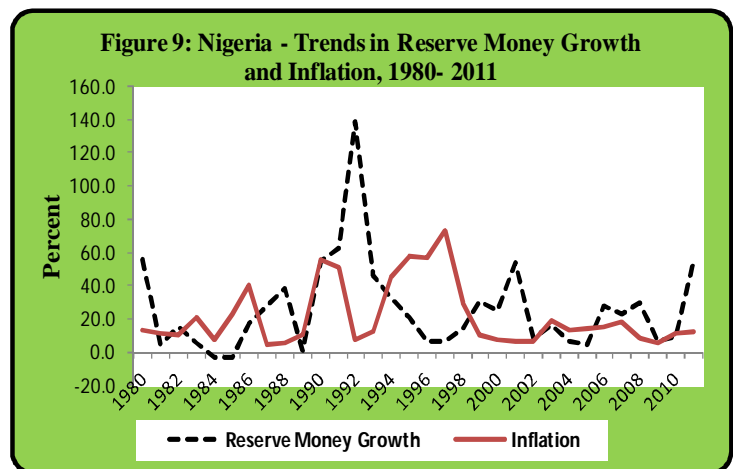


The major development in fiscal management in recent years was the successful implementation of a cash-based budget to achieve fiscal discipline, which resulted in the successful achievement of the HIPC completion point in 2007. The key fiscal policy instruments are: taxes, expenditure and deficit financing (debt), grants and contingency funding. The emphasis is on resource mobilization through taxes and grants to finance government programmes. The country is operating a cash-management aimed at expenditure rationalization on recurrent expenditure, especially on wages and salaries; travels by government officials, goods and services.

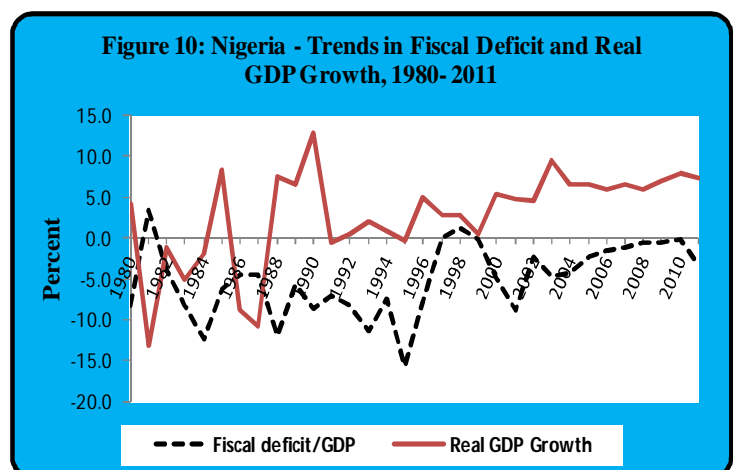
Policy Coordination: The role of policy coordination is undertaken by several committees including the Economic Management Team (EMT) and Debt Management Committee (DMC). The EMT is the highest body responsible for coordinating fiscal and monetary policies. It is chaired by the President of Liberia and 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.

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. 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. 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).

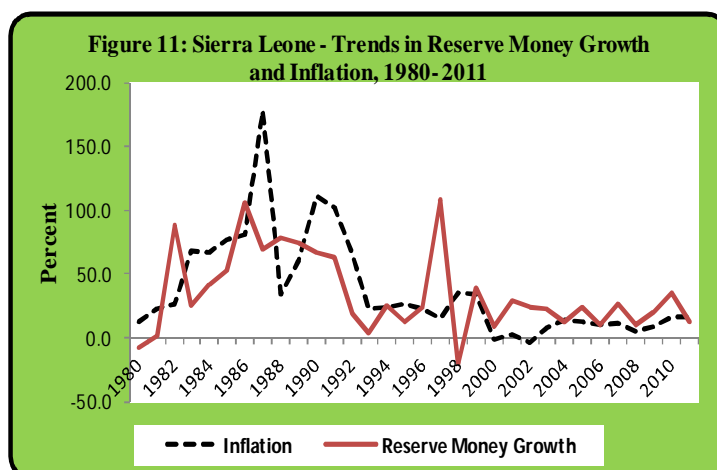
The Federal Executive Council (FEC) in 2010 adopted a more restrictive debt management framework in order to avoid a relapse into debt burden experiences prior to the debt relief of 2005/ 2006. The key features of the debt management framework are medium-term debt management strategy, domestic and external 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 (MFPPC), Cash Management Committee (CMC) and Fiscal and Liquidity Assessment Committee (FLAC). MFPPC 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 MFPPC 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 MFPPC 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.

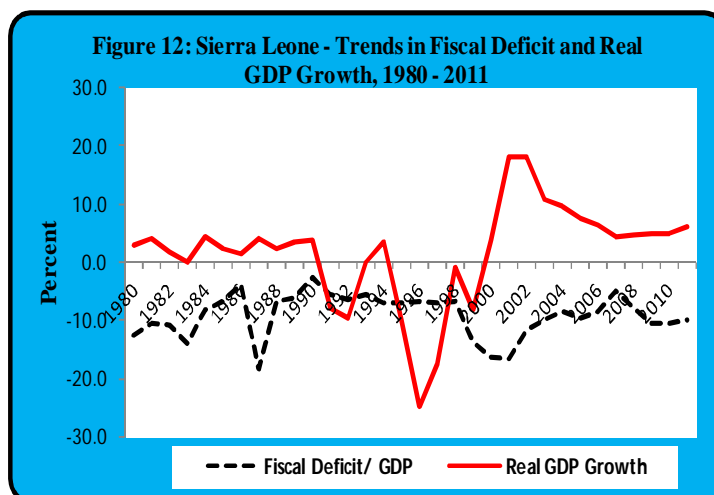
2.6 Sierra Leone

Monetary Policy: The ultimate policy objectives of the Bank of Sierra Leone (BSL) are price stability and sustained economic growth. Monetary policy framework of the Bank is a monetary–targeting regime with reserve money as the operational target and broad money supply as the intermediate target. The Bank conducts its monetary policy using open market operations to hit the reserve money before it affects the



intermediate and ultimate targets. The Monetary Policy Committee (MPC) formulates and directs the conduct of monetary policy in order to deliver price stability and support government objectives for sustainable growth; directs the conduct of the financial markets operation; reviews developments in the foreign exchange market and formulates policies to support macroeconomic stability; and addresses any other issues that have implications for the stability of the macro-economy.

Fiscal Policy: The thrust of fiscal policy in Sierra Leone is to formulate and implement sound economic policies and public financial management, ensure efficient allocation of public resources to promote stable economic growth and development in the context of a stable macroeconomic environment. Thus, fiscal policy framework is centred on sustaining spending on infrastructure development in order to spur sustainable economic growth; provision of basic services to make progress towards the attainment of the MDGs; improve domestic revenue collection; mobilizing concessional external support from traditional and non-traditional partners to finance critical infrastructure; and enhancing the capacity and productivity of the public service by implementing public sector reforms to ensure effective and efficient delivery of public services.



The fiscal policy instruments are taxation and government expenditure and the key priorities are to increase fiscal space for developing basic infrastructure, improving social services, while supporting the effective participation of the private sector in the economy as well as implementing prudent expenditure management.

Policy Coordination: Policies have been harmonized by the institutional arrangements of both the fiscal and monetary authorities in Sierra Leone. However, the coordination process has not

yet been formalised. 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 MPC, Monetary Policy Technical Committee (MPTC), and Cash Management Committee (CMC). The MPC comprises members from the BSL, MOFED and University of Sierra Leone. The Governor of the Bank chairs the Committee, which meets once every month. Since this committee includes senior officials from both authorities, policy recommendations and their implications on fiscal or monetary policy are discussed and addressed, and the outcome from such meetings are published in local newspapers. The MPTC is made up of the Directors of Financial Markets, Banking, Research and Banking Supervision from BSL; Director of Economic Policy and Research Unit, Director of Budget Bureau, The Accountant General and The Head of Public Debt Unit of MOFED; the Commissioner General of National Revenue Authority and the Statistician General of Statistics Sierra Leone. The MPTC is largely responsible for consolidating the inputs of the various departments on monetary policy related issues. It also reviews macroeconomic and monetary developments, both domestic and international and their likely impact on the BSL's ability to achieve price stability. It further makes recommendations and advises the MPC on the stance of monetary policy. The CMC is chaired by the Financial Secretary, MOFED and comprises officials from the BSL, MOFED, National Revenue Authority (NRA) and Accountant general's Office, and meets weekly. This Committee is largely responsible for the planning of financing requirements, deciding on the volume, timing, type and frequency of borrowing, among others.

3.0 LITERATURE REVIEW

3.1 Theoretical Literature Review

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 inter-temporal solvency constraint, such that, in equilibrium, the price level has to adjust 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 inter-temporal 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. So what will happen, rational agents anticipate increase in money creation in future and bid the price level up today, a phenomenon referred to as unpleasant monetarist arithmetic (see Sargent and Wallace, 1981).

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. Generally, monetary and fiscal policy coordination is undertaken to (i) set internally consistent and mutually agreed targets of monetary and fiscal policies with a view to achieve non-inflationary stable growth; (ii) 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; and (iii) compel both the central bank and government to adopt a sustainable policy. However, 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 the 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).

3.2 Empirical Literature Review

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 modelled for a single country, where the target variable is the path of government debt across time. The study 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 manoeuvres, establishing the fact that fiscal policy does affect monetary variables. 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 (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.

4.0 THEORETICAL FRAME WORK AND METHODOLOGY

4.1 Policy Functions and Coordination

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. 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 will emanate largely from fiscal dominance in a closed economy but also from exchange regime

and administration in an open-economy setting. 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.

