DEFICIT FINANCING, INFLATION AND CAPITAL FORMATION IN NIGERIA, 1970-2017

By

SAMSON ADENIYI ALADEJARE

B.Sc. Economics (ABU); M.Sc. Economics (Ibadan)

Matric. No. 159967

A Thesis in the Department of Economics,

Submitted to the Faculty of Economics and Management Sciences

In partial fulfilment of the requirements for the Degree of

DOCTOR OF PHILOSOPHY

of the

UNIVERSITY OF IBADAN

December, 2021

CERTIFICATION

I certify that this work was carried out by Samson Adeniyi ALADEJARE under my supervision in the Department of Economics, University of Ibadan, Ibadan, Nigeria.

Chairman, Thesis Supervision Committee
Prof. Omoaregba O. Aregbeyen
B.ED. (Educ. Mgt. & Econ), M.Sc. (Econ), Ph.D. (Ibadan)
Professor of Economics,
Department of Economics,
University of Ibadan, Nigeria.

DEDICATION

This doctoral thesis is dedicated to God almighty, my source of knowledge, wisdom and understanding.

ACKNOWLEDGMENTS

My praise and utmost reverence go to God almighty for seeing me through the completion of this thesis. Your endless love towards me has been my strength and the reason I could aspire this far in life. I will forever exalt you, for you are the only true God.

My sincere appreciation goes to my supervisor and chairman of my thesis committee, Professor Omoaregba Aregbeyen, for his mentorship, understanding, and encouraging words that ensured this thesis's successful completion. I have always admired your leadership and professional qualities from my undergraduate days, and thanks to God for the privilege to have learned under you at the University of Ibadan. May God reward you abundantly for your care.

I acknowledge and appreciate Professor Adeola Adenikiju, Professor Adeolu Adewuyi, Professor Abiodun Folawewo, Dr Alarudeen Aminu, Dr Babajide Fowowe, DrSamuel Orekoya, and all other Professors and lecturers in the Department of Economics University of Ibadan for their assistance throughout my PhD programme.

My gratitude goes to my wife (my Angel) Mrs Edidiong Samson Aladejare, and my sons Ibukunoluwa Aladejare and Joshua Aladejare for their support, understanding and prayers. I love you guys and will forever be grateful for all your sacrifice.

I love to appreciate my father, Mr Samuel Aladejare, and my stepmother Mrs Comfort Aladejare, for their outstanding support and prayers all through the years. Thanks to my siblings Mrs. Christiana Ogundairo, Dr. Samuel Aladejare (jnr), Bukola Aladejare, Damilola Aladejare, Damilare Aladejare and Tobi Aladejare for your prayers.

I am also profoundly grateful to my friends and colleagues at the University of Ibadan. Worthy of note are Dr. Festus Osagu, Stanley Akachukwu, Dr. Joseph Ogebe and Femi Adeboje. I also acknowledge Dr Peter Obutte and Dr Mrs Ojebode of the University of Ibadan, Dr Ebi Bassey of the University of Calabar, and Dr Taofeek Ibrahim of the Ahmadu Bello University Zaria. A big thank you to all my colleagues at the Federal University Wukari, especially, Dr Emmanuel Ani, Dr Ruth Adelagun, Ishaku Rimamtanung, Zachariah Emmanuel and Engineer Daniel Onaivi.

ABSTRACT

Deficit financing (DF) is the excess of government expenditure over its revenue. The DF occasioned by low domestic savings and low capital formation (CF), have characterised the Nigerian economy since the 1970s with attendant increase in inflation. Empirical studies on Nigeria have shown that DF directly affects inflation and CF when examined independently. But, little attention has been paid to a simultaneous investigation of the direct and indirect effects of DF on inflation and CF in Nigeria. Therefore, this study was designed to examine the direct and indirect effects of DF on inflation and CF. The DF was disaggregated into three components, and their direct and indirect effects on inflation and CF were examinedfor Nigeria from 1970 to 2017.

The Keynes-Wicksell Three Asset Money Growth Theory provided the framework. A simultaneous model that shows the linkage among DF, inflation and CF was estimated. Aggregate DF and its three components: domestic financing (DMF), external financing (EF), and other sources of financing (OSF) were used for the estimation. Inflation and CF were proxied bythe consumer price index and gross fixed capital formation, respectively. DF's direct and indirect effects on inflation and CF were estimated by a linear and chain rule equation, respectively. The indirect effect of DFon inflation was through the broad money supply channel, while the indirect effect of DF on CF was through the broad money supply and inflation channels. The Generalised Method of Moments and the Two Stage Least Squares were used for the estimation. Data were sourced from the Central Bank of Nigeria Statistical Bulletin,International Monetary Fund Investment and Capital Stock Dataset, World Development Indicators and Open Data for Africa.All estimates were validated at $\propto \leq 0.05$.

Aggregate DFindirectly increased inflation by 0.01% (t= 3.41). The DMF and EF indirectly increased inflation by 0.01% (t= 9.21) and 0.001% (t= 5.22) respectively, while OSF indirectly decreased inflation by -0.02% (t= -3.79).Inflation deteriorated CF by -0.2%(t= -4.88) with aggregate DF and by -0.2% (t= -6.07), -0.18% (t= -4.55) and -0.22% (t= -6.29) with DMF, EF and OSF, respectively. Aggregate DF, DMF and EF indirectly reduced CF by -0.002% (t= -2.12), -0.001% (t= -7.26) and -0.0002% (t= -5.84) respectively, OSF directly increased CF by 0.03% (t= 2.12) and indirectly by 0.004% (t= 5.89). The aggregate DF affected inflation indirectly through the money supply channel. Inflation impacted on capital formation through reduced real returns on savings and investments. The DF indirectly influenced CF through money supply and inflation channels to reducecapital formation.

