

**GOVERNMENT DEFICIT AND THE INFLATIONARY
PROCESS IN NIGERIA, 1986-1998**

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DECLARATION

I, Usman Moses Okpanachi, do hereby declare that this Ph.D. thesis has been written by me and is a record of, or the product of my own original research; and that no part of it has, to the best of my knowledge, been presented anywhere at any time for the award of any higher or other degree; and that all quotations and references have been duly acknowledged.

Usman Moses Okpanachi

CERTIFICATION

This is to certify that the research work for this thesis and the subsequent preparation of this thesis by Mr. Usman Moses Okpanachi (Mat. No. UJ/PGSS/9717/96) were carried out under my supervision.

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DEDICATION

This work is dedicated to the **glory of God** and to the
memory of my father, **Moses Achim Okpanachi**

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ABSTRACT

This research investigates empirically the relationship between government deficit and inflation in Nigeria. The study aims at determining the nature of causality between deficit and inflation; the dynamics of inflation; and the role of deficit in the process of inflation, among others. Both descriptive and analytical techniques have been used to carry out the study. Specifically, ratios, charts, growth rates and a macro econometric model have been used to analyse relevant statistics. The model of the study was estimated using the Two-Stage Least Squares (2SLS). Two-way causality was found between the variables mentioned earlier. Inflation was found to be a contributory factor to the deficits and tended to be self-generating, due to its effects on government expenditures and revenues. Expenditures adjusted to changes in domestic price level faster than did revenues, and so government revenues persistently lagged behind expenditures, making deficit a recurring feature of government's fiscal operations.

In addition, the surges in money supply during the period were found to be partly due to the loss of control over expenditures. In financing the excess expenditure, Government

over-relied on money creation (especially CBN Monetary accommodation), which increased base money and consequently, inflation. One implication of these findings is that anti-inflation policy must target in part, government expenditures, to be effective. Past inflation stabilization plans failed partly because they could not achieve this. In order to improve, the adjustment of revenues to income and price, early retrieval of revenues, indexation and overall improvement of revenue collection machinery of government are obvious necessities. To regain macro economic balance the government should strive to balance its budgets or restrict deficits to magnitudes that are amenable to less inflationary financing.

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND TO THE STUDY

Attaining Macro economic balance has become a major goal to be pursued by most countries. While it is commonly agreed that persistently high deficits are bad for any economy (whether developed or not), there is little agreement as regards the precise effects of deficits on the various macro economic variables such as the domestic price level, domestic private consumption, domestic output, interest rate, capital formation, and the definite transmission mechanisms of the impact of deficits on the economy. This is notwithstanding the opposing view that government deficits have no effect on the macroeconomic variables of an economy.

Given the dominant view that persistent deficits are bad, the need to reduce them has become imperative for most countries. Fiscal crises seem to have afflicted both the developing and the developed countries simultaneously. Deficits have led to high and moderate inflation, debt crises, or to low inflation with or without crowding out of private investment in some countries, whereas in others, studies have shown that deficits have not affected the balance in the economy (Easterly and schmidt-Hebbel, 1994).

More often than not, governments find it difficult to tax their residents to the required extent because of the possible dis-

incentive effects of such on production, savings, aggregate supply, capital formation, work effort and for political reasons. This is even more so in recent times with the re-emergence of supply side economics which proposes tax cuts as a means of achieving economic growth through aggregate supply expansion, increased savings, labour supply and increased investment (Keleheri 1985; Raynold, et al 1980). Other than the obvious sources of deficit such as external and internal revenue shocks, inflation, expanding responsibilities of government and unforeseen emergencies (like natural disasters and war especially), poor macroeconomic management could result in the widening of budgetary deficits. Mbat (1998) noted for example, that in Nigeria, inflated contracts, inefficiently managed public enterprises and the absence of an appropriate maintenance culture are some of the contributory sources of government deficits.

Although the goal of balancing the budget is popular, there are a number of reasons why a balanced budget may not be expedient all the time. First, the compelling reason is that such a policy would preclude the use of deficits or surpluses to stimulate or restrain the economy, as well as negating the automatic stabilizing properties of the budget that helps to reduce the severity of

recessions. Second, some federal outlays are for federal capital formation, and deficit financing of federal capital formation is appropriate even during economic expansion to the extent that such investments benefit future generations. Third, it has been argued that deficit financing of temporary surges in outlays such as those associated with war and related military spending is efficient. Raising tax rates temporarily to avoid such deficits is inefficient because it induces people to change the timing of their economic activity simply to reduce their tax liability. Finally, federal borrowing in some cases may reduce imperfections in capital markets (Barro, 1978; Sidney, 1982; Buiter 1983; Havrilesky, 1985).

Whether deficit spending is seen as a deliberate policy position or as an 'ex-post' result of government fiscal operations in which deficits are driven by external shocks and other domestic macro economic conditions, there is wide spread consensus on the need to reduce their size wherever they are found to be persistently large. There is however far less agreement on precisely what course of action to follow. Some scholars believe that the goal of governments ought to be total elimination of deficits while others think otherwise.

Of all the consequences attributed to government deficit spending, its effect on domestic prices appears to be more complex. The traditional notion that deficit and inflation display a simple relationship of deficits causing inflation could be misleading. In some countries inflation has been empirically shown as a major source of deficit via its negative effect on tax revenue (**Olivera Tanzi effect**). Islam and Wetzels (1994) and Easterly (1994) confirmed this for Ghana and Columbia respectively.

Improper or inadequate appreciation of the process of inflation and also of the facilitating role of deficits in this process leads to prescription of shallow remedial measures that never solved the problem anywhere. In some Latin America countries like Argentina and Chile, simplistic solution sets based on the notion of unidirectional causation between inflation and money supply failed to arrest the situation. This led to the thorough investigation of the dynamics of inflation and the realisation of the link provided by fiscal deficits in sustaining the self-generating inflation in Argentina and Indonesia by Dutton (1971) and Aghevli and Khan (1977) respectively.

At independence in 1960, Nigeria's resource base was great. Besides abundant deposits of mineral resources, the lands were fertile with well reassuring weather conditions offering vast

opportunities for agriculture. The market for output was seemingly unlimited (domestic and foreign). And so it was not wrong for any one to have thought that Nigeria had commenced the journey to economic independence on a very sound footing. In addition the early discovery and exploitation of petroleum made the economic scenario of the country more promising. By the early 1980s however, the economy was in shambles with major macro economic indicators on the negative side. Income percapita had dropped substantially. The growth rate of GDP had as well declined.

Table 1.1. Selected Macroeconomic Indicators, 1960-1990.

Subject/Year	1960	1965	1978	1981	1982	1986	1990*
GDP (1977/78 Const. Prices)	162	204	292	288	279	710	903
*Growth Rate (%)	4.8	6.0		9.2	-0.8	1.7	5.6
*Contr. of Agric (%)	63	23.4	20.1	20.4	23.3	38.66	32.7
Deficit / GDP Ratio (%)		2.0	7.0	7.0	10	11.3	8.5

Inflation Rate	6. 0	3 3. 9	16 .6	20 .9	7. 7	7.7	44.5
Govt.Exp.Growth Rate (%)			23 .7	5. 8	10 .8	35. 2	70.4
GDP Per capita	2 8 3	3 6 0	37 0	35 5	32 5	24 5	290

Note: *GDP figures for 1986 and 1990 are at 1984 constant prices

Source: (1). CBN, Annual Report and Statement of Accounts (several Issues)

(2). Akor, M. E: *The Nigerian Economy*. Jos: Macedonia Trust International, 2001, p. 92.

(3). Ariyo, A: Tax Policy and Eco. Dev.: A Nigerian Perspective' in Ojo, M. O (ed.), *Nigeria: Prospects For Development*. Abuja: CBN/Essan Ent. 1996.; pp. 81-111.

(4). CBN Statistical Bulletin, 1995.

The agricultural sector that provided not only food for the teeming population but which was also the major source of foreign exchange earnings soon suffered neglect with the emergence of oil revenue. Agriculture which contributed about 64 percent of GDP in 1960 gradually declined and by 1980, its contribution to GDP had dwarfed to about 21 percent. Even at this the economy was still buoyant owing to the oil revenues. The government had accumulated foreign exchange much more than was enough for its immediate operations and so public expenditure grew very rapidly. The sudden collapse of oil revenues in the early eighties (1980s) with the already expanded government expenditure outlets simply left the nation stranded. By 1981, the economic problems of the nation had fully

manifested and thereby left no one in doubt as to whether the country was into a crisis situation or not. The era of warning was simply over. It was obvious that something needed to be done and urgently too. Unfortunately, this climax of Nigeria's economic misadventure coincided with a period during which there was a global downturn in economic activity. Given the externally dependent nature of the Nigerian economy, it appeared as if little was going to be achieved irrespective of whatever policies that were put in place. This view presupposes that Nigeria's economic misfortunes, which climaxed in the early 1980s, could not have been averted in view of the global economic recession of that period. Yet the nation had at some points suffered decline in the face of global economic up swing or could not recover as quickly as did some other countries. By the early nineteen eighties, the major economic indicators had shown that the country was heading towards economic disaster.

For an economy that depended almost completely on oil revenues, the drastic drop in oil earnings by more than a one-third, coupled with the declining non-oil revenues naturally placed the country on a tight fiscal pedestal. The deficits of the federal government increased by almost 10 percent in 1981 compared to its 1980 level (CBN, 1995). Both domestic and external debts increased sharply within the same period.

Deficit as percentage of GDP which was 4 percent in 1980 rose to 7 percent in 1981 and to 10 percent in 1982. The percentage of non-oil export in total export dropped from 6.9 percent in 1978 to 1.7 percent in 1981. At the same time total value of imports rose from about 7 billion (₦) in 1979 to 12 billion

(₦) in 1981. Likewise, Nigeria's balance of payments (BOP) swung from a surplus of 2 billion (₦) in 1980 to almost 4 billion (₦) deficit in 1981. Within the same period, Nigeria's external reserves dropped from 5.5 billion (₦) in 1980 to 2.4 billion (₦) in 1981, to 1 billion (₦) in 1982 and to 0.78 billion (₦) in 1983 (CBN, 1996) . Going by this statistics, it is clear that by the early eighties (1980s), Nigeria was no doubt in a serious economic downturn.

Even if Nigeria was bound to experience decline in the early eighties due to the global recession of the period, it is equally logical to think that the extent could have been far less if only the country did not over depend on oil revenues. Production pattern throughout the seventies (1970s) shifted gradually from actual production to speculation and commerce making the country import dependent and consequently open to every kind of external shock. It was not surprising therefore that the reduction in the oil revenues went beyond limits within which the government could immediately streamline its expenditure.

Although deficits started appearing in the federal budgets (soon after the oil windfalls) in 1975, its magnitude was reasonable and sustainable at least by some known standards. Until 1978, federal government's nominal deficits as percentage of the GDP

remained below 5 percent. At this level (below 5%), it is unlikely to result in an ever increasing public sector liabilities (that is, ratios of debt and money to income). Such levels of deficit are generally regarded as sustainable (Islam and Wetzels, 1994; Morande and Schmidt-Hebbel, 1994).

Deficit as the excess of government spending over its revenue must necessarily be financed. Nigeria over the years utilised all the conventional financing sources. These included debt financing, money financing and revenue from financial repression. Debt financing is employed whenever government decides to borrow money from either the domestic money market or from foreign sources to finance a deficit. Money financing typically involves debts drawn on the Central Bank. It is sometimes referred to as 'ways and means' advances or put simply, money creation.

Revenue from financial repression can also be a means of financing government deficits. This is possible in economies in which interest rates are controlled like they were in Nigeria during the period under review. Whenever interest rates can be, and are controlled, the implicit tax on financial assets could be a hidden source of revenue to the government. The implicit tax from financial repression is normally computed as the product of the interest tax

(that is the difference between the foreign and domestic interest rates) and the outstanding stock of government domestic debt (Easterly and Schmidt Hebbel, 1994). It is important to note that in Nigeria, the Central Bank consistently provided the larger part of the federal government's deficit finance during the period covered by this study. This is a common feature of many developing countries, the major reasons being the infant nature of money markets in such economies, and limited access to foreign finance.

Today, the problem of inflation in Nigeria seems to have defied common or simplistic solutions. Its process deserves to be carefully studied, and the role of deficit in the process systematically analyzed.

1.2 STATEMENT OF THE RESEARCH PROBLEM

Nigeria has for some time been battling with series of economic problems most of which have seemingly defied solutions based on conventional wisdom. The 1980s witnessed the full manifestation of the ill-health of the economy with most indicators of macro-economic imbalance such as inflation, unemployment, Balance of payments disequilibrium, low capacity utilization and debt burden assuming worrisome heights.

The 1980s was a decade of fiscal adjustments that have continued through the 1990s. This notwithstanding, the early 2000s and beyond perhaps seem to be calling for further adjustments. It appears as if the fiscal indiscipline of the 1970s has proved difficult to reverse. The strong association between government fiscal activities and the performance or nonperformance of the Nigerian economy is not in doubt. This is because, in Nigeria, government was not just a facilitator of economic activities but also a key player. And so several economic variables were largely driven by government expenditure and revenue generation activities.

The poor performance of government policies in achieving desired macro economic targets in Nigeria stemmed largely from the lack of recognition on the part of policy makers of the structure of the economy vis-à-vis the interrelationships between government's own fiscal activities and macro-economic variables. The period being examined in this study was one during which the economy was undergoing deregulation (1986- 1998). Yet, government control of key variables like interest rates and exchange rates unnecessarily enhanced the impact of federal fiscal activities on the economy.

Attaining macro economic balance has become a foremost necessity for Nigeria. Meanwhile a very important source of imbalance in Nigeria are (seemingly) the deficits of the government. Prima-facie, reduction or elimination of deficits would perhaps appear to be an appropriate policy. However, there is more to the situation. This is because deficits are known going by the experiences of other developing countries to show bewildering effects. In some of these countries deficits have been reported as carrying along with them the common consequences such as debt crises, inflation, balance of payment deficits and crowding-out of private investment. In others, moderate deficits have not caused macro-economic imbalances at all.

Eventually, the issue is not just that requiring a casual response such as 'reduction' or 'elimination'. An important precondition for effective deficit policy is a correct understanding of its effects and channels of such effects based on systematic analysis of a particular country's situation. Clearly ordinary theoretical prescription could not have produced an appropriate deficit policy for Nigeria. Policy makers ought to understand precisely, the interrelationships between deficit and macro economic variables in Nigeria.

The crux of the matter is that, agreed, persistently large budgetary deficits are unambiguously bad for growth and were probably responsible for macro-economic imbalance in Nigeria. However, inadequate understanding of the basis of the relationship between deficit and the macro economy on the part of policy makers might have been partly responsible for the ineffectiveness of past efforts at achieving balance.

Inflation has been quite outstanding of all Nigeria's' economic problems. This one problem has seemingly become intractable. There is no doubt; macro economic policy objectives year-in, year-out had contained reduction of inflationary pressures on the economy. Yet the more it was chased, the more invincible it became. Clearly, its process has not been well understood. To the extent that inflation is unidirectionally caused by excessive money supply growth, it is a simple problem. However, where the process is self-perpetuating as it seemed in Nigeria, mere reduction of the growth rate of money supply becomes less potent as a solution. The nature of causality between inflation and money supply growth needs to be well appreciated.

Unfortunately, the empirical evidence on this matter in Nigeria are mostly based on unidirectional conception of causation

(for example, Ademola, 1972), a common framework that has led to the replication of the same result and policy recommendations by many empirical studies. The result has been a notorious resistance of the problem to the commonly recommended therapy.

Essentially, the central problem of this research is the identification of the nature and dynamics of inflation in Nigeria, with a particular focus on the role of government deficit spending in the process.

1.3 OBJECTIVES OF THE STUDY

The objectives of this research are:

- i) To investigate the nature of the relationship between government deficit and inflation in Nigeria between 1986 - 1998.
- ii) To identify the means of financing the deficits and the implications for the domestic price level during the study period
- iii) To determine the nature of the relationship that existed between fiscal policy variables (expenditure and revenue generation especially) and the money stock in Nigeria during the same period

- iv) To investigate the effects of inflation on government expenditure, revenues and ultimately on the deficit during the study period and;

1.4 JUSTIFICATION AND SIGNIFICANCE OF THE STUDY

Quite a number of economic issues appear to have been well examined, and in some cases settled in the literature, so that any new attempt to address them is likely to be suspect of rehashing the same old arguments. This is true of inflation in Nigeria. The literature abounds on the causes, consequences and remedies of inflation in Nigeria. Despite this, the problem has continued to be here. Yet to undertake another study in this area requires justification. Inflation itself is a highly dynamic process, which means that the process of inflation within the last 10 years may not be the same as it was perhaps 25-30 years ago. Besides, there has been in recent times an added dimension, conceiving it as a self-generating process with government fiscal policy (deficit) providing the link. This new avenue of thought has renewed the subject of inflation and thus deserves fresh empirical examination. This re-examination has been carried out for some countries with significantly positive results (for example, Aghevli and Khan, 1978;

tested this for Argentina and Columbia). This is one of the major tasks of this research in which we propose to use Nigeria as the case study.

At the levels of theory and empiricism, the likely consequences of persistent deficits are well known: Inflation, crowding-out of private investment, debt problems, and balance of payments (BOP) deficits, among others. What is rather difficult is the precise mechanism and the extent of operation. Empirical findings have not helped matters after all. From country to country, deficits have caused virtually all of these problems, while in others, not all of the consequences have been experienced. Besides, the magnitudes of effects have not been equal in countries with similar range of deficit experience. With inflation in particular, deficit has displayed a wide range of association, from complete non-effect to relatively high effects.

Going by empirical evidence, deficit spending has not been too direct in its inflationary effects. Whereas countries like Pakistan, Thailand and Zimbabwe were able to run fiscal deficits without inflation, others like Ghana, Argentina and Colombia had contrary experiences (Easterly, et al 1994).

In Nigeria, both deficit and inflation have been on for a period long enough for suspect. But just knowing that the two are associated is certainly not an end; perhaps it is the beginning. The precise nature of the relationship ought to be established vis-à-vis the relative influence of the various sources of financing. The issue of two-way causality between money and prices with deficits providing the link (if established) is another dimension entirely separate from the conventional notion of the unidirectional relationship.

Surely inflation is not intractable as the experiences of some countries (including Nigeria) seem to suggest. What is required is an appropriate anti-inflation policy, which can only be founded on a good understanding of its dynamics. This study is one attempt at investigating the dynamics of inflation in Nigeria, with particular focus on the role of fiscal deficits in its process.

In an economy where several things were wrong at the same time, it is difficult to separate the contribution of any one of them to the problem of the system. However, a logical starting point is to establish, even if a rough one, some kind of distinction between the wrongs. Inflation in Nigeria during the period under investigation might not have been caused simply by government fiscal

operations, but a clear understanding of this potentially important source will no doubt constitute a major advancement in the search for a durable solution to this macroeconomic cankerworm. In addition to this, it is hoped that the study will contribute to the ongoing discourses about macroeconomic policy choices, public sector resource management, and governance in general. To these issues, deficit and inflation are very cardinal.

1.5 RESEARCH HYPOTHESES

The hypotheses of this research are:

- 1) Ho: That the deficits of the federal government were not responsible for the rapid growth in money supply between 1986 and 1998.

 H1: That the deficits of the federal government played a major role in the growth of money supply between 1986 and 1998.
- 2) H0: That there is no relationship between money supply and prices in Nigeria.

 H1: That surges in money supply cause prices to rise in Nigeria.

3) H0: That government deficit and Inflation are not related

H1: That government deficits and inflation display a bilateral relationship in Nigeria.

1.6 SCOPE OF RESEARCH

The study covers the period 1986-1998. The implementation of the Structural Adjustment Programme (SAP) commenced in 1986. This development which marked the commencement of the deregulation process essentially altered the fundamental structure of the Nigerian economy which was hitherto heavily regulated. The choice of the period 1986-1998 has therefore been consciously made to avoid a mix-up of policy strategies and measures that may be encountered if the scope of study were to cut across the period before and the period after the introduction of SAP.

1.7 METHODOLOGY OF THE STUDY

Both descriptive and analytical techniques are used in this research. The data collected have been subjected to empirical examination to find out the significance of policy variables.

The model used in this research is a simple macro econometric model. It is a simultaneous equations model designed to show a two-way relationship between surges in money supply and inflation, and further introduces government fiscal deficit as providing the link through its reaction to inflation. The structural model includes four behavioural equations explaining respectively, the price level, government expenditures, government revenues and the supply of money; and two identities. All the behavioural equations are specified in their logarithmic forms. The formal discussion of the model is presented in chapter three.

The descriptive approach employed involves the use of statistical tools (specifically, ratios, percentages and charts) to show trends in the variables of the study and also describe their relationships. Whereas the model captures aggregate effects, specifics such as sectoral sources of deficits, expenditure patterns and the financing the deficits including the mechanism of sourcing funds have been addressed using descriptive techniques.

The two approaches complement each other in this study and jointly offer a good insight into the major problem of this study, namely, the inflationary process of government deficit spending in Nigeria.

1.8 DATA SOURCES

The data for this study were obtained from the Federal Office of Statistics (FOS), The Central Bank of Nigeria (CBN), The Federal Ministry of Finance (FMF), National Planning Commission (NPC), publications of the International Monetary Fund (IMF) and also the World Bank (IBRD).

1.9. OUTLINE OF THE STUDY

The work is made up of six chapters. Chapter one is the introductory chapter. A review of related literature has been carried out in chapter two. Chapter three provides a detailed description of the model and the estimation technique. A descriptive examination of the research problem and data has been carried out in chapter four. In chapter five, the estimates the research model have been presented, and the findings discussed. The theses is concluded in chapter six with a summary of the work, conclusions, recommendations, major contributions to knowledge and suggestions on areas of further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

One frequent subject matter of macroeconomic policy discussion and research in recent times is the consequences of fiscal deficits. Macroeconomic imbalances have been commonly attributed to poor fiscal management on the part of governments. This overriding condemnation of government and the conviction upon which it is based, led to the popular campaign on governments - across the globe (both developed and developing countries), to reduce their deficits. This was one component of the overall solution to the macro-economic imbalances experienced during the decade of the 1980s by many countries.

Despite this popular view, the consequences of deficits on the economy are not clear-cut either from the perspective of economic theory or empirical evidence. Within the traditional theoretical framework, deficits have been credited with stimulating output and employment and blamed for inflationary tendencies, crowding-out of private investment (through high interest rates), debt burden and so on. Empirical evidence based on country case studies have

supported both positions. Left at this level, things would have been much easier for the macro economic policy maker, who may or may not be an active participant in the debate. Again, there has been another extreme theoretical position summarized as "Ricardian equivalence" which attributes no effects at all to debt and deficits on the economy.

In this review, some attempts have been made at surveying the theory and some empirical evidence available on this subject.

2.2 THE CONCEPT OF INFLATION

Inflation has been defined as a situation of persistent rise in the rate of change of the general price level. The mechanisms or processes of inflation are quite diverse. The process of inflation has therefore been explained differently to reflect the various sources of price change. In effect, several theories have been advanced over the years to explain inflation in both developed and developing economies. These theories include.

- Demand pull
- Cost push.
- Sectoral demand shift
- Phillips hypothesis.

- Structuralism.
- Expectations theories.
- Implicit contract theories; among other traditional theories.

Beyond these traditional explanations of inflation, there have been other explanations of inflation in recent times, many of which have tended to draw implications from some combinations of earlier conceptions of the phenomenon. The self-generating conception of inflation stands out as one of the recent explanations of inflation in Latin American Countries (Dutton, 1971; Aghevli and Khan, 1978)

The demand-pull theory explains inflation as arising from expansion in aggregate demand for goods, a situation which may not always be complemented by an equal expansion in aggregate supply. This explanation of inflation admits that demand management policies are sufficient to bring down inflation (George, 1976).

The cost-push theory views trade unions as being able to push wages up independently of the state of demand in the labour market. Employers are in response assumed to raise product prices in order to maintain their profit margins. Therefore, trade unions' 'pushfulness' is diagnosed as the source of inflationary pressure in the cost-push theory. The anti-inflationary policies arising from this conception of the process of inflation revolve around the use of incomes policy. Authorities try to limit the ability of trade unions to push up wages by specifying limits to income rise. The validity of this explanation would depend primarily on the nature of markets in any given economy .In advanced economies where trade unionism is well developed, there is a strong possibility of cost-push inflationary pressure than is the case in LDCs. In LDCs, labour mobility is highly limited. Labour markets in such economies are less flexible than in industrialized nations and this on its own limits to a great extent the

bargaining powers of unions. In some LDCs like Nigeria, organized labour unions are more common in the public sector than in the private sector, which is largely unorganized. Nevertheless, this explanation of inflation has been generally criticized. George (1976) argues that if trade unions are really able to push up wages at will, there shouldn't be strike actions. He argues further that in an open economy, an employer cannot determine his prices independent of the rest of the world. Besides, it is not always true that trade unions are aggressive monopolies that are only interested in the welfare of their members. Unions in reality do respond to social and collective responsibilities of nation building.

In a modernizing economy, demand shifts from sector to sector. Prices rise rapidly in expanding sectors but do not always fall in declining sectors. Inflation emerges as a result of escalation in the prices of the expanding sectors and the rigidities in the declining

sectors (Schultz, 1969). This is the argument of the sectoral demand shift theory. Because of inter-sectoral linkages, the effects of expansion in fast growing sectors are easily transmitted to other sectors in the form of price rise, among others.

In another attempt, Phillips (1958) presented statistical evidence based on the U.K to support the existence of an inverse relationship between unemployment and the rate of change in money wage rates. The implication of this relationship is that unemployment and inflation are inversely related. This formed the basis for the emphasis on contractionary policies as a panacea for inflation, and macroeconomic policy conflict in the sixties. This conception of inflation presents policy makers with a simple choice in the formulation of anti-inflationary policies- that is they must be ready to accept some level of unemployment if inflation has to be combated. Doubts regarding the Phillips curve approach to inflation emerged about the

end of the 1960s when accelerating rates of inflation coincided with high levels of unemployment (stagflation).

It has been observed that these orthodox theories of inflation cannot be applied strictly to less developed economies. For one, the integrated nature of the industrialized economy is different from the poorly integrated sectors of the LDC. The application of concepts and theories which have originated in the economic and institutional setting of the western, industrialized economies to LDCs introduces errors into analysis (Seer, 1963). Streeten (1972) observed that the simple transfer of fairly sophisticated concepts from one setting to another without close scrutiny of the institutional differences, could be misleading. He argued that:

Almost all concepts formed by aggregation suitable for analyzing western economies must be

carefully reconsidered before they can be applied to underdeveloped economies. "capital", "income", "employment", "unemployment", "price level", "savings", "investment", presuppose conditions which are absent in many underdeveloped countries (p.86)

This view underscores the need for caution in the application of many theories in economic science to less-developed countries. With regard to inflation theories specifically, Kirkpatrick and Nixon (1976) observe that the concepts of aggregate demand and supply are one case of misplaced aggregation. The typical LDC economy, they argue, is characterized by factor immobility, market imperfection and rigidities, and disequilibria between demand and supply in different sectors of the economy.