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/ deficits. Monetary authorities' response may be a tight monetary policy stance. The extent of fiscal dominance determines monetary policy effectiveness. On the other hand, monetary authorities can take the first move to determine the level of seigniorage revenue that can be raised by setting its policy prior to the fiscal policy. Fiscal authorities are then 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). First mover advantage by the monetary authorities may impose discipline on fiscal authorities provided fiscal space is limited. 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 monetary policies or contractionary fiscal and monetary policies. These are essentially the results of explicit policy coordination. 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.

4.2 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 modelled 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

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

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

Equations (3) and (4) states 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 changes 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

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

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

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

4.3 Empirical Model Specification

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).

4.3.1 Set Theoretic Approach

The set theoretic approach of modelling 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 decreasing inflation (or deflation). These two scenarios are normal cyclicalities associated with the growth path of an economy. This growth cyclicalities can be corrected by automatic stabilizers although may take time. 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 the policy responses may come with a lag as policymakers first observe the impact of the shocks before taking action. Where policymakers fully anticipate 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 $spc=0$)

4.3.2 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 modelling 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 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.

4.4 Data Type and Sources

The key variables for the VAR model are changes in output gap (GAP) representing shock to output)-s 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 makes use of annual time series data for the period 1980 to 2011 for all countries. Data were obtained from United Nations and IMF eLibrary database. 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 is used to separates the cyclical component of a time series from raw data.

5.0 PRESENTATION AND ANALYSIS OF EMPIRICAL RESULTS

5.1 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. The policy prudence scores are also weak generally in all the countries except in Liberia, Nigeria and Sierra Leone where one policy institution has a policy prudence score above the threshold of 50.0 percent. The Gambia obtains a coordination score of 10.3 percent. That is, out of the 29 pairs of policy instruments and goals observed during the sample period, only 3 pairs suggest some form of policy coordination. Fiscal and monetary prudence scores for the Gambia are 48.3 and 34.5 percent, respectively. This implies that fiscal authorities tend to implement relatively more prudent policies than does the central bank. Ghana achieves a coordination score of 34.5 percent, implying only 10 pairs out of the 29 pairs of policy instruments and goals suggest coordination. The prudence scores are 44.8 and 48.3 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 19.0 percent, meaning only 4 out of the 21 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 17.2 percent, implying only 5 out of the 29 pairs of policy instruments and goals confirm coordination. Nigeria's policy coordination score is 16.7 percent which means only 5 out of the 29 pairs of policy instruments and goals observed indicate some level of coordination. Policy coordination score for Sierra Leone is 31.0 percent, meaning

only 9 out of the 29 pairs of policy instruments and goals observed reveal some coordination. Liberia and Sierra Leone have relatively weak fiscal prudence (41.0 and 48.3 percent, respectively) but strong monetary prudence (51.7 and 65.5 percent). Nigeria, on the other hand has a strong fiscal prudence with a score of 58.6 percent but relatively weak monetary prudence (41.4 percent).

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 | 10.3 | 48.3 | 34.5 |
| Ghana | 34.5 | 44.8 | 48.3 |
| Guinea | 19.0 | 47.6 | 47.6 |
| Liberia | 17.2 | 41.4 | 51.7 |
| Nigeria | 16.7 | 58.6 | 41.4 |
| Sierra Leone | 31.0 | 48.3 | 65.5 |

Source: Authors' computation

5.2 VAR Model Results

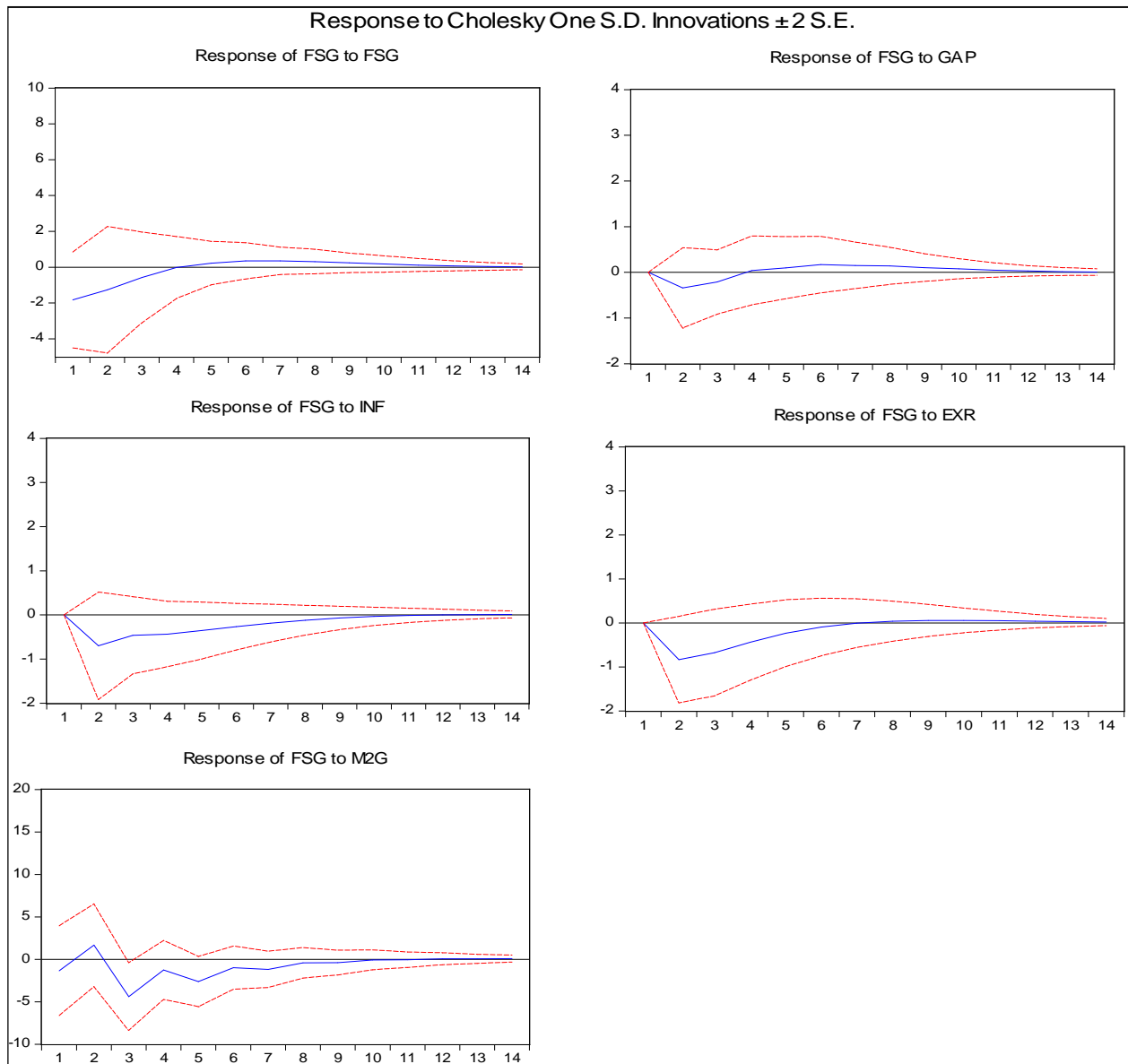
Given that fiscal and monetary policy variables do not granger-cause each other (see Appendix I), the study adopts the explicit policy coordination VAR model for estimation. The preliminary data tests such as stationarity and lag length criteria test results are presented in Appendix II and III. The unrestricted VAR model results are reported in Appendix IV. 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.

5.2.1 Results for the Gambia

Response of FSG: The time paths of the response of fiscal deficit to shocks 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