Deficit financing in the aggregate and its components indirectly impacted on inflation and capital formation in Nigeria from 1970 to 2017. Therefore, there is a need for better synergy of fiscal and monetary policies for effective control of inflationand growth of capital formation.

Keywords: Deficit financing in Nigeria; Consumer price index; Gross fixed capital formation.

Word count: 461

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER ONE
INTRODUCTION

1.1 Background to the Study

Fiscal deficit financing (hereafter abbreviated as DF) is often regarded as oneof the traditional meansdeveloping nations can adopt to grow and develop their economy (Eyiuche, 2000).This is because developing economies are often characterised by low domestic savings and capital formation (hereafter abbreviated as CF), extreme poverty and unemployment, weak production capacity, huge infrastructure deficit, reliance on primary production, poor economic fundamentals, weak institutions, etc. Most of the reasons for fiscal deficit can be compartmentalised into economic, political, and social factors (Gbosi, 2012). In today's world, Federal Governmentpolitical and economic decisions in both developed and developing countries are almost intertwined. For instance, in Nigeria, Federal Governmenteconomic decisions are often outweighed by political considerations. The reason is that for political relevance, Federal Governmenttries to meet the expectations of the citizens, as well as deliver on campaign promises through increased spending.

Keynesian Economists have consistently advocated that to supply the needed finance to correct the above imbalances,the government can manipulate fiscal policy instruments (such as; taxation and expenditure) to redirect economic activity. Advocators of the Keynesian schoolbelieve that government tax rates can be lowered to promotegrowth in the economy. On the other hand, public outlay can also be increased through budget deficit to raise aggregate employment, economic activity, and improve output.Definitely, the Keynesian teaching is fundamentally based on the hypothesis that in a period of unemployment; dis-saving (DF) by the government helps generate new capital and creates new jobs.In a whole Keynesian system, DF and CF will then probably be regarded as naturally linked, and depending on whether or not full employment condition is achieved in the economy; "inflation" which may simply be explained as persistent growthinthegeneralpricelevel which is not backed by increased output, may be a mediator in the relationship between DF and CF.

1.2 Statement of the Problem

The Federal Government revenues' inability to cater to public outlays, particularly in periods beyond the 1970s, arising from the desire by Nigerian policy makers and political leaders to meet the needs of the citizens, has often resulted in high fiscal deficits over the years. Furthermore, the Federal Governmentremains the major player in providing social services such as poverty alleviation programmes, subsidies, natural disaster control, etc. Structural reasons, which include a high level of tax avoidance and evasion, high levels of income and wealth inequality, demographic pressures, government inefficiency, have also continued to account for the growth in DF in Nigeria. Also, for political relevance, governments have not been able to grow tax revenues significantly.This is because citizens are always sceptical of the effective use of tax revenues to achieve job creation through investment in CF in Nigeria. The above factors have given recourse to DF, through internal and external borrowing, as a solution to the revenue-expenditure gap, with mounting national debt as a consequence.

From 1970 to date, annual DF of the national budget through borrowing had been necessitated by various Federal Government economic policy interventions; targeted at reducing the country's infrastructural deficits. A good starting point is from the second to the fourth National Development Plans (1970 to 1985). Within these periods, DF was designed primarily for post-war reconstruction. However, the creation of states and the relocation of the Federal Capital to Abuja in 1976 and the massive growth in primary per capita consumption made it difficult for investment to take place (Anyanwu et al. 1997). The result was a diversion of funds from the original objectives of the development plans.

From mid-1986 to 1989, the Federal Governmentintroduced the Structural Adjustment Programme (SAP). The plan aimed to efficiently transform and reconstitute the production and consumption practices in the economy by eradicating price volatility, the over-reliance on crude oil export for revenue, and diminishingthe importation of consumer and producer goods. However, the SAP only succeeded in aggravating the inflationary problem in the country due to a weakened naira to dollar exchange value (Anyanwu et al. 1997).

Then came the Rolling Plan eras (1990-1999), with the goals to rehabilitate and provide economic and social infrastructures.Unfortunately, these objectives were also impeded by rising recurrent expenditures (Anyanwu et al. 1997). Nigeria's experiences from the 2000s to date have been a bit different. With the national budgets still running at annual deficits, there have been positive improvements in CF. However, these improvements were not directly linked to DF. For instance, the Federal Governmentinvested a total sum of ₦2.74 trillioninto the power sector from 1999-2015, of which ₦1.64 trillion (i.e., about 60 percent of the total sum) was sourced from the excess crude oil account (Energy Commission of Nigeria, 2015). This and many other interventions accounted for the growth in CF in the 2000s.