The foregoing consideration has given rise to the view that in these economies (LDCs) inflation can be more usefully analyzed in terms of the structural composition of the economy while noting the imperfection of markets and the division of the economy into separate or poorly integrated sectors (Kirkpatrick and Nixon, 1976). Inflation is seen in this circumstance as the result of particular sectoral bottlenecks in the economy.

2.3 INFLATION IN DEVELOPING COUNTRIES

In the literature, two approaches have dominated the explanation of inflation in developing countries. They are; "Structuralism" and "Monetarism". The 'structuralist' approach to explaining inflation in developing countries emerged in the 1950s following series of attacks on western (orthodox) analysis of inflation in the LDCs. The structuralists clearly reject orthodox explanations of inflation (especially the cost-

push and demand-pull theories) in developing countries generally and in Latin America especially.

The 'structuralist' argument is that inflation is inevitably the consequence of expansion in the face of structural bottlenecks or constraints. Thorp (1971) defines these constraints as 'certain fundamental facets of the economic, institutional and sociopolitical structure of the country that in one way or another inhibit expansion'. As a developing economy tries to move from an 'outward-oriented' to an 'inward-oriented' one, inflation results. This kind of transition requires massive changes in the socio-economic structure of the LDC, which the price mechanism is unable to achieve. This group identifies the inelastic supply of foodstuffs, the foreign exchange bottleneck and the financial constraint as the structural constraints of a typical LDC (Sunkel, 1960). They are the basic or structural inflationary pressures.

In a related sense, Baer and Kerstenetzky (1964) distinguish between the factors that start a price rise and the spiral processes that keep prices rising. To the structuralist, the factors that cause inflation in the first instance may not be the ones that will sustain it. The factors that facilitate inflationary spiral include budget deficits, devaluation, and rising import prices.

Kirkpatrick and Nixon (1976) explain the structuralist's bottlenecks as follows:

1. That urbanization and rising incomes (which are common in expanding economies) lead to rising demand for foodstuffs which cannot be met by the agricultural sector. The inelastic food supply constitutes a structural inflationary pressure through rises in price, more food imports, and slower growth in other sectors.
2. The foreign exchange bottleneck arises because the growth rate of earnings is not sufficient to meet rapidly rising import demands generated by accelerated development strides. Devaluation is unable to cure the structurally-induced balance of payment deficits; rather it (devaluation) contributes to the

inflationary spiral. Import shortages and rising import prices that result from devaluation will trigger off cumulative price rise. Instability of export earnings could lead to a reduction in government revenue and could force government to embark on deficit financing to maintain relatively inflexible levels of expenditure.

3. Inadequate internal financial resources in the face of increased range of government activities, mainly in the area of physical facilities and infrastructures is the third bottleneck. Government revenues in LDCs do not often respond quickly to expenditure requirement, mainly because tax systems in these countries are most of the time inefficient, corrupt and antiquated (Baer, 1967). Whereas the necessary reforms of these systems are a long-term problem, the expenditure need of governments in these countries is often short term. This discrepancy is usually resolved by recourse to deficit financing with a high risk of inflation.

Sunkel (1960:10) argues that budget deficit (the third bottleneck) leads to an increase in money supply. He argues further that deficit represents:

The existence of a number of structural problems which preclude the realization of a balanced budget policy... the financing of the deficit by loans from the banking system, issuing bonds, revaluation of monetary reserves and other measures related to money supply

This clearly represents the view of this group that expansion in money supply is a permissive factor of inflation rather than the actual cause of it, a position that is highly contested by the monetarists.

In summary, the structuralists hold the opinion that inflation is inevitable in the short-run as the government tries to extract real resources faster than the economy's growth rate. It therefore cannot be cured in the short-run without cost, as price stability can only be achieved through economic growth, which is a long run phenomenon.

There is no doubt that the arguments of the structuralist suggest familiarity with the LDC's socio-economic terrain and could therefore be easily accepted by many scholars. There are nevertheless certain loopholes in this analysis. The emphasis on three bottlenecks and also the presentation of a rigid analysis of the mechanism of these bottlenecks leads to overgeneralization which could be refuted easily with specific examples (Kirkpatrick and Nixon 1976). The structuralist position has also been criticized on the grounds of the little attention it pays to the nature and the roles

of the propagation mechanism and the money supply increase that accompanies the inflationary process.

The Monetarist analysis of inflation in the LDC follows from the group's conventional explanation of inflation. In Latin America for example, Monetarists blamed inflation on expansionary monetary and fiscal policies, comprising of government deficit spending (coupled with the operation of inefficient state enterprises and uneconomic pricing policies), expansionist credit, and exchange policies (KirkPatrick and Nixson, 1976).

Monetarists generally do not deny the existence of bottlenecks in LDCs. What they however contest is that the bottlenecks are 'structural' or autonomous in nature. They argue that bottlenecks result from price and exchange rate distortions, which are typical of LDCs. These distortions include overvalued currencies, price controls direct import controls, high tariffs, all of which have tendencies of originating and sustaining inflation (Kirkpatirck and Nixsion 1976). To this group, attaining monetary stability is the sure way to achieving sustained growth. If inflation is controlled, monetarists argue, the bottlenecks would be eliminated. They recommend removal of exchange distortions, and less government intervention in domestic activities as anti-inflation measures.

The tendency to treat inflation as a purely monetary phenomenon as conveyed by the monetarists' explanation has been criticized greatly. Prebisch (1961) argues that inflation couldn't be explained as something divorced from the socio-economic maladjustment and stresses to which the economic development of a nation gives rise. Although it seems as if every case of sustained inflationary pressure must have some monetary undertone, it is less likely that inflation in the LDC would always have monetary origin and thus respond easily to monetary management (stabilization) policy.

Some scholars have confirmed some aspects of both the monetarist and the structuralist explanations empirically. In a cross-country study, Tegene (1989), using quarterly data of five African countries (Nigeria inclusive), reports that estimates for all the countries sampled were generally consistent with the monetarist explanation of inflation. Odusola and Akinlo (2001) identify low output and exchange rate depreciations as major causes of inflation in Nigeria. In a more comprehensive examination, Moser, (1994) identifies the following as the main determinants of inflation in Nigeria.

- (i) Monetary expansion is driven mainly by expansionary fiscal policy, a view canvassed by Morgan (1979) for oil producing economies generally.
- (i) Devaluation of the naira and
- (ii) Agro- climatic condition

In an earlier study on Nigeria, which employed statistics covering the period 1960-91, Akinlo and Odusola (1994) stress the role of interest rate in the informal market on the behaviour of variables such as food and industrial prices. Their results indicate that food shortage is a major factor triggering inflationary cycles in the country.

From the foregoing, it is obvious that there are many common grounds in the reports of the studies reviewed on the determination of inflation in Nigeria. Monetary expansion, inadequate food supply, and exchange rate depreciation are the commonly reported determinants of inflation in Nigeria. In particular excessive money growth has been established to be highly associated with government expenditure policy in which deficits are a regular feature (Komolafe, 1996; Addison, 1996). What seem to have eluded these studies are the definite transmission mechanisms of

the identified causal variables. This is by no means unimportant in a policy study.

2.4 DEFICITS AND MACRO ECONOMIC PERFORMANCE

Deficits are known to display a bewildering range of effects going by country case studies from enhancing output and employment to crowding- out of domestic private investment. Both theory and empirical research reports seem to suggest that deficits are unambiguously bad for growth. For instance, Easterly, et al, (1994) in an overview of eight country case studies submitted among others that:

- a) Deficits display very weak correlation with any one indicator of macro economic imbalance (Such as inflation, real exchange rates, market-determined exchange rate) in most of the countries studied.
- b) The occurrence of negative effects of deficits on private investment and growth, irrespective of the sources of finance.
- c) Large deficits were driven by conscious policy choice rather than external shocks or feedbacks from domestic economic environment.

- d) Although inflation and monetary financing display long-run association, inflation does not result from monetary financing of deficits by the government.
- e) Deficits were a major source current account deficits and over-valued currencies in some of the countries studied.

These results vindicate some part of the theory and contradict other parts. The range of effects or non-effect reported in this study is quite wide for easy reconciliation. Let us further examine theory and empirical reports on deficits and other macro economic variables individually.

2.4.1 Deficit and Domestic Output

The theoretical relationship between deficits and domestic output and any other macro economic variable, for that matter depends crucially on the means of financing them. But when viewed from the broad perspective of an increase in government spending, Keynesian economics teaches that domestic output is enhanced. This position is based on the Keynesian argument that full employment equilibrium is hardly a practical reality. The basic Keynesian model of aggregate demand suggests that deficit spending stimulates the economy in the short run by making households feel wealthier (Seater, 1993).

With due recognition of the various ways of financing deficits, the Keynesian position on the issue does not differ significantly. Much earlier, Keynes advocated Government spending as a stimulative economic measure, but with the qualification that this be done by monetary expansion. He however, later down graded the necessity of monetary expansion in the General Theory, owing to his conviction that monetary authorities had the power to defeat expansionary fiscal actions, by making sure that the expenditure financed by the treasury was at the expense of the private sector (Mitchell, 1974).

Keynes' overall idea of the impact of deficit financing on domestic income (output) can be clearly visualized through the concept of the Keynesian multiplier developed by Khan (1931), by which a change in government spending affects income by some multiple of the increase in government expenditure and the multiplier. Keynes (1936) however recognized that the multiplier may not always work in this strict sense due to possible adverse reactions of policy to private investment in other directions. This adverse reaction, he argued may result from the means of financing the increase in government expenditure.

Musgrave (1959) analyzed the Keynesian view of a debt-financed increase in government deficits as leading to either an increase in output, a decrease or a null effect depending on the responsiveness of interest rates. He argued that Government spending increases output directly if interest rates remain unresponsive. However, if the increase in the bond-financed deficit causes a sharp rise in the interest rate, the expansionary income effect could be countered by a reduction in private investment, among others. This implication led to the Keynesian recommendation of deficit spending to boost economic activities during depression, at which point in a country's, business cycle, interest rates are likely to be unresponsive.

To the monetarists, Government deficits financed by debt (domestic) constitute merely a transfer of resources from the private sector to the public sector with little or no net effect on output. But, since the private sector is seen as being more efficient than the government, such a transfer could have a negative effect on output. They however believe that increased government expenditure financed by monetary expansion has a strong stimulative effect on the economy, and as such raises aggregate demand (Mitchell, 1974). Prior to the publication of the General

Theory, the dominant position in the literature as canvassed by both classical and neo-classical economists is that government expenditures necessarily crowd-out private investment and therefore very unlikely to raise domestic output. With the assumption that the economy is always tended to full-employment equilibrium, government expenditure summarily fails as an economic stabilization measure, especially when financed by bonds (Culbertson, 1968,). This group of economists does not favour deficits financed by money creation either. On this, they are quite straightforward, that money financed deficits lead to excessive money supply growth and thereby causes inflation. The more recent followers or proponents of this view (like Miller, 1985; Sargent and Wallace 1981; Blinder, 1974; Solow, 1973; Tobin and Buiter 1976), have further argued that the government does not really have any option to monetising its deficits in the long run, even if they were financed initially by issuing bonds. To them the question is when? And the ultimate consequence is inflation (Darby, 1985).

On the whole, the bottom line of classical and neoclassical views on the impact of fiscal deficits irrespective of the means of financing remains that it causes macro-economic imbalances,

through inflation and crowding out of private investment. A clearer picture of this position is presented in the next section.

2.4.2 Deficit and Private Investment

The theoretical positions on the effects of government deficits on private investment are summarized in the analysis of deficit and domestic output. Both the Keynesians and the monetarists recognize the possibilities of government spending crowding-out private expenditure through increased cost of credit (higher interest rates). Keynes himself subtly recognised this possibility in his earlier works prior to the publication of the General Theory and more visibly in the General theory (1936). It is worthy of note however, that the 'crowding out' thesis pre-dates the Keynesian revolution. In fact, what has come to be known as the monetarist crowding out of private spending is actually an offshoot of the old classical position.

Adam Smith (1776) had argued that government labour was unproductive and therefore condemned the transfer of resources from the private sector to the government. To him such transfers amounted to destruction of capital. Other classical economists Like J.S. Mill and J.B. Say later saw the light in Adam smith's view and

argued further, that government spending was not necessary as a stabilization tool, because private investment was enough to utilize the funds provided by private savings. The Say's law, which states that: "supply creates its own demand" has some rudimentary crowding out notion implied in it. In a typical Say's economy, increased government spending via tax increase or domestic debt merely induces relative price changes so as to locate the same level of real output as would still be achieved automatically in the absence of the government through adjustments in prices (Mitchell, 1974).

More technically, it is argued, in the absence of the government that private propensities to spend the full-employment level of real income for either consumption or investment sum up to one. With government spending, the private propensity to spend is reduced by the magnitude of the government propensity to spend to maintain total propensity to spend equaling one (Culbertson, 1968). In a similar vein, Klein (1968) noted that whether government spending is financed from taxes or from loans, it is bound to be a replacement of private investment. Spending out of new bank credit, he maintains, would be inflationary, apart from

forcing ba up and causing credit contraction. Mitchell (1974:181)

puts it in this way:

If for example, the Government were to borrow from banks to finance its investment spending, the increased purchasing power of the government would allow it bid resources away from other sectors and under full - employment conditions, drive up the price level. The higher price level would serve as a deterrent to "real" consumers or private investment spending which would otherwise have taken place

The strict classical position on crowding-out presupposes that the economy was closed to external sources of capital and operated at full employment equilibrium.

Keynes recognition of fiscal crowding-out was made explicit in his hypothetical analysis of an increase in government expenditure by expanding its work force. He admitted that aggregate employment may not increase in the manner suggested by the multiplier due to possibilities of price rise coupled with interest rate increase (depending on the method of financing) militating against investment in some other sectors. Apart from the limitation of the multiplier, Keynes recognised that government spending could crowd-out private investment expenditure through the confused

psychology (households feeling wealthier) usually accompanied by increasing liquidity preference or decreased Marginal Efficiency of Capital (Smith, 1939).

Other post-Keynesian writers like Musgrave (1959) acknowledge the possibilities of bond financed changes in government expenditure crowding-out interest sensitive sectors of the economy. He (Musgrave) however argued that this depends on whether interest rates respond or not to the increase in government bonds supply. Although Keynesian economics denies the existence in practice of full employment equilibrium, it generally does not rule out the possibilities crowding out of private investment by government deficits financed by bonds even under less than full-employment equilibrium. At any rate, complete crowding out in the strict classical sense is not implied. The complete crowding out of private investment implied in the classical theory derives essentially from the consideration that the economy is closed and operating at full employment equilibrium, to the extent that the level of private saving out of which both federal government deficit and private investment must be financed cannot be further increased. The acquisition of additional federal debt must come at the expense of private investment. The federal government induces this

substitution by bidding up rates of interest and thereby crowding out interest sensitive private spending. With less than full employment, budget deficits lead to output expansion, which typically increases the demands for money and raise interest rates. As a result, interest sensitive private spending falls (CBO, 1984).

Bond financed deficits can crowd out private investments only if individuals under estimate their future tax obligation and therefore increase their consumption today, which implies a reduction in investment as the bonds are erroneously substituted for investment. If consumers are able to assess their future tax liability by effectively discounting future tax payments against present cut, then no crowding out effects are to be expected of increased public spending financed by bonds (Bryant, 1985). Overwhelmed by this same consideration, Friedman (1985:242) remarked:

Deficits are bad-but not because they necessarily raise interest rates. They are bad because they encourage political irresponsibility. They enable our representatives in Washington to buy votes at our expansion without having to vote explicitly for taxes to finance the largesse.

If interest rates are controlled as they were in Nigeria, the implicit tax on financial assets could be a hidden source of revenue. The effect of government deficit spending on private investment in this case follows a fairly indirect channel. Domestic Credit squeeze occurs as financial institutions try to allocate (ration) credit and explore cosier investment outlets abroad. Overall, the volume of credit in the economy declines and also private consumption and investment. In a cross-country study it was observed:

There are large differences in domestic private credit stocks between countries with deregulated financial markets - where private credit reaches an average of 30 percent of GDP - and those with stringent financial controls, where the corresponding average ratio hovers' around 10 percent (Easterly and Schimdt-Hebbel, 1994:51)

Among the countries sampled in this study were Ghana, Mexico and Zimbabwe. These countries experienced terrible domestic credit declines in the 1980s during which interest rates were largely fixed by their respective monetary authorities. The argument here is that whether interest rates are fixed or market determined, government deficits are capable of eroding domestic private investment, if they (deficits) are financed by domestic debt.

A complete opposite of the views discussed so far is the contention that debt - financed federal deficits may not raise real interest rates at all. This view forms the centrepiece of the theory summarised as "**Ricardian equivalence**". Led by Barro (1974), some economists have argued that interest rates may not rise in response to debt-financed deficits if the deficits are generated by tax cuts. They argue that current tax cuts imply increased disposable income to consumers, who will save more in anticipation of future higher taxes, at which time the government will be paying both the interest on debts incurred and the principal. Ricardian equivalence is the proposition of the neutrality of debt/deficit policy. This proposition denies all the effects attributed to government debt policy by economic theory. Viewed from the Keynesian angle, public debt is said to stimulate the economy in the short run by creating a 'psychological' wealth effect, an illusion that makes households to increase their expenditure (consumption) following an increase in their income due to a tax cut. From another perspective (more commonly, the monetarists), government debt is seen as competing with private debt for funds, with government having an edge over the private sector due to its vast resources and statutory powers, thereby

bidding resources away from private agents through higher interest rates. This phenomenon is commonly known as 'crowding out' effect.

Until the revival of Ricardian equivalence, these were the two dominant theories of public debt effects on the economy.

Much earlier, Ricardo had suggested the equivalence proposition but was not viewed seriously until Barro (1974) made full expositions of it. Put simply, Ricardian equivalence is the proposition that the private sector saves in anticipation of future tax obligations in view of current debt financed fiscal operations of the government. The basic proposition of this theory is that government budget deficits and debt are neutral with respect to aggregate demand and interest rate. Barro argues that budget deficits caused by tax cuts will not increase aggregate demand since households will discount such cuts against future tax increase.

Suppose the government decides to leave its expenditure unchanged, but reduces taxes in the first period by (B) naira per-capita and sells (B) naira debt per capita instead, at interest rate (r) and maturity of (N) years, where (N) may be infinity. The (B) naira per-capita is equal to the naira amount of per-capita deficit, since expenditure is unchanged. The (B) naira

debt and the attendant interest are to be paid in some future period through imposition of higher taxes. The effect of the new taxes on the individual can be seen in the analysis that follows. The individual would use (B) naira of his income to purchase the debt instrument in the initial period and expect interest and principal in the future. Also the individual's tax obligations had fallen in the initial period by (B) naira but rise in subsequent period as government tries to make payments in respect of both interest and principal to the individual. The implication of the analyses is that every new inflow to the individual is offset by equal outflows and so his lifetime budget constraint is unaffected and so is his consumption pattern.

The equivalence proposition is that a fresh inflow equals outflows. The non effect of government's use of resources simply derives, according to this hypothesis, from its inability to affect the individual's life cycle wealth and of course the individual's life cycle consumption given the dependence of the later on the earlier (Hill and Stuart, 1982).

A fundamental assumption of the Ricardian equivalence

proposition is the principle of infinite horizons of individuals. The inter-temporal utility function explicitly assumes that individuals keep on operating from one period to another and so on in an endless succession of periods. That is from period (1) to (2) to....to N, and beyond, (N+1, N+2....N+). In this situation Ricardian equivalence effectively holds given the necessary

condition that the individuals face perfect capital markets. But practically speaking individuals do not have infinite horizons. Perhaps an honest answer to the question "How many 200 years old can we count around us?". Or "How many people do we know who died at the age of one hundred and fifty years and above," tells us that the infinite horizon model is inappropriate for analysing people's consciousness of future obligations and tendency to behave accordingly. Clearly as suggested by seater (1993), finite horizon models are more appropriate for solving problems of individual inter-temporal choice than the infinite horizon models, which are at best suitable merely as analytical conveniences.

In fact this incorrect assumption weakens the Ricardian equivalence substantially being that it forms the premise of the permanent income/life cycle hypothesis of which the Ricardian equivalence is a generalised extension. Barro (1976) sought an escape out of this dead end by arguing that if people see their children as extensions of themselves, then Ricardian equivalence holds even in the finite horizon model.

This argument implies that the utility of a son (or a daughter) is a natural extension of the father's, and a disutility of a son is an

extension of the father's disutility. This is commonly referred to as 'intergenerational altruism'. Altruistic behaviour of parents necessarily changes the finite horizon into an infinite one. Unfortunately, parents may not always behave altruistically for obvious reasons. Bequest motives of parents are sometimes tied to certain necessary attitudes expected of the child (note that altruism ensures Ricardian equivalence only if bequest motive is operative). In the absence of such attitudes, parents' altruistic behaviour may not be guaranteed.

Also childlessness could cause people to have little or no concern for higher taxes to be levied in the future. As such anticipated savings may not take place. Again, Ricardian equivalence fails. With lifetime uncertain and altruism not guaranteed, Ricardian equivalence fails to hold due to the probability that the individual will die before all taxes implied by current debt are collected (Blauchard, 1985)

Equally crucial in the assumption of perfect capital markets which individuals are assumed to be facing. This assumption is particularly strained for LDCs where individuals are rather faced with limited borrowing and lending opportunities. Hill and Stuart (1982:245) explain this further:

Capital markets (in these countries) are fragmented and poorly arbitrated. The lending rate available to any household depends upon its access to financial assets and own productive investments. The range of borrowing rates is equally as great given the frequency of non-price rationing (financial repression) in organised capital markets and the notorious variability in the interest charged in informal markets.

Another important argument against the Ricardian equivalence hypothesis is that many households are liquidity constrained and would prefer tax cut now and their future tax obligations raised by a current debt-for-taxes swap. Ricardian equivalence is invalidated by liquidity constraint if the issuance of government debt introduces an element that private markets could not on their own. Liquidity constraint of the household may involve differential borrowing rates. If government is able to borrow at interest rate lower than available to individuals, Ricardian equivalence fails. This is because the present value of the government debt issue would be less than the value of the current tax deductions.

Uncertainty is another possible source of non-equivalence. Because people are often uncertain as to what their future income will be, they are not sure of the amount of bequests they would want to make. As such they are not indifferent between an additional dollar now and a future payment to their children that would have a present value of a dollar. Again Ricardian equivalence fails (Feldstein, 1985).

Leiderman and Blejer (1988) offered a wide variety of reasons why the Ricardian equivalence may not hold even in an open economy. These reasons include the existence by borrowing constraints, distortionary taxation, uncertainty about the imposition of the requisite future taxes, and differences in planning horizons for public and private sectors. Whereas it is logical to think of the government planning in the context of the infinite horizon, the individual's planning horizon logically appears to be finite unless he is extremely altruistic. Rodriquez (1994) added to the already long list of reasons invalidating Ricardian equivalence, the risk-induced differentials in rates of interest at home and abroad; and differences in the spending propensities of tax payers and bond holders.

Although for Nigeria at present there is little or not direct empirical evidence in support of or against the Ricardian equivalence

proposition, there exist sparsely, evidence from other LDCs. From developed countries, however, empirical evidence are legion though mixed.

In low-income economies where credit markets are largely imperfect, it is unlikely that most individuals will have substantial savings that acts as buffer during low-income periods as may be anticipated with future higher taxes. The relationship between current private consumption and current disposable income tend to follow the Keynesian hypothesis of one - to - one, which in fact implies non - equivalence. Islam & Wetzel (1994) tested empirically and confirmed this for Ghana.

Feldstein (1982) examined the US economy for Ricardian equivalence using the generalised consumption function. He estimated the consumption function including as explanatory variables, current income, various forms of wealth proxies, total tax revenues, 'government transfers to individuals. He reported a robust rejection of the Ricardian equivalence based on the decision rule that all the explanatory variables excepting government expenditure (which was expected to possess a negative coefficient) be equal to zero for Ricardian equivalence proposition to be accepted as operative in the U.S. economy. His result was however criticised

widely on grounds of methodological inconsistencies and incorrectness (Seater, 1993; 1985; Leimer and Lesnoy, 1982; and Kormendi, 1983).

Kormendi (1983) is another commonly cited case study in empirical investigation of Ricardian equivalence. Kormendi estimated the generalised consumption model similar to the one used by Feldstein. Unlike Feldstein however, Kormendi's Methodology has been credited as approximating a standard statistical practice for testing competing models (Seater, 1993). His consumption model that he (Kormendi) described as the "consolidated" approach to the aggregate consumption function differs somehow from that used by Feldstein. Kormendi's explanatory variables were current and lagged output, wealth, total spending, tax revenue, retained earnings, transfers, government interest payments, and the stock of government bonds. His estimates gave mixed results, but more supportive of the Ricardian equivalence than disclaiming it.

Other empirical studies on this subject used the Ricardian equivalence proposition of interest rates neutrality (insensitivity) to debt - financed government deficit as a measure of its validity or otherwise. In this wise current interest rate is regressed on some measure of government debt policy. Makin (1983) and Hoelscher

(1983) both used this approach and found that deficits had statistically insignificant effect on interest rates, implying validity of Ricardian equivalence. Barro (1987) used the British consul yield as the regressand in an interest rate based model, with current deficit and stock of government debt as regressors and came out with a supportive result for Ricardian equivalence. Barro (1989) reinforced his submission on the relevance of the Ricardian equivalence by claiming that: "overall, the empirical results on interest rates support the Ricardian view". It would appear as if Barro sees contrary evidences as resulting from either methodological ineptness or inappropriate framework of analysis such as those of the consumption based studies. This notwithstanding, there are series of interest rate based studies that have equally reported contradictory results. In a cross-country study, Nicoletti, (1989) tested the proposition and arrived at overall negative results.

Overall, whether interest rate based or consumption based, the evidence on Ricardian equivalence is still mixed and therefore not a settled matter. Perhaps, a shift of focus to developing countries would further clarify the situation. Unfortunately, not much empirical evidence is available in respect of these countries.

Apart from the difficulties arising from the basic assumptions of the Ricardian equivalence hypothesis, there are a number of considerations, particular to Nigeria and most LDCs, pointing to the non-validity of the proposition in these countries. The household liquidity limitation in Nigeria and of course in most LDCs involves both credit rationing and differential borrowing rates. Obviously the monetary authorities (in particular, the Central Bank of Nigeria), have over the years regulated interest rates. Effectively government borrowed in the past and is still borrowing at rates determined by it and not market conditions. Such rates coincide with bank rates or differ insignificantly, but more seriously is the issue of differential borrowing rates among individuals. The urban (elite) class, because they possess the relevant collateral and working knowledge could access bank credits at the prevailing (government determined) rate; but the 'ruralites' as well as the urban poor could more certainly access informal credit outlets, like local thrifts, cooperatives and private money lenders. The rates in this sector are quite higher, reflecting more closely what could be the realistic rate of interest had there been no financial repression. This, Hill and Stuart (1982) referred to as the 'notorious variability in the interest charged in the informal markets'. The existence of differential rates

either between government and individuals or between individuals effectively invalidates Ricardian equivalence.