Figure 13: Response of Fiscal Deficit - The Gambia

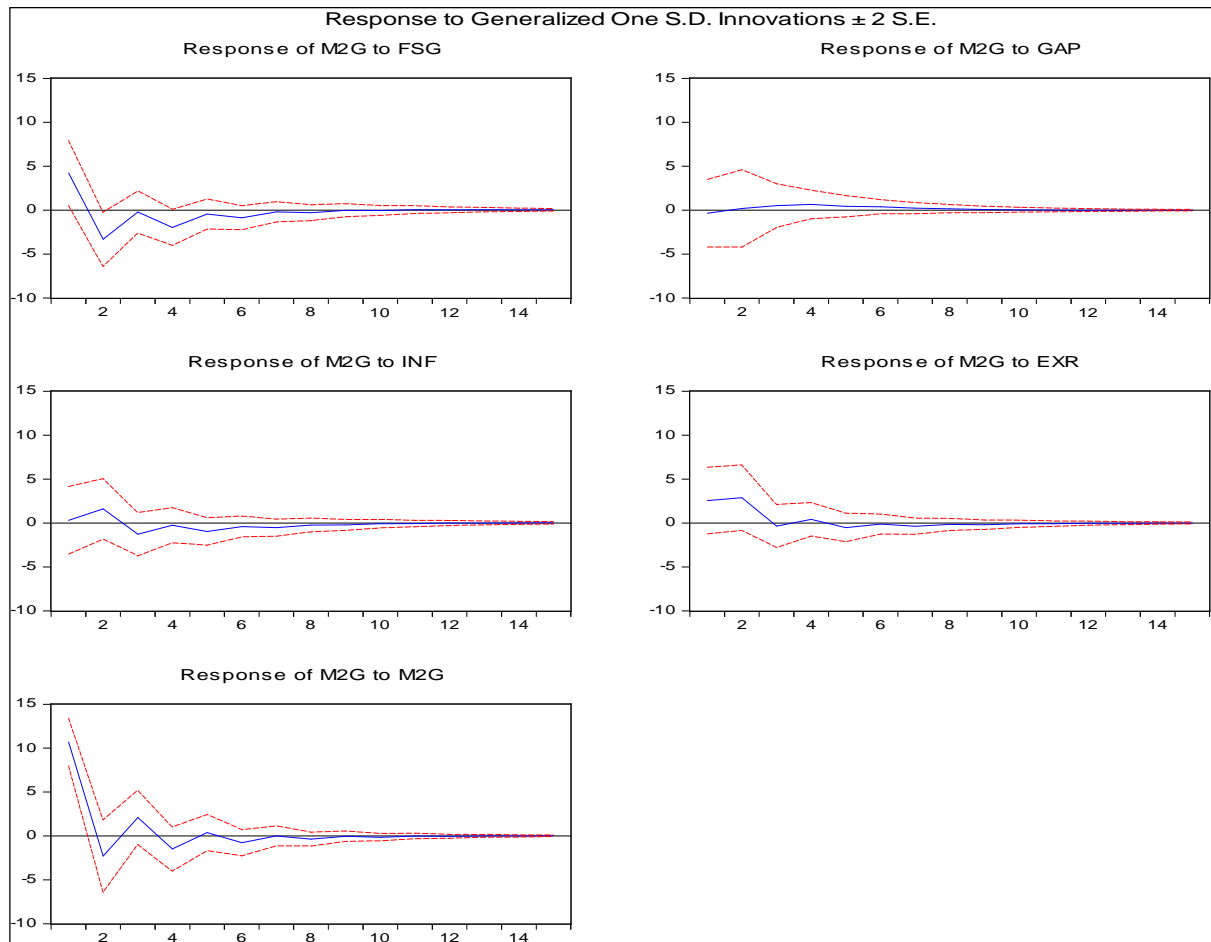


downward inflexible during downswing of the business cycle. The response of fiscal deficit to a shock in inflation is again pro-cyclical as it increases through the second forecast horizon before it begins to taper off. It takes eleven years for the fiscal response to inflation shock to completely wane. This increase in fiscal deficit due to inflation shock 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.

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.

Figure 14: Response of Money Supply Growth - The Gambia



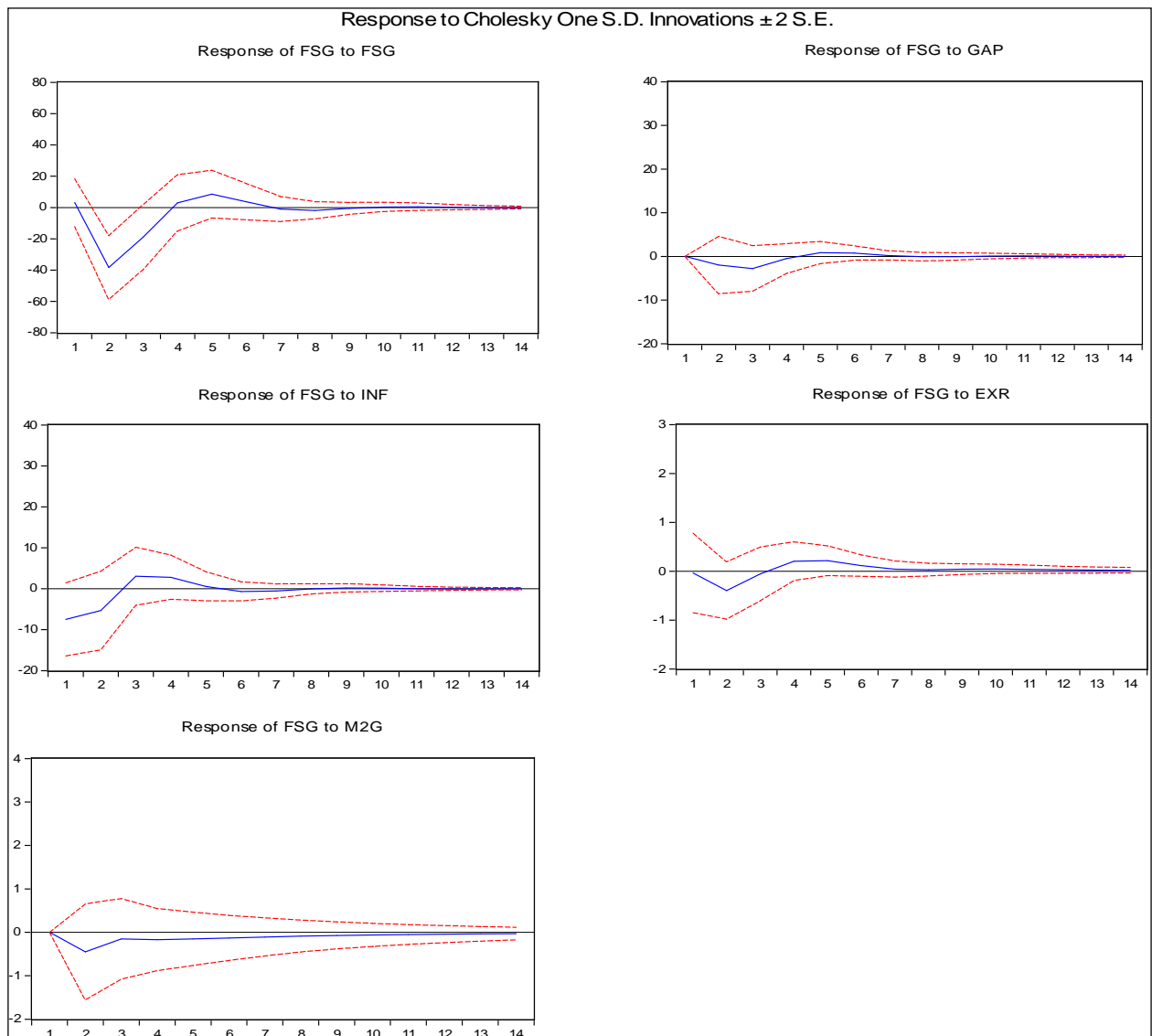
To an own shock, money supply growth increases initially before declining to its long run equilibrium after the ninth year. A shock to output gap causes money supply growth to initially declines before rising through the fourth period horizon. The response tapers off during the seventh forecast period.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

5.2.2 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

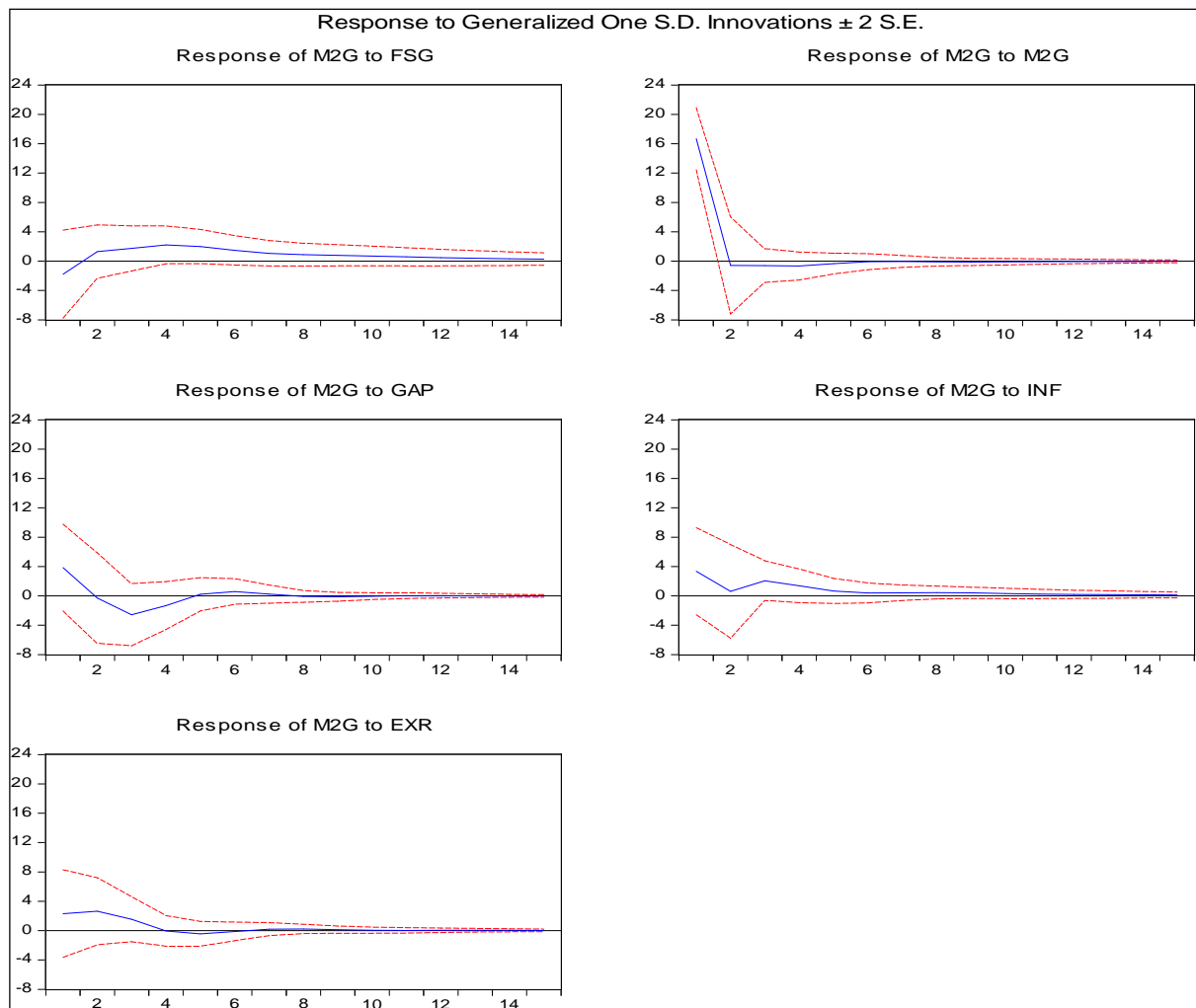
Figure 15: Response of Fiscal Deficit – Ghana



long run equilibrium level after twelve years. To a shock in output gap, fiscal deficit worsen during the second year, but the response tapers off quickly and disappears completely in the eight 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.