Regardless of the adduced reason for DF, Bello (2004) and Agundu and Dagogo (2008) observed that there had been no significant improvement in economic infrastructure in Nigeria. It was observed that instead of investing the supplementary funds arising from DF into increasing CF, political leaders in Nigeria habitually divert such funds to other ventures.A position which could be attested to by Nigeria's rank of 148th, out of 180 countries ranked on the Transparency International's corruption perception index as at 2017.For instance, Mbat (1988) noted that culpable factors for growth inDF in Nigeria are Federal Governmentinflated contracts, poor management of public enterprises, and the absence of an adequate maintenance culture. Thus, eroding what should have been the fundamental goal of DFwhich is to growCF. Thereby contradicting earlier findings by Oyejide (1972) that DF has spurred CF in Nigeria.

Nevertheless, the continuous annual deficit spending since the 1970s, due to various policy interventions by the Federal Government, has not spurred growth in CF. Otherwise, Nigeria today ought to have been more reckoned as a producing nation, against its current status of heavily import reliant. Apart from crude oil which constitutes about 90% of the country's export, the non-oil sector contributes less to the revenue source of the Federal Government (Aladejare, 2018). Much of what is consumed in the country is imported, due to low manufacturing capacity of the country. This phenomenon could be the responsible factor for the high inflation rates experienced so far.Thus, contradicting empirical findings (such as Moser, 1995; Tule et al., 2019; and Fasanya et al. 2021) that DF always gives rise directly to inflation in

Nigeria.Furthermore, poor credit to the private sector, rising cost of production, poor naira exchange rate, escalating debt servicing, etc., contributeto inhibit the deployment of DF for growth inCF. The foregoing trends, therefore, form the bedrock of the following pertinent questions. How significant are the post-1970 effects of DF onCF in Nigeria? Likewise, how significant are the post-1970 effects ofDFoninflation? Whatis the direction of the nexusbetween inflation and CF in Nigeria?

1.3 Objectives of the Study

This study's broad objective examined the effects ofFederal GovernmentDF on inflation and CF in Nigeria. To achieve this broad objective, a set of three specific and interrelated objectives were pursued. These include to:

(i) Determine the direct and indirect effects ofFederal DFon inflation

(ii) Determine the direction of the relationship between inflation and CF, and

(iii) Examine the direct and indirect effects ofFederal DFonCF.

1.4 Study Justification

The observed gaps in the literature underpin the justification for this study. These gaps are threefold: theory, methodology and empirics.

In the aspect of theory, an earlier study by Oyejide (1972) theoretically tested the nexus between DF, inflation and CF with the quantity theory of money model. A significant justification by the study for the quantity theory's adoption was becausebefore the 1970s, the Federal Government could easily print money to meet its financial obligations. However, adopting such an approach in the post-1970 era has become very unpopular. The economy's low output capacity will only exacerbate the inflationary tendency ofDF through money printing. Furthermore, the quantity theory is based on the static assumptions of the volume of transaction and money velocity. Whereas, in today's world,both the volume of transaction and the velocity of money are dynamic. Another significant flaw of the quantity theory is that it neglects money as a store of value. This is because the theory stresses the demand for money to be

singularly transaction driven; thus, neglecting the speculative and precautionary roles of money.

Based on the aforementioned gaps, this study re-examined the effect of DF on inflation andCF by adopting a dynamicKeynes-Wicksell threeasset money growth theory.In contrast to Oyejide's approach of disaggregating his study into deficit-inflation nexus and deficit-CF relationship, this study replacedthe business sector in theKeynes-Wicksell's money growth frameworkwith the government sector. The government sector is represented in the modelby a government budget deficit to be funded using tax collections, increase in money supply, and public borrowing through the issuing of interest-yielding government bonds.Theslight modification to Keynes-Wicksell's model captures the dynamism in DF in the post-1970 periods in Nigeria. Thus, enabling the study onhow financing the deficit in the Federal budget can create inflation and lowerCF simultaneously.

Methodologically, empirical studies such as Oyejide (1972) and Onwioduokit (1999) adopted the Ordinary Least Squares (OLS) technique in assessing the relationship between DF, inflation, and CF, and the deficit-inflation nexus, respectively for Nigeria.The OLS technique, however, is known to be plagued by many estimation problems. For instance, in a situation where there are outliers in the data set, the OLS procedure tends to yield bias estimates. Another unique problem with this technique is that it could lead to poor predictions when a subset of explanatory variables in the model is significantly correlated to each other. For instance, the study by Ishaq and Mohsin (2015) showed that endogeneity is present in the deficit-inflation relationship.The deficit-inflation nexus can be impacted by a number of variables such asthe real interest rate, economic growth, the exchange rate, volume of private sector credit, etc. Thus, to correct these observed methodological issues, this study adopted the use of Instrumental Variables (IV).

The empirical validation for this study is anchored on the fact that the exact nexus between DF, inflation and CF in Nigeria remains ambiguous. For instance, Oyejide (1972), Moser (1995), Tule et al. (2019) and Fasanya et al. (2021) concluded that an increase in DF would directly lead to higher inflation, while Onwioduokit (1999) and Oseni and Sanni (2016) found a bi-directional direct nexus. Further, a positive direct

effect of DF on CF was reported by Oyejide (1972), while a negative direct effect was found by Ezeabasili and Nwakoby (2013).None of these studies consideredthe indirect link fromDF toinflation and CF in Nigeria. This empirical gap is crucial if the magnitude of the effect of DF on inflation and CF isto be understood. Thus, this study coveredboth the direct andindirect effectsto fill this gap in the literature. For the inflation-CF nexus,Ahortor and Adenutsi (2009) showed a negative bi-directional association between inflation and CF. Contrarily, Olanipekun and Akeju (2013) observed that the relationship is positive and flows from inflation to CF. This studyre-examined the inflation-CF nexus by considering the role of DF in the relationship.