In Nigeria, tax cuts merely signify some kind of relief geared towards improving household consumption rather than some surpluses to be saved in anticipation of any future rise in taxes. This is simply due to the generally very low level of household income and the attendant high marginal propensity to consume. Given this situation, it is unthinkable that people will save such 'surpluses' as suggested by Ricardian equivalence. The effect of such would only be an expansion in aggregate demand implying non-equivalence.

In economies in which interest rate is regulated (as it was in Nigeria), the economy's growth rate tend to be deceptively high, suggesting that government could continue to accumulate domestic debt (roll over) and never collects any higher taxes. Instead new debts could be issued whenever payment of interest and principal fall due. In such a situation, the debt would become net wealth and as such aggregate consumption is enhanced, invalidating Ricardian equivalence. Bryant (1985) argues that, for Ricardian equivalence to hold, individuals must be capable of estimating correctly their future tax liability or else they are likely to increase consumption today and reduce investment as the bonds are erroneously substituted for

investment. This argument pre-supposes in the first instance the existence of well developed capital markets such that individuals could access easily instruments in the markets, and availability of a wide array of securities,. In Nigeria, neither are people able to estimate their future tax liability nor have easy access to capital market information. Beside the paucity of instruments and the negative real rates of return on the few assets available have often limited people's patronage of the market. If people save at all, they do so either by keeping vault cash outside the banking system or substitute with acquisition of physical assets (Ojo, 1975).

Given these considerations, it would appear as if there isn't much theoretical grounds to expect Ricardian equivalence to hold for Nigeria, and in most LDCs with characteristics similar to those of Nigeria. There is no doubt, the Ricardian equivalence proposition appears to be theoretically splendid especially when viewed against the realities of the advanced capitalist economies, yet the evidence in support of it from those countries is certainly not over whelming. When extended to the LDCs and Nigeria in particular, alot of difficulties arise, both from the impracticability of its assumptions and the absence of the theoretical requirements for its operation.

2.4.3 Deficit and the External Sector

The overall impact of government deficits on the external sector can be clearly visualized through its (deficit) effect on key external sector variables such as the real exchange rate, the trade and current accounts and the level of foreign indebtedness. These variables are quite sensitive to the composition of government spending and the means of financing such expenditure.

Viewed from a very broad angle, monetarists see causality in external sector variables such as the balance of payment, trade surplus and trade deficits as largely driven by domestic money market conditions. Therefore, they treat balance of payments as a monetary matter to be analysed with monetary theory instruments. Changes in the demand for and supply of money are the focus of this approach (Hahn 1977). Government deficits have great potentialities of causing disequilibrium in the domestic money market as far as they are financed by debt instruments drawn on the central bank (money creation). Excess money supply (which may result from government deficit spending) increases domestic spending on imported foreign goods and assets, thereby raising domestic demand for foreign exchange. Under a floating exchange rate regime, the exchange rate depreciates. With fixed exchange rates, the government is obliged to draw on external reserves in order to meet the increased demand for foreign exchange. Ojaide

(1993) notes that Nigeria experienced this prior to the deregulation of exchange rates, following the introduction of the structural adjustment programme in 1986.

Within the Keynesian income - expenditure analysis of an open economy, government deficit could be a source of external disequilibrium through its impact on the product market. Increases in domestic demand for goods and services caused by deficit-driven money supply increases is a potential source of balance of trade deficit, if absorption fails to rise equivalently or over domestic expenditure. The two approaches so far do not differ significantly. While the monetarists' approach traces external disequilibrium from money market disorder, and calls for expansion in money demand relative to increases in money supply, the absorption approach recommends diversion of foreign and domestic expenditure towards domestic output expansion. In either ways, the negative effect of deficit spending on the external sector is mitigated.

Still on the external effects of government deficits, the Ricardian equivalence proposition is that debt or tax financed government deficits do not have any effect on the trade balance, and the real exchange rate. Using a set of systematically derived equations, Rodriguez (1994) examined this implication as follows:

$$F_{pg} = T + \frac{dC}{dt} + \frac{dD}{dt} - iD \dots\dots\dots (1)$$

where F_{pg} = Net financing from private sector to government
 T = taxes, C = money, and D = Internal government debt.

i = interest payment.

$$F_{ep} = E \cdot \frac{dD^*p}{dt} - i^* \cdot E \cdot D^*p \dots\dots\dots (2)$$

where F_{ep} = Net financing from the foreign to the private sector.

E = exchange rate

I = Interest rate

D^*p = External private debt and

$*$ = The variable is measured in foreign currency

$$F_{eg} = E \cdot \frac{d(D^*g)}{dt} - i^* \cdot E \cdot D^*g \dots\dots\dots (3)$$

where F_{eg} = Net financing from the foreign to the government sector

D^*g = external government debt.

Given this equation, the private sector budget constraint can be written as

$$P_p = Y + F_{ep} - F_{pg} = \text{Private spend on goods} \dots\dots\dots (4)$$

where Y = gross domestic production (GDP);

and government budget constraint (G_g)

$$G_g = F_{pg} + F_{eg} \dots\dots\dots (5)$$

and ,

Total spending (TS) equals:

$$TS = P_p + G_g = Y + F_{ep} + F_{eg} \dots\dots\dots (6)$$

Where,

P_p = private sector spending on goods, and

G_g = public sector spending on goods.

F_{ep} and F_{eg} are as defined previously.

From equation (6) total spending on goods can exceed total output only if it is externally financed (i.e $F_{ep} + F_{eg}$). For a given composition of total spending, the real exchange rate depends on the trade balance deficit (amount of external financing). As such, government's financing strategies will affect the real exchange rate only if they affect the trade balance. However, government's financing strategies will only affect the trade balance if the Ricardian equivalence proposition does not hold or else deficits arising from tax cuts and financed through increased debt, increase private savings rather than increasing private spending. As a result, the trades balance is unaffected and also the real exchange rate. But where Ricardian equivalence does not hold, increased spending by the private sector is unavoidable given an increase in disposable income due to tax cut.

Given Ricardian equivalence, if government decides to finance its deficits by external borrowing, the private sector reacts by investing the tax savings in foreign assets, total spending will not change and no real exchange rate changes are to be expected since the debt (external) is unable to affect the trade balance.

In terms of equation (6), F_{eg} increases and F_{ep} decreases equivalently and so the exchange rate remains unaffected (Razin 1986; Auernheimer, 1982; Leiderman and Blejer, 1988; Rodriguez, 1984). This result could hardly be expected of developing countries even if such funds were used for development. A number of social and economic costs are to be expected of a developing country arising from external borrowing, including future balance of payment difficulties. Ubok-Udom (1978) argues that personal incomes increase as economic growth is enhanced with proper application of external loans. The increase in income would also mean an increase in demand for consumer products, a large proportion of which has to be imported. Where export proceeds fail to rise fast enough to cover the expected increase in imports, alongside contractual obligations of debt charges, then future balance of payment problems will arise. However, when a government deficit is internally financed (debt), given that Ricardian equivalence holds,

the savings generated by the lower taxes is used by the public to acquire the increased internal issue of debt, and total spending remains unchanged. Nevertheless, should the private sector buy the internal debt with increased foreign private financing, total external financing will increase and the trade balance will be affected. If the trade balance is affected, the exchange rate is also affected. Lastly, where the government decides to embark on money financing, Rodriquez argues that the higher inflation rate may lead to increased demand for foreign assets, implying larger capital outflows, and a reduction in private spending and a higher real interest rate in the short-run. In the long run however, the real interest rate is lowered as the income earned on foreign assets so acquired increases expenditure on foreign goods.

At the level of theory, the relationship between deficit, the trade balance and the exchange rate depends on whether or not the Ricardian equivalence proposition holds, and also whether the deficit is financed through inflation tax (money creation) or not. In the first category, the channel of transmission is its (deficit) effect on the level of private spending given that Ricardian equivalence does not hold. And in the second, it is the use of a non-neutral tax on one domestic asset –money, which carries some portfolio-

induced affects on private demand for foreign assets courtesy of inflation that provides the linkage. The empirical evidence on Nigeria confirms the negative effects of deficit on the trade balance. Egwaikhide (1999) in a study on Nigeria confirms this but cautioned that the negative effects do not depend on the means of financing the deficit as suggested by theory.

There is also a theoretical basis for believing that the causation runs both ways. Real exchange rate depreciation raises public expenditure by increasing foreign interest liability of the government and the cost of foreign consumables by the government and thereby could cause government fiscal operations to go into deficit. This situation is very much to be expected in developing countries than the developed ones. On the other hand, government revenues are boosted by a real depreciation which raises surpluses of firms producing tradable goods and government revenues via increased tax receipts. This later effect is expected to be more prevalent in developed countries, where the popular Marshall - Learner export elasticity condition is often satisfied. The Simultaneous occurrence of the two effects is however not a theoretical impossibility. The net effect of a change in real exchange rate on government deficits depends on the relative weights of traded and non-traded items in public expenditure and revenue (Easterly and Schmidt - Hebbel, 1994).

In Nigeria, exchange rate depreciation cannot be completely ruled out of the sources of government expenditure growth in recent times. Although the government has been trying to avoid this consequence by maintaining a dual exchange rate regimes (government rate and public rate), it has equally been incurring expenditures through the public in the form of higher bills on

contracts and other clientele services. As such the government unavoidably pays indirectly through the public that patronises the higher exchange rate markets. As such, the deficit spending gradient tends to be steeper as the exchange rate worsens.

2.4.4 Deficit and Domestic Price Level

The literature on deficit spending and domestic price is vast and varied. The contention that deficits are necessarily inflationary is neither new nor conclusively settled at the levels of theory and empiricism. For the monetarists, the relationship between deficits and inflation follows essentially from the old classical equation of exchange (quantity theory). In its undiluted form, changes in the quantity of money were said to generate proportionate changes in the price level. From here, monetarists' position on the causality between deficits and inflation can be visualised. Government deficits are basically inflationary so long as they are financed by money creation. Monetization of government debt raises money supply and consequently inflation. In summary monetarists hold the view that higher deficits lead to higher inflation (Blinder 1982; Friedman, 1981a; Hamburger and Zwick, 1981; and Sprinkle,

1981). To this group the inflationary consequence of deficits could be avoided if the monetary authorities refuse to monetize government debts. They often see monetary accommodation as an act of irresponsibility owing to ignorance and shortsightedness on the part of the monetary authorities (Hein, 1981, Friedman 1981a).

Some economists have opposed this view vehemently, arguing that the inflationary consequences of government deficits are not only to be expected when deficits are financed by money creation. They believe that inflation can also result from debt-financed deficits. Impliedly, they believe that inflation does not only result from money market dis-equilibria caused by surges in money supply as contended by the monetarists. These economists (Miller, 1985; Wallace, 1984; Bryant and Wallace. 1979; Miller and Sargent 1985) argue further that the monetary authority may not really have a choice than to monetize some portion of the deficit if it persists (Miller 1982c). In fact, larger deficits make accommodation by the central bank unavoidable or else the government faces a threat of insolvency as it tries to meet interest obligations of already existing debts. The government may issue new debt but certainly cannot force citizens to hold them. More over in some countries, the monetary authorities do not have the liberty to turn

down government debts in practical terms. In Nigeria, the CBN is not autonomous in the classical sense of it. In fact, refusing to monetize federal debts is usually not one of the options available to it. In such an environment, monetary policy is accommodating in nature, and generally dictated by fiscal policy trends.

Overall, the view of the later group of economists is summarized by the legal restrictions theory. The legal restrictions theory of fiat money and fiat bonds seeks to explain why people would value either money or bonds given that they are of no use either as goods or as assets, in which case the private sector would ordinarily have no demand for them. Even where certain returns were to be expected on bonds, there might be other assets in existence that have rates of return that exceed the expected return on fiat debt. However, since positive demands for fiat debt are not guaranteed, governments enact laws and regulations to facilitate demand for them and thereby make value for them assured. Such rules and regulations come in the forms of legal tender acts and reserve requirements for depository institutions. These laws force individuals, and depository agencies to hold them (fiat bonds and fiat money). As such, government can finance deficits by issuing

these instruments and some how force them on the private sector (Miller 1985).

Another important aspect of the legal restrictions is that substitution between fiat money and fiat debt which would have taken place, if they were held at all is prevented (Wallace 1979). Miller further stressed that if money and bonds were perfect substitutes, deficits would be directly inflationary leading to complete impotence of monetary policy. Given the separation of demands for money and bonds, government is able raise its implicit tax efficiently. With the separation between the demand for bonds and money being as a result of government restrictions, higher deficits lead to more inflation in three ways, viz: (a) **monetary accommodation** (b) **crowding-out effect** and (c) **private monetisation of government debt**.

Monetary accommodation (acceptance of government debt by the monetary authority) cause surges in money supply and therefore accentuates inflation. This coincides with the monetarists view of inflation, although they see this phenomenon as shortsightedness or outright irresponsibility on the part of the monetary authority (Weintraub, 1981; Hein 1981). But the legal Restrictions theory implies that the monetary authority has very

little choice other than to accommodate monetarily the deficits. In fact, Miller (1985:252) argues:

Large deficits require accommodation by the monetary authority. If it is not forthcoming, the increase in bonds will cause real interest payments on bonds to grow without limit, thereby forcing the government into insolvency.

Crowding-out of private investment is another path through which government deficits lead to inflation. In the absence of monetary accommodation, more bonds must be issued and sold in the open market. With government offering higher bids to ensure that they are held. This reduces private capital in the market and hence, higher interest rate. Private investment reduces as a result and ultimately domestic output drops. This combining with the already high money path produces a high inflation path. The third and last path to inflation going by the restrictions theory is private monetization of debt. This presupposes that holders of bonds are able to circumvent the restrictions on bonds/money substitution. This substitution makes bonds easier to use for real purchases thereby increasing the inflationary pressure on the economy. Alternatively, if the citizens were able to exchange money for

bonds, they would have succeeded in reducing money holding and by implication implicit taxes fall. This path to inflation (private monetization of debt) is also a theoretical possibility under the transaction cost theory of separate demands for money and bonds. Going by this theory, private monetization of government debt makes bonds and money to be very close substitutes in which case, deficits become directly inflation (Bryant and Wallace 1979).

There have been a number of empirical studies on the relationship between money and prices in Nigeria. For example, Ajayi (1978) investigated the relationship between money, prices and interest rates in Nigeria. He identified changes in money as a very important factor in the inflationary process in Nigeria. He (Ajayi) however acknowledges the fact that money is not the only one. His analysis follows the traditional approach proposed by Cagan (1956), by which the causation between money and prices is assumed to run one-way, from money to prices. Ajayi summed up by arguing that "the growth rate of money supply must be equal to the growth rate of output if stable prices are to be maintained". This same conclusion was implied by Terriba (1973), and other notable scholars of the University of Ibadan-based monetary economists circle.

Ademola (1972) examines the relationship between government deficits, price level and capital formation in Nigeria. His results may be summarized as follows:

- i That budgetary deficits influenced money supply.
- ii That the price level could be explained in terms of other measures of deficit financing such as domestic credit creation and internal credit magnetization.
- iii That there exist a positive and significant relationship between variations in price level and in domestic credit creation.
- iv. That there was also a positive and deficits as measured by internal credit manetization, and
- v. That going by pre-civil war data, and on the basis of the same regression result, capital formation was greatly influenced by deficit financing.

Overall, the literature on deficits/inflation relationship is broadly divided into two parts. A part that denies the existence of cause-effect relationship between the two, given that Ricardian equivalence proposition holds; and another part that emphasizes

relationships but with certain qualifications, given that Ricardian equivalence does not hold.

2.5 CAUSATION BETWEEN BUDGET DEFICIT AND INFLATION

The aspects of the literature examined so far have simply treated causality between deficits and inflation as running one way. That is, persistent government deficits lead to inflation. But there is also some theoretical basis to think of a two-way causation running between deficits and inflation. Whereas persistent deficit spending can cause inflation, government deficits can also be driven by prolonged inflation. The basic argument is that inflation results in a widening of fiscal deficits financed by debt drawn on the monetary authority (money creation), leading to further increases in money supply and consequently further increase in prices (Aghevli and Khan 1978). Earlier, other economists had put up this proposition even though they did not verify the phenomenon empirically (for example, Olivera, (1976). Studies on

Nigeria have in various ways pointed to the role of government fiscal action in driving money supply expansion. Moser (1994) carried out one prominent study in this direction. Using reduced form (elasticities) model, Moser empirically demonstrated that monetary expansion driven by government fiscal policy action explains largely the inflationary process in Nigeria. This study also tried to establish the mechanism or the link provided by deficit (especially) in the circumstance.

It has been argued that attempts by the government to extract real resources at some rates faster than could be sustained at a given rate of inflation result in increases in the money supply and further inflation (Frankel 1977). The more common explanation for increases in the money supply in response to inflation is government's fiscal operations (Aghevli and Khan 1978). Inflation affects government deficits through various channels. Some of these channels are:-

- i) Anticipated inflation increases interest payment to domestic debt holders.

- ii) Inflation lowers real tax revenue due to collection lags for taxes that are not fully indexed (Olivera Tanzi effect).
- iii) Prolonged inflation causes public demoralization and hence reduces tax compliance.
- iv) Real government recurrent expenditure tends to decline as a result of inflation if public wages and transfers are not indexed. This outcome has been empirically established for zimbabwe (Morande and Schmidts-Hebbel 1994); and most probable in Nigeria (For detailed discussion of these channels, see Dornbusch, et al., 1990; and Easterly and Hebbel 1994).

The issue of tax erosion of government revenue was popularised by Olivera (1967) and Tanzi (1977) and so named after them as **Keynes - Olivera - Tanzi** effect. This effect is crucially important in assessing the effects of inflation on government deficits and of course, the self perpetuating process of inflation. By this effect, government tax revenue is reduced by inflation. Tanzi (1978:161) explains:

In all countries, taxes are collected with lags; as it is always difficult and for some taxes impossible, for exact payments to be made to the tax authorities at the same time that taxable events occur

He explains further that these lags tend to be short in advanced countries where withholding at the sources and advance payments are common for income taxes and also due to their improved accounting procedure which quickens tax assessment. In less developed countries, the lags are longer due to inefficient tax administrations. The Olivera-Tanzi effect has been established empirically for some developing countries including Ghana (Islam and Wetzel, 1994) and Colombia (Easterly 1994). This brings to the fore, the existing gap in the literature on Nigeria. This study is one attempt at filling this gap as we hope to adopt a model type that explicitly captures possible feedback causation from prices to money.

CHAPTER THREE

MODEL FORMULATION AND ESTIMATION METHOD

3.1 INTRODUCTION

In the literature, we have noted the variety of theoretical positions on the macroeconomic consequences of sustained government deficits generally, and their role in facilitating a self generating inflationary process. Empirical evidence obtained from country case – studies does not indicate the same or similar conclusions. Deficits display a bewildering range of effects, from enhancing output and employment to crowding-out of domestic investment in developing countries. Easterly, et al (1994) noted that deficits might lead to high and variable inflation, to debt crises, to low inflation with crowding out of investment and growth in some countries, whereas in other countries, moderate deficits seemed not to generate macroeconomic imbalances at all. Notwithstanding the divergent views and evidence on this subject, the concern that persistently high deficits are bad for growth and thus deserve to be reduced appears dominant in the literature. We may summarize the literature as follows: Persistently high deficits ultimately require monetary accommodation, which if resisted by the monetary

authorities could lead to insolvency on the part of the state. Monetary accommodation of deficit typically leads to surges in money supply.

In Nigeria, excessive money supply growth has been widely blamed for the inflationary pressures on the economy (Komolafe 1996; Addison, 1996). In an oil producing developing economy (like Nigeria), It has been observed, fiscal policy (especially government expenditure) is the primary determinant of domestic liquidity (Morgan 1979). Monetisation of oil revenues and the temptation to over spend the budget are characteristic of such economies. Also a positive (unidirectional) relationship between inflation and deficit-induced monetary expansion has been documented by many scholars through empirical investigations (for example, Ajayi 1978; Ademola, 1972; and Moser, 1994). Beyond this however, the relationship between surges in money supply and inflation could be bilateral, with deficit providing the link. This hypothesis has been empirically confirmed for some countries including Argentina, Indonesia, Brazil, Colombia, Dominican Republic, and Thailand. The basic contention is that inflation results in a widening of deficits financed by debt drawn on the monetary authority (money creation), leading to further increases in money supply and

consequently further increases in prices (Olivera, 1967; Frankel, 1977; Aghevli and Kahn 1978; Dutton,1971).

Generally in Macroeconomic investigations of this kind, several model types exist which may be broadly dichotomized in terms of how relationships between variables are hypothesised. Along this line, two approaches may be discerned; the one that presumes one way causality between variables with causation running from the independent variable(s) to the dependent, and the other that treats causality as running both ways. The first type of model which is based on the unidirectional conception of causality running from money to prices was formalised by Cagan (1956) in the study of hyperinflation in Latin America. The study conclude (principally) that changes in money cause changes in prices without any feed backs. Using a fairly different methodology, Sergeant and Wallace (1973) re- examined the same data used by Cagan, and concludes that there exist some empirical bases for believing that the relationship runs both ways. Several other studies in this area have however tended to follow the Cagan approach including those in which Nigeria has been used as the case study. Examples include Ademola (1972); Ajayi, (1978) and Moser (1994); with apparently

similar conclusion - changes in money supply cause prices to change.

For Nigeria, the long term association between deficit and inflation is not in doubt. Deficit/GDP ratio increased from 8.5% in 1990 to 15.5% in 1993. During the same period, the inflation rate rose from 7.5% to 54.2%. Similarly, Deficit/ GDP ratio declined to less than one percent in 1997, and the inflation rate dropped to 8.5% in the same year (CBN, 1998). It is therefore not out of place to argue that the deficits of the federal government cause changes in domestic prices in Nigeria. This approach essentially treats money supply as exogenously determined hence the unidirectional causation. This assumption and the conviction upon which it is based have come under severe criticisms in recent times. Obviously, the existence of lags in the conduct of government fiscal operations (expenditure and revenue generation) tends to cast doubts on this presumption. If the desired levels of government expenditure and nominal revenues are assumed to have some relationship with national income, then it becomes reasonable to think that government would (in the long-run) wish to increase expenditure proportionally with increases in national income. Revenues may not respond by the same proportion. In fact, in less

developed economies like Nigeria the adjustment of government revenues to national income expansion is normally slower than that of expenditure due to lags in revenue collection, narrow tax bases and weak revenue collection machinery typical of such economies. This phenomenon has been described in the literature as the Keynes-Olivera-Tanzi effect (Olivera, 1967 and Tanzi, 1977). As a result, increases in price cause government nominal expenditure to grow but fail to produce corresponding growth in revenues. The effect is that deficit becomes a regular feature of government's fiscal operations. In developing economies generally, the options for financing deficit are limited with the domestic banking system being the most prominent source of deficit finance (as has been the case in Nigeria). Inevitably money supply grows unabated, causing further inflation. The crux of the matter here is that, it could be argued that inflation is a major source of monetary expansion in developing countries. This reasoning makes the unidirectional modeling (conception) of price – money (deficit- inflation) relationship in such an economy deficient. This contention is the origin or the basis for the second category of models in which the relationship between money and prices is conceptualised as flowing both ways.

Sergeant and Wallace (1973) applied this type of model (which presumes a bilateral relationship between money and prices) on the same sample of countries (and data) investigated by Cagan (1956) and obtained some evidence of two – way causality between money and prices with government deficits serving as the link or the facilitator of the Mechanism (process). Several other scholars have used this model type (though in different formulations) and have obtained also found evidence of two-way causality between the variables. These studies include; Frankel (1977), Jacobs (1977) and Aghevli and Kahn (1978).

Aghevli and Kahn (1978) employed a simultaneous equation model to capture the mechanism of two-way causality between money and prices, and introduced government deficit as providing the link between the two (money and prices). The countries examined in this study were carefully selected to include those that experienced hyperinflation (Brazil and Colombia) and those that experienced much lower inflation (Dominican Republic and Thailand). Using the 3-stage least squares, estimates of the structural equations were obtained simultaneously for each country. Their results indicate that the model type is applicable to countries with high and low inflation experiences. The major observable draw

back of this model type is that the 'goodness of fit' of the regression line is usually not very reliable. This is normally due to the kind of least square estimators that are amenable to the model type. However, this limitation hardly would have any serious implication for analysis (result) because the 'goodness of fit' requirement of the regression line is not a very important indicator of significance in simultaneous equations models.

Both single and simultaneous equations models shall be used in this study. The two are expected to complement each other to test the hypotheses set, and provide answers to the research problem. In specific terms, single equation models shall be used first to establish causality between variables. This is expected to provide a lead (an insight) into what would be expected from the application of the second model (the simultaneous equations model).

3.2 MODELS

3.2.1 Causality Model

The objective here shall be to determine the nature of causality between deficit and inflation (price) in Nigeria.

The Granger Test

According to Granger (1969, 1988,), two series, say inflation (Inf) and government deficits (Gdd) are said to be mutually dependent (ie display two-way causality), if Gdd causes inf and Inf causes Gdd. In the circumstance, there exists a feedback between Inf and Gdd which may be symbolically written as:

$$Gdd_t \leftrightarrow Inf_t.$$

The causality model that emerges is based on the assumption of auto regressive representations in time series. Thus, that Gdd causes Inf is functionally demonstrated by:

$$\underline{Cpi_t = f (Cpi_{t-1}, Gdd_{t-1}, Gdd_{t-2}, Gdd_{t-3}), \dots \dots \dots (1a)}$$

$$\underline{f_1, f_2, f_3, f_4 > 0;}$$

and that Inf causes Gdd is functionally demonstrated by:

$$\underline{Gdd_t = f (Gdd_{t-1}, Cpi_{t-1}, Cpi_{t-2}, Cpi_{t-3} \dots \dots \dots (1b)}$$

$$\underline{f_1, f_2, f_3, f_4 > 0;}$$

where Gdd_t is current government deficit; Gdd_{t-i} (i=1,2, ..) are lagged values of government deficit; Cpi_t is current consumer price index; Cpi_{t-i} (i=1,2, ..), are lagged values of Cpi.

We note that for simple causality, the change in the value of Gdd does not have to affect CPI in equation (1) in the same period. We note also that the current value of Gdd does not enter the model, equation 1, unless we are modeling instantaneous causality.