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

Figure 16: Response of Money Supply Growth – Ghana



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.

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.

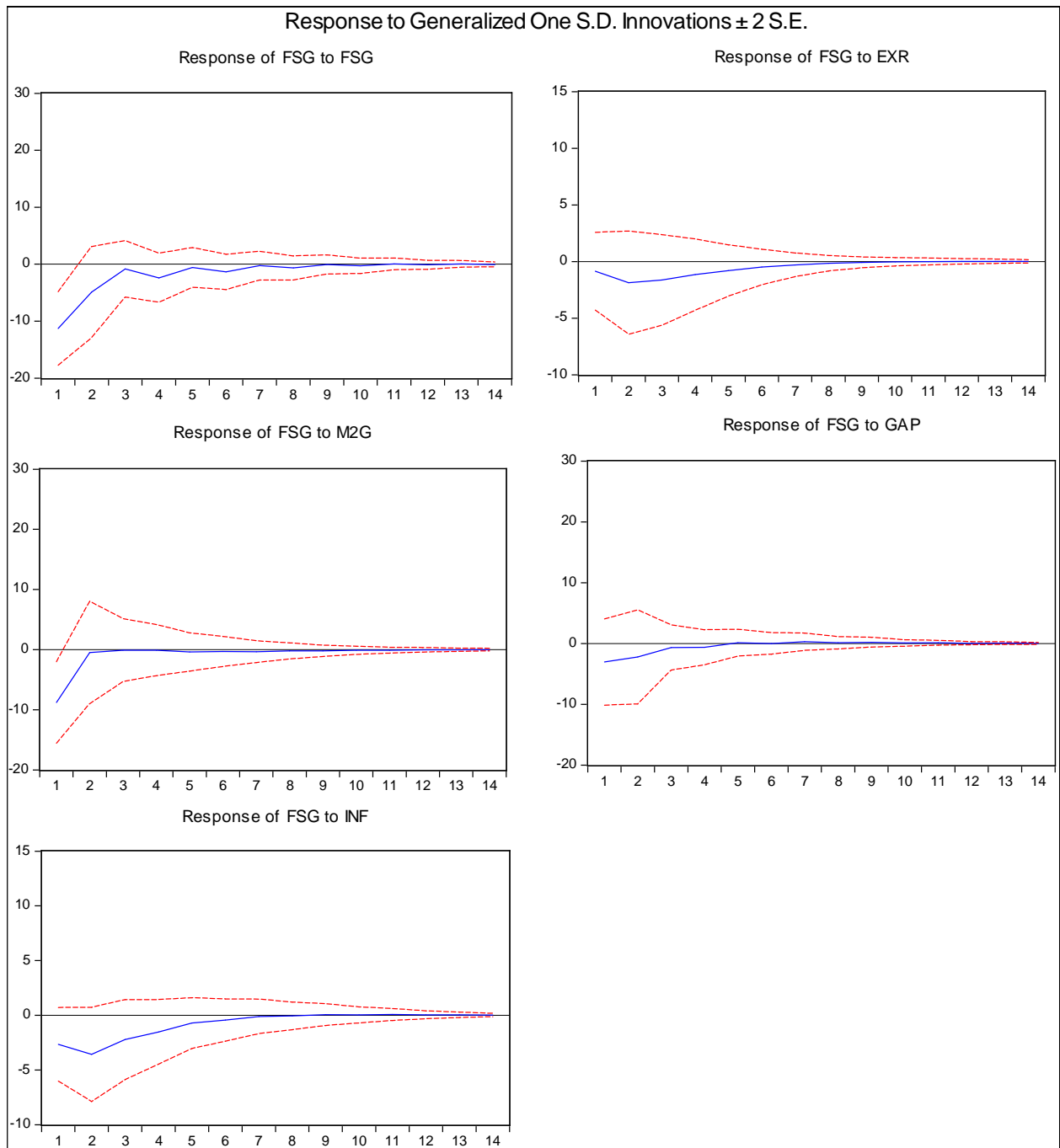
In sum, there appears to be very little coordination between fiscal and monetary authorities in Ghana as far as policy goals are concerned. Fiscal policy appears non-supportive of monetary policy as fiscal deficit continues to widen even in the face of rising money supply growth, while money supply growth continues to rise with deteriorating fiscal position, implying accommodating monetary policy. With regard to inflationary spikes, fiscal policy tends to respond appropriately, while monetary policy does not. Concerning output gap shocks, both fiscal and monetary policies do not respond significantly.

5.2.3 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.

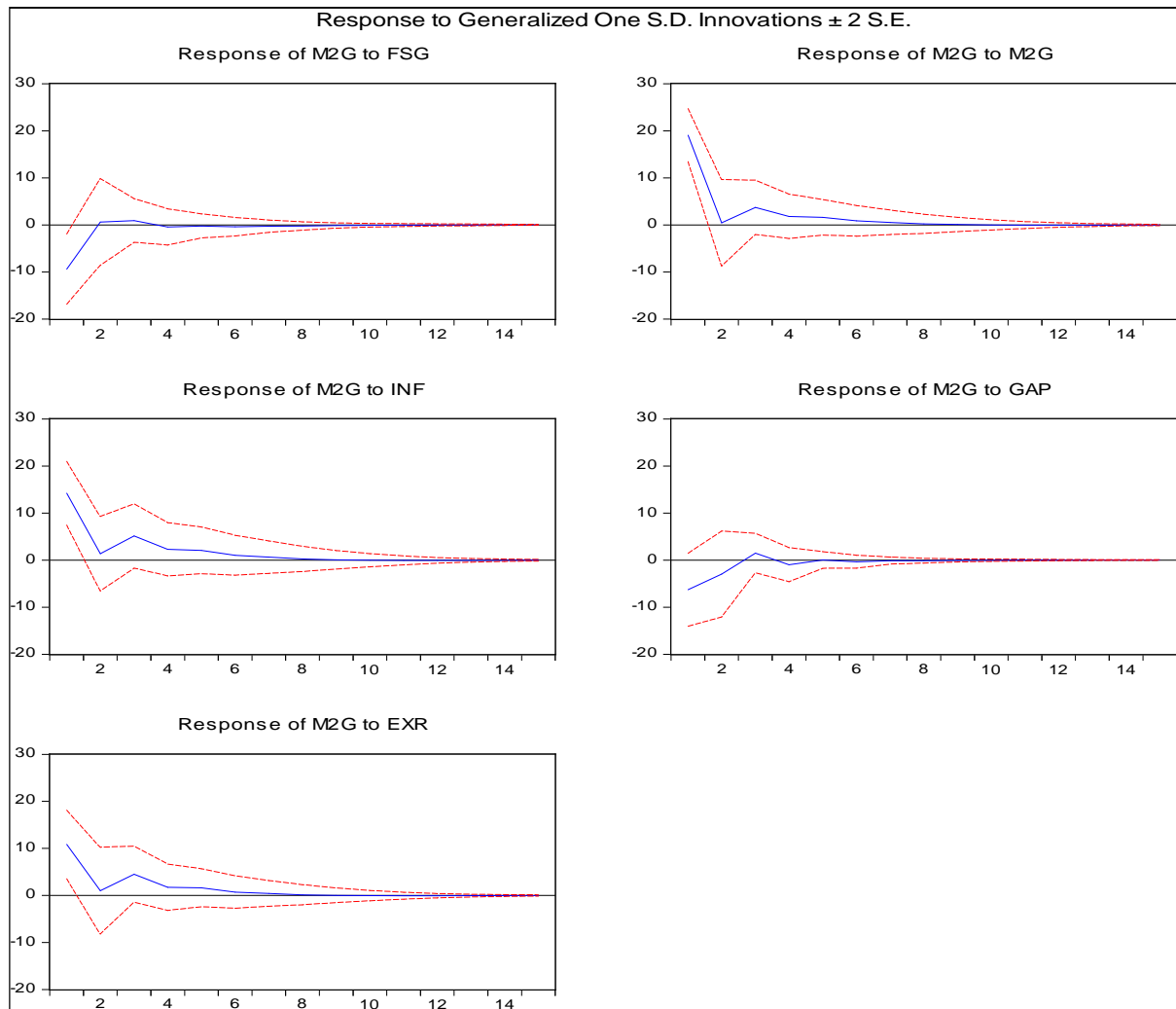
To a shock in output gap, fiscal deficit widens in the first year, implying deterioration of the fiscal position in the first year of the forecast horizon. The response wanes sharply through the second and third years, and significantly improves from the fourth to tenth period, but dissipates fully in 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 17: Response of Fiscal Deficit- Guinea



Response of M2G: To a one standard deviation shock in fiscal deficit, money supply growth immediately 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.

Figure 18: Response of Money Supply Growth – Guinea



It increases again in the third year before declining gradually through the ninth year of the forecast period.

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 arrest inflationary spiral in the country. 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.