Finally, this study bridged the existing empirical lacuna in the literature by evaluating the tripartite nexus between DF, inflation, and CF for a developing nation like Nigeria. The only current study of this nature, particularly for Nigeria, is almost five decades old and is credited to Oyejide (1972). The intuition is that, there have been numerous changes in the Federal Government's policy directions over the years. Furthermore, this study improved on the five DF measures applied by Oyejide's study which are the overall budget deficit, external reserves, money supply, domestic credit creation, and internal credit monetisation. DF as measured in this study consist of domestic, externaland other source financing. The three measures constitute the broad components of DF as measured by the Central Bank of Nigeria (CBN). Thus, the need to re-evaluate the conclusions reached in the study by Oyejide to show if those conclusions are still valid or dated.

1.5 Scope of the Study

This study covered the period 1970-2017. The choice of this period is informed by the increase in Federal GovernmentDF and fluctuating levels of inflation and CF experienced within the period. Secondly, the availability of data forms another reason for the choice of the study period.

1.6 Organisation of the Study

This thesis is structured as follows: Chapter one introduces the study.Chapter two containsliterature reviews on the study. Chapter three shows the study's theoretical framework and methodology. Chapter four contains the results and discussions. Chapter fivecontains the study's summary, conclusion and recommendations.

CHAPTER TWO
LITERATURE REVIEW

2.1 Preamble

To understand the interrelationship between DF, inflation and CF, this chapter embarks on a review of the literature in the aspect of theory, methodology and empirics. Also, an overview of Federal Government DF, inflation and CF in Nigeria is provided. The impacts of the various Federal Government policy directions, from 1970 onwards, as they relate to the variables were considered. These policies include the second to the fourth National Development Plans (1970 to 1985), the Structural Adjustment Program (1986-1989), the Rolling Plans (1990-1999), the National Economic Direction (2000-2003), the National EconomicEmpowerment and Development Strategy (NEEDS) from 2004-2007, the seven-point agenda (2007-2010), and the transformation agenda (2011-2015).

2.2 Theoretical Literature Review

2.2.1 The Quantity Theory of Money

The quantity theory of money is based on the submission that changes in the quantity of money will resultin, *ceterisparibus*, approximately the same amount of changes in the price level. The theory explains the mechanical and fixed proportional nexus between variations in the money supply and the general price level. Any change in the quantity of money will generate the same proportional change in the price level. Usually, the quantity theory of money is alphabetically written as MV = PY, where Mdenotes the supply of money; V is the velocity of the circulation of money, that is, the average number of transactions that a unit of money performs within a specified interval of time. P denotes the price level, and Y signifies the final output. The quantity theory originated from an accounting identity, according to which the aggregate expenditure in the economy (MV) is identical to the aggregate revenue realised from selling final goods and services (PY) (Tsoulfidis 2008). This identity is translated into a behavioural expression once we can deduce the values of V and Y.

The quantity theory of money can be traced back to sixteenth-century Europe, where it originated as an answer to the influx of precious metals from the New World. Thus, making it one of the earliest theories in economics. Nevertheless, only in the late mercantilists' writings does one start to find theoretical statements that justify the connection between M and P.

The theory postulationsupposes that in a situation of a steady-state, a government that runs a budget deficit will be wealthier when there is an expansion in M (for instance, through DF). Such that the growing demand for increased spending would raise the prices of products. Thus, raising the earnings of another set of entrepreneurs whose increasein demand for factor inputs would elevate prices even further (Tsoulfidis 2008). Though this chain reaction is expected to fade out at some point, the relationship's anticipated outcome would be the restoration of equilibrium, although at greater prices.

To the Classical Economists, the quantity theory of moneyis an integral part of their value and distribution theory. They cited Say's law of markets, upon which output is seen as given. There is also the further assumption that V is given and ascertained by the customs of payments and society's institutional arrangements (Tsoulfidis 2008).It then signifies that relative adjustments in M will be mirrored in P and vice versa. In particular, David Ricardo (1772–1823) restated the usual causal nexus of the quantity theory of money, debating that causality flows from P toM and not the other way around. The rationale is that the value of money is a base unit on which quantities are measured for all other prices. Suggesting that if government deficits lead to excess supply of money due to the sale of a new set of government bonds for the purpose of financing the deficits, it becomes plausible to infer that the value of government bonds generallywill fall and, thus, the prices of other commodities will rise.

Therefore, it could be said that the direction of causality between P to M is very much important. Thus, the quantity ofmoney is endogenously derived—that is, factors within the economic system influence it. Proponents of theneoclassical economics school of thought like Irving Fisher (1867-1947) further advanced the quantity theory by focusing on exogeneity. The Fisher's equation of exchangewhich is a slight modification of the initial quantity theory can be mathematically expressed as MV +

M'V' = PT; where M is currency and M' is demand deposits, V and V' are the respective velocities, and T indicates the total volume of transactions and not only of final goods.

In summary, the quantity theory of money postulates that increasing the quantity of money, such as DF, tends to create inflation and vice versa. For example, the theory holds that if the Central Bank should double the supply of money in the process of financing government deficit, the long-term prices in the economy is likely also to double.