Causality in equation (1a) requires that the estimate of at least one of (Gdd_{t-1}, Gdd_{t-2}, Gdd_{t-3}) has to be statistically significant. The same applies to equation (1b), at least one of the estimates of parameters of (Cpi_{t-1}, Cpi_{t-2}, Cpi_{t-3}) has to be statistically significant also. Feedback causality requires that causality exist in both (1a) and (1b). In order to boost evidence, two different presentations of the relationship between inflation and deficit will be used. The second specifications of the causal relation between the variables of the study are :

$$\underline{CPI_t = f(CPI_{t-1}, MS_{t-1}, MS_{t-2}, MS_{t-3}) \dots \dots \dots (2a)}$$

$$\underline{f_1, f_2, f_3, f_4 > 0}$$

And

$$\underline{MS_t = f(MS_{t-1}, CPI_{t-1}, CPI_{t-2}, CPI_{t-3}) \dots \dots \dots (2b)}$$

$$\underline{f_1, f_2, f_3, f_4 > 0}$$

Where MS_t is current change in money stock; MS_{t-1} ($i=1,2, ..$), are lagged values of MS; other variables are as defined previously.

Equations 1 and 2 will be estimated one at a time using the Ordinary Least Squares (OLS) method.

3.2.2 **The Structural Model**

The simultaneous equations model type is ideal for investigating relationships in which feedbacks are anticipated or hypothesized. The relationship under investigation in this study is expected to be bilateral. Econometric theory suggests that it is better to lump together a set of variables which can be determined simultaneously by the remaining set of variables (Gujarati, 1988). The major model for this research (following Aghveli and Khan, 1978) is one of such models, in which there are four equations to be estimated simultaneously. One for each of the mutually dependent endogenous variables. The four equations are expected to explain respectively, prices, government expenditure, revenue and money supply in Nigeria. The formal derivation of the model is as follows:

The price equation

The monetarist contention that high money growth rates produce high inflation may be derived from the quantity theory and the basic equation of exchange:

$$MV = PY. \quad (1)$$

Where,

M = Money stock

V = Velocity of Circulation

P = Price

Y = Output

The quantity theory takes income as given and equal to the full employment level of output. In addition, it assumes that V (money velocity) is constant. In the classical tradition these variables, M and V are considered as changing at very insignificant rates in the short run. The implication of this assumption is that a change in the quantity of money (M) is accompanied on a one-to-one basis by a change in the price level in the same direction. This formulation may as well represent a money demand relation (Rowan, 1983). In equilibrium, the demand for money is required to be equal to the supply of money. Hence, $M^d = M^s$;where M^d is money demand and M^s is Money stock.

The demand for money is a demand for real balances because an individual holds money for what it will buy, among other motives. The higher the price level, the more nominal balances an individual has to hold to be able to make purchases. It also depends on income because the higher an individual's income is, the higher the amount of money he is able to hold, and so all the motives for holding money are income elastic. Meanwhile, the cost of holding money is the interest that is foregone by holding money instead of interest bearing assets such as bonds. Therefore the higher the interest, the more costly it is to hold money. In the Keynesian scheme, the speculative demand for money is determined by the rate of interest. Later works like those of Baumol (1952) and Tobin (1956) indicate that this component of the demand for money is also Income elastic, just as the transactions demand. On these simple grounds, the demand for real balances therefore increases with the level of income and decreases with interest rate. Following Zecher (1974), we write the demand for money function as

$$M^d/p = Y^k I^{-h} \dots\dots\dots 2$$

M^d/p is demand for real money balances; Y is income, and I is interest rate. k and $-h$ are elasticities with respect to income and interest rate respectively. The actual stock of real balances $(M^s/p)_t$

is assumed to adjust proportionally to the difference between the demand for real money balances $(M^d/p)_t$ and the actual stock of real balances in the previous period $(M^s/p)_{t-1}$ (Aghevli and Khan 19778). That is:

$$\Delta(M^s/p)_t = \beta[(M^d/p)_t - (M^s/p)_{t-1}] \dots\dots\dots 3$$

where β is the adjustment coefficient.

Substituting 2 into 3,

$$\Delta(M^s/p)_t = \beta[(Y^k I^{-h}) - (M^s/p)_{t-1}] \dots\dots\dots 4$$

Note that $\Delta(M^s/p)_t = (M^s/p)_t - (M^s/p)_{t-1}$.

Therefore,

$$(M^s/p)_t - (M^s/p)_{t-1} = \beta[(Y^k I^{-h}) - (M^s/p)_{t-1}] \dots\dots\dots 5$$

and

$$(M^s/p)_t = \beta[(Y^k I^{-h}) - (M^s/p)_{t-1}] + (M^s/p)_{t-1} \dots\dots\dots 6$$

The log form of equation 6 is

$$\text{Log } (M^s/p)_t = \beta k \log Y_t - \beta h \log I_t - \beta \log (M^s/p)_{t-1} + \log (M^s/p)_{t-1} \dots\dots 7$$

From here, we can obtain the equation for the domestic price level, P.

Notice however that $\text{Log } (M^s/p)_t = \log(M^s)_t - \log(P)_t$.

Therefore,

$$\text{Log } (P)_t = \log(M^s)_t - \beta k \log Y_t + \beta h \log I_t + \beta \log (M^s/p)_{t-1} - \log (M^s/p)_{t-1} \dots\dots\dots 8$$

From equation 8, three variables to which the domestic price level is expected to respond have emerged. They are; output, interest rate and money supply (current and lagged). Equation 7 is essentially a money demand function expressed in terms of price.

In developing countries, it has been observed, the relevant opportunity cost of holding assets in money form is the rate of return on physical assets, which is the expected rate of inflation (Ndebbio, 1998). In Nigeria there is little basis for assuming the contrary in view of the undeveloped nature of money and capital market institutions, the narrow range of financial assets and poor banking habits all of which are common features of developing economies. In effect, interest rate, which is often officially repressed and most of the times negative in real terms, ceases to be a reliable determinant of the composition of wealth holder's portfolio of assets and thus unattractive as a money demand variable. This consideration informs the choice of expected rate of inflation in its stead in many studies on the Nigerian economy. Examples of such studies include Ajayi (1974) and Ndebbio (1998). Expected inflation (subsequently symbolized by Π) is however unobservable directly but can be generated through the standard adaptive expectation (Cagan, 1956) or may simply be proxied by

the previous period inflation rate (Ndebbio, 1998). The domestic price level equation is accordingly adjusted to reflect inflationary expectations (Π) in place of interest rate. By assigning the letter "b" as coefficients to the independent variables, and an error term " e_1 " equation (8) becomes

$$\text{Log}P_t = b_0 + b_1\text{Log}M/p_{t-1} - b_2\text{Log}Y_t + b_3\text{Log}\Pi_t + e_1 \dots \dots \dots (9)$$

In equation (9), causation (relationship) between price and real money supply as indicated by the subscript, t-1 is assumed to take place with a lag. This is consistent with econometric theory. Although economic theory does not tell how far or close, it generally suggests that many variables exhibit lags in their effects on others, as is the case with most economic phenomena (Koutsyiannis,1977). In particular, many studies have shown that the effects of monetary expansion on domestic prices are very rarely instantaneous. Some studies on the Nigerian economy have also attested to this (for example, Ndebbio, 1998;Orubu,1996). The effect of monetary expansion is assumed to take sometime to be transmitted to the goods market in the form of higher prices of goods and services. This view aptly justifies the inclusion of the lagged money supply variable as an explanatory variable in the formulation of the price equation in many macro-econometric

models including for example, that used by Aghveli and Khan (1978). It will not be surprising nevertheless if evidence of instantaneous causation is found with data on the Nigerian economy. This is because certain features of an economy could cause economic variables to behave erratically, i.e. in manners that essentially depart from convention or theory. Production structures in Nigeria are not very elastic and thus unable to accommodate shocks over extended periods. In such a situation, a money market disorder could have some immediate consequences for domestic prices along with delayed (lag) effects.

Government Expenditure and Revenue Equations

In specifying the government expenditure function, we incorporate the lag element noted in the literature. It has been observed that the conduct of government fiscal operations (expenditure and revenue generation especially) take place with reasonable degree of lag effects (Tanzi,1977). The major hypothesis of the facilitating role of government budgetary deficits in the inflation process is premised on this assumption. Both revenue and expenditure of

government are assumed to adjust to changes in the level of national income (Y), and are also primarily affected by changes in the level of the domestic price (P) with lags. Therefore in specifying any of the two functions we cannot avoid lagged exogenous variables (such as, Y_{t-1} , Y_{t-2} , Y_{t-n}) in addition to the current value of the same variable. But then we will in the process run into some difficulties with the estimation of individual equations as the explanatory variables may correlate with each other, a situation that must be avoided. Besides, economic theory does not tell us the extent of the lag effects (i.e. how far back we could go in search of lagged explanatory variables).

Koyck (1954) provides a way out of this problem by suggesting the use of a one-period lagged endogenous variable (in our case, government expenditure lagged by one period G_{t-1}) as a substitute for (Y_{t-1} , Y_{t-2} ,....., Y_{t-n}) in the model. The reasoning is that G_{t-1} will be less correlated with Y_t than (Y_{t-1} , Y_{t-2} ,....., Y_{t-n}). This technique is known as Koyck's transformation. With Koyck's geometric lag structure, we avoid the two major problems with distributed lag models. That is, we gain maximum economy of degree of freedom and avoid multicollinearity (Koutsoyiannis, 1977).

In order to avoid the estimation difficulty inherent in the original form of Koyck's structure, we shall use the modified form of it proposed by Nerlove (1958), which offers us a fairly different behavioural hypotheses. It is important to note however that both the pure Koyck's model and the *partial adjustment model* proposed by Nerlove yield the same set of explanatory variables. The only difference is that the latter excludes the autoregressive schemes in the error terms. The Nerlove transformation produces an error term which has no direct connection with its own values (Koutsoyiannis, 1977).

Government Expenditure Equation:

The government expenditure equation is formulated in line with a methodology adopted from Aghveli and Khan (1978) as follows:

The desired level of government expenditure (G^*) is assumed to be functionally related to income (Y). That is ,

$$G^* = f(Y), f_1 > 0, \dots \dots \dots (10)$$

stated in linear form as:

$$G_t^* = g_0 + g_1 Y_t + v_t \dots \dots g_1 > 0 \dots \dots \dots (11)$$

Where:

g_0 is the intercept term; "v" is the error term and "t" is time.

Suppose that the government, in the long run, wishes to adjust expenditure proportionally with changes in income, then (following rational expectations), changes in current expenditure will adjust to the difference between the desired level of expenditure $(G^*)_t$ and the actual expenditure in the previous period (G_{t-1})

This we may state as:

$$\Delta G_t = \alpha [G^*_t - G_{t-1}] \dots \dots \dots (12)$$

Where ΔG_t is change in current expenditure and α is the coefficient of adjustment and possesses a value higher than zero but less than one.

Substituting (11) into (12) yields

$$\Delta G_t = \alpha [g_0 + g_i Y_t + v_t - G_{t-1}] + u_t \dots \dots \dots (13)$$

In order to obtain the expression for current government expenditure, we add G_{t-1} to both sides of (13). That is:

$$\Delta G_t + \Delta G_{t-1} = \alpha[g_0 + g_i Y_t + v_t - G_{t-1}] + G_{t-1} + U_t \dots \dots \dots (14)$$

Note that $\Delta G_t + G_{t-1} = G_t$.

Therefore,

$$G_t = \alpha g_0 + \alpha g_i Y_t - \alpha G_{t-1} + G_{t-1} + (U_t + \alpha v_t) \dots \dots \dots (15)$$

In Nigeria, the domestic price level is a crucial factor in government purchases. Although public sector wages are not indexed to keep pace with inflation, government has had to occasionally yield to pressures for upward review of wages in the public sector, which were often justified by the erosion of purchasing power of workers resulting from rising prices. Between 1999 and 2002, public sector wages have been reviewed twice. Also, government nominal expenditure on other inputs apart from labour has been rising partly as a result of inflation. The costs of many contracts have had to be reviewed upwards repeatedly to keep pace with changing cost conditions. Therefore, it will not be out of place to reflect the domestic price level as a substantive explanatory variable of government expenditure in Nigeria. Adjusting equation 15 to reflect this and substituting $(U_t + \alpha v_t)$ with e_2 yield

$$\text{Log } G_t = \alpha g_0 + \alpha g_1 \text{ Log } Y_t + (1-\alpha) \text{ Log } G_{t-1} + g_2 \text{ Log } P_t + e_2 \dots (16)$$

Government Revenue Equation:

The desired level of government revenue is also assumed to be functionally related to the level of income (Aghveli and Khan, 1978). This relationship may be stated as:

$$R^*_t = r_0 + r_1 Y_t + e_t; \quad r_i > 0 \dots \dots \dots (17)$$

Where R^*_t is the desired revenue in the current period (t); r_0 is the intercept, and Y is nominal income.

Actual revenues are expected to adjust to the difference between R^*_t and R_{t-1}

And so our gradual adjustment function is

$$\Delta R_t = \lambda [R^*_t - R_{t-1}] \dots \dots \dots (18)$$

Where λ is the adjustment coefficient. Substituting (17) into (18) yields

$$\Delta R_t = \lambda [(r_0 + r_1 Y_t + e_t) - R_{t-1}] + E_t \dots \dots \dots (19)$$

$$\Delta R_t = R_t - R_{t-1} = \lambda [(r_0 + r_1 Y_t + e_t) - R_{t-1}] + E_t \dots \dots \dots (20)$$

Rearranging,

$$R_t = \lambda r_0 + \lambda r_1 Y_t - \lambda R_{t-1} + R_{t-1} + (E_t + \lambda e_t) \dots \dots \dots (21)$$

Equation 21 is expressed in a log-linear form as

$$\text{Log } R_t = \lambda r_0 + \lambda r_1 \text{Log } Y_t + (1-\lambda) R_{t-1} + (E_t + \lambda e_t) \dots \dots \dots (22)$$

The values of the expenditure adjustment coefficient (α) and the revenue adjustment coefficient (λ) would determine the magnitude

of the deficit that will arise in government fiscal operations. Our expectation however is that the expenditure coefficient (α) will be larger than the revenue adjustment (to income) coefficient (λ). This is because even if government recognises the need to restrain expenditure as income grows, they find it difficult to reduce their commitment in actual sense. Secondly, revenue tends to adjust more slowly to income rise in developing countries generally due to non-indexation of taxes, low income elasticities of tax systems and longer lags in tax collection (Tanzi, 1977; Aghveli and Khan, 1978). In Nigeria revenues do not grow as fast as does expenditure due to the same reasons. It is therefore expected that income increases arising from inflation would cause expenditure to rise faster than revenue, thereby creating deficits in the budget. For example, adjustments in indirect taxes in Nigeria (especially sales tax or VAT as it is now called) are not frequent enough to keep pace with inflation. Meanwhile, government expenditure has often quickly adjusted to changes in income occasioned by inflation. Likewise, adjustments in exchange rates to inflation have been very sluggish due to government direct intervention in the market. The implication is loss of revenue from trade taxes. All these constitute the bases of our a priori expectation that the adjustment of

expenditure to income rise (α in equation 16) will be faster than the rate at which revenues adjust to changes in income (λ in equation 22).

Money Supply Equation

The supply of money is determined through the activities of the government, the banking sector and the non-bank public. The government affects it through its fiscal operations while the banking sector affects it through the amount of excess reserves. The public affect it through individual decisions on money holding (i.e. asset-portfolio management decisions). Changes in money supply could therefore arise from any of these three sources. It is however important to note that the impact of the government sector tends to be heavier in an environment of sustained budgetary deficits financed through the banking system especially. In Nigeria the banking system has been the major financier of government deficits. In a situation like this, Aghevli and Khan (1978) noted that an increase in deficit results in an equal change in high-powered money. The second basis for government's prominent role in money supply determination in Nigeria has to do with the rapid

monetisation of oil revenues. It has been observed that in oil exporting developing countries generally, fiscal policy is often the primary determinant of domestic liquidity (Morgan, 1979). This argues Morgan, results from the injection of government revenues into the domestic income stream through its expenditure. Changes in money supply may be stated as (Morgan, 1979)

$$\Delta M = (\Delta CP + BPp) + (G/d - Rd - Ld) + \Delta NUA \dots\dots\dots(23)$$

Where, ΔM = Change in Money Supply

ΔCP = Change in the Claim of the banking system on the private sector

BPp = Balance of payments of the private sector

Rd = Government domestic revenue

Ld = Government borrowing from the domestic non-bank public

ΔNUA = Change in net unclassified assets of the banking system

Morgan's formulation indicates that the main determinants of the money supply in such economies (oil exporting developing countries) are the budget deficit ($Gd - Rd$), the balance of payments of the private sector, and the change in domestic bank credit to the private sector.

In order to obtain a clear functional form, we shall adopt the money supply function proposed by Aghevli and Khan (1978), In which Money stock (M_t) is expressed as a multiplicative function of high powered money (H). That is

$$M_t = m_t H_t \dots\dots\dots(24)$$

Where m is the money multiplier

Changes in the stock of high powered money (H_t) could Occur through changes in international reserves (ΔER), changes in central bank's claim on the government (ΔCG), and changes in the central bank's claim on commercial banks (ΔCC). ΔER and ΔcG may be consolidated into one composite variable (ΔOA) such that;

$$\Delta H_t = \Delta CG_t + \Delta OA_t \dots\dots\dots 25$$

or

$$H_t = \Delta CG_t + \Delta OA_t + H_{t-1} \dots\dots\dots 26$$

Since changes in central bank's claim on the government (ΔCG_t) are simply a reflection of fiscal deficit, equation 26 may be written as:

$$H_t = Gd_t - Rd_t + ER_t \dots\dots\dots 27$$

Where Gd is government expenditure while Rd is government revenue.

Substituting (27) into (24) yields

$$M_t = m_t (Gd_t - Rd_t + ER_t) \dots \dots \dots (28)$$

Equation (28) can be specified in a Log – Linear form (for reason of computational convenience) as

$$\text{Log}M_t = \text{log}m_t + K_0 + K_1 \text{log}Gd_t - K_2 \text{Log} Rd_t - K_3 \text{log} Er_t + e_4 \dots (29)$$

Government Budget Balance Identity

The revenue of the federal government in Nigeria is a component of the federally collected revenue. Definitionally, the federally collected revenue is equivalent to total oil revenue plus non-oil revenue plus Value Added Tax.

$$\text{FCR} = \text{OR} + \text{NOR} + \text{VAT} \dots \dots \dots (30)$$

Where

FCR = Federally Collected Revenue,

OR = Oil Revenue, NOR = Non-oil revenue excluding VAT.

VAT = Value added tax receipts.

VAT (as a component of FCR) is separated from NOR because the distribution of its proceeds among the various tiers of government in Nigeria does not follow the sharing formula applicable to the Federation Account (FA).

$$\text{OR} = \text{PPT} + \text{RR} + \text{NNPCE} + \text{NERFUND} \dots \dots \dots (31)$$

Where

PPT = Petroleum Profit Tax

RR = Rent and Royalties

NNPCE = Nigerian National Petroleum Corporation Earnings.

NERFUND = National Economic Reconstruction Fund.

N OR = CE + CIT + FIR + OT.....(32)

Where

CE = Revenue from Customs and Excise

CIT = Company income tax

FIR = Federal Government Independent Revenues

OT = others (include Education Tax; privatization proceeds, Petroleum Trust Fund earnings, etc.)

In order to capture Federal Government Retained revenue, (FRR) we have to define the Federation Account (FA) which is the pool into which all funds to be shared among the three tiers of government are paid into. The FA may be stated (definitionally) as the deference between the Federally Collected Revenue (FCR) and funds that are not disbursed from the Federation Account (FA). That is:

FA = FCR – (FLC + FIR)- VAT.....(33)

Where FLC is first line charges; FIR is federal independent revenue; VAT is value added tax proceeds. FLC include transfers to special funds, priority projects, petroleum trust fund (PTF), Joint venture cash call, etc. The Federal Government Retained Revenue (FRR) is hereby defined as the Federal Government's shares of FA and VAT plus FIR

$$FRR = \delta FA + \epsilon VAT + FIR \dots \dots \dots (34)$$

δ and ϵ are variable ratios defining respectively the Federal Government's shares of the FA and VAT proceeds. δ especially is determined from time to time by the Revenue Mobilization and Fiscal Commission, a body saddled with this responsibility constitutionally.

The expenditures of the Federal Government in Nigeria (FE) traditionally fall into two categories namely, capital (CE) and recurrent (RE) and lately, three with the increased importance of extra-budgetary expenditures (EBE). We however intend to treat this as part of recurrent expenditure. That is:

$$FE = RE + CE \dots \dots \dots (35)$$

The expenditure components of the Federal Government's fiscal operations RE and CE are categorised. The subheads in both cases

are administration, economic services, community services and transfers (CBN, 1995).

The condition for Federal Government budget balance may be stated as:

$$[RE+CE] = [\delta FA + \epsilon VAT + FIR + FLC] \dots \dots \dots (36)$$

Where

$[RE+CE]$ = Total expenditure, and $[\delta FA + \epsilon VAT + FIR + FLC]$ = Federal Government Retained Revenue – FRR. All other variables are as previously defined.

Domestic Deficit Identity

In the long-run, government is expected to balance its budget. In the short-run however, this may not be feasible. Government fiscal operations in the short-run typically involve either a deficit or a surplus. For developing countries especially, deficits are more common. Some of the reasons for this have been outlined in the literature to include the need to rapidly transform the economy through massive public sector investment in infrastructure, limited scope and variety of taxable events, wide spread transfers and subsidies to critical sectors that are often too many in addition to over dependence on a limited range of income sources.

In order to bridge the gap between receipts and expenditure, governments explore both internal and external sources. Denoting externally sourced funds by GBF and internally sourced funds by GDB, we may state the short-run funding requirement of government as:

$$[FE-FRR] = [GDB+GBF].....(37)$$

This equation means that the difference between government revenue and expenditure [FE-FRR] must be financed either internally or from foreign sources. The internal sources of deficit financing may be (for our purpose) further decomposed into debts drawn on the banking system (GBDBS) and those drawn on the non-bank sector (GBNBS). It is important to acknowledge that the scope of borrowing from the commercial and merchant banks as well as the non-bank public is limited in Nigeria by the level of development of the money and capital markets, and the substantial volume of money outside the banks. This situation has tended to reflect in the form of heavy reliance on the Central Bank for financing of the of deficits, which it frequently did through its "*Ways and Means*" advances to the government (NPC, 1995).

Introducing the dichotomy between deficit funds obtained from domestic non-bank sector and the banking system into the government budget constraint, we have:

$$FE - FRR = GBDBS + GBNBS + GBF \dots \dots \dots (38)$$

Government borrowing from the domestic banking sector (GBDBS) typically involves the creation of high-powered money (H), while borrowing from the domestic non-bank sector (GBNBS) and foreign (GBF) most often result in increased debt and interest accumulation. Viewed from this angle, the government budget constraint may be stated differently as:

$$GDD = \mu H + dD \dots \dots \dots (39)$$

Where GDD is government domestic deficit, M is monetary base, D is the stock of government debt, μ is the growth rate of the monetary base and d is the growth rate of real debt. This alternative formulation of the government budget constraint states that the excess of spending over revenue must be financed either by base money creation or by borrowing. GBDBS in equation... tantamount to base money creation while GBNBS and GBF are debts on the non-bank private sector and the foreign sector respectively.

3.2.3 The Complete Macro-econometric Model

The complete model includes four equations explaining respectively, price, government expenditure, government revenue and money supply; and two identities. The relevant behavioural equations are as follows:

$$\text{Log}P_t = b_0 + b_1\text{Log}(M/p)_{t-1} - b_2\text{Log}Y_t + b_3\text{Log}\Pi_t + e_1 \dots\dots\dots(9)$$

$$\text{Log}G_t = \alpha g_0 + \alpha g_1 \log Y_t + (1-\alpha)\text{Log}G_{t-1} + \text{Log}P_t e_2 \dots\dots\dots(16)$$

$$\text{Log}R_t = \lambda r_0 + \lambda r_1 \text{Log}Y_t + (1-\lambda)R_{t-1} + e_3 \dots\dots\dots(22)$$

$$\text{Log}M_t = \text{Log}m_t + k_0 + k_1\log G_t - k_2\text{Log}R_t - k_3 \log E \dots\dots\dots(29)$$

And the identities are:

$$[\text{RE} + \text{CE}] = [\delta\text{FA} + e\text{VAT} + \text{FIR} + \text{FLC}] \dots\dots\dots (36)$$

$$\text{GDD} = \mu M + Dd \dots\dots\dots(39)$$

The notations used in the model are identified as follows:

P = Domestic price level

M = Money supply

$(M/p)_{t-1}$ = One period lagged Real money supply

Y = GDP at factor cost

Π = Inflationary expectation

G = Federal government expenditure

G_{t-1} = Lagged value of government expenditure

R = Government revenue

R_{t-1} = Lagged value of government revenue

$Er.$ = External reserves

m = Money multiplier

α = Government expenditure adjustment coefficient

λ = Government revenue adjustment coefficient

t = Time period (1year)

b_i, g_i, r_i, k_i are regression parameters corresponding to price, government expenditure, revenue and money supply equations respectively, while e_1, e_2, e_3, e_4 are error terms in the same respective order.

RE = Recurrent expenditure

CE = Capital expenditure

đFA = Federal share of the Federation Account

ęVAT = Federal share of Value Added tax receipts

FIR = Federal Independent Revenue

FLC = First Line Charges

GDD = Government Domestic Deficit

H = Monetary base

D = the stock of government debt

μ = the growth rate of the monetary base

d = the growth rate of real debt

3.2.4 The transmission mechanism

The macroeconometric model is made up of four equations in four endogenous variables. It is therefore a complete system of equations. The model is expected to capture the inflationary process of government deficit in Nigeria. The transmission mechanism of the relation is expected to involve a feedback, hence the adoption of the simultaneous equations model type.

The basic hypothesis runs as follows. Suppose there is an initial increase in money supply through a deficit, financed by the banking system. This would raise the price level in equation 9, and also cause government revenue and expenditure to rise in equations (16) and (22). If the increase in expenditure is greater than that in revenue (which is more certainly the case in Nigeria), the deficit of the government will increase in equation (29), and cause further increases in money supply and the circular process is repeated. In the event, inflation becomes self-perpetuating.

This situation typically makes deficits a regular feature of the fiscal operations of government. The reality on ground in Nigeria points towards this direction. Despite the unanimous condemnation of deficit spending by policy makers in Nigeria since the late seventies, deficits have continued to persist in the federal government fiscal operations on a yearly basis.

3.2.5 Theoretical Expectations

Equation 9 of our model expresses price as a function of output. Production bottlenecks are generally blamed as part of the immediate causes of price rise in developing countries. Food supply shortage especially has been identified in the literature as an important source of inflation in such countries. This partial conclusion was also reached by some studies on Nigeria (For example Moser, 1994). Given the inelastic supply of food and other products and some form of restrictions on import, we expect price to be inversely related to output. Increased expectations of inflation would result in further increase in price. Expected rate of inflation therefore is expected to be positively related to the level of domestic price. Money supply is expected to display a positive relationship with price. Several studies have so indicated for

Nigeria. In the face of output constraints, rapid money supply growth (as witnessed in Nigeria starting from the civil war era) surely plays an important role in explaining inflation in Nigeria.