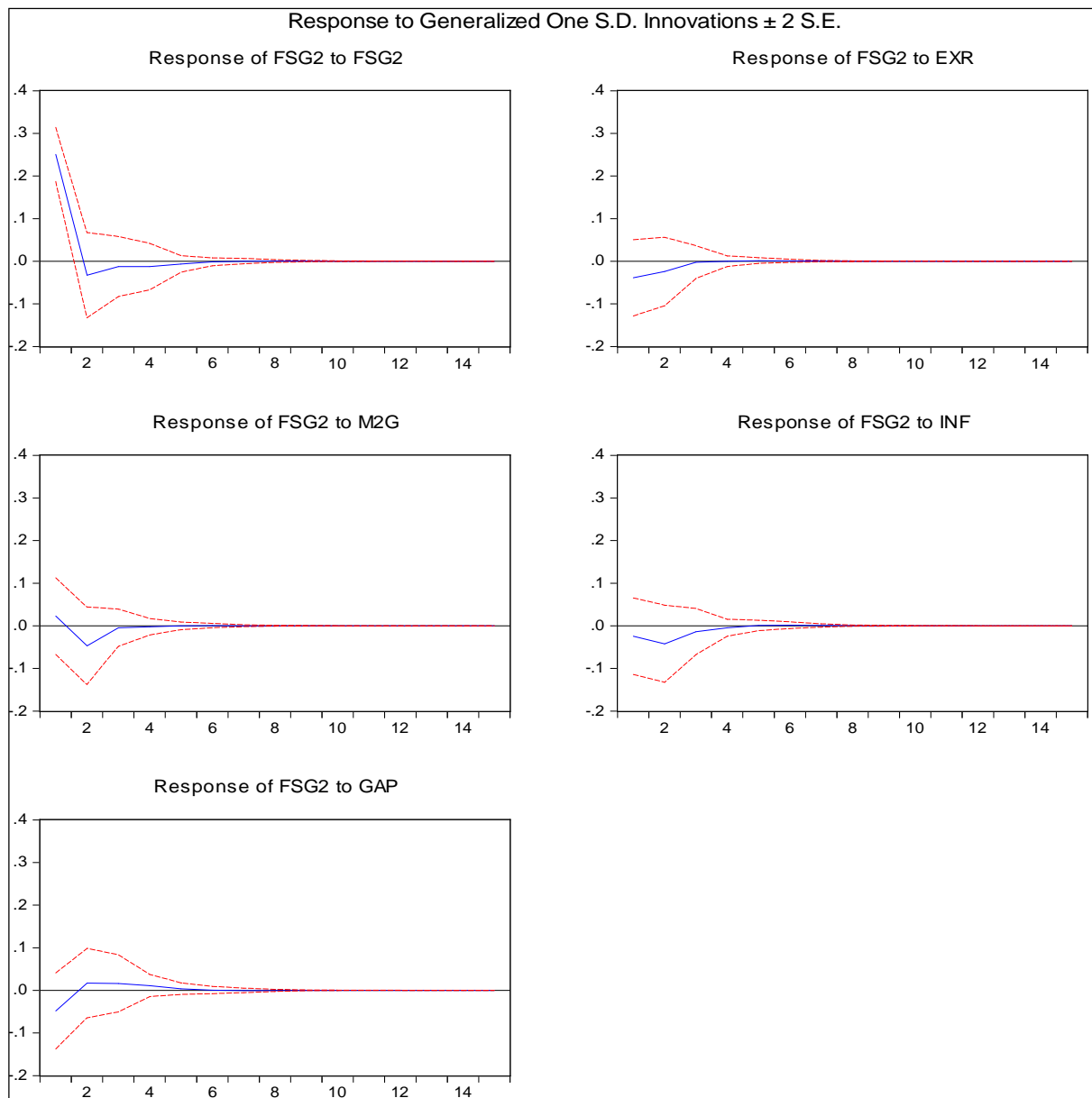
In response to exchange rate depreciation shock, money supply growth rises initially before declining in subsequent years. It takes more than fifteen years for the response to completely die

out. It thus appears that money supply does not adjust to arrest exchange rate depreciations in Guinea.

5.2.4 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

Figure 19: Response of Fiscal Deficit- Liberia



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. The response wanes quickly as fiscal deficit returns to the zero line. It takes six years for the response to die out completely. The initial rise implies that fiscal deficit improves in the first year following the monetary shock.

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.

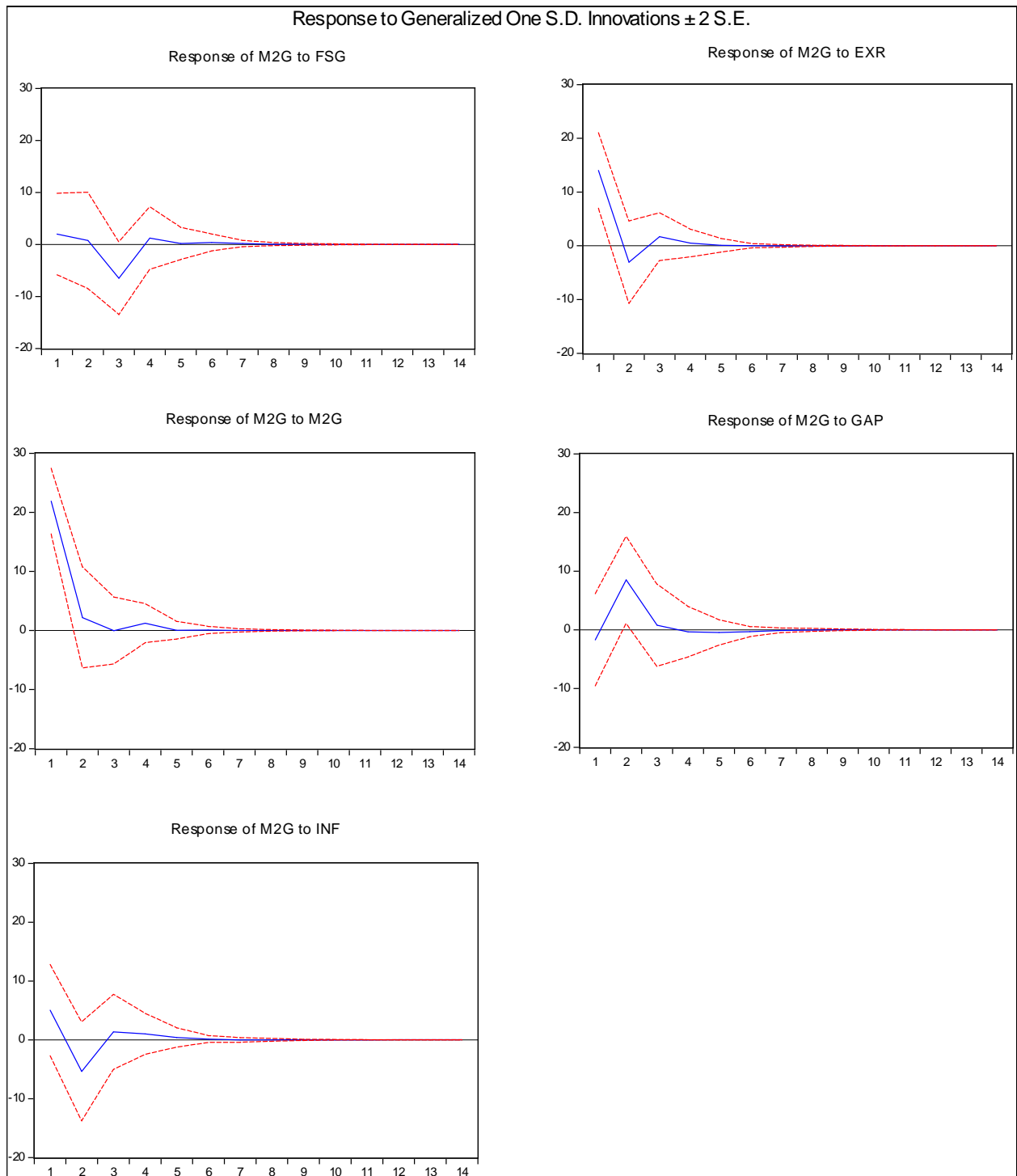
Overall, fiscal policy adjustments in Liberia were appropriate in responding to smooth the output expansion path, but do not help to contain inflationary spiral and exchange rate depreciation. Thus, although the response of fiscal deficit to various shocks wane out quickly, fiscal policy seems not to be implemented in a manner that delivers adequate interventions in the economy to forestall macroeconomic instabilities.

Response of M2G

The response of money supply growth to a shock in fiscal deficit is to jump above the zero line in the first year, but declined thereafter. It however, increased in the fourth year and return 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. During the second year however, the response declined below the zero line, but money supply growth increased in the third year following the shock, but the impact dies 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 exchange rate depreciation with a lag. Money supply growth also increased in year three, but 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.

In conclusion, money supply responds to inflationary and exchange rate shocks with a lag. However, money supply does not respond appropriately to shocks emanating from fiscal deficit and output. Fiscal policy on the other hand responds appropriately to shock emanating from output.