2.2.2The Neoclassical Money and Growth Model

The Neoclassical money and growth models found their way into macroeconomic literature through Tobin (1955, 1965), who broadened the Solow model of real growth through the introduction of monetary factors. Tobin's paper on "Money and Economic Growth", published in 1965, for instance, discussed monetary variables' role in determining the intensity of CF for an economy. He noted that economists such as Irving Fisher and Maynard Keynes had made significant demarcations between choices that impact the disposition of income and those that impact wealth. The first category of options establishes the amount being saved rather than consume and the value of wealth being accumulated. The second category identifies the mode in which savers store both old and new savings. Tobin's model was based on analysis for a closed economy, where the essential alternative stores of value are monetary assets, whose yields set limits on acceptable rates of return on real capital and the acceptable extent of CF.

The generalized versions of the Tobin type model were later developed by Uzawa (1966),Sidrauski (1967),Levhari and Patinkin (1968), Nagatani (1970), etc. A major feature of these later extensions is the regard for money as an asset in addition to real capital and the adoption of money market disequilibrium as the cradle for the modelling of inflation and inflationary expectation. In addition, the neoclassicals built on Say's law of market for goods, which was a major assumption of the Classical's quantity theory of money. Thus, allowing the exclusion of any goods-market problem; since the labour market phenomena were derived from Solow (1956), based on the premise of full employment and the macroeconomic marginal productivity model of

the income distribution. Models based on Tobin's monetary growth theory have eventually resulted in a huge amount of literature on equilibrium growth theories that optimises economic agents' behaviour as the objective.

Distinctive matters handled by the later Tobin neoclassical economists include the analysis of the steady-state effects of money supply growth rate and the Tobin effects. Furthermore, these neoclassicals examined the steady state's local stability, where specifically, the destabilizing function of inflationary anticipation was examined under the condition that saw the adjustment of adaptively created inflationary expectations become significantly fast.

Generally, the neoclassicals assumed that the accumulated capital is usually tantamount to the level of planned savings per unit of capital (i.e., $s^*y(x)$). Where s^* denote planned savings per unit of output, and $y(x)$ denote output per unit of capital. Their model showed that if n represents the growth of effective labour and x the ratio of effective labour per unit of capital. Then the neoclassical model can be stated as:

$$\frac{Dx}{x} = n - s^*y(x); \qquad D = d/dt \qquad (Equ.2.1)$$

Hence, monetary policy may affect the long-term equilibrium CF $(1/x)$, as well as its value in the short-term; suppose the planned savings ratio s^* is influenced by the rate of monetary expansion. However, suppose the real balances serve as inputs into the production function, then there is another way through which monetary policy can affect the equilibrium level of CF.

The neoclassical money and growth model is a simple two-asset portfolio behaviour, in which economic agents can either save their wealth in the form of money or capital and where taxes on capital are viewed as lump-sum levies. The neoclassical models base their model on three assumptions about portfolio behaviour by explaining that if the two assets' yields vary, wealth owners will desire to invest all of their resources in the asset with the highest yield. Also, if, the yields are the same, wealth owners will not bother in what proportions they divide their wealth between both assets. If both assets have positive yields, they will likely be held in portfolios only if the two yields are equal. These assumptions show how the institutionally determined rate of interest

on money regulates the yield of capital. Specifically, the neoclassical models maintained that the rate of interest, which is the minimal rate of profit leads to the Keynesian deflationary bottleneck.

The neoclassical models are founded on the premise that actual CF is identically the same as output, minus planned consumption. That is when output is Y_1, the CF will be inverse and the same to C_1A_1; where C is planned real consumption, and A the level of technology. Further, when output is Y_2, the CF will be C_2A_2. The neoclassical model's investment function is taken to be irrelevant when determining the level of CF.The neoclassical models believe that when the quantity of money supply is instantaneously doubled, regardless of how the money is distributed. The price level is also expected to instantaneously double in as much as the money supply's anticipated growth rate remains the same prior to and after the "blip" in the money supply.

Price Dynamics in the Neoclassical Models

In the Neoclassical model, the per capita demand for real balances m^d is taken as being dependent on the per capita capital stock (k), as well as the expected rate of inflation (π^*):

$$m^d = L(k, \pi^*)L_1 > 0,\ L_2 < 0 \qquad (Equ.\ 2.2)$$

The capital stock and the anticipated inflation rate are given at any particular period, likewise is the nominal money stock and population. In addition to equation 2.2 is the neoclassical stipulation that the money market consistently operate in equilibrium and adequate in determining the price level.

$$M/PN = m = m^d \qquad (Equ.\ 2.3)$$

Specifically, when the money stock is doubled, the price level is also expected to double, but the change in the system is expected to remain the same. In Sidrauski's two-sector model, for instance, price determination requires the commodity market clearing, and the level of prices cannot be expected to be measured by the requirement of the portfolio balance. In such a model, "jumps" in the money stock impact only the general price level.

One important question to ask is if there is any reason to consider this instantaneous neutrality with suspicion? To answer this, the model showed that there are situations under which it might be considered plausible. For example, if it was proclaimed that each individual will experience a doubling of his nominal money balance at some point of time. Then, given some level of sophistication by economic agents, one realization might be that this process was equivalent to making a new unit of account. Hence, the consequence is a price level that might simply double. This notwithstanding, constitutes a fundamental assumption of the neoclassical models that incorporation of money is not allocated based on the existing holdings of money. Since, on the contrary, the transfer payments necessitating the expansion of the money supply would be equivalent to interest payments made on money holdings. Based on this premise, it is expected that a rise in some individuals' nominal money balances in the economy should be anticipated to yield their effects on prices steadily through the real balance effects, rather than instantaneously.