Equation (16) is the government expenditure equation. Government expenditure is expected to be positively related to growth. In fact expenditure is assumed to adjust proportionally to changes in income (Aghevli And Khan, 1978). This means that we expect a positive relationship between expenditure and income, likewise the lagged value of government expenditure.

It has equally been postulated in the theoretical formulation that government revenue adjusts to both income and price with some lags. The lagged price variables have been substituted with the one period lagged revenue as an explanatory variable in equation (22). The coefficients of both income and the lagged revenue variables are expected to possess positive signs.

Increased government expenditure is expected to raise money supply in equation 29, while revenue would have an opposing influence. The coefficient of government expenditure in this equation is expected to be positive while that of revenue is expected to be negative.

3.2.6 Justification of the Model Type

Economic variables generally are known to be highly connected to one another and in some cases; they display highly complex relationships, referred often to as simultaneous dependence. "Taking into account the complexity of the real world one should hardly expect to study economic phenomena satisfactorily by using single relation models" (Koutsoyiannis, 1977). In this study, we confront one of the fairly complex relationships in economic theory. The presumption of joint dependence between the variables of interest in this studying has necessitated the use of a multi-equation model.

Econometric theory suggests that whenever two variables (say inflation and deficit) are jointly dependent on each other single- equation modeling of such a relationship produces a myriad of estimation problems, chief among which is that parameter estimates will be biased and inconsistent as we apply classical least squares to such an equation (Gujarati 1988). This is because the independent variable(s) of the model is not really exogenous as assumed. In fact the independent variable in that circumstance will not be independent of the error term, which violates one of the assumption of the OLS.

The choice of the simultaneous equations model allows us to handle all equations belonging to the same system jointly and thus shield us from all the difficulties we would otherwise face. Both theory and empirical literature have pointed to the fact that certain feedbacks are to be expected in the relationship between the two major variables of this research- Deficit and Inflation under normal circumstances. Evidence of this has been reported from other parts of the world, especially Latin America, where inflation has been a long-time subject of macroeconomic policy discourse. The same has not been the case with Nigeria. Onwoiduokit (1999) advanced the most recent empirical evidence on this issue. He investigated causal relationship deficit and inflation using Nigerian data. The results of this study were, however, mixed. The study found evidence of a bilateral relationship between inflation and deficit measured as a ratio of GDP; and also, evidence of one-way causality between inflation and deficit measured in absolute terms. Although this attempt deserves to be commended, it cannot be seen as representing conclusive evidence. The contradiction inherent in the results of the study could be blamed on the methodological inadequacy. The Granger test used in this study is a 'simple' causality test designed to, at best, provide an indication of

causation, not sufficient for conclusions. The same could be said of all other 'simple' causality tests. These tests provide some indication of the direction of causality (Aghevli and Khan 1978).

This study employs a more comprehensive methodology including simple causality tests. Bilateral causality between the two variables has been conceived as a process involving other intervening variables that help to bring about the process. In this study, government fiscal operations and their connections with the domestic money market are modeled as part of the mechanism. The results obtained from the simple causality tests are expected to combine with that from the macroeconomic model of this study to provide a more reliable conclusion about the nature of causation between the variables.

Finally, the model includes lagged endogenous variables as explanatory variables. This has been dictated by theory, the choice of econometric technique, and current trend in macroeconometric research. The use of lagged models has gained prominence in applied econometric research in recent times. Such models are in general flexible and capture more effectively the dynamic nature of economic relationships. In addition, they allow the estimation of

long-run elasticities and other parameters of economic relationship (Koutsoyiannis, 1977).

3.2.7 Estimation Method

In selecting an estimation technique, we take into consideration certain features of the model. The most important features of the model that have been considered in the choice of estimation technique are :

- (i) That the model is over-identified and
- (ii) That there is a problem of simultaneous equations bias.

Over-identification is not a problem per se so long as an appropriate estimation technique is employed. The incidence of Simultaneous equations bias is a common feature of all multi – equation models and results from the inclusion of endogenous variables in the set of explanatory variables of the function. The random components of such variables are usually not independent of one or more of the explanatory variables in the set. The Two–Stage Least Squares (2SLS) effectively overcomes both limitations of our model. It produces satisfactory estimates of the parameters of structural equations, and has been shown as the most reliable of

the techniques for the estimation of overidentified models (Theil, 1953, Bassamann, 1957).

The two-stage least squares like other techniques in its class aims at the elimination of the simultaneous equations bias, and has therefore been considered as the most appropriate for the estimation of our research model.

CHAPTER FOUR

BUDGETARY DEFICIT, INFLATION AND MACRO-ECONOMIC PERFORMANCE

4.1 INTRODUCTION

The performance of any economy is closely linked to the policies of the government. The strength of the association between the public sector budget programme and the macro-economy, however, depends on the relative role of the state and also the efficiency of budget instruments in any given situation. For Less Developed Countries (LDCs) especially, this association tends to be stronger because the role of the state can hardly be limited to the provision of enabling environment (including defense, legal and infrastructure) only. In such economies, governments more commonly occupy the economy's commanding heights by operating key industries, allocating credit and foreign exchange, and trade controls, among other measures. A key justification for the great involvement of the government in economic activities in many LDCs and in Nigeria especially, has been that the private sector itself is technically weak

and somehow unable to perform expanded roles with enough efficiency to justify government disengagement (Komolafe, 1996). The introduction of the Structural Adjustment Programme (SAP) in 1986 however engendered a programme of gradual disengagement of the government from key economic activities in Nigeria through privatization of Public Enterprises (PEs) and divestments. This notwithstanding, the size of the public sector in Nigeria is still much bigger than commonly advocated by proponents of private sector-led growth.

In effect, the impact of government fiscal actions on the economy in Nigeria is indisputably high. Government spending especially is crucial in this regard. The government budget remains one of the most important channels of public sector impact on the economy.

4.2 OVERVIEW OF FEDERAL GOVERNMENT FISCAL OPERATIONS

The conduct of federal government fiscal operations in Nigeria involves revenue generation, expenditure and debt management. During the entire period under review, except

1995 and 1996, fiscal operations of the federal government persistently resulted in overall deficit as shown in table 2.

**Table 2. Federal Government Fiscal Profile, 1970-2001
(N'000)**

Year	Growth Rates				Balance	
	Revenue	Expenditure	Revenue	Expenditure	Deficit/surplus	% of Gdp
1980	12,993.3	14,968.5			-1,975.2	3.9
1981	7,511.6	11,413.7	(42)	23.7	-3,902.1	7.7
1982	5,819.1	11,923.2	(22.5)	4.5	-6,104.1	11.8
1983	6,272.0	9,636.5	7.78	(19)	-3,364.5	5.9
1984	7,267.2	9,927.6	15.8	3	-2,660.4	4.2
1985	10,001.4	13,041.1	37.6	31	-3,033.7	4.2
1986	7,969.4	16,223.1	(20.3)	24.3	-8,254.3	11.3
1987	16,129	22,018.	102.3	35.7	-	5.4

199	90,622	160,893	8.5	(15.6)	-	7.7
4	.6	.2			70,270.	
					6	
199	249,76	248,768	264.9	54.6	+1,000	(0.1)
5	8.1	.1				
199	325,14	288,094	30.1	15.8	+37,04	(1.6)
6	4.0	.6			9.4	
199	351,26	356,262	80.3	23.6	-5,000	0.2
7	2.3	.3				
199	310,17	443,563	(11.6)	24.5	-	4.7
8	4.0	.3			133,389	
					.3	
199	662.58	947.600	113.6	113.6	-	8.4
9					285,020	
					.0	
200	597.2	701,050	(9.8)	(26)	-	2.9
0					103,850	
					.0	
200	79690	1018,02	33.4	45.2	221,120	4.0

Federally Collected Revenue. A fraction of this revenue is dedicated (i.e placed in dedication accounts), another fraction is set apart as first line charges (FLC) for executing priority projects and debt service. What is left is consolidated into an account called the Federation Account (FA). In Nigeria, all the tiers of government share in the proceeds of the federation account according to a predetermined sharing formula. The revenue of the federal government often referred to as the Federal Retained Revenue (FRR) is actually made up of the tier's share of the FA, independent revenues, and the tier's share of Value Added Tax (VAT) proceeds which dates back to 1994. Essentially, federal government revenue in Nigeria depends on the variable sharing formula and the size of the FA, the sharing formula and size of VAT proceeds, the tier's independent revenue generation capacity, and the amount of diversion from the FA, usually as dedicated funds, stabilization funds and national priority project funds. The tier's share of the FA has been the major component of its revenue. The table below shows the major compartments of federal government revenue in Nigeria

Table 3. Composition of Federal Government Retained Revenue, 1986-2001 (NB)

Year	'86	'87	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Share of FA ¹	6.3	14.5	15.0	18.7	23.5	27.7	38.2	51.8	53.6	69.6	81	101	124.5	218.8	502	530
Independent Rev	0.4	0.40	0.54	0.93	1.7	3.0	4.9	5.6	3.8	20.7	3.4	8.33	2.3	11.5	38.0	44.4
Share of VAT									1.4	7.4	10.7	12.2	9.4	7.12	8.25	13.35
FLC ²								55.9	71	105	127	114	74	358.3	00	00
Others	1.2	1.1	1.7	6.0	12.8	-	10.1	12.7	11.7	38.0	102.7	105	96	0.0	0.0	0.0
Total	7.9	16.1	15.5	25.8	38	30.8	53.2	126	132.2	249.7	325	351	310	662	597	996.9
FLC as % of Total								43.6	53.7	42	39	32	23.8	54	00	00

1. Federation Account**2. From 1993, total revenue includes First Line Charges (FLC)****Source : i) CBN Statistical Bulletin 1999, 1995****ii) CBN Annual Report and Statement of A/C (2001)**

Obviously government revenue in Nigeria is closely tied to domestic output. Other than import duties, other tax (revenue) sources are closely tied to the domestic output capacity of the economy. Table 4 shows the revenue and output statistics of the country, and their growth trends.

Table 4. Federal Government Revenue and GDP, 1985-2001 (#B)

Year	Govt. Rev.	% change	GDP	Rev. as % GDP
1985	10.0	37.6	72.35	13.8
1986	7.969	(20.3)	73.1	10.9
1987	16.129	102.3	108.8	14.82
1988	15.588	3.35	145.2	10.7
1989	25.893	66	224.7	11.5
1990	38.152	47.3	260.6	14.6
1991	30.829	(19)	324.0	9.5
1992	53.264	72.7	549.8	9.68
1993	126	56.7	697	18
1994	132.24	8.5	914.7	14.4
1995	249.768	264.9	1997.7	12.5
1996	325.144	30.1	2740	11.8
1997	351.262	80.3	2835	12.3
1998	310.174	(11.6)	2765.6	11.2
1999	662.58	113.6	2289.1	28.9
2000	597.2	(26)	2540.84	23.5
2001	796.9	33.4	3162.32	25

Source: CBN Statistical Bulletin 1995 and 1999 Editions

Note: Figures in parenthesis represent negative growth

rates

The structure of government revenues in Nigeria pre and post SAP shows the dominance of petroleum revenues, accounting for over half of total revenues as can be seen in table 5. Non-oil revenues have consistently accounted for less than half of total earning.

Table 5. Structure of Federally Collected Revenue, 1986-1998**(#B)**

Year	Oil REV.	Non Oil Rev.	VAT	Total Rev.	Oil Rev. as %of Total Rev.	Oil Rev. as % of GDP	Non- Oil Rev as % of GDP
1986	8.107	4.48	Na¹	12.5	64.8	11	6
1987	19.0	6.35	Na	25.3	75	17	5
1988	19.8	7.76	Na	27.5	72	13.6	5.3
1989	39.1	14.75	Na	53.8	72	17.4	6.6
1990	71.8	26.2	Na	98.1	72.3	27.5	10
1991	82.6	18.3	Na	100.9	82.6	25.4	5.6
1992	164	26.3	Na	190.4	86	29.8	4.7
1993	162.1	30.66	Na	192.7	84	23.2	4.3
1994	160	34.5	7.2	201.9	79	17.4	3.7
1995	324.5	133	20.7	459.9	70	16.4	6.7
1996	369.1	120	31	520.19	70.9	13	4.2
1997	416.8	132	34	582.8	71.5	14.1	4.4
1998	289	138	36.8	463.6	62.3	10.1	4.8

*1. VAT had not been introduced***Source: CBN Statistical Bulletin, 1995, 1999**

Although the dollar value of oil revenues continuously declined following the gulf war peak in 1990, they remained higher than the 1990 level in Naira terms due to the continuous depreciation of the exchange rate. Overall, the main features of the structure of government revenue in Nigeria during the study period may be summarized as follows:

- a. Government revenue has been increasing in nominal value since 1984 except in 1991 and 1998**
- b. The dominance of petroleum revenues in the structure of government revenues.**
- c. The weak performance of the tax system in terms of the proportion of revenue generated from the source.**
- d. The improvement of non-oil revenue (as percentage of total revenues) following the introduction of VAT in 1994, from 15.9% in 1994 to 26% in 1995 and 36.7% in 1997 (CBN, 1999)**

- e. The fluctuating nature of oil revenues as exemplified by the decline in the revenue source in the early 1980's due to the glut in the world oil market; the peak dollar value of oil revenue in 1990 following the gulf war and the subsequent gradual decline in real terms of oil revenues.**
- f. The essentially high dependence of government revenues on an externally determined variable, the price of crude oil, and the consequently high vulnerability of fiscal policy to the effects of price shocks (positive or negative)**

The objectives of government tax policy since 1986 may be grouped into four:

- i. To broaden the tax base and strengthen tax administration machinery in order to improve the performance of non-oil revenue in the face of dwindling oil receipts.**
- ii. To deal with multiplicity of taxes to encourage voluntary tax compliance and stabilize prices.**

- iii. To increase incentives to individuals and corporate bodies to promote investment in preferred sectors
- iv. To encourage savings, check conspicuous consumption and encourage local production

From these objectives, it is clear that whereas government desired to increase its revenue by expanding the scope of taxation, it also realized the need to grant incentives, reliefs and subsidies in some sectors in order to achieve some desirable consequences such as improved savings, export promotion and investment. This situation pointed to a typical case of the 'classical dilemma' in the attainment of macroeconomic goals and the choice of fiscal policy instruments. Nevertheless, the overriding consideration of government, it appeared tilted in favour of the revenue objective, in view of the decline in oil revenues as exemplified by the introduction of the VAT in 1994. VAT almost immediately proved to be a reliable source of revenue. This component of government revenue is a form of consumption tax instituted as a replacement of the sales tax by decree No. 102 of 1993. The actual implementation of

VAT commenced from January 1, 1994. The proceeds of VAT were to be shared among the three tiers of Government. Total VAT receipts for 1994 stood at #7b, which was 21% higher than the estimate for that year. Since inception, VAT has effectively diversified the revenue structure of the federation, by broadening the tax base and improving revenue from the non-oil sector. Revenue from this source grew steadily in nominal terms through the 1990s. Table 6 shows VAT receipts over the period.

Table 6. Value Added Tax Receipts, 1994-2001 (#B)

YEAR	Approved Budget	Actual	% change	% of Non-Oil Revenue
1994	6	7.26		17.4
1995	12	20.76	185.9	15.37
1996	25	31	49	20.5
1997	35	34	9.6	20.5
1998		36	8.4	21.18
1999		47.1	30	20.99
2000		58.4	24	18.59
2001		91.7	57	17.5

Note : *Approved estimates for 1998-2001 are unavailable following the inability of the NPC, the specific source of this statistics to sustain its annual report, The Economic and Statistical Review, beyond 1997.*

Source: (i) *National Planning Commission, The Economic and Statistical Review(1994, 1995, 1997 eds.)*
(ii) *Annual Report and Statement of A/C (2001)*
(iii) *Authour's computations*

4.2.2 Expenditure

Government expenditure programme is a very important component of fiscal policy in Nigeria. Available statistics show that federal government expenditure grew substantially within the last two decades. Contrary to the underlying principle of SAP, the size of the public sector (measured in terms of the growth rate of government expenditure) did not experience a reversal during the SAP period. Table 7 shows the growth rate of federal government expenditure between 1986 and 2000. It is evident that public expenditure and output grew in the same direction, but public expenditure grew faster than output, a situation that somehow leads us favourably in the direction of The Wagner's hypothesis, although this cannot be taken as a conclusive evidence of it.

Table 7. Government Expenditure and GDP, 1985-2001 (#B)

Year	Govt. Exp. (GE)	% change	GDP	(GE) as %GDP
1985	13.04		72.35	18
1986	16.22	24.6	73.1	22.1
1987	22.01	48	108.8	20.2
1988	27.7	25.9	145.2	19
1989	41.02	48	224.7	18.2
1990	60.26	22	260.6	23.1
1991	66.5	10.2	324.0	20.5
1992	92.7	39.3	549.8	16.8
1993	191.2	106	697	27.4
1994	160.89	(15)	914.7	17.5
1995	248.7	54.5	19977.7	12.5
1996	288.09	15.8	2740	10.5
1997	356.2	23.6	2835	12.5
1998	443.5	24.5	2765.6	16
1999	947.6	113.6	2289.1	41.3
2000	701.05	(25.9)	2540.84	27.5
2001	1018.02	45	3162.32	32

Note: Figures in parentheses are negative growth rates

Source: *i. CBN Statistical Bulletin, 1999, 1995*

ii. The Federal Office of Statistics, Annual Abstracts of Statistics (Various issues)

In the 1970s, government expenditure policy was driven by the need to invest in economic infrastructure and accelerate economic development through direct involvement in economic activities. The oil windfalls during this period facilitated the pursuance of the twin objectives of infrastructure building and establishment of key industries. And so government expenditure grew unabated. The expectation of increased oil earnings and growth in the future further enlarged the funding scope of government projects by ushering in external capital. By the time commodity prices fell in the early 1980s, public expenditure outlets had widened substantially. Deficits increased, as government was unable to cut expenditure commensurately.

Table 8. Deficits and Revenue, 1986-2001 (#B)

Year	Revenue	Deficit as % Current Rev	Deficit- GDP Ratio
1986	7.96	103.6	8.25
1987	16.12	36.4	5.88
1988	15.58	78	12.16
1989	25.89	58.5	15.13
1990	38.15	58	22.16
1991	30.82	115.9	35.75
1992	53.26	74.2	39.53
1993	83.49	129	107.7
1994	90.62	77.4	70.2
1995*	249.76	-	
1996*	325.14	-	
1997	351.26	1.4	5
1998	310.1	42	133.3
1999	662.58	43	285.1
2000	597.2	17.3	103.7
2001	796.9	27.7	221

Note: *Fiscal operations of government in the year resulted in overall surplus

Source: (i) CBN Statistical Bulletin 199, 1995

(ii) CBN Annual Report and Statement of A/C 92001)

The deficit of the federal government grew in nominal and real terms and exceeded the statutorily permitted level of 12.5 per cent of current revenue as shown in the last column of table 8.

Government revenue persistently lagged behind expenditure. The prevalence of fiscal crises on both fronts (domestic and external) necessitated a reversal of government's role in the economy. Although government beginning from 1986, as a product of the SAP was supposed to be downsizing, its expenditure did not reflect this. The

extra budgetary component of federal government expenditure grew rapidly in the 1990s. Table 9 shows this.

Table 9. Extra budgetary Expenditure, 1993-2001 (#M)

Year	Extra-Budgetary Exp.	% of Total Expenditure
1993	54583.5	28
1994	4055.7	2.5
1995	9357	3.76
1996	00	-
1997	00	-
1998	11303.5	2.54

1999	70570	7.4
2000	93845.0	13.3
2001	73594.5	7.2

**Source : i. CBN Annual Report and Statement of A/C
(various issues**

**ii. National Planning Commission, The Economic
and Statistical Review(1994, 1995, 1997 eds.)**

The practice of extra-budgetary spending in Nigeria has been discredited as underscoring the lack of transparency in budget documents as well as final accounts of the government (Zanini 1994). These expenditures have actually boosted government expenditure and of course the deficits in recent times. Unfortunately, this aspect of fiscal indiscipline, which dates backs to 1986, was never officially reported until the Okigbo Committee Report (1994) which probed the CBN. The same applies to dedicated revenues, which at some points were as high as 40% of total oil

revenues (Garba, 1998). Both expenditure avenues escaped the budgetary process and did in fact help to accentuate fiscal deficit. Table 9 shows extra-budgetary spending of N54.5 billion, which translates to 28 per cent of total expenditure in 1993. It subsequently declined to 3.76 per cent in 1995 and headed upwards again in 1998 when it attained 13.3 per cent of total expenditure. Unfortunately, it has been observed, the bulk of extra budgetary spending was done on projects that were not very productive and therefore did not dispose to the economy the necessary stimuli (Abiola, 1998).

The functional classification of government expenditures indicates the dominance of the administrative sector (including defense) and debt service in federal expenditure outlays. This trend has persisted over time. Table 10 shows this.

Table 10. Functional Classification of Government Expenditure (‘000), 1986-1998

YEAR	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
ADMINIS TRATION	2,582.5 2,940.5	2,488.8 7,862.5	2550.0 7676.4	4,585.3 8888.0	7,374.2 9460.1	10356.6 11,298.8	12,247.2 13,973	25,557.1 26,447.8	31,684.4 29,319.9	49,683.3 42095.7	85,502.8 61,986.4	77,367.9 110882.1	108,095.5 89943.9
ECO. SERV.	3,434.9 1,613.6	2,452.3 3,252.6	3479.3 3349.9	3309.8 4857.3	4887.5 5099.4	2999.1 4448.4	4734.4 5477.1	9089.0 65,578	14,113.4 72,632.5	28,329.7 49,067.1	26,054.2 69422.2	28,849. 75,659.7	41,844.3 87639
SOC./COM SERV.	1,934.2 1,517.4	1493 1088.1	2,705.7 3,840.2	3,381.3 6,074.9	435.6.0 5492.0	4,022.9 4,168.6	4859.1 5797.7	13,594.6 12,382.7	17,179.1 15,079.9	17,789.6 23,036.4	22711.5 26343.4	36,754.3 28,232.6	57,871.8 46,143.2
TRANSF ERS	3,130.2 10,152.3	8074.5 9815.5	8943.3 12883.0	1578.4 20,720.1	21367.1 40,216.7	22,586 47,668.6	30195 70,890.5	63,869.8 74,814.2	47,223.1 81,424.7	57692.7 80482.5	68188.1 130,342.2	1287,52 141487.9	159,476 208,533.7

Note: Figures underneath are actual while those on top are approved budget estimates

Source: CBN Statistical Bulletin, 1999 and 1995

The high growth rate of government expenditure in Nigeria may be blamed on a variety of factors. These include:

- i. The period under review was characterized by frequent changes in government. The period (1986-1999) witnessed five administrations, all military except the Shonekan led government that lasted only a few months. Large internal security expenditures have characterized the initial periods of each of the regimes aimed at securing power in the first instance. Being military regimes, expenditures were never appropriated, and often directed at gaining acceptability through social and welfare oriented projects that often achieved very little in the end. Examples of such programmes include MAMSER, Better life for Rural Dwellers, NDE, Family support and the Family Economic Advancement Programme (FEAP).**
- ii. The practice of extra-budgetary spending financed largely by 'Ways and Means' advances and the covert drawings on stabilization and dedicated**

accounts also contributed significantly to rising expenditures during the period. The administration of dedicated accounts and extra budgetary expenditures were outside the purview of the budget and therefore lacked accountability and transparency (NPC, 1994). The prevalence of such channels for disbursement of public funds, in addition to unidentified expenditures that equally grew in importance during the same period exacerbated fiscal indiscipline.

- iii. The budgetary process itself cannot be absolved of the blame. Faulty budgetary process, reflective of a total collapse as some analysts put it, led to frequent formulation of budgets that were unsustainable. The budget process lacked institutional capacity. Revenue projections especially were not often realized even under normal circumstances. Organizational capacity for implementation and evaluation of government budgets has been very inadequate.**

- iv. Patronage of cheap sources of funds also shares in the problem. If governments recognized that they had to vote explicitly for increased taxation in order to finance their largesse, they would probably be more prudent. In Nigeria the easy and quick resort to money financing (monetary accommodation by the CBN), and the lack of institutional mechanisms for restricting military governments to statutorily permitted deficit levels provided additional impetus for rapid expenditure growth.**
- v. Occasional oil revenue shocks were often thought to be enduring. Positive price shocks especially had driven public expenditures to higher levels that became unsustainable sooner than later. The oil boom of the early 1970s had this consequence for Nigeria. The 1991 Gulf crisis and the oil price gains that followed had a similar effect as federal government revenue rose by seventy two (72) percent in 1992, and expenditure by 39 percent in the same year.**

- vi. **The macroeconomic environment of exchange rate instability and inflation heightened the cost of government projects and thus necessitated further expenditure. The obvious difficulty in predicting these variables in Nigeria and the limited capacity of policymakers to do so apparently made nonsense of the budget and portrayed expenditure as seemingly uncontrollable.**
- vii. **Lastly, several inefficient state enterprises constituted an added expenditure avenue especially as government engaged in further spending on them preparatory to privatization.**

4.3. DEFICIT FINANCING

The gap between revenue and expenditure of government must be financed. This gap has continued to widen over the years. Table 2 above shows the deficit situation measured on cash basis. The cash accounting basis ignores interest arrears and the implication for the government's balance sheet. It therefore offers a better picture of government

fiscal stance than when measured on an accruals basis, which incorporates interest accumulation. Obviously if the accrual basis is used, even the years during which the government reported surpluses will eventually turn to deficits. We are nevertheless compelled to use the cash basis deficit data, which is the officially reported statistics. To finance the deficits, the government mostly resorted to borrowing from the banking system of which CBN financing has always been dominant.

Table 11. Government Deficits and Financing Sources, NM,1986-1998

Year	1986	87	88	89	90	91	92	93	94	95	96	97
Deficit	8254.3	5889.7	12160.9	15134.7	22116.1	35755.2	39532.5	107735.3	70270.6	-1000	-37049.4	5000
Banking system	475.2	2809.7	6102.4	9236.4	2727.7	31107.1	33598.8	89402.0	40900.1	-17819.6	-153143.2	-62880.5
CBN	6042.7	590.9	7473.7	6477.4	-1498.0	18430.8	46433.4	62383.6	41253	7312.6	-52288.4	n.a
Foreign debt	708.1	832.7	1918.7	5719.0	980.6	2972.6	-11859.6	16963.5	8390.8	22455.4	7825.4	13382.6
N-bank pub.	0.3	3655.9	2259.4	3438.6	3364.9	1005.3	13117.8	1734.0	19347.5	-10717.4	9953.7	2243.4
Others	7070.7	- 1408.6	1880.4	15213.5	15042.9	670.2	4675.4	-364.2	1632.2	-30557.6	98314.7	52254.5

Source: (i) *CBN Statistical Bulletin 1999, 1995*
(ii) *CBN Annual Report and Statement of A/C (2001)*

As table 11 shows, the share of the deficits financed by the banking system grew from less than 5% in 1986 to over 50% in 1989 and to 70% in 1993. The same trend characterized the proportion of the deficit financed by the CBN as a component of banking system's financing.