Figure 20: Response of Money Supply Growth- Liberia



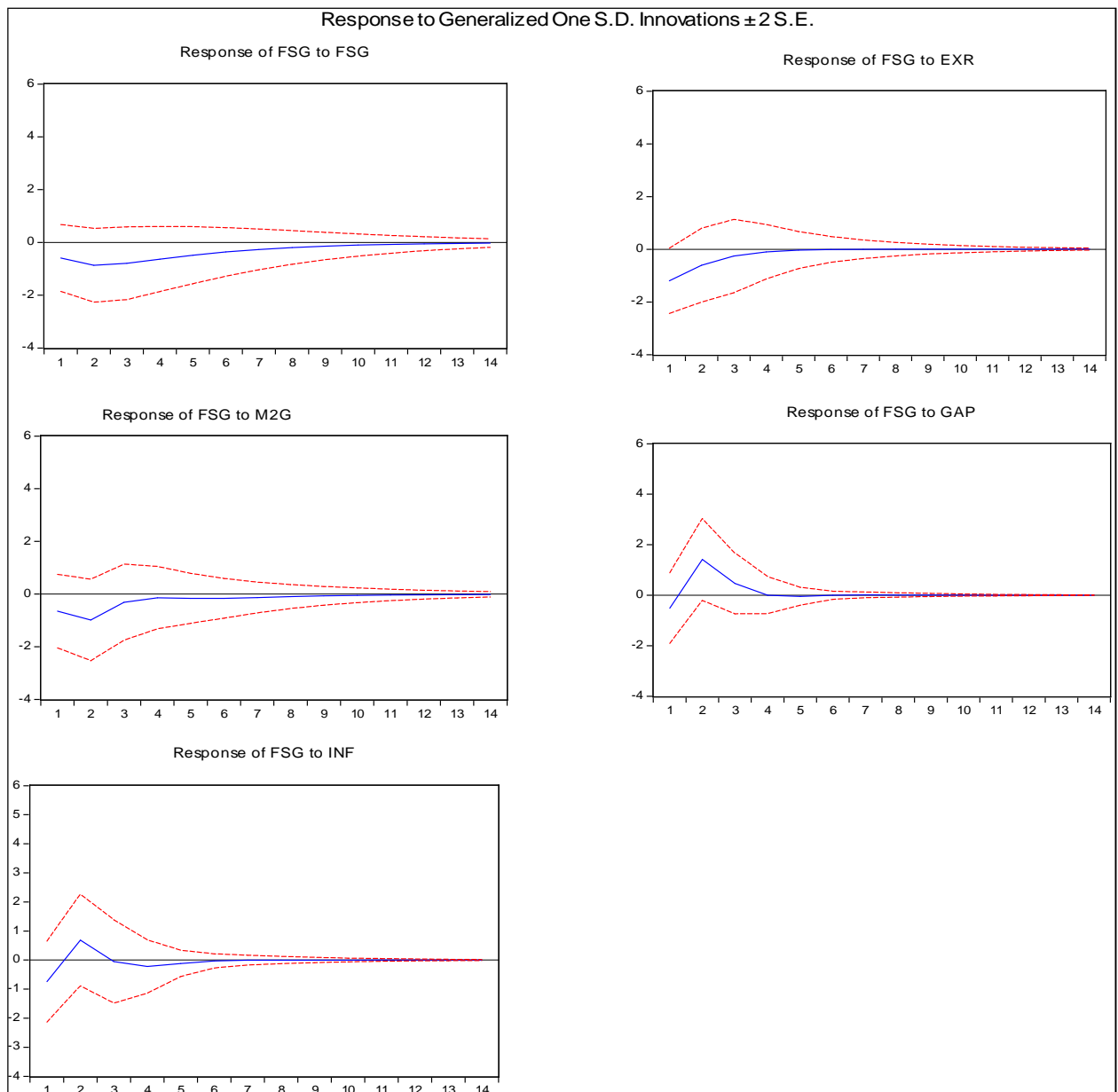
5.2.5 Results for Nigeria

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. To 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

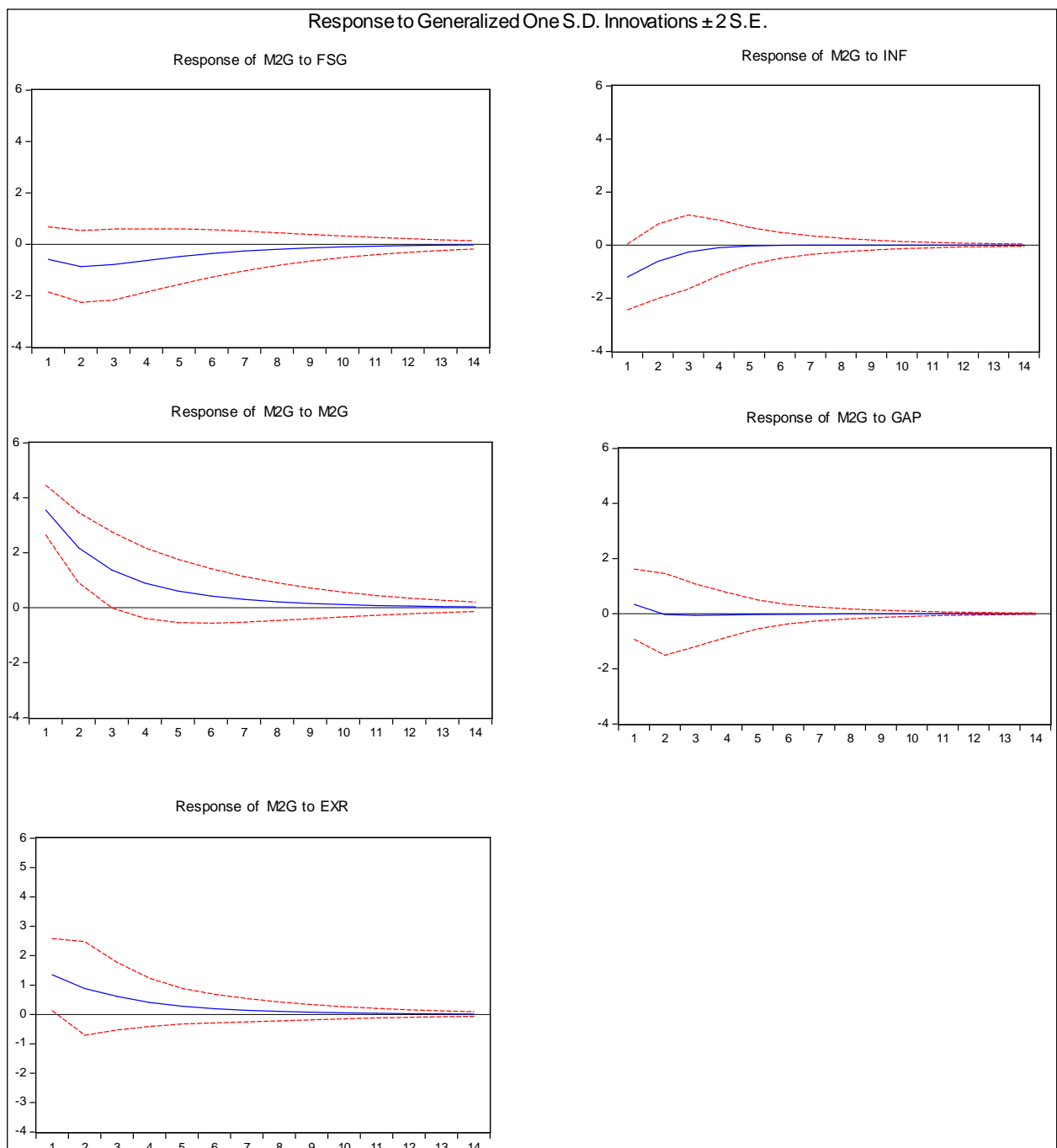
Figure 21: Response of Fiscal Deficit – Nigeria



tapers off until it dies out completely in the eight 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.

In summary, fiscal operations in Nigeria 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.

Figure 22: Response of Money Supply Growth- 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.

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, output gap and fiscal variable, but does not respond adequately to address shock from exchange rate depreciation, during the period under review.

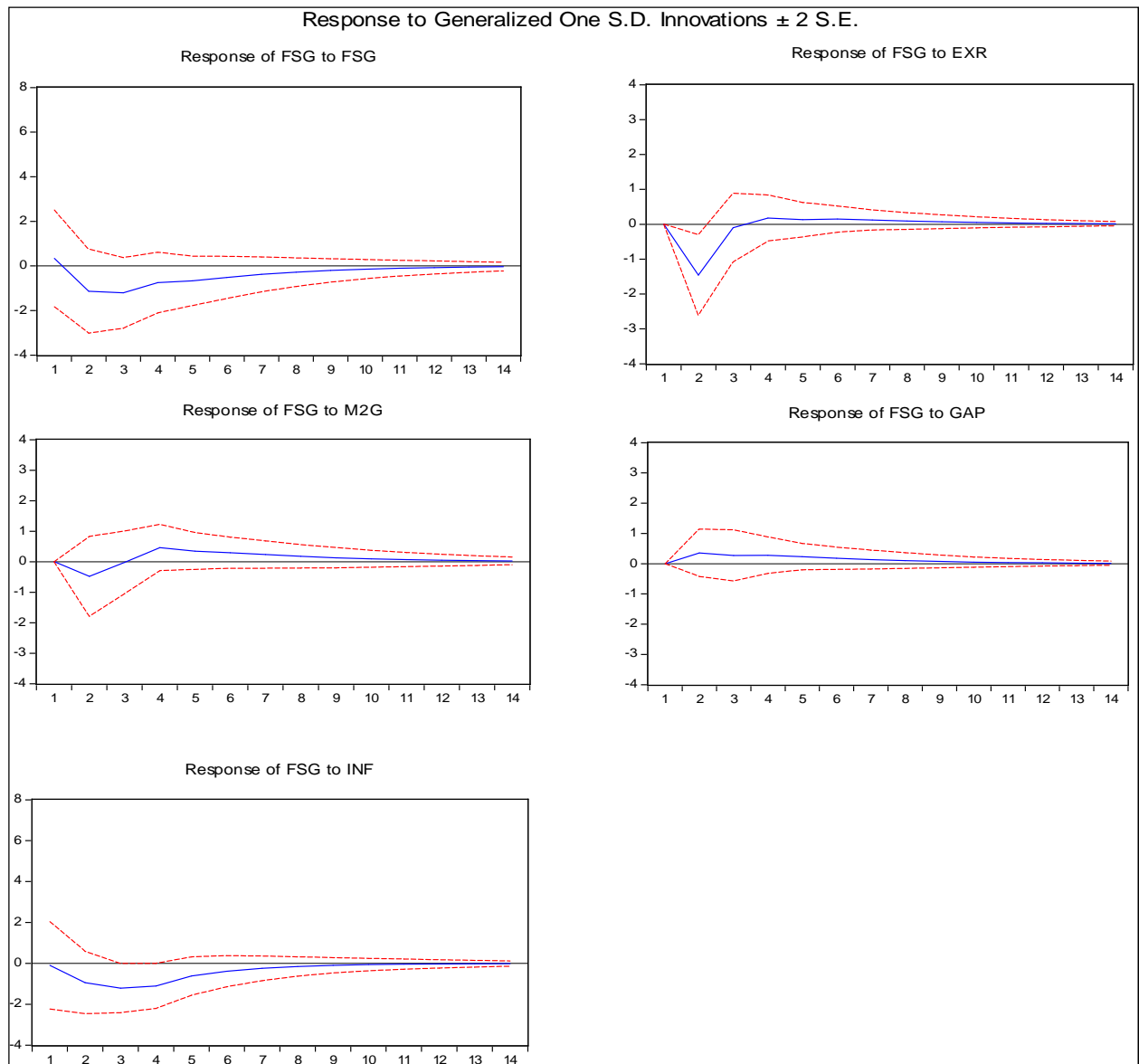
5.2.6 Results for Sierra Leone

Response of FSG: In Sierra Leone, the response of fiscal deficit to a one standard deviation own 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 is respond to an inflationary shock with a lag. 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.