Using equation 2.2 and 2.3, the neoclassical models of the rate of inflation can be shown as

$$\pi = \mu - n - \frac{1}{m}[L_1 DK + L_1 D\pi^*] \qquad (Equ. 2.4)$$

Where μ signify the (assumed constant) rate of expansion of the nominal money supply, n represents the rate of growth in the population, and D indicates the time derivative. Hence, in the steady-state, $\pi = \mu - n$; thus, the CF will lower the rate of inflation below its steady-state value and at the same time increased beyond its steady-state value by anticipated growth in inflation rate.

To Summarize, the neoclassical growth model offered wealth owners the opportunity to store value in money or capital asset. Having such an alternative store of value ensured that saving was no longer directly used for investment in physical capital. This is because the apportioning of saved funds between physical capital and money became a function of the community's portfolio determination. Further, the community's portfolio determination is assumed to rely fundamentally on the (real) returns expected on the two types of assets: the marginal productivity of capital on one hand and the real return on money. Hence, CF is only expected to occur only if

themarginal productivity of capital is significantly higher in respect to the real yield on money. For instance, the neoclassicals postulate that an accelerated monetary growth ratewill culminate inlong-term CF growth. The reason is that increasing the rate of monetary growth by increasing inflation; reduces the real return to holding money and causes a portfolio shift towards capital.

2.2.3 The Keynes-Wicksell Three Asset Money Growth Model

As against the neoclassical two-asset monetary growth theory, the fullness of the Keynes-Wicksell monetary growth model can best be appreciated. It considers an economy where three stores of assets are money, bonds, and capital, exist. This type of model's cardinal characteristiclies in its refutation of the classical (quantity theory of money) and neoclassical Economists' Say's law of market assumption of savings and investment decisions being equal to each other. Thus, stating otherwise that savings and investment decisions are independent of each other. Since it assumes thatfirms determine their desired rates of investment in line with expected yields on capital. While on the other hand, household desired savings is determined from some process of optimization. The essential point is that, in inflationary periods, firms may choose not to invest even if the level of household savings in bonds is high.Indicating that the decision by firms to invest, do not consider household saving decisions. Rather, the market has the function of reconciling the demand for firms' output with households' savings. The efficacy with which the markets conduct this reconciliation duty deeply affects the consequences of monetary growth in the economy.

Firms in the Keynes-Wicksell monetary growth model are assumed to desire a ratio of capital to labour in such a way that the marginal product of capital (r) equatesto the real rate of interest. In addition, they are premised to attempt increasing or reducing the available ratio of capital to labour; to the extent that the anticipated rent per unit of capital rises or is below the opportunity cost of investment. The anticipated rent (R) is assumed to be positively associated or equal to capital's current marginal product(r). While the opportunity cost of investment is the real rate of interest,measured as the current nominal bond rate of interest (p) minus the anticipated rate of price changeπ^*. Even when a firm does not finance its investment by means of borrowing, it could still repay outstanding debt or lend funds in the market rather than accumulating real capital.

The Keynes-Wicksell monetary growth model asserts independent real savings and investment functions and the premise that prices change but only to reactions to excess demand in the goods market. These crucial features of the Keynes-Wicksell monetary growth model differentiate them from the classical and neoclassical models. Since the classical and neoclassical monetary growth models, there is the absence of independent investment function, and all markets are continuously in equilibrium.

The Keynes-Wicksell Price Dynamics

In the Keynes-Wicksell model, the law of supply and demand determines the rate of inflation. Specifically, the models assume that:

$$\pi = \lambda(D - S), \qquad 0 < \lambda < \infty \qquad (Equ. 2.5)$$

where π denotes the rate of inflation, D and S represent aggregate demand for and supply of goods, each in real terms, and λ serves as a constant. It is evident that inflation cannot exist without excess demand if equation 2.5 ascertains the inflation rate, and hence a steady-state with inflation demands a relentless excess demand. The Keynes-Wicksell model can accordingly develop steady states, whereby individuals are persistently disappointed in having the goods they demand.Although their demands are founded on accurate expectations and perceptions of the price level while being condemned to be so disappointed forever after. This outcome appears unappealing with two potential solutions to the problem. The first could be that demands could be anticipated to change in response to such disappointments. On the other hand, the price determination equation might not be sufficient.

Pursuing the alternative approach, the challenge raised by equation 2.5 alongside similar equations include: whose character does such equations narrate? The Walrasian standard reply is "the auctioneer"; another frequent reply happens to be "somewhat less than competitive firms." If we consider the auctioneer reasoning,then in the standard individual period exchange model, the auctioneer will call out prices for each good successively base on the mechanism:

$$p_{i,j} = p_{i-1,j} + x_j(p_{i-1}) \qquad (Equ. 2.6)$$

where i denotes the iteration number of the current call, and j the number of the good, p represent the vector of prices, while $x_j(p_{i-1})$ denotes an increasing function of excess demand for good j at the prior called price vector. As for intertemporal models, an equilibrium price vector is often arrived at through the above procedure at the beginning;suppose in each period, new information can be obtained, just as in models with uncertainty. If it is assumed that an "auction" occur in each period, then the auctioneer's motive in each period will be to ascertain market-clearing prices. Prices ensure that demands always equate to supplies.