4.3.1. The Implication of the means of financing for Monetary Aggregates and Inflation

The means of deficit financing in Nigeria are principally:

- i. Domestic Bank Debt
- ii. Domestic Non-bank debt
- iii. External Debt
- iv. Others (unclassified)

Domestic Bank Debt

Debt drawn on the banking system constitutes the most important source of financing government deficits in Nigeria. The proportion of federal deficits financed from the banking system has continued to grow. In this category, debt drawn on the CBN remained dominant over the period under study (table 11). In effect the banking sector credit to the government continued to expand.

Since 1992, the economy's credit to the government has persistently outgrown that to the private sector. This situation however changed in 1996 and 1997. The reason being the decline in government budgetary deficits in those years and the use of previous surpluses instead of the usual recourse to borrowing from the banking system.

The immediate repercussions of the banking system's high credit to the federal government (table 15) and in particular the CBN 'ways and means' advances (table 14) have been the rapid expansion in monetary aggregates, increased domestic debt, and the crowding-out effect noticed by the decline (relatively) in the banking system's credit to the private sector especially as from 1990 when the CBN compelled commercial and merchant banks to hold stabilization securities. This policy which was aimed at controlling escalation of money supply did diminish the ability of the banks to lend to the private sector.

The persistently high deficits of the federal government and the huge financing from the CBN created a path to money growth in the economy, in addition to the phenomenal growth in interest accumulation on debt owed the banking system. During this period, broad money (M2) grew astronomically, just as the debt

situation worsened. Figure 1 shows the trends in changes in money supply and government expenditure. Clearly, there is symmetry in both trends. Over a period of fifteen years (1986-2001), government expenditures recorded negative growth only once, i.e. in 1994. Apparently, in the same year, money supply (broad money) recorded a sharp decline in growth. The co-movement between the two points to the fact that the government relied heavily on seigniorage revenue for the financing of the deficits that persisted over the same period.

Table 12. Sources of Money Growth, NB, 1989-1999.

Year	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	Cumulative Change
M2	45.4	63.5	85.0	128.5	196.7	266.6	318.3	363.1	422.7	4.99	621.5	575
Net domestic credit	47.1	54.7	76.1	171.2	2800	439.1	474.3	371.0	365.8	401.0	465	418
Fed. Govt.	18.3	21.0	33.9	91.1	185.1	288.1	263.0	110.4	46.3	139	142	123
Other public/priv ate.	28.9	33.6	42.3	80.0	95	151	211	261	318	262	323	
Net foreign asset	21.3	44.8	58.8	35.7	63.5	56.2	108.6	237.9	234.0	265.5	621	

Source: (i) *CBN Statistical Bulletin 1999, 1995*
(ii) *CBN Annual Report and Statement of A/C, 2001*)

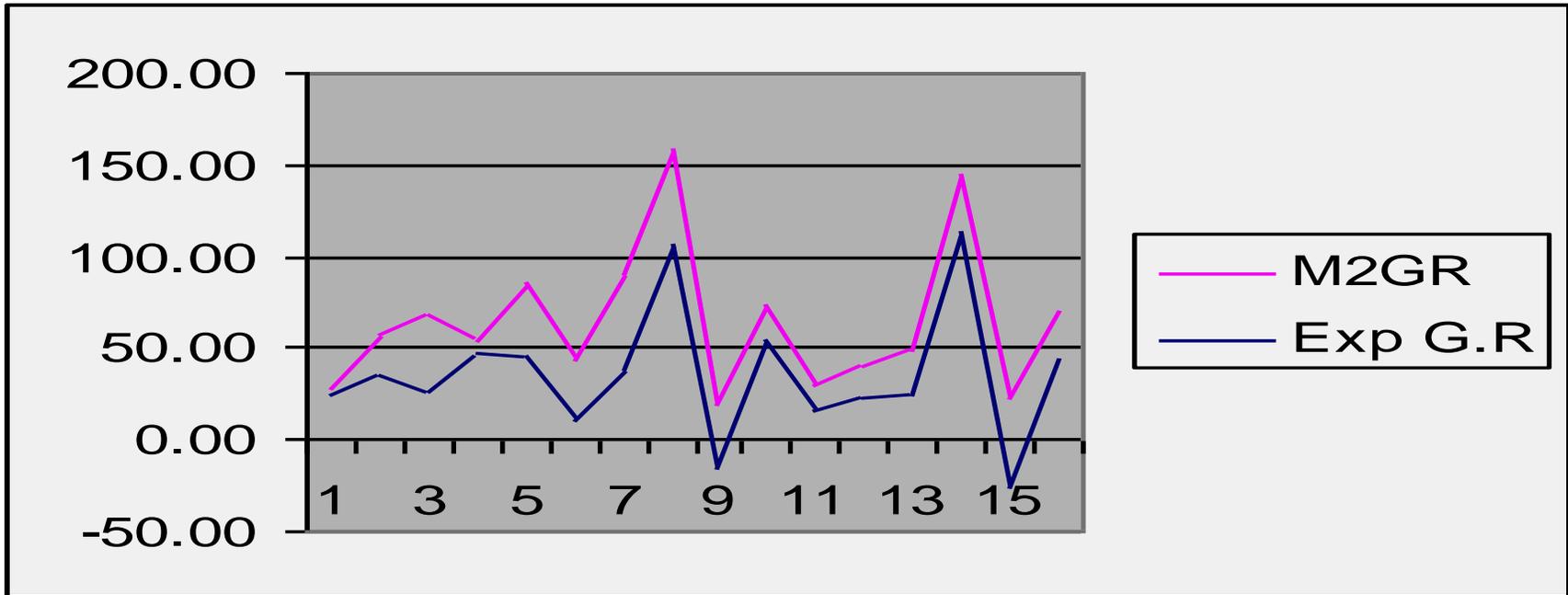


Figure 1. Money Supply and Government Expenditure Growth Rates, 1986-2001

Table 12 shows the various sources of money growth over a ten (10) year period. Clearly, domestic credit to the federal government contributed heavily to the observed high path of monetary expansion. In nominal terms, M2 grew by a total of #575bn between 1989 and 1999. Put differently, M2 grew by 1266.5% over this period. This is notwithstanding the much slower rate of growth of credit to the private sector and the drop in external reserves in 1996 and 1994. Credit to the federal government increased in nominal terms by 123 billion naira over the same period. In 1989, the stock of credit to the federal government (N18.3b) was 8% of GDP. By 1999, the stock of federal government debt (N142b) was 101% of GDP.

Meanwhile, achieved credit to the private sector only surpassed target in 1995. This was because, in that year, the government recorded a surplus in her accounts and therefore had very little credit requirement of 5.6%. Table 13 shows monetary and credit targets and achievement between 1993 and 1995

Table 13. Monetary and Credit Targets and Achievement, 1993-1995 (percent)

Year	1993	A	1994	A	1995	A
Growth in M1(%)	20.0	54.6	21.4	47.8	9.4	5.6
Growth in M2 (%)	18.0	49.8	14.0	39.1	0.0	10.1
Credit to domestic Economy	17.5	75.9	9.4	27.9	11.3	29.5
Credit to Private Sector	20.0	16.6	32.6	28.3	21.9	49
Credit to government	14.6	120.7	0.0	27.7	5.6	19.0

Source: Iyoha, M (1995): "OMO and the Efficiency of Monetary Policy in Nigeria- NCEMA-policy Analysis series vol. no.1 pp. 1-25

Note: The columns marked "A" contain actual figures.

Through the three years, achieved growth rate of broad money (M2) constantly out grew the targets due to huge fiscal financing. A similar pattern characterized credit to government during the period. These deviations of actual from projections were primarily due to CBN ways and means financing of the escalating deficits of the government (table 14). Iyoha, (1995) notes that it was the financing of deficit through the banking system especially that resulted in a sustained injection of high-powered money into the economy. This in turn accelerated the growth of money supply, exacerbated inflation, and also caused a measure of depreciation of the naira. It can be argued, in addition, that this chain of effects bordering on persistent government deficits, given the means of financing, was also primarily responsible for the sustained inflationary pressures on economy before 1993. Overall deficit as percentage of GDP was 8.5% In 1990, 7.2% in 1991 and 11% in 1992, out of which banking system financing accounted for over 80 per

cent in 1991 and 1992. The domestic debt situation was no better as table 15 shows.

Table 14. **Ways And Means Advances Outstanding, 1993-1997** (N' million)

Year	Amount outstanding	Monthly average
1993	429,893	35,824.4
1994	390,302.3	32,525.2
1995	225,453.0	18,787.8
1996	1,025,257.6	85,438.1
1997	820,203.7	68,350.3

Source: CBN, Annual Report and Statement of Accounts 1997

Table 15. Federal Debt by Domestic Holder, NM (1986-1997)

Year	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Total	22689.	27597.1	35578.	32405.5	65837.	96939	128936.	228571.3	289396.5	299929.9	295812.1	305679.6
Banking Sector	9		7		2		5					
CBN	17721.	19197.2	27682.	28483.5	56564.	89412.6	122028.	170773.4	241567.5	279817.0	234681.6	264229
Comm. and Merch. Banks	6		7		1		3					
Non-Bank Sector	4968.3	8399.5	7896	3922	9273.1	7526.4	6908.2	48797.5	47825	20112.9	61130.5	41450.2
CBN in Percent of GDP	5750.3	9193.5	11.452	14645.6	18255.	19261.2	32963.7	32522.3	51869.8	390141	49862	53349.5
Non-Bank	.4				9							
Percent of GDP	24.3	17.6	19.0	12.6	21.7	27	22	25	26.4	14.1	11.8	7.5

Source: (i) *CBN Statistical Bulletin 199, 1995*

(ii) *CBN Annual Report and Statement of A/C 92001*)

Domestic Non-Bank Debt

In Nigeria, the scope of deficit financing from this source was highly limited by the underdeveloped nature of the money and capital markets, and the prevalence of unattractive interest rates, which were negative in real terms during most of the period under survey. Although, as part of the deregulation process, interest rates were supposed to be freed (liberalized), and this would perhaps have opened the doors to non-bank funds. But due to the occasional setting of interest ceilings (usually at levels lower than market and inflation rates), this avenue of financing government deficits remained relatively unimportant. Non-bank financing grew substantially in 1992 owing by the CBN's monetary policy stance in that year which freed interest rates. From one billion naira in 1991, this source provided 13 billion naira in 1992. This avenue started drying up in 1993 and by 1995, it had simply closed up. Obviously the objective of government in other sectors (especially of encouraging investment) would not permit it to exploit this avenue continuously due to its high interest rate sensitivity. The re-imposition of interest rate ceiling in 1994 apparently mitigated the ability of the federal government to meet (at least in part), its large financing requirement from this source.

Table 11 above shows this and other sources of financing the deficits of the federal government in Nigeria.

Foreign Debt

Before 1986, Nigeria's external debt situation and credit worthiness had started deteriorating. Interest due on external debt had started accumulating. In fact, by 1986, the burden of debt in terms of servicing obligations had risen substantially. Total external debt as a percent of GDP was 56.7%. By 1990 it increased to 114.6 (table 16).

Table 16. Nigeria's External Debt Overhang, 1986-1998 (N'M)

Year	Total External Debt	GDP at Current Market Prices	Debt as % of GDP
1986	41452.4	73061.9	56.7
1987	100789.1	108885.1	92.6
1988	133956.3	145243.3	92.2
1989	240393.7	224796.9	106.9
1990	298614.4	260636.7	114.6
1991	328054.3	324010.0	101.4
1992	544264.1	549808.8	99.0
1993	633144.4	697095.2	90.8
1994	648813.0	914940	70.9
1995	716865.60	1977740.0	36.2
1996	617320.0	2356600.0	26.2
1997	595931.9	3127940.0	19.1
1998	633017.0	2837150	22.3

Source: (i) CBN Statistical Bulletins, 1995 and 1999 eds.

(ii) CBN, Annual Report and Statement of Accounts (2001)

This situation effectively limited government's access to further loans to finance her deficits – another reason for heavy reliance on domestic sources. Net external financing was almost negative especially as from 1986 through the 1990s. What was required of

the country (by external creditors) in the form of amortization of previous debt to qualify for fresh credits on a yearly basis was higher than the amount of the new credit (Zanini 1994). As the statistics in table 11 show, the dependability of foreign debt for financing the deficits of the federal government has diminished in recent times partly as a result of the debt situation of the country. An additional reason perhaps, may be traced to the perceived lack of political will on the part of the government to institute some stringent reforms demanded of them by major creditor institutions.

4.4 MONEY GROWTH AND DOMESTIC PRICES

As noted in the literature, the association between monetary expansion and inflation appears to hold for Nigeria. To the extent that (money-financed) deficit remained a recurring feature of the government budgets, inflationary consequences were not unexpected. Although in the Nigerian situation it is difficult to dissociate other potential sources of inflationary pressures such as devaluation, removal of subsidies, decline in food production, etc, which are all part of the nations economic history, such conditions are however not expected to have permanent inflationary effects (or are at least expected to be easily ameliorated), if

unaccompanied by excess money supply growth (Zanini, 1994). The commonly advocated path to inflation in a situation such as this is that money demand growth lags behind money supply causing disequilibrium in the money market. This disequilibrium is transmitted to the goods sector (almost) instantaneously in a structurally rigid economy like Nigeria with production bottlenecks in almost all sectors, in the form of higher prices. Figure 2 shows money/price movement in Nigeria.

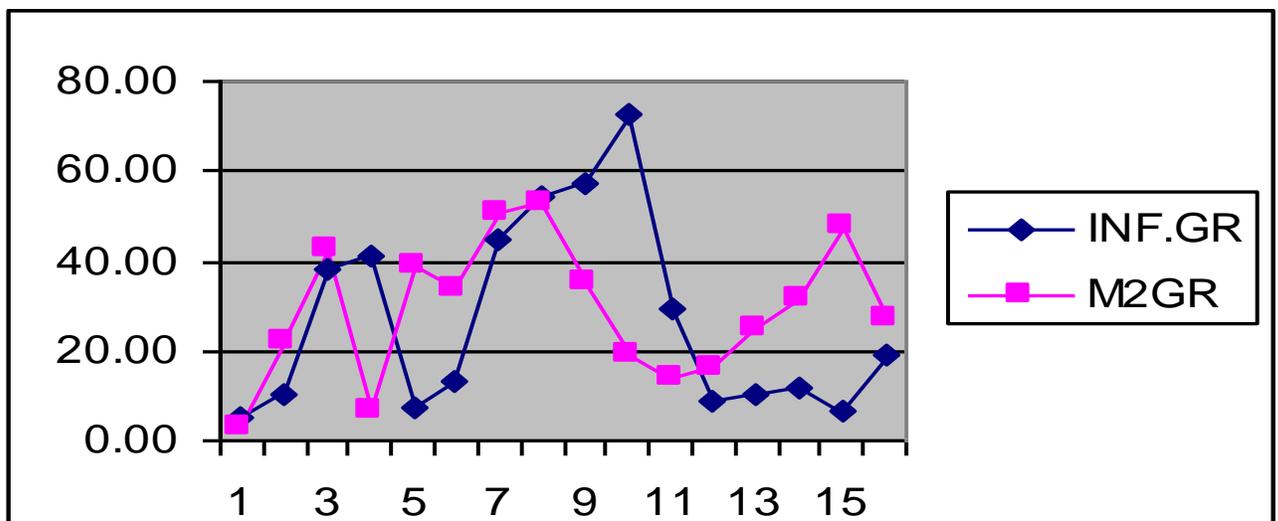


Figure 2. Inflation and Money Supply Growth Rates (GR),
1986-2001

Efforts at stabilizing inflation during the period under investigation were not very successful. At some point though, temporary successes were recorded, but the situation soon deteriorated. For example, in 1990, following the within period peak of 40% inflation rate in 1989, government floated a stabilization plan. In that year (1990), the inflation rate dropped to 7.5% but soon headed upwards in 1991 and climaxed in 1995 when it attained an all

period high of 72%. Inflation stabilization is deemed to have failed if at any time during the three subsequent years, inflation exceeds $\frac{3}{4}$ of the rate prevailing in the year before stabilization or if it exceeds the level it reached during the stabilization year (Hamann and Prati, 2003). Applying this simple evaluation condition, it is evident that the 1990 stabilization failed. As reported on table 18, two years after the commencement of stabilization, inflation hit 44.5%, which exceeded both the level a year before the commencement of stabilization, that is, 1989, and the level during the stabilization year.

4.5 BUDGET DEFICITS, INFLATION AND EXCHANGE RATES

Until 1986, Nigeria operated a fixed exchange rate system. This resulted in an overvalued naira through the period preceding the adoption of SAP. Therefore exchange rate deregulation featured as a core policy direction in the SAP. The rates that emerged initially were low averaging N6 to a dollar over the period 1986-1991. Starting from 1992 however, the naira depreciated substantially

averaging N16 dollar over the next five years (1992-1996). The rapid depreciation of the naira during this period was not unconnected with the deficit-induced expansion in monetary aggregates during the period. The expansive fiscal policy and the banking system's financing of the deficit combined to aggravate inflationary pressures on the economy and consequently led to increased pressure on the naira exchange rate. The distinction between the official (government) exchange rate and the parallel naira/dollar exchange rate notwithstanding, the rapid depreciation of the parallel rate often necessitated adjustment of the official rates in guided succession. This was aimed at reducing the growing gap between the official naira exchange rate and the bureau de change and parallel market exchange rates. The sustained increase in the parallel market rate (which was market determined) was obviously a symptom of inflation. This is because, the exchange rate, like other prices, is driven by expansive monetary and fiscal policies. In effect, the deficit-induced monetary expansion was responsible for upward movements in prices of goods, and also contributed to the instability of the exchange rate during the period under review. This is however to be seen as an underlying cause rather than an immediate cause. Apparently, the reduction in oil

receipt due (in real terms) over some periods was partly instructive to the depreciation of the naira. This analysis might appear daunting at first sight, as what has been commonly argued is that exchange rate depreciations caused inflation instead. It is in any case important to note that the position being advanced here does not completely out-rule this (other) possibility. Rather, we seem to be confronting (unavoidably) the possibility of a bilateral association between exchange rates and inflation in Nigeria. The argument is that the monetary accommodation of government deficits in Nigeria led to monetary expansion, then inflation and then exchange rate depreciation.

These linkages could as well be argued in the reverse direction especially in a short-run analysis (Zanini, 1994). Overall, the deficits, and the means of financing them are to be seen as the proximate sources of the chain reaction. Since the introduction of SAP, the exchange rate has continuously depreciated with recorded peaks in 1987, 1989, 1992 and 1993. The corresponding depreciation rates were 49.7%, 38.6%, 42.7% and 21.5% respectively (table 17).

Naira Exchange Rates, CPI and Inflation Rate, 1984-1999

Year	Exchange Rate #/U.S.&	Nominal EXR. Index =100	Real EXR. Index :1985 =100	CPI	Inflation Rate	Depr. Rate %	Parallel Market Rate
1984	0.7649	85.97	85.97	94.8	39.6	-5.36	-
1985	0.8939	100	100.00	100.0	5.5	-14.4	-14.4
1986	2.0206	226.0	186.0	105.4	5.4	-55.8	4.020
1987	4.0179	337.6	252.7	116.1	10.2	-49.7	4.730
1988	4.5367	507.5	280.1	181.2	38.3	-11.4	6.878
1989	7.3916	826.9	303.2	272.7	40.9	-38.6	10.810
1990	8.0378	899.2	306.7	293.2	7.5	-8.0	9.610
1991	9.9095	1108.6	335.0	330.9	13.0	-18.9	13.285
1992	17.2984	1935.2	404.5	478.4	44.5	-42.7	21.070
1993	22.0502	2466.8	328.1	751.9	57.2	-21.5	37.260
1994	21.8861	2448	208.9	1,180.7	57.0	0.70	

		.4					Na
1995	21.8861	2448	120.0	2,041.4	72.8	0.00	81.2
		.4					
1996	21.8861	2448	92.8	2,638.1	29.3	0.00	81.2
		.4					
1997	21.8861	2448	85.5	2,863.3	8.5	0.00	85
		.4					
1998	21.8861	2448	NA	3,149.2	10.0	0.00	87.9
		.4					

Source: *i. FOS (1998). Review of the Nigeria Economy 1997, pp. 94,119*
ii. CBN Statistical Bulletin, 1999

The naira appreciations in 1994 and subsequently were achieved through a combination of two major developments. First, the government decided to fix the official exchange rate at 1\$ / N21.8561 and maintained that level for a while. Second, there was also a conscious effort at controlling expenditures starting from 1994. From 15.5% in 1993, the deficit-GDP ratio declined to 7.7% in 1994. In the same year, government expenditure recorded a negative growth for the first time over 11 years (table 18). The trend continued through 1995 and 1996, during which years official statistics indicate overall surpluses (table 2). However, the parallel market exchange rate, which is market determined and therefore the more realistic exchange remained at 1\$ N80. There is no doubt, inflation would have played an important role in the depreciation of the naira exchange rate at some point. This reverse causation is apparent between 1986 and 1989 during which period Nigeria enjoyed favourable terms of trade, yet, the parallel exchange rate depreciated from N62 in 1986 to N83 in 1988 and to N89 in 1989.

4.6 CAUSALITY BETWEEN DEFICITS AND INFLATION

The most obvious link between inflation and government deficit in Nigeria is the rapid growth of money supply. As has been shown previously, large budgetary deficits financed mainly by the CBN advances translated directly to expansion in monetary aggregates. As the deficits of the government expanded, so did money supply due to heavy reliance on the banking system for financing.

Time series data show that Nigeria experienced single-digit inflation between 1960 and 1969 with the exception of 1966 when it hit the double-digit mark of 10.2 percent. The situation was not the same in the decade that followed (1970-1979) as inflation maintained double-digit rates all through excepting 1972 and 1973, and averaged 15 percent during the period. The decade that followed (1980-1989) witnessed a much higher average inflation rate of 20 percent. The decade of the 1990s was worst as inflation averaged 30%. Nearly the same pattern could be observed in government's fiscal operations, which continued to result in ever-increasing deficits. From a surplus position of 9.8% of GDP in 1974, fiscal operations of government swung into a persistent deficit position attaining a within period high of 7.7% of GDP four years

later in 1978. By 1982, deficit measured nominally attained nearly 12% of GDP. Clearly, the symmetry between government deficit, growth in money supply and inflation is not in doubt. What follows is which variable leads which? This question may be answered through a cursory examination of growth rates for leads and lags. A series is said to be causing another if it leads the other (in terms of growth) over time or put differently, if the other lags behind it persistently over time (Pierce and Hugh,1977; Aghevli and Khan, 1978). Following this simple method, we examine table 18 in order to answer the question of causality.

Table 18. **Inflation, Money and Expenditure Growth Rates
(GR), 1986-2000**

Year	Inflation	Money G.R	Exp. G.R
1986	5.4	3.24	24.3
1987	10.2	21.9	35.7
1988	38.3	42.6	26
1989	40.9	6.3	47
1990	7.5	39	46
1991	13.0	33.8	10.4
1992	44.5	51	39.3
1993	54.2	53	106
1994	57.0	35	-15.6
1995	72.8	19.3	54.6
1996	29.3	14	15.8
1997	8.5	16.4	23.6
1998	10.0	24.6	24.5
1999	12.1	31.6	113

2000	6.9	48	-25.9
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*Source: CBN Statistical Bulletin 1999,1995
 CBN Annual Report and statement of A/C (several issues)*

In this examination, we have to note the relevant transmission mechanism in order to identify the appropriate variables. For two-way causality between inflation and deficit, we expect that inflation results from expansion in monetary aggregates as government finances its deficits largely from banking system sources especially through the creation of high-powered money. The relevant series would be inflation rate and the growth rate of money supply. Feedback causation is expected if inflation results in a widening of the deficits by causing expenditure to grow unabated. In essence we have to compare growth rates of money supply and inflation as well as inflation and growth of government expenditure.

Table 18 shows price leading money supply over a four year period (1993-1996). During this period, price grew faster than money supply as indicated by the consistently higher price growth rate (inflation) over money. During the period that followed (1997-2000), the statistics on table 18 show a change in trend with price lagging behind money supply in terms of growth over another four

year period. The phenomenon of price leading and lagging behind money supply over separate periods implies that monetary expansion causes price to rise and that price escalations also cause money supply to grow (Aghevli and Khan 1978). This generally translates to a bilateral relationship between inflation and budgetary deficits (the immediate cause of rapid monetary expansion in the circumstance)

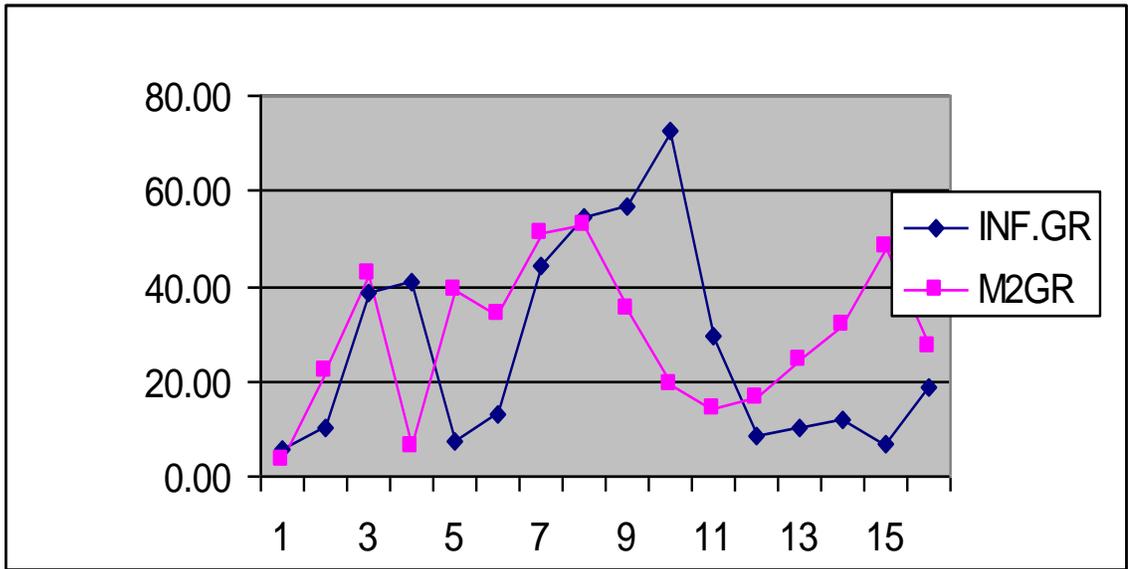


Figure 3. **Inflation and Money Supply Growth Rate, 1986-2001**

A similar conclusion would be reached if we examine government expenditure growth rates instead of money supply. The deficit is the difference between government expenditure and revenue. As expenditure grows, if revenue fails to grow commensurately, then the fiscal gap widens. In effect if there is a bilateral relationship between government expenditure and price, the same goes for inflation and deficit. The direct translation of this is that if inflation causes expenditure to grow (either in nominal or in real terms), all things being equal, the deficit grows. This is because government revenue is not expected to grow equivalently due to the possibility of reduced tax compliance owing to inflationary expectations and public demoralization. It is more prudent to assume this than otherwise in developing nations where tax systems are characteristically inefficient (Tanzi, 1978).