In summary, there is a delayed response from the fiscal authorities in Sierra Leone to exchange rate shocks, but responds appropriately to output gap shock, although it takes a longer time for the response to return to its equilibrium path. The response of fiscal policy to shock emanating from inflation remained inappropriate.

Figure 23: Response of Fiscal Deficit- Sierra Leone

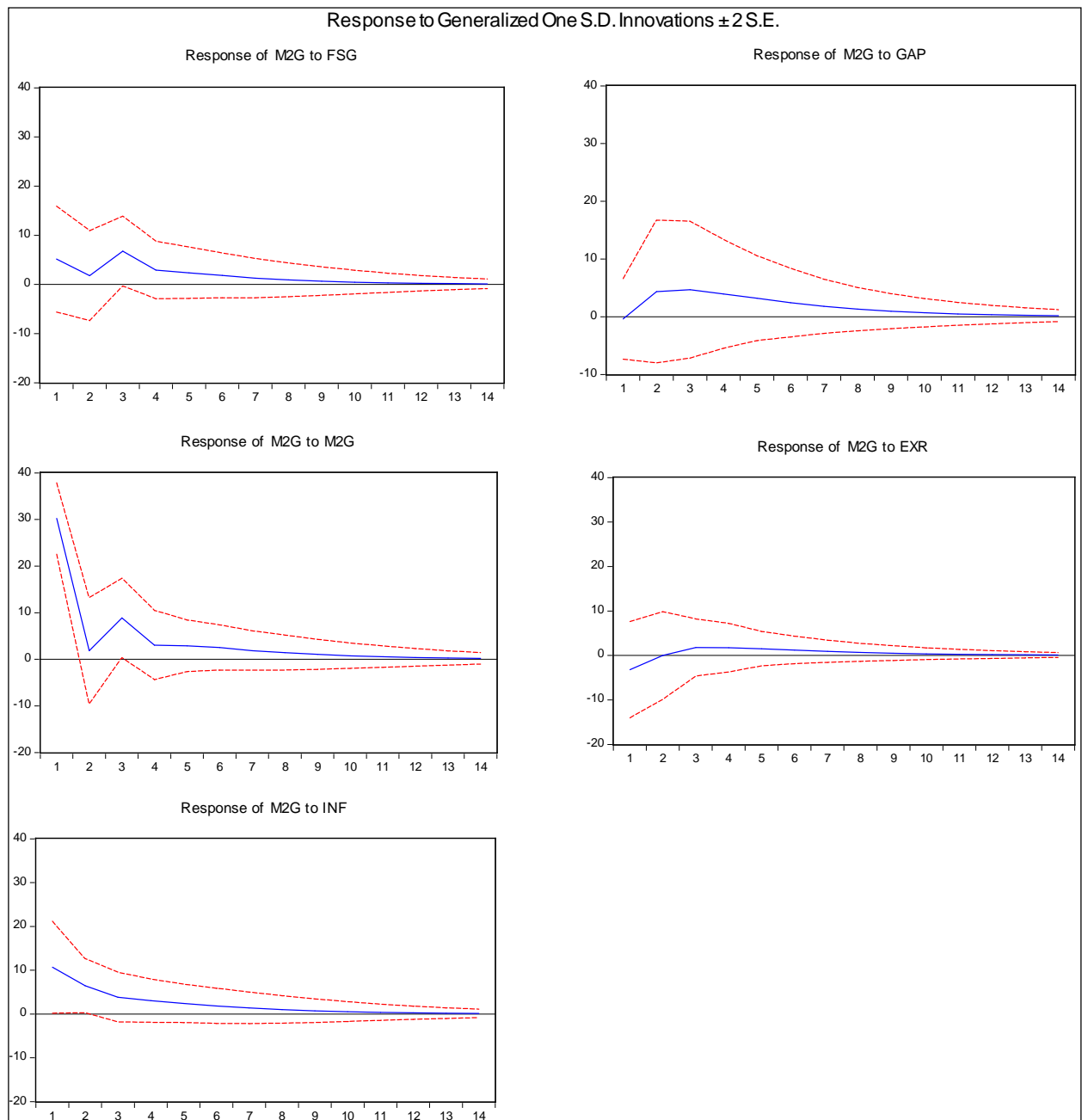


Response of RMG: To a shock in fiscal deficit, money growth immediately jumps up as monetary authorities are compelled to accommodate the rise in fiscal deficit. The response however declines in the second year of the forecast horizon before rising again in the third year. The response dies out completely after fifteen years. This suggests that monetary authorities in Sierra Leone accommodate fiscal expansion by the government. Money growth respond to a one standard deviation 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 jumps up in the first year following the shock. It thereafter declines gradually and peters out completely after the fifteenth year of the forecast period. 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

Figure 24: Response of Money Supply Growth – Sierra Leone

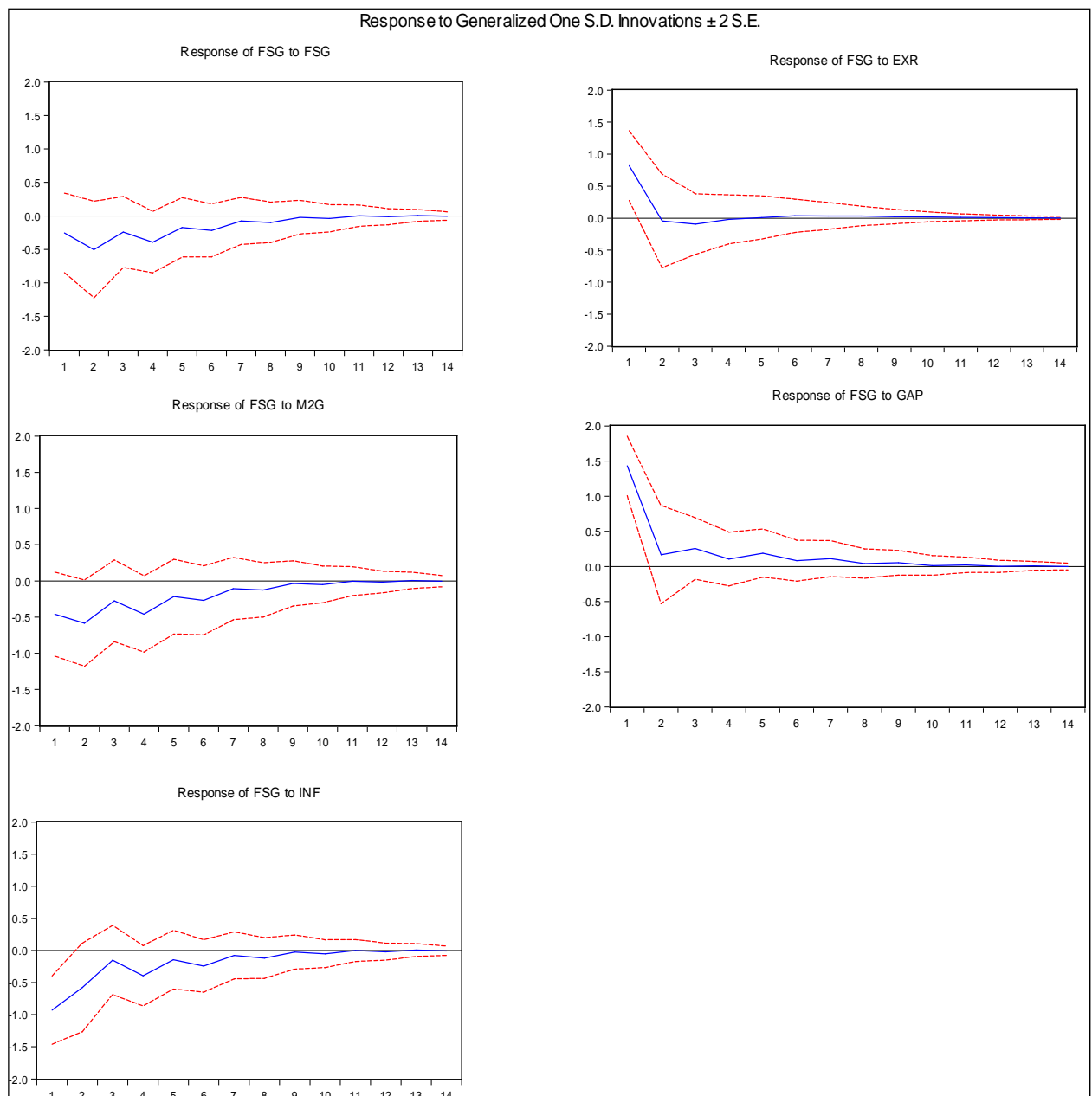


period before petering out completely after fifteen years. Thus, money supply adjusts to address the depreciation of the domestic currency. Overall, monetary policy appears to be supportive of exchange rate stability, but has a delayed response to shock emanating from inflation.