Equation 2.5 provides an avenue to use equation 2.6 in a limited context that ensures the subscript "i" transforms into a "t" while applying equation 2.6 to general prices. However, the objective of the auctioneer is not considered. If the auctioneer requires the general price level at time t to differ from that at t-1, then his rule of thumb might be applicable as:

$$p_{i,j} = p_{t-1,j}\left(\frac{\bar{p}_t^e}{\bar{p}_{t-1}}\right) + x_j(p_{i-1}) \qquad (Equ.2.7)$$

Where $\bar{p}_t^e$ represents the aggregate price level anticipated to prevail at t, and $\bar{p}_{t-1}$, is the aggregate price level at t-1. If we aggregate over goods, and in persistent time, an analysis of equation 2.7 becomes:

$$\pi = \pi^* + \boldsymbol{\lambda}(D - S) \qquad (Equ.2.8)$$

where π denote the actual inflation rate, and π^* is the expected rate of inflation. The auctioneer is absent in the majority of the markets, making it unacceptable to explain reasonable behaviour for a missing economic agent.

The Keynes-Wicksell method's significance toward understanding the working of a developing monetary economy arises from the following crucial conclusions. First is the submission that savings and investment decisions are to be separated from each other through an important process. Thus, rejecting the validity of Say's law both in its petty and in a more expanded form. Also, the price inflation model must be associated with the goods market and its disequilibrium, not as stated in Tobin's related

generalized models to money market disequilibrium. The Keynes-Wicksell model measures imbalance in the goods market through the divergence of savings decisions from the investment decisions. At the same time, the model of inflation was developed on this imbalance and augmented by anticipated inflation in Fischer (1972) through a monetarist fashion for the purpose of achieving a steady-state equilibrium. By contrast, the money market was now explained through the normal Keynesian LM-equilibrium condition, as nominal interest rate theory. Thus, allowing the level of investment to be a function of the deviation from the nominal gross rate of profit. Finally, the Keynes-Wicksell contribution to the monetary growth theory, as against the neoclassical view emphasized the cyclical consequences of labour market disequilibrium, the challenge in income distribution, and CF.

In summary, the Keynes-Wicksell theory's contribution to the analysis of monetary growth lies in its decisive forward move in the understanding of such growth theories. First, the Keynes-Wicksell model of monetary growth leads to the introduction of a new financial asset, different from money as in the neoclassical monetary growth models. These enabled savers the opportunity to store their wealth inform of bonds (equities), especially during episodes of high inflation, when investment in capital may not be profitable. Thus, theneoclassical and Keynes-Wicksell theories of monetary growth cannot be said to belong to the same class of abstraction in monetary growth theories. Rather, the Keynes-Wicksell model belongs to a higher hierarchy since it incorporates the independence of firms' investment decisions from household savings decision and incorporating this imbalance from the Wicksellian point of view through the easiest way possible.

2.3 Synthesis of Theoretical Literature Review

The above theoretical review has shown that an intimately linked discourse is the association between household saving and investment (CF). The classical Economists' quantity theory believes that doubling the quantity of money supplied will trigger prices to double by the same amount of the increase. Thus, creating inflation in the economy. On the other hand, the neoclassicals and Keynes-Wicksell models have both stressed the possibility of eliminating and having excess saving in an economy. To the neoclassicals, the excess savings can be eliminated by raising the rate of inflation while money become less desirable compared to actual capital. The neoclassical

analysis further noted that the ensuing rise in CF will offset the rising saving rate. Thus, sustaining the level of aggregate demand.

However, the Keynes-Wicksell models stress the possibility of eliminating the excess saving and showed that such excess saving could persist in an economy. Excess saving in the Keynes-Wicksell model signifies a situation when individuals will choose not to hold capital, except its returns is anticipated to rise above some minimum required yield. This is because when the expected yield from capital is very poor, a rise in savings will only lower aggregate demand, and suppose prices can be reviewed downward, then, thelikely result is a deflationary tendency until the rise in the measure of real balances creates a significant depreciation in the level of savings. However,if a fall in prices is difficult tooccur,excess savingsis expected to generate unemployment.

This analysis shows against the neoclassical model's conclusion that at an expanding rate of inflation, investors' desire to hold real capital may not be increased as postulated, but rather it will decline. Thus, the Keynes-Wicksell monetary growth model was adapted for this study. Further, an essential characteristic of our study's theoretical framework is, as against the traditional neoclassical premise that every tax should be treated as lump-sum levies, taxes in our theoretical framework is recognized on capital income as a factor that diminishes the net rate of yield on capital assets. Our innovation to the three asset model of the Keynes-Wicksell model was the introduction of a government sector through the introduction of a government deficit to replace the business sector. The government deficit was assumed financed not solely by raising the money supply but also through the issuing of interest-yielding government bonds.

2.4 Methodological Literature Review

Some of the contradictions in the existing studies can be traced to differences in the methodology adopted by different authors. In order to understand the reasons for the various estimation techniques employed in previous studies, this section critically reviewed a variety of estimation techniques used in the literature. This assisted to ascertain the appropriate estimation technique for this study. In addition, it also reviewed the type of data and various issues on model specification.