Table 18 shows price leading expenditure in growth rates over three years (1994 -1996) suggesting that inflation caused government expenditures to grow; and in the period that followed (1997-1999),

inflation lagged behind expenditure growth signifying the contrary. In effect, the relationship between the two could be safely said to be bilateral. If this is true, as we suppose, then a contrary conclusion cannot be reached between deficit (the direct consequence of rapid expenditure growth in the face of declining revenues) and inflation.

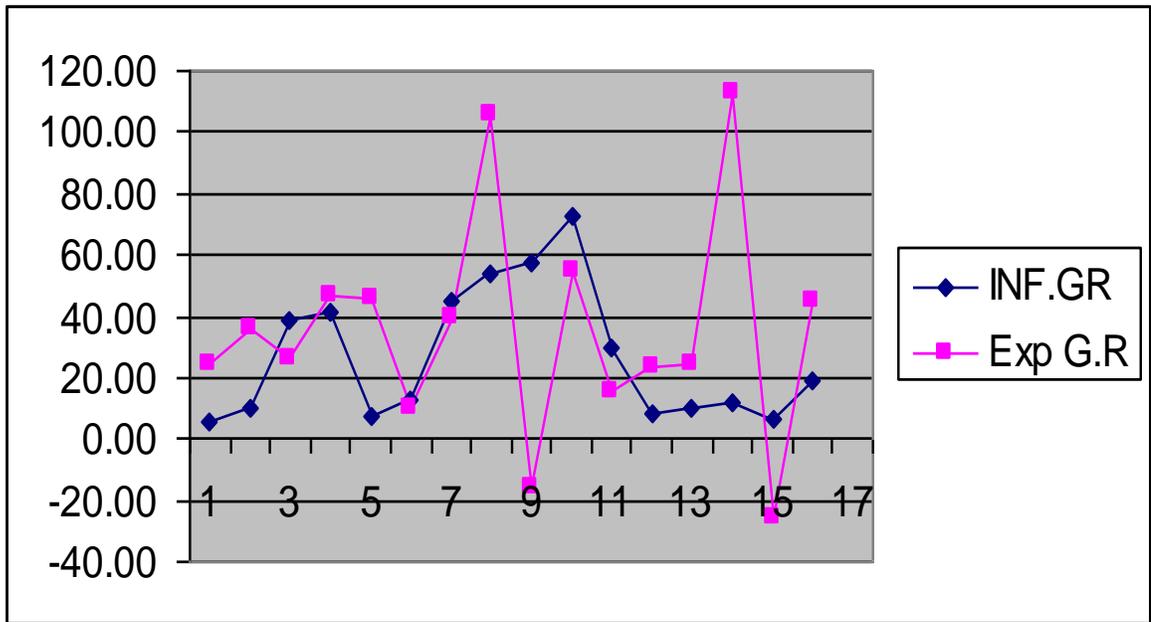


Figure 4. **Inflation and Government Expenditure Growth Rates, 1986-2001**

4.7 LESSONS FROM OTHER COUNTRIES' EXPERIENCE.

The analyses in the previous sections have indicated that inflation in Nigeria might not have been caused by the deficits alone, yet any inflation stabilization effort deserves to target in part, deficit reduction. The experiences of other countries lend credence to this view. This is notwithstanding any disparity in initial macroeconomic conditions and stabilization policy anchor. Argentina, Bolivia, Brazil, Peru and Ukraine are some of the countries that have experienced chronically high inflation in modern times with records of successful stabilizations. The peak periods of these countries' experience of modern time hyperinflation were, in their respective order, 1989-90, 1984-85, 1989-90, 1990, 1991-1994 (Reinhart and Savastano, 2003). At the very low end though, a comparable period in Nigeria's inflation history is 1993 – 95 (table 15). In all the cases, major fiscal adjustments have been needed to end each episode.

Except for Brazil, countries that ended hyperinflation had to reduce their deficits by more than 10% of GDP, on average, over a three-year period, among other measures (table 19). In the case of Nigeria, fiscal adjustments that brought about some relief after the 1995 inflation peak actually went beyond 10%. In fact, deficit-GDP ratio averaged 0.8% over the period 1995-1998 (table 2)

Table 19. Annual Inflation Rates in Selected Countries
(percent, average)

	t-3	t-2	t-1	T	T+1	t+2	t+3
Argentina (1989-90)	9.1	131.3	334.0	2697.0	171.7	24.9	10.6
Bolivia (1984-85)	32.1	123.5	275.6	6515.5	276.3	14.6	16.0
Brazil (1989-90)	147.1	228.3	629.1	2189.2	477.4	1022.4	1022.5
Peru (1990)	86.3	667.3	3398.5	7485.8	409.5	73.5	48.9
Ukraine (1991-94)	n.a	2.1	4.2	1613.7	376.4	80.2	15.9
Nigeria (1993-95)	7.5	13.0	44.5	61.3	29.3	8.5	1010

(b) Deficit/GDP

(PERCENT)

	C-3	C-2	C-1	C	CX1	CX2	CX3
Argentina	4.2	6.7	8.6	4.9	1.7	-0.4	0.2
a							
Bolivia	7.8	14.7	19.1	16.7	2.5	7.4	5.7
Brazil	3.6	5.7	4.8	2.8	0.0	-2.2	0.3
Peru	9.0	6.4	7.2	7.4	1.4	2.6	2.7
Ukraine	n.a	n.a	n.a	M	8.7	4.9	3.2
Nigeria	8.5	11.0	7.2	7.7	1.6	0.2	4.7

Source: IMF, international financial Statistics (various issues); Reinhart and savastino (2000) cited in Reinhart and servstino: The realities of modern Hyperinflation, F/D (June 2003).

CBN Annual Reports and statement of A/Cs (various issues)

Note: t refers to the hyperinflation period (years); for Nigeria, a comparable period of high inflation

This attainment was very temporary as the deficit/GDP percent soon rose to 4.7% two years later. Even at that, the stabilization effort of the government during this period appeared to have been more successful than the previous one in 1990. This is because, as official statistics indicate, the rate of inflation rate did not attain (subsequently) the 1996 level of 29.3% at which time the stabilization plan may be deemed to have commence.

Table 19 above shows evidence of successful disinflation in five countries with fiscal adjustment as a major component of their stabilization plans. Table 20 below has been extracted from table 19

to show explicitly the magnitudes of fiscal adjustments in countries that recorded successful stabilization at different times following inflationary spirals.

Table 20. **Fiscal Response to Inflation in selected Countries**

	Deficit/GDP (%) a year earlier	Hyper inflationary period average	3 years later
Argentina	6.7	4.9	0.2
Bolivia	19.1	16.7	5.7
Brazil	4.8	2.8	0.3
Peru	7.2	7.4	2.7
Ukraine	n.a	14.1	3.2

Source: Extracted from table 19

The ratio of deficit-to-GDP in Argentina a year before the hyperinflationary period (1989-90) was 8.6%. This was brought down to 0.2% three years after. Similarly, in Bolivia, from 19.1% to 5.7%; from 7.2% to 2.7% in Peru. The forgoing analyses build up to one important lesson, that is, fiscal adjustments are crucial to disinflation.

CHAPTER FIVE

DATA ANALYSIS

5.1 CAUSALITY BETWEEN INFLATION AND GOVERNMENT DEFICIT

To conclude that since there is co-movement between inflation (measured by absolute changes in price - Cpi) and the size of government deficit (Gdd) during the study period, then inflation and deficit exhibit a bilateral (two-way) causality would be rather simplistic. To avoid this, a formal test of causality has been carried out. The Granger test has been adopted for this purpose.

5.1.1. The Test Procedure

The Granger test has been briefly outlined using the main variables of the study, inflation (Inf) and government deficit (Gdd) in chapter three. According to Granger (1969), two series, say Inf and Gdd are said to be mutually dependent, (i.e display two-way causality) if Gdd causes Inf and Inf causes

Gdd. In the circumstance, there exists a feedback between Inf_t , and Gdd_t which may be symbolized as,

$$Gdd \leftrightarrow Inf.$$

Thus, that

Gdd causes Inf is functionally demonstrated by:

$$Cpi_t = f (Cpi_{t-1}, Gdd_{t-1}, Gdd_{t-2}, Gdd_{t-3}), \dots \dots \dots (1a)$$

$$f_1, f_2, f_3, f_4 > 0,$$

and that Inf causes Gdd is functionally demonstrated by:

$$Gdd_t = f (Gdd_{t-1}, Cpi_{t-1}, Cpi_{t-2}, Cpi_{t-3} \dots \dots \dots (1b)$$

$$f_1, f_2, f_3, f_4 > 0;$$

where Gdd_t is current government deficit; Gdd_{t-i} ($i=1,2, \dots$) are lagged values of government deficit; Cpi_t is current consumer price index; Cpi_{t-i} ($i=1,2, \dots$), are lagged values of Cpi.

We note that for simple causality, the change in the value of Gdd does not have to affect Cpi in equation (1) in the same period. We note also that the current value of Gdd does not

enter the model, equation 1, unless we are modeling instantaneous causality.

Causality in equation (1a) requires that the estimate of at least one of (Gdd_{t-1} , Gdd_{t-2} , Gdd_{t-3}) has to be statistically significant. The same applies to equation (1b), at least one of the estimates of parameters of (Cpi_{t-1} , Cpi_{t-2} , Cpi_{t-3}) has to be statistically significant also. Feedback causality requires that causality exist in both (1a) and (1b). In order to boost evidence, two different presentations of the relationship between inflation and deficit have been used. Tables 5.1 and 5.2 below show the estimates of the regression coefficients of the two models of inflation/deficit causation. The second specification of the causal relation between the variables of the study are :

$$Cpi_t = f(Cpi_{t-1}, MS_{t-1}, MS_{t-2}, MS_{t-3}) \dots \dots \dots (2a)$$

$$f_1, f_2, f_3, f_4 > 0$$

And

$$MS_t = f(MS_{t-1}, Cpi_{t-1}, Cpi_{t-2}, Cpi_{t-3}) \dots \dots \dots (2b)$$

$$f_1, f_2, f_3, f_4 > 0$$

Where MS_t is current change in money stock; MS_{t-i} ($i=1,2, \dots$), are lagged values of MS; other variables are as defined previously.

Here we use the change in money supply as a proxy for deficit. During the period under review, monetary authorities in Nigeria relied heavily on domestic financing of the deficits. All through the period, the banking system, as noted in chapter 4, provided over 50% of the funding. The CBN in particular accounted for over 70% of the total banking system financing of the deficits through its ways and means advances. As a result, changes in the base money during the period were mainly a reflection of the deficits since both financing strategies involved money creation. This phenomenon makes the choice of changes in money supply as a measure of the deficits in the second specification of the causality model justifiable.

Table 21. Causality test Results for model 1

<u>Variable</u>	<u>Gdd_t</u>	<u>CPI_{t-1}</u>	<u>Gdd_{t-1}</u>	<u>Gdd_{t-2}</u>	<u>Gdd_{t-3}</u>
<u>CPI_t</u>		<u>1.2</u>	<u>-0.72</u>	<u>-13.19</u>	<u>11.19</u>
		<u>(19)</u>	<u>(-0.36)</u>	<u>(-4.9)</u>	<u>(3.5)*</u>
<u>Gdd_{t-1}</u>	<u>0.43</u>				
	<u>(1.6)</u>				
<u>CPI_{t-1}</u>	<u>0.05</u>				
	<u>(2.28)*</u>				
<u>CPI_{t-2}</u>	<u>-0.008</u>				
	<u>(-0.12)</u>				
<u>CPI_{t-3}</u>	<u>-0.124</u>				
	<u>(-1.86)</u>				

NOTES: **(1) t -values have been reported in parentheses**
(2) An asterisk (*) indicates that the variable is statistically significant at 5% level and possesses expected sign.

Table 22. Causality Results for model 2

<u>Variable</u>	<u>MS_t</u>	<u>CPI_{t-1}</u>	<u>MS_{t-1}</u>	<u>MS_{t-2}</u>	<u>MS_{t-3}</u>
<u>CPI_t</u>		<u>-0.52</u>	<u>-7.9</u>	<u>37.8</u>	<u>-16.14</u>
		<u>(-1.5)</u>	<u>(-1.5)</u>	<u>(3.5)*</u>	<u>(-3.6)</u>
<u>MS_{t-1}</u>	<u>1.3</u>				
	<u>(12.8)</u>				
<u>CPI_{t-1}</u>	<u>-0.03</u>				
	<u>(-2.17)</u>				
<u>CPI_{t-2}</u>	<u>-0.016</u>				
	<u>(-0.55)</u>				
<u>CPI_{t-3}</u>	<u>0.045</u>				
	<u>(1.45)*</u>				

*
—(1) T-values have been reported in parentheses(2) An asterisk (*) indicates that the variable is statistically significant at 5% level and appropriately signed.(3) Two asterisks (**) indicate significance at the 10% level

5.1.2 Discussion of Causality Test Results

The results on table 21 show that two of the independent variables of the CPI equation, Gdd_{t-2} and Gdd_{t-3} are statistically significant at the 5 percent level. Gdd_{t-2} can however be ignored because it failed in terms of sign. The parameter estimate of Gdd_{t-3} is not only significant but also appropriately signed. Even though the estimate of Gdd_{t-1} is not, it could still be inferred that Gdd_t causes CPI since at least one of (Gdd_{t-i}) is significant. This conforms to the causality requirement outlined earlier. The same could be said of the reverse causation running from CPI to Gdd. The results also show that the parameter estimate of CPI_{t-1} is statistically significant at 5%, signifying the existence of a feed back causation running from Cpi to Gdd. Overall, the results

presented in table 21 do support the existence of a feedback relation between deficit and price.

On table 22, the coefficients of two explanatory variables of Cpi_t (that is MS_{t-2} and MS_{t-3}) were found to be statistically significant at the 5% level, thus implying the existence of causality running from MS to CPI. Likewise, one explanatory variable in the reverse equation (CPI $>$ MS), CPI_{t-3} , is significant at 10%, also indicating causation in the reverse direction.

These results corroborate those on table 21 and have been summarized as follows:

1. That the deficits of the government observed either in absolute terms or proxied by changes in monetary aggregates, did cause prices to change in the same direction and had therefore been partly responsible for the inflationary pressures on the economy during the period under review.
2. That there is also evidence supporting the existence of a bilateral relationship between inflation and deficit (as demonstrated by an aspect of the literature) in

Nigeria during the period under review. This is evidenced by the statistical significance of the coefficient of the one-period lagged domestic price (Cpi_{t-1}) in the b-equation of model one; and the parameter of the three-period lagged value of price in the b-equation of model two (CPI_{t-3}). These results corroborate those obtained using leads and lags in money supply, inflation and government expenditure growth rates in chapter four.

Fundamentally the presumption of dual causality between deficits and prices is principally predicated on the relationship between fiscal policy (Revenue generation and expenditure, especially) and real output on the one hand, and the dependence of monetary aggregates on government fiscal actions on the other. In an oil producing developing economy like Nigeria, it has been observed, fiscal policy is the primary determinant of domestic liquidity (Morgan, 1979). Overall, our results disprove conclusions reached by Onwudoukit (1999)

but conform with those obtained by Ndebbio (1998). These results further lend credence to the choice of econometric technique employed in this study – namely, the simultaneous equations model.

5.2 ESTIMATES OF THE STRUCTURAL MODEL

The macroeconomic model of the study is made up of four behavioural equations and two identities. The equations to be estimated are:

$$\text{Log}P_t = b_0 + b_1\text{Log}(M/p)_{t-1} - b_2\text{Log}Y_t + b_3\text{Log}\pi_t + e_1 \dots\dots\dots(9)$$

$$\text{Log} G_t = \alpha g_0 + \alpha g_1 \text{Log} Y_t + (1-\alpha)\text{Log} G_{t-1} + g_2\text{Log}P_t e_2 \dots\dots(16)$$

$$\text{Log} R_t = \lambda r_0 + \lambda r_1 \text{Log} Y_t + (1-\lambda)\text{Log} R_{t-1} + e_3 \dots\dots\dots 22)$$

$$\text{Log}M_t = \text{Log} m_t + k_0 + k_1\text{Log} G_t - k_2\text{Log} R_t - k_3 \text{Log} E_r + e_4\dots\dots$$

(29)

And the identities are:

$$[\text{RE}+\text{CE}] = [\delta\text{FA} + e\text{VAT} + \text{FIR} +\text{FLC}]\dots\dots\dots (36)$$

$$\text{GDD} = \mu\text{H}+ \text{Dd} \dots\dots\dots(39)$$

The notations used in the model are identified as follows:

P = Domestic price level

M_t = Money supply

$(M/p)_{t-1}$ = One period lagged Real money supply

Y = GDP at factor cost

π = inflationary expectation

G = Federal government expenditure

G_{t-1} = Lagged value of government expenditure

R = Government revenue

R_{t-1} = Lagged value of government revenue

$Er.$ = External reserves

m = Money multiplier

α = Government expenditure adjustment coefficient

λ = Government revenue adjustment coefficient

t = Time period (1year)

b_i, g_i, r_i, k_i are regression parameters corresponding to price, government expenditure, revenue and money supply equations respectively, while e_1, e_2, e_3, e_4 are error terms in the same respective order.

RE = Recurrent expenditure

CE = Capital expenditure

δ FA = Federal share of the Federation Account

ϵ VAT = Federal share of Value Added tax receipts

FIR = Federal Independent Revenue

FLC = First Line Charges

GDD = Government Domestic Deficit

H = Monetary base

D = the stock of government debt

μ = the growth rate of the monetary base

d = the growth rate of real debt

Given the features of the model outlined in chapter three, which include over-identification, the choice of estimation technique was obvious - the two-stage least squares (2SLS). This technique has been demonstrated as the most suitable for estimating over-identified simultaneous equations models especially (Gujarati, 1988; Koutsoyiannis, 1977). The estimation results are shown in table 23.

Table 23. **Estimates of Structural Equations**

$$\text{Log CPI}_t = 11.37 + 1.2\text{Log}(M/p)_{t-1} + -2.6\text{LogY}_t + 1.4\text{Log}\pi_t$$

(2.73)* (-1.2) (4.9)*

$$R^2 = 0.97; F = 97.27; D-W = 1.69; SEE = 0.2$$

$$\text{Log G}_t = -15.28 + 3.8\text{LogY}_t + 0.04\text{LogG}_{t-1} + 0.36\text{LogP}_t$$

(2.33)* (0.09) (1.2)

$$R^2 = 0.98; F = 170.2; D-W = 2.2; SEE = 0.16$$

$$\text{Log R}_t = -1.49 + 0.74\text{LogY}_t + 0.25\text{LogR}_{t-1}$$

(7.1)* (0.9)

$$R^2 = 0.98; F = 267; D-W = 2.8; SEE = 0.19$$

$$\text{LogM}_t = 0.03 + 1.2\text{LogG}_t - 0.05\text{LogR}_t - 0.14\text{Log Er}_t$$

(5.2)* (-0.32) (-1.7)**

$$R^2 = 0.98; F = 260; D-W = 2.5; SEE = 0.13$$

(1) T -values have been reported in parentheses

(2) An asterisk (*) indicates that the variable is statistically significant at 5% level and appropriately signed.

(3) Two asterisks () indicate that the variable is significant at the 10% level and appropriately signed**

The values of parameters have been reported in their composite forms and 't' ratios in parentheses. For each equation, the values of coefficients of determination, R^2 and the adjusted R^2 have also been reported. The Durbin-Watson statistics (D-W) and standard error of regression (SE) for each equation have equally been reported. In table 24, we report the values of the individual parameters. In particular, we have shown the values of adjustment coefficients (α and λ , among others) and the equilibrium or long-run values of relevant relationships.

Table 24. **Estimates of Individual Parameters**

Parameter	Estimated Value
	<u>Price Level</u>
b_0	11.37
b_1	1.2
b_2	-2.6
b_3	1.4
	<u>Govt. Exp.</u>
α	
g_0	0.96
g_1	-15.9
g_2	3.9
	.36
	<u>Govt. Rev.</u>
λ	.75
r_0	-1.9
r_1	.98
	<u>Money Supply</u>
k_0	
k_1	.03
k_2	1.2
k_3	-.05
	-.14

-
- Notes: 1. $g_1 = 3.8/0.955 = 3.9$; while $r_1 = 0.74/0.75 = .98$
 2. $(1-\alpha) = 0.04 \Rightarrow \alpha = 1 - 0.04 = 0.96$
 3. $(1-\lambda) = 0.25; \Rightarrow \lambda = 1 - 0.25 = 0.75$

5.2.2 Statistical/Econometric Appraisal of Estimates

Estimates of equation 9 - the price level equation, show that increases in real income ($\text{Log } Y_t$) would lower the price level ($\text{Log } P_t$) while expectations of increased inflation ($\text{Log } \pi_t$) would obviously increase the price level. Similarly, increases in real money stock [$\text{Log}(M/p)_{t-1}$] would also increase the price level. In terms of statistical significance of estimates, our results show that the coefficients of both money stock and expected inflation are significant at 5%, and appropriately signed. The coefficient of the third explanatory variable, output, is also appropriately signed, but not statistically significant at 5%. The coefficient of determination, R^2 , shows a good fit just as the regression error (S.E). In terms of sign, all the coefficients of the explanatory variables in this equation conform to a priori expectations.

The Durbin-Watson statistics (1.3) indicates positive auto correlation. This has been corrected using the Cochran-Occut iterative technique. Convergence was achieved after a single iteration, raising the DW to 1.6. Meanwhile parameter

estimates did not show any significant departure either in terms of value or sign from previous levels. The coefficient of income remained negative and insignificant at 5% while those of inflationary expectations and money stock remained positive and also statistically significant. The R^2 only changed marginally from 0.99 to 0.97 which is still good enough.

The estimates of equation 16 show that government expenditures ($\text{Log } G_t$) increase with increases in national income ($\text{Log } Y_t$). The estimates also suggest that government expenditure is positively related to the domestic price level ($\text{Log } P_t$) as well as its own one-period lagged value ($\text{Log } G_{t-1}$). All the coefficients possess appropriate signs, conforming with theoretical anticipations. The coefficient of $\text{Log } Y_t$ is statistically significant at 5% level while those of $\text{Log } G_{t-1}$ and $\text{Log } P_t$ were not, even though the latter is close to the border line of significance at the 10% level. Overall, the regression line shows a good fit as demonstrated by both the R^2 (0.98) and the F statistics (170). The standard error of regression

(S.E = 0.16) is sufficiently low, indicating also that the estimates are reliable.

Equation 22 is the government revenue equation. Estimates of this equation indicate as well, that changes in national income ($\text{Log } Y_t$) affect government revenue in the same direction, which conforms to the apriori expectation. It is significant even at 1%. It therefore has a very high predictive power over the dependent variable. The coefficient of the second explanatory variable, one period lagged value of government revenue ($\text{Log } R_{t-1}$) is also appropriately signed, although not significant at 5%. The coefficient of determination, R^2 (0.98) shows a good fit. The same can be said of the F-statistic (267) and the standard error of regression (SE) which is 0.19. Estimates of the money supply function, equation 29, show that government expenditure is a major determinant of money supply in Nigeria ($\text{Log } M_t$). The coefficient is both statistically significant and appropriately signed. Whereas increased government spending would have an expansionary effect on money supply, increased government revenue would have a

contractive influence. Although the latter is not statistically significant at 5%, it is appropriately signed. The country's external reserves (Er_t) is negatively related to money supply signifying that as the reserves increase, money supply decreases. Accumulation of external reserves is an indication of a conscious refrain from spending and therefore lessens the pressure on money supply growth. The coefficient of this variable possesses a negative sign, and therefore conforms to the apriori expectation of it. The parameter estimate is significant at the 10% level. The overall regression line is impressive with $R^2 = 0.98$; $SE = 0.1$, and $F=260$.

5.3 MAJOR FINDINGS AND DISCUSSION

As has been reported in chapter four and confirmed using the Granger test in the earlier section of this chapter, the first major finding of this study is that the causal relationship between the main variables of the research- deficit and inflation is two-way. This result which lends credence to the choice of the multi-equations model type for the study has been buttressed by the results emanating from the estimates

of the structural equations reported in the preceding section. The model effectively captures the mechanism of two-way causation between money and prices in Nigeria and may also be useful in studying the dynamics of inflation in other countries with macroeconomic attributes similar to those of Nigeria.

From the money demand equation (9) two important explanatory variables of domestic price in Nigeria emerge. These are money stock and expectations of inflation. Other recent studies also support this result. These studies include Ndebbio (1998); Orubu (1996); Ojameruye (1988); Asogu, (1991); Aigbokhan (1991). Inflationary expectations are generated mainly by history (past experience), policy statements and related actions while changes in money supply are driven largely by government fiscal actions – in particular the deficits. The non-significance of income as an explanatory variable poses no surprise. This is because, the output statistics used were not adjusted to exclude oil income, a component that is better regarded as exogenous. This

component is largely determined by the country's production quota and the price of crude oil in the world market, both of which are more dependent on external factors rather than internal macroeconomic conditions. Nonetheless, the sign of the output coefficient suggests clearly that an increase in output would dampen the inflationary pressure on the economy. Orubu (1996) and other studies have also emphasized this.

Table 24 shows the effects of income on government expenditures (g_1) and on revenues (r_1) in the short-run. The effect on expenditure is positive and significant at the 5% level. The adjustment coefficient of government expenditure (α), which is 0.96, is not significantly different from unity. This means that government expenditures are adjusted upwards almost automatically to keep pace with inflation. Obviously cost of government procurements of factor inputs and contracts are subjected to frequent variations in Nigeria. Because execution of public projects is often delayed,

sometimes they end up gulping three to four times their initial cost estimates on completion.