5.2.7 Results of the Panel Vector Autoregression

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

Figure 25: Responses of Fiscal Deficit – WAMZ



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. The overall response to depreciation shocks is for fiscal deficit to worsen slightly and remain below its equilibrium level. It does appear therefore that fiscal deficit adjust to arrest any rapid rate of depreciation in the WAMZ countries.

To an 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.

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.

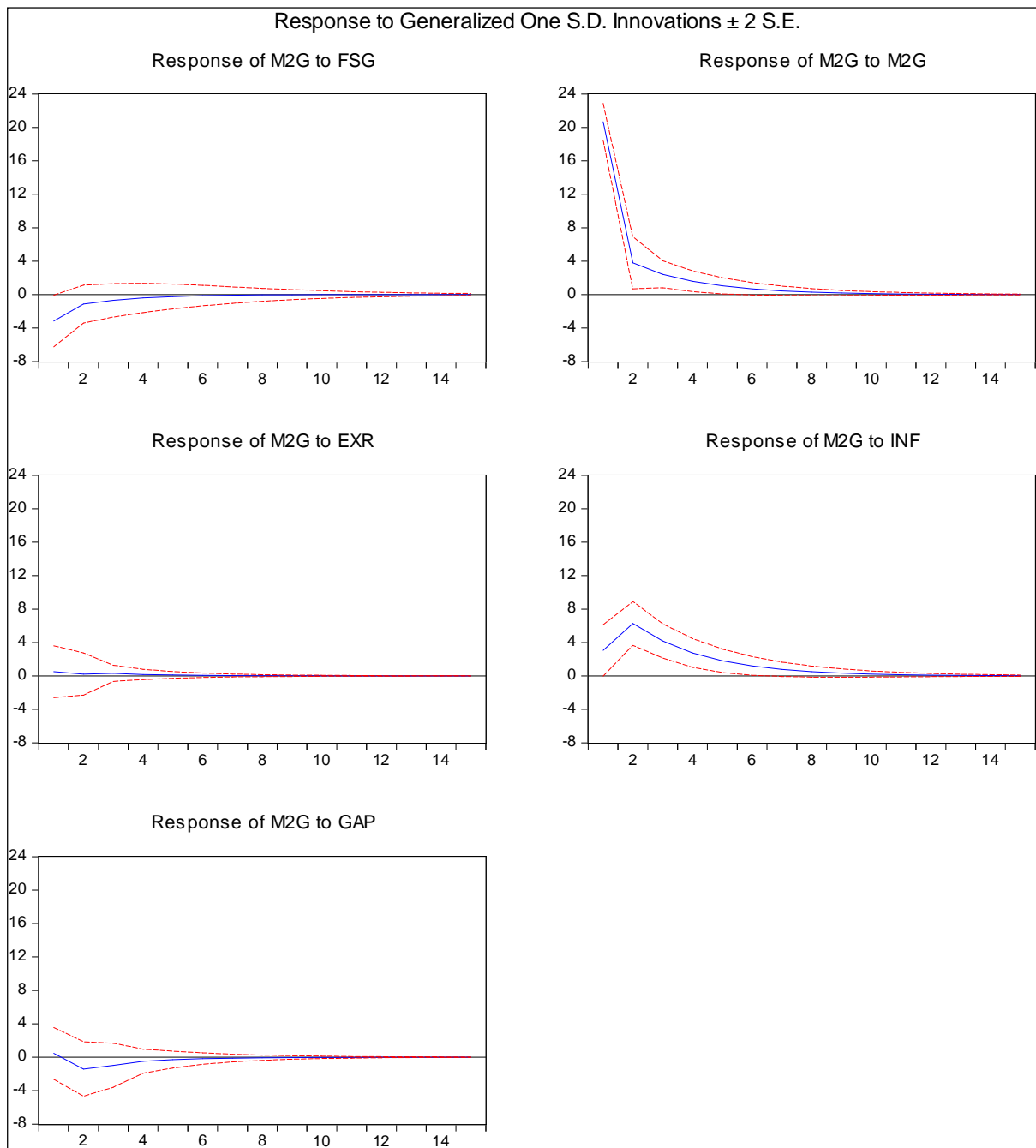
Regarding exchange rate shocks, money supply growth does respond but only marginally positively from the first year to the eleventh year of the forecast horizon. This implies that money supply growth is not supportive of halting excessive exchange rate depreciation in the WAMZ countries.

Responding 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 26: Responses of Money Supply Growth – WAMZ



6.0 SUMMARY OF FINDINGS AND POLICY RECOMMENDATIONS

6.1 Summary of Findings

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

The paper establishes that monetary policy has been independent of the fiscal policy in all the WAMZ countries. Given the independence of the policies, the paper then works out the extent of coordination through movements of policy indicators. A major message from the study is that the achievement of macroeconomic policy goals requires a careful combination of fiscal and monetary policy instruments.

The results showed that all the WAMZ countries (both at individual and zonal level) had weak policy coordination during the study period. Results from the set theoretic coordination scores ranged from 10.3 percent in The Gambia to 34.5 percent in Ghana, clearly less than the 50.0 percent benchmark for adequate policy coordination.

Results of the Impulse Response Function Analysis also showed that there are weak policy responses to shocks in model variables. The variables converge to their original values after a very long time, which shows that there is evidence of weak responses of policy variables to different shocks, reaffirming the weak coordination between monetary and fiscal policies. The impulse response functions for the individual countries are analyzed as follows:

In **The Gambia**, fiscal operations tend to respond in a way to correct any excessive money supply growth and exchange rate depreciation. This means that fiscal policy adjustments in the face of monetary shocks appear to be supportive of monetary authorities' desire to maintain price stability. On the other hand, monetary policy adjusts to neutralise shocks to fiscal variables but with a delayed effect. Money supply adjustments are also consistent with price stability objectives of the Central Bank of the Gambia.

In **Ghana**, Fiscal policy appears non-supportive of monetary policy as fiscal deficit continues to widen even in the face of rising money supply growth, while money supply growth continues to rise with deteriorating fiscal position, implying accommodating monetary policy. With regard to inflationary spikes and exchange rate depreciation, monetary policy does not respond adequately enough to counterbalance the shocks. Concerning output gap shocks, both fiscal and monetary policies do not respond significantly.

In **Guinea**, fiscal operations tend to respond in a way to correct any excessive money supply growth and exchange rate depreciation. However, monetary policy in Guinea appears not to be directed at addressing shocks to price and exchange rate, rather it appeared to be more reactive to fiscal policy dynamics and shock to output.

In the case of **Liberia**, fiscal policy adjustments do not help to contain inflationary spiral, exchange rate depreciation and money supply growth. Thus, although the response of fiscal deficit to various shocks wane out quickly, fiscal policy seems not to be implemented in a manner that delivers adequate interventions in the economy to forestall macroeconomic instabilities. On the other hand, money supply responds to inflationary and exchange rate shocks with a lag. However, money supply does not respond appropriately to shocks emanating from fiscal deficit and output.

In **Nigeria**, fiscal operations do not seem to contained inflationary spikes and halt depreciation of the domestic currency during the period under review. 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. On the other hand, money supply growth adjust appropriately to shocks emanating from inflation, output gap and fiscal variable, but does not respond adequately to address shock from exchange rate depreciation, during the period under review

In the case of **Sierra Leone**, there is a delayed response from the fiscal authorities to exchange rate shocks, but responds appropriately to output gap shock, although it takes a longer time for the response to return to its equilibrium path. The response of fiscal policy to shock emanating from inflation remained inappropriate. Also, monetary policy appears to be supportive of exchange rate stability, but has a delayed response to shock emanating from inflation.

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.

6.2 Policy Recommendations

The policy coordination processes in most member countries have not been formalised. All member countries apart from Nigeria and The Gambia should put in place a formal coordination platform that will bring the two policy institutions together. In the case of Nigeria and The Gambia, there is a need to strengthen contacts between the monetary and fiscal authorities in deciding jointly on 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) set rules and procedures, which should be binding on both the fiscal and monetary authorities.

There is lack of adequate data to ensure effective coordination of fiscal and monetary policies in all 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.

Closely linked with the above is the partial understanding of the workings of the macro-economy in most member countries. Thus, there is a need to strengthen the capacity of relevant policy institutions to be able to fully understand the cyclical nature of their respective economies in order to engage in effective policy coordination in the area of policy goal setting and choice and design of policy instruments. Policy transmission mechanisms also need to be identified and strengthened through relevant policy reforms in all member countries.

Policy institutions in member countries have weak or no monitoring and evaluation units that monitor policy implementation. Thus, authorities in member countries should establish monitoring and evaluation units in all relevant policy institutions to monitor policy implementation and track deliverables agreed on at policy coordination meetings.

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APPENDIX

Table A1: Granger Causality Test Results

| Countries | FSG does not Granger Cause M2G | | M2G does not Granger Cause FSG | |
|--------------|--------------------------------|-------------|--------------------------------|-------------|
| | <i>F-stat</i> | <i>Prob</i> | <i>F-stat</i> | <i>prob</i> |
| Gambia | 3.77108 | 0.0623 | 1.00862 | 0.3238 |
| Ghana | 1.83226 | 0.1867 | 0.01524 | 0.9026 |
| Guinea | 0.80646 | 0.3799 | 0.97977 | 0.2599 |
| Liberia | 0.07039 | 0.7927 | 0.43391 | 0.5155 |
| Nigeria | 1.13574 | 0.2957 | 0.58622 | 0.4503 |
| Sierra Leone | 0.14117 | 0.7100 | 0.00354 | 0.9530 |

Table A2: Stationarity Test Results

Table A3: Lag Length Test Results

Table A4: VAR Model Results