The revenue adjustment coefficient ($\lambda = 0.75$) is likely to be biased upwards since our revenue data were not adjusted to exclude some part of revenues which are strictly non-tax (e.g. Rent and Royalties). Nevertheless, it is smaller than its expenditure counterpart ($\alpha = 0.96$). This outcome is particularly significant in this study. Both revenues and expenditures increase in response to increases in either price or income or both; but the increase in expenditure is more likely to be higher than the increase in revenue thereby causing further deficits. That (λ) is smaller than (α) means that government expenditure adjusts more promptly to changes in income and price than do government revenues. In Developing countries generally, Aghevli and Khan (1978) have shown that this is more typically the situation and usually so because tax systems are underdeveloped. Besides, taxes in such countries are usually non-indexed, and collections often take place long after the taxable event might

have occurred (Tanzi 1978). The difference between (α) and (λ) helps to make deficits a recurring feature of government budgets and therefore has a tendency of aggravating inflationary pressures. This constitutes the empirical verification of the main hypothesis of a two-way causality between deficits and inflation (or money and prices) with government fiscal actions serving to provide the link. The average time lag in the adjustment of expenditures ($1-\alpha/\alpha = 0.047$) is shorter than the average time lag in adjustment of revenues ($1-\lambda/\lambda = 0.33$). Again similar results have been obtained for several developing countries including those that experienced hyper-inflation, such as Brazil and Colombia) and those that experienced much lower rates of inflation like Dominican Republic and Thailand in the 1960s and the 1970s (Aghevli and Khan 1978).

Finally, the relationship between government deficits and money supply has equally been confirmed. Equation 29, shows money supply as a positive function of government expenditure and a negative function of government revenue.

Definitionally, deficit is the difference between government expenditure and revenue as expressed by the government budget constraint (36). It is understood that money supply is the first victim of fiscal indiscipline (as reflected by the domestic deficit identity, equation 39) especially where the resulting deficits are financed largely by the monetary authorities and/or by commercial banks. The effect on monetary aggregates of a deficit financed by debt drawn on commercial banks would depend on whether the banks recourse to replenishing their reserves by borrowing from the central bank. In Nigeria, the CBN is the bankers' bank and as such serves as a bank of last resort. This effectively 'potentiates' the second channel of monetary expansion, if indeed the deficits are financed by commercial banks. Folorunso and Abiola (2000) share this view in their examination of the Nigerian economy.

As has been shown in chapter four, the banking system finances over 50% of government deficits in Nigeria, with the CBN accounting for over 70% through monetary

accommodation. Seigniorage revenue was therefore high in Nigeria with the attendant inflationary consequences. With due regard to other means of financing, it could still be said that the inflationary consequences of government deficits in Nigeria were more prominently anchored on both the size, and the extent of money creation in the choice of financing options.

However, in order to boost evidence, this study examines (in addition) another channel of deficit-induced inflation – the classical crowding-out effect, noted in the literature. It has been argued that along with or in the absence of money creation, higher deficits lead to higher inflation as the government embarks on debt financing, thereby crowding-out interest sensitive components of aggregate demand (Miller, 1985; Sergeant and Wallace, 1981). In testing this, the study is constrained by data availability to limit examination to private consumption, ignoring private investment. Inflation is expected to result from the attendant substitution of private consumption by public consumption.

The private consumption model used to assess the impact of government deficits on private consumption draws explanatory variables mainly from two separate studies conducted on Colombia (Easterly, 1994) and Ghana (Islam and Wetzel, 1994). The investigation of the determinants of private consumption expenditure (PCE) in Colombia used as explanatory variables, government consumption (GCE), disposable income (GDI) Government savings (S), real interest rates (RIR) and lagged dependent variable (PCE_{t-1}). For Ghana, Islam and Wetzel used GDI, S, foreign savings (FS) proxied by the difference between exports and imports; liquidity constraint (proxied by domestic credit to the private sector, PSC); RIR; and GCE. In both studies, the hypothesis was that government consumption expenditure (GCE) would crowd-out private consumption expenditure (PCE). In the event, the parameter estimate of GCE would be significant and negatively signed. Through step-wise regression, the study proposes (parsimoniously), GCE, PCE, GDI, RIR and PCE_{t-1} as explanatory variables of private consumption in Nigeria. In

this formulation, private consumption (PCE_t) is expressed as being functionally related to public consumption (GCE_t), government savings, 'proxied' by deficits (GDD_t), gross disposable income (GDI_t), real interest rate (RIR_t), and an autoregressive component, one period lagged private consumption (PCE_{t-1}).

$$PCE_t = \alpha_0 + \alpha_1 GCE_t + \alpha_2 GDD_t + \alpha_3 GDI_t + \alpha_4 RIR_t + \alpha_5 PCE_{t-1}$$

(-) (-) (+) (-) (+)

The estimates of the private consumption model have been presented on table 25 below

Table 25. Results of Estimated Private Consumption
(PCE) Model

PCE	Coefficient	T	
Constant	-47769	-2.5	$R^2 = 99$
GDI_t	0.96	16.5*	DW = 1.5
GCE_t	-2.49	-2.38*	$T \alpha/2 = 2.28$
GDD_t	-1.46	-3.3*	
RIR_t	262	0.5	
PCE_{t-1}	0.380	7.1*	

An asterisk (*) indicates that the variable is statistically significant at 5% level and appropriately signed.

GDI = Gross Domestic Income

GCE = Government Consumption expenditure

GDD = government savings (proxied balance)

RIR = Real lending Rate

PCE_{t-1} = Lagged dependent variable

The estimates of the consumption model have been set out in table 25 above. All variables other than the real interest rate (RIR) are statistically significant and appropriately signed. In Nigeria, financial markets are weak, and majority of Nigerians patronize informal credit outlets rather than the banks for their short-term credit needs. It is therefore not surprising that the real interest rate (RIR) is unrelated to private consumption behavior.

From the estimates, private consumption relates to current disposable income on a nearly one-to-one basis, which supports the Keynesian consumption hypothesis. In low-income countries, where credit markets are far from perfect, consumption is often very closely tied to disposable income (Islam and Wetzel, 1994). As has been observed earlier the prevalence of low household incomes in Nigeria is an added reason why peoples' marginal propensity to consume would be close to one.

The results also indicate that government consumption is negatively related to private consumption, which supports the crowding-out hypothesis. Within the formal financial sector in Nigeria, the government and its agencies have the first claim on credit, not statutorily though, but for the obvious advantages they have in terms of size, credit worthiness and the ease with which favourable credit and repayment terms can be secured by lending institutions. As a result, public consumption has tended to substitute private consumption.

Equally crucial is the relationship between government savings (deficits-GDD_t) and private consumption. The parameter estimate indicates a negative relationship. The deficits of the government thus have a crowding-out effect on private consumption. This is also not surprising as available statistics show that the banking sector in Nigeria accounts for over 50% of deficit finance for over ten years now (CBN, 1999), a situation that has tended to reduce the economy's credit to the private sector. Overall, these results lend credence to the second deficit-inflation path- that in the absence of money

creation, deficits could still lead to inflation as long as they result in diversion of resources away from the private sector.

Due to data limitations, econometric examination has been restricted to private consumption alone. Official statistics in Nigeria report investment in a composite form, comprising both public and private investment. Statistical separation of the two is necessary for the estimation of a private investment function for Nigeria. The estimates of the consumption model lend support to the view that fiscal deficits and public consumption crowd-out private consumption in Nigeria, thereby increasing the possibility of the second path to inflation through systematic decline in domestic output. This result reinforces the inverse relationship, between output and the domestic price level indicated by the estimation results of the money demand equation in the main model of the study. Although output failed to achieve statistical significance in the estimates, its relevance in anti-inflation policy cannot be over looked. Other literatures have also emphasized this.

Summary of Results

1. The estimates of the structural model support the transmission mechanism. In effect, the three main

hypotheses of the study, namely: that surges in money supply were independent of the deficits; that changes in the domestic price level were independent of changes in money supply; and that deficit and inflation are unrelated, stand rejected in favour of their respective alternates.

2. In Nigeria, the relationship between deficit and inflation during the period under investigation was found to be bilateral. Whereas surges in money occasioned by the huge and persistent deficits caused inflation, price escalations also led to a widening of the fiscal gaps.
3. That the deficits persisted partly because the adjustment of government revenues to income and prices was slower than the adjustment of government expenditures to same; average time lag of adjustment of expenditure to income is 0.047 while that of revenue is 0.33, meaning that expenditures adjust to income faster than do revenues.

4. That the excess expenditures of government during the period under investigation had a partial crowding-out effect on private spending
5. Expectation of increased inflation was a major determinant of the domestic price level in Nigeria.
6. Inflation during the period investigated tended to be self-generating because of its links to government deficit.

CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS.

This chapter summarizes the findings and conclusions in the earlier chapters of the research work and provides policy recommendations aimed at addressing the problem of macroeconomic imbalance (inflation being a major focus) occasioned largely by the huge and persistent deficits of the government in Nigeria.

6.1 SUMMARY

The broad objective of this research is to investigate and analyze empirically the inflation process in Nigeria with a particular focus on the role of the persistent deficits of the government. This has been achieved using both descriptive and analytical techniques. The findings obtained using both approaches are consistent. These findings have been discussed in chapters four and five.

The association between government fiscal operations and the macro-economy in Nigeria is very strong. This is principally because the government had traditionally occupied the commanding heights of the economy's activity. Until 1986 when the process of deregulation commenced with the adoption of the Structural

Adjustment Programme (SAP), the government in Nigeria controlled key industries/sectors of the economy. Energy and communication for instance were almost exclusively managed by the public sector. As a result, the government remained the major initiator and sponsor of economic growth. This made the rest of the economy highly sensitive to government's fiscal actions. The budget of the government has been a major determinant of private sector actions in Nigeria. Through the budget the government is able to dispose growth to the rest of the economy. This has not been without some costs. The rapid monetization of oil receipts and the financing of domestic deficits through seigniorage revenue have endogenized money supply and thus made the economy more vulnerable to monetary sources of imbalance. As a result, inflation has tended to be self-perpetuating, with sustained budgetary deficits acting as buffers.

Money supply endogeneity is one of the ways in which the framework of this research departs from several others before it. Inflationary financing of deficits necessarily makes domestic money supply a crucial endogenous variable in any macroeconomic policy model, designed to capture explicitly the dynamics of inflation. It is

in the circumstance expected to be determined (primarily) by fiscal policy variables.

The role of the deficits in the inflation process in Nigeria centers around the association between the deficits and changes in money supply given the heavy reliance of government on the banking system (especially the CBN) for its financing requirements. Deficits became directly inflationary principally because the government over relied on the creation of high-powered money for financing of the budgetary gaps.

In all, the study is made up of six chapters. Chapter 1 provides a detailed background to the study, the research problem and the study objectives. The chapter also presents a brief description of the methodology of the study. Chapter 2 provides a review of related literature. This chapter examines a wide spectrum of views cutting across those that propose debt\deficit neutrality (Ricardian equivalence) and those that ascribe moderate and high effects on the economy to deficits. The high points of this chapter are:

- i) Deficit financing ultimately causes surges in money supply irrespective of the means of financing, as the monetary authority may have no option other than to accommodate the deficit monetarily as they grow.

- ii) Money supply surges are highly associated with inflation, a situation that has been pointed to in Nigeria by many studies.
- iii) The relationship between deficit and any individual macroeconomic variable (such as domestic output, BOP, consumption or inflation) is not simple. Similarly, the macroeconomic consequences of sustained fiscal deficits vary from country to country. Even where similar consequences exist, they differ in magnitude and severity for similar range of deficit experience.
- iv) In Nigeria budgetary deficits have been credited on the basis of empirical investigations, with increase in capital formation, and discredited with inflationary consequences. It has also been credited as positively impacting on output and also discredited with having the tendency of worsening balance of payments.
- v) Deficits have very high tendency of crowding-out private expenditures directly, or indirectly through higher interest rates.
- vi) The Ricardian equivalence, the proposition that denies all the effects attributed to government debt/deficit policy, has very

slim likelihood in Nigeria particularly, and developing countries generally.

- vii) Money supply and prices sometimes display a bilateral (two-way) relationship with government deficits providing the link between the two, a situation that triggers a self-generating inflation process.

Chapter 3 presents a detailed description of the model and the estimation technique. The model of the study is a simultaneous equation model including four behavioral equations explaining respectively, the domestic price, government expenditure, government revenue and money supply; and two identities, namely government domestic deficit and the condition of budget balance. This model brings out the interrelationships between macroeconomic variables, and captures the relevant transmission mechanism of a bilateral relationship between money and prices.

Chapter four provides a descriptive examination of the relationship between deficit and inflation using percentages, ratios and charts. It is evident from this chapter that the deficits of the government were partly responsible for the inflationary pressures on the economy through their effects on money supply. Causality

between the two variables was examined. It was found that there existed a feedback relationship running from money to prices during the period under consideration, a situation that predisposed the economy to a self-generating inflationary process. Inflation resulted in a widening of government deficits, which when financed by money creation (as was predominantly the case) caused further expansion of money supply and further inflation. This chapter also examines the deficit financing options that were available to the government, and noted the preference (dominance) for money financing as against debt financing during the period under study. During this period, the huge external debt overhang had affected Nigeria's external credit worthiness and thus limited the scope of funding from external sources. Likewise, very little of the government's financing requirement could be met by borrowing from the domestic non-bank sector principally because the market for such funds were undeveloped. Apparently, the government had little or no option to relying heavily on the banking system (CBN especially) for the financing of the deficits. The chapter concludes on the basis of the descriptive examination, that the relationship between domestic prices and deficits runs both ways, implying that anti-inflation measures must be directed at breaking the

dependency circle in order to be effective. In chapter five, an econometric examination of policy variables was carried out using a simple macro-econometric policy model. As a prelude, the Granger causality test indicated the existence of feedback relations between deficit and inflation which is consistent with the findings of the descriptive examination in chapter four. The estimates of the macroeconomic model support the primary hypothesis that changes in domestic prices in Nigeria were not independent of the level of deficit or changes in money supply, a direct consequence of the deficits. The estimates also support the earlier contention of money supply endogeneity and the importance of fiscal policy variables in its determination. In Nigeria, both expenditure and revenue generation activities of government are crucial variables in the determination of domestic liquidity. Estimates of the money supply equation support this view.

On the whole the estimates of the model support the transmission mechanism inherent in it; the financing of an initial deficit causes money supply to grow. Changes in money supply raise the domestic price level. Increases in price would affect both revenue and expenditure of government positively but with a higher impact on expenditure thereby widening the fiscal gap. The

financing of this gap causes further increases in money supply and the process is repeated.

6.2 CONCLUSIONS

- i) The Nigerian economy was supposed to be undergoing structural transformation arising from the implementation of the Structural Adjustment Programme (SAP) during the period covered by the study. As a background principle, the public sector was supposed to be downsizing in effect. This did not happen, as the trends of major indices of public sector size indicated. The growth rate of government expenditure maintained an upward trend all through the period. Budgetary deficit remained a common feature of government's fiscal operations. Domestic credit to the government sector grew rapidly, and in all instances was higher than the economy's credit to the private sector. The overall situation clearly represented gross negation of the fundamental intent of SAP which ought to have witnessed higher private sector growth and gradual public sector contraction.

- ii) The huge and persistent budgetary deficits of government in Nigeria were the immediate sources of expansion of monetary aggregates during the period covered by this study. In financing the deficits, the government over depended on seigniorage revenue due to the constraints on alternative sources of financing such as domestic non-bank debt and foreign debt. Through monetary accommodation, the CBN consistently provided the bulk of government's financing requirements. This amounted to further creation of base money in the face of a fairly inelastic money demand.

- iii) Base money creation or surges in money supply which were unaccompanied by commensurate expansion of money demand resulted in money market disequilibrium which normally transmitted to the goods market in the form of higher prices for goods and services. Given the structure of the Nigerian economy with production rigidities, monetary expansion translated easily to increased domestic prices. This does not pose any surprise because in an economy with enormous production and distribution constraints, price is usually the immediate victim of a money market disturbance.

The rate of inflation therefore is to be seen as a major indicator of macroeconomic imbalance.

- iv) Government expenditure adjusts more rapidly to increases in domestic prices than do revenues. Non-indexation of taxes, long collection lags and narrow tax bases, low level of tax compliance due to public demoralization are some of the reasons why government revenues in Nigeria have often lagged behind expenditure in terms of adjustment to changes in price. Inflation therefore tended to increase the expenditure requirement of government much more than it did to revenues, and as such a causal factor of government deficits in Nigeria.

- v) The relationship between inflation and deficit in Nigeria runs both ways. That is, whereas persistent deficits caused inflation through expansion in money supply, price escalations also resulted in a widening of the fiscal gaps (deficits). The occurrence of two-way causation between the variables meant that inflation tended to be self-perpetuating.

- vi) Anti-Inflation measures in Nigeria were often based on the not-too-correct notion of unidirectional causality between deficit-induced surges in money supply and price. Improper understandings of the inflation mechanism have led to prescription of remedial measures that failed to achieve the desired results. Year-in, year-out, macroeconomic policy objectives had contained mitigation of inflationary pressures on the economy. But the more it was chased, the more intractable it became. Although the study recognises other sources of inflation in Nigeria, like the massive devaluation of the country's national currency, upward adjustments in petroleum product prices, public sector nominal wages increases and expectations of inflation, however, monetary expansion occasioned by the persistently high deficits of the government remains a crucial causal factor. To be effective, anti-inflation measures must include instruments targeted at breaking the bilateral flow of causation between deficit and inflation.
- vii) The deficits of the government during the period under review were high and far from sustainable levels, and failed to

dispose as much growth to the economy. The direction and composition of public expenditures were to be blamed for this. Massive public expenditures on activities that were not directly productive characterized the period under review. For example in many years, expenditure on overheads such as basic travel allowance (BTA) and 'estacodes', administration, and poorly conceived and implemented welfare programmes accounted for much of the deficits. The practice of extra-budgetary spending, and the maintenance of several 'dedicated' accounts which were outside the purview of the budget represented the heights of fiscal indiscipline that characterized the period. Each of these contributed in one way or the other to accentuate the deficits.

Viii) At the present the macroeconomic consequences of deficit spending are likely to be underestimated due to the official measurement basis of fiscal stance in Nigeria. Available CBN and MOF deficit statistics are cash-based. The problem with this measurement basis is that it tends to understate the deficit whenever payment arrears are being accumulated. In the event the amount of adjustment necessary to bring the

budget back into balance is underestimated. The immediate consequence is that corrective measures fall short of their targets. Although this measurement basis gives (usually) a better picture of government's fiscal position, it is can be quite deceptive. Since accumulation of financial arrears (on interest, wages, goods procurement) has been more or less a stable feature of fiscal operations of government in Nigeria (and indeed most debt-ridden developing nations), it will be more appropriate to adopt the payment-order (accruals) deficit measurement basis. This measure effectively overcomes the limitation of the cash-accounting basis and offers a more realistic picture of the deficit situation.

6.3 RECOMMENDATIONS

(1) As a first step, the government needs to reassert control over expenditures. This is particularly necessary in view of the constraints on alternative sources of financing deficits in Nigeria. Being a highly indebted low-income country, external financing of additional expenditures cannot be guaranteed easily. The underdeveloped nature of the capital market has tended to limit the

scope of non-bank borrowing. The appropriate thing for the government to do under the prevailing circumstances will be to limit expenditures to revenues. Public expenditures must be cut down to sustainable levels. This will entail (in the medium term) a refrain from new expenditure programmes (especially those that are not related to specific national emergencies), while focusing on on-going projects only.

(2) Given the magnitude of the deficits in recent years, to bring the budget into balance, government might have to cut expenditure by nearly a half. This may not be practically feasible. The way out is that revenue generation must improve as well. In this regard, tax-income or non-oil revenues especially deserve to be given a boost. The extent to which taxes may be increased is nevertheless limited in Nigeria by mass poverty, political considerations, and the need to encourage certain key activities such as exportation and inflow of foreign investment. Boosting non-oil revenues should not be ultimately seen as, or limited to raising existing tax levels. Rather, strengthening collection machinery, effective prevention of revenue diversions, and prevention of tax evasion and avoidance, may be quite helpful. In Nigeria, three agencies are responsible for the collection of the bulk of the federally collected revenue. They are

the Federal Inland Revenue Board (FIRB), the Nigerian Customs and Excise (NCE), and the Nigerian National Petroleum Corporation (NNPC). Efforts at enhancing revenue generation must be primarily focused on improving the performances of these agencies. There is need for adequate capacity building in these agencies to enable them cope adequately with the challenges of increasing revenue generation. The FIRB is responsible for VAT collection. As we noted in chapter 4, there exists a lot of potentials with this revenue source. At the present, so many economic activities that are 'VATable' actually escape the collection machinery. A lot of these activities are concentrated in the informal sector. There has to be a special mechanism for capturing informal sector activities adequately. Given the large size of the sector's share in economic activity in Nigeria, a careful refocusing of the VAT collection machinery in the direction of such activities will have a tremendous impact on the nation's revenue profile. Capacity building in the agencies responsible for revenue collection requires adequate training of staff of the organizations for better performance. The ability of a designated official to assess the tax liabilities of a potential taxpayer correctly is obviously predicated on his level of skill and the quality of his or her working tools.

Therefore, other than training, these agencies need to be properly equipped with state-of-the-art facilities that are required not only for proper tax assessment but also for regular updating of their data banks. With regard to the latter, a functional research unit will be an added imperative.

(3) Tax laws are supposed to be reviewed from time to time in order to bring them in line with changing macroeconomic and social conditions. In a democratic setting, the national assembly is usually responsible for such reviews. Delays in reviewing tax Laws result in revenue loss. This is because changing circumstances could make certain provisions of such laws obsolete or subject to varied interpretations. For example, until the release (of recent) of tax tables, varied rates were applied from one establishment to another. With respect to PIT especially, different state governments demanded rates that were at variance with one another from federal workers in the states. Prompt attention should be given to matters relating to tax laws for them to be effective.

(4) Equally crucial is the issue of prompt collection of revenues. Real tax revenues tend to fall due to collection lags especially at times of rising prices. Early retrieval of taxes is not only necessary to prevent real term losses but could also have a mitigating effect

on inflation. In order to improve the adjustment rate of revenue to changes in price despite non-indexation, quick retrieval of revenues is necessary and that calls for an efficient collection machinery.

(5) The magnitude of revenue loss due to smuggling and corruption at the borders is great. The Nigerian Customs and Excise requires continuous reforms to cope with the changing structure and strategy of smuggling. Adequate staff welfare must be given priority attention in order to boost staff morale and commitment, in addition to helping to curb corruption.

(6) Tax evasion, another source of revenue loss, may be curtailed through spot checks of tax returns. The conventional strategy of waiting until a taxpayer needs tax clearance before he/she is checked should be complimented with spot checks. Also, stiffer penalties should be instituted against tax-deviant corporate bodies and individuals to serve as a deterrent to others.

(7) As part of efforts aimed at reducing the pressure on resources, favourable debt reschedulement terms should be vigorously sought in order to free some resources for the domestic economy. At the present, the burden of external debt in terms of service obligations is very high. Perhaps, a way out will be to look forward to harnessing any revenue windfall in the future towards

achieving a quantum reduction in the stock of outstanding foreign debt. Since debt owed the CBN constitutes the bulk of the domestic debt, government could obtain relief by requesting the CBN to write off all or part of the debt, while ensuring that no further debts are sought from this source. Elimination or a drastic reduction of the deficit would help in ensuring that no further financing (debt) is sought from the CBN.

(8) To bring down inflation, government should strive to balance its budget or reduce the magnitude of the deficits, and control monetary aggregates. Fiscal and monetary measures should focus on stability in domestic prices and exchange rates. There is need to beef up reserves to support the exchange rate market intervention by the CBN. Exchange rate stability should be a component of any set of anti inflation measures in Nigeria. The self-generating property of inflation attested to in previous chapters could be defeated if the flow of causation between money and prices is broken. To achieve this, deficits must give way to a realistic balancing of the budget along side other measures. In the immediate period, the government should strive to create conditions that will enable the capital market to grow as this will in

the long term increase the scope of financing by domestic non-bank debt, which is less inflationary and more consistent with growth.

(9) There is also the need to overhaul the entire process of budget formulation, implementation and control. At the present a lot of expenditures escape the actual budgeting process. Apart from the lack of transparency that this entails, it also tends to make the budget a neutral document which it ought not be. Extra budgetary expenditures should be reduced to minimum levels if they cannot be completely eliminated. Every form of expenditure needs to be channeled through the budget. In this regard the recent development of bringing all up-front charges within the purview of the budget should be sustained. Budget monitoring and evaluation capacity needs to be strengthened as well.

(10) Finally, the problem of deficit is not limited to the central government alone. Both the state and local governments in Nigeria are involved. The inflationary consequences of deficit spending are not only to be expected of the central government deficits. The size and financing strategy of deficits at the lower tiers of government also have implications for the economy's balance. The central government should in some ways restrict the ability of lower tiers to obtain loans from all sources. In the same way, both financial and

non-financial public enterprises have to be encouraged to eliminate their own deficits as part of the overall goal of achieving macro-economic balance.

6.4. MAJOR CONTRIBUTIONS TO KNOWLEDGE

- 1. The incidence of two-way causality between money supply and prices is not to be expected only in countries with a history of hyperinflation. In essence, a bilateral relationship could also occur in countries experiencing moderate inflation.**
- 2. In Nigeria, the relationship between deficit and inflation during the period under investigation was found to be bilateral. Whereas surges in money occasioned by the huge and persistent deficits caused inflation, price escalations also led to a widening of the fiscal gaps.**
- 3. During the period under consideration, the findings of the study have indicated that monetary policy was largely accommodating. That is, the CBN did**

not exhibit independence in the control of monetary aggregates. Fiscal policy (government expenditure especially) dictated the direction of monetary policy through the financing options of the deficits, and thus constituted the major determinant of domestic liquidity.

- 4. That the deficits persisted partly because the adjustment of government revenues to income and prices was slower than the adjustment of government expenditures to same; average time lag of adjustment of expenditure to income is 0.047 while that of revenue is 0.33.**
- 5. That the excess expenditures of government during the period under investigation had a partial crowding-out effect on private spending.**
- 6. The government over relied on the banking system for the financing of the deficits, a situation that caused surges in money supply and consequently, inflation.**

7. That the levels of the deficit reported across the years by official sources might have been understated due to the accounting basis employed.

6.5. SUGGESTIONS ON AREAS OF FURTHER RESEARCH

The results of this study have thrown some light on related avenues of further research.

First, the effects of inflation on real tax revenue deserve further investigation. Although this study has alluded to a positive effect of inflation on nominal revenues, its effects on real tax revenue may not be the same. The investigation will complement this work in enriching the literature and providing greater understanding of the deficit/inflation link.

Second, empirical investigation of other macro economic consequences of government deficit in Nigeria, e.g. its effect in the external sector or on private investment, or on domestic output deserve to be precisely ascertained. The findings of such studies will further enlarge the range of choices available to the

macroeconomic policy maker. He is able to estimate in advance which variables of the economy are likely to be enhanced or compromised with a given level of deficit.

Third, there is also, the need to investigate what will happen if government decides to finance its deficits in a non-inflationary manner. This kind of investigation may be done using simulation. The result will provide a useful guide for policy in the future.

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