2.4.1 Methodological issues on data

Existing studies with respect to DF, inflation and CF have adopted descriptive data analysis, time-series data analysis and panel data analysis, with varying findings and conclusions.

One study in the literature that made use ofdescriptive data analysis is credited to Ahmad (1970). The use of descriptive statistics has its flaws, including poor analytical technique due to easy misrepresentation of data. This gave rise to the use of time-series data analysis in studies such as Oyejide (1972); Onwioduokit (1999); Charkraborty (2007); Ahortor and Adenutsi (2009); Hadiwibowo (2010);Bakare (2011); Aiyedogbon (2011); Paiko (2012); Ezeabasili and Nwakoby (2013); Olanipekun and Akeju (2013); Imegi (2014); Abirami and Panda (2015); Srinivasakumar and Vijayabanu (2015); Adinevand (2015); Ssebulime and Edward (2019); Tule et al. (2019); and Fasanya et al. (2021). The biggest advantage of using time series analysis is that it can be used to understand the past as well as predict the future.

Furthermore, there are studies that have also explored the use of panel data analysis over time series analysis. This is because panel analysis is used to explore both cross-sectional and time-series properties simultaneously. Based on cross-sectional analysis lapses, these studies have used panel data, which is more flexible to various functional forms (both dynamic and static) and transformation (lag or difference). Studies that have used panel data includeServen and Solimano (1993), Choi et al. (1996), Krkoska (2002), Khan and Rana (2013), Lin and Chu (2013), Nguyen (2015), Ishaq and Mohsin (2015), and Ahmad and Aworinde (2019).

From the above, it is evident that most recent studies related to DF, inflation, and CFconsidered the use of time series data analysis more appropriate.

2.4.2 Methodological issues on estimation techniques

There are differences in the literature in terms of the estimation technique adopted. The discrepancies are based on whether they accounted for endogeneity between DF and inflation or accounted for causal relationship/simultaneity between inflation and CF. An in-depth review of existing methodologies shows that the major estimation techniques used in various studies are the use of OLS approach, vector autoregressive

framework (VAR/VECM), static panel (pooled) and simultaneous regression methods (2SLS or 3SLS).

A number of studies made use of the OLS approach to analyze the effect of DF or fiscal deficit on inflation. These studies include Oyejide (1972), Onwioduokit (1999), Paiko (2012) and Ezeabasili and Nwakoby (2013). However, the major problems associated with the use of OLS, which includes multi-variates analyses, failure to deal with outliers, the nonlinearity in most economic relationships, and the possibility of high correlation between a sub-set of the explanatory variables, led to the use of the Vector Auto-Regressive (VAR)/Vector Error Correction (VECM) framework in studies such as Charkraborty (2007), Hadiwibowo (2010), Kreiter and Paul (2010), Aiyedogbon (2011), Ocran (2011), Kassu et al. (2014), Kanu and Ozurumba (2014), Abirami and Panda (2015), and Ahmad and Aworinde (2019). These studies used the VAR/VECM in examining the relationship between DF and inflation and inflation and CF. Other studies such as Tule et al. (2019) and Fasanya et al. (2021) adopted the ARDL framework.

Some studies have also observed the use of panel analysis in evaluating the DF-inflation, fiscal deficit-inflation, or fiscal deficit-CF nexus. The key factor behind the adoption of panel analysis is to widen the degrees of freedom, thereby avoiding collinearity. Furthermore, it can be deployed for the measurement of unobserved heterogeneity and the introduction of dynamic structure into a cross-sectional regression. Panel analysis can also be adopted for tackling aggregation bias challenges as well as apprehend estimation effects associated with cross-section and time series regressions. Examples of studies in the literature that have adopted the technique includeChoi et al. (1996), who adopted panel OLS, Ahortor and Adenutsi (2009) used a panel VECM approach, Lin and Chu (2013) used an Autoregressive Distributed Lag (ARDL), Khan and Rana (2013) adopted a panel two stages least square (P2SLS) technique and Nguyen (2015) who used the pool mean group (PMG) and the panel generalized method of moment (PGMM).

Thesimultaneity problem between DF and inflation in the literature led to the use ofInstrumental Variables (IV) in some studies. The IV estimation techniquesare a major estimation technique used to solve potential simultaneity problems between

variables. Furthermore, the technique does not only correct for endogeneity and simultaneity bias; but can also be used to explain the causal relationship among variables. Adinevand (2015), Nguyen (2015), and Ishaq and Mohsin (2015) are study examples in the literature that used the 3SLS and GMM methods respectively to examine the deficit-inflation nexus.

The use of causality and correlation was also observed in studies such as Onwiodukoit (1999), Oladipo and Akinbobola (2011), Imegi (2014), Srinivasakumar et al. (2015) and Ssebulime and Edward (2019).

2.4.3 Synthesis of Methodological literature review

The contradictory results in the empirical literature can be related to the different methodologies used in such studies. For instance, a major estimation technique used to examine the effect of DF on CF or investment in the literature has been the use of the VAR framework (Chakraborty 2007, Hadiwibowo 2010, Aiyedogbon 2011 and Kassu et al. 2014).

In examining the relationship between DF and inflation, various techniques have been used such as Oyejide (1972) used the OLS approach, Kreiter and Paul (2010) and Ahmad and Aworinde (2019) used the VAR framework, Oladipo and Akinbobola (2011) empolyed the granger causality approach. Imegi (2014) used the correlation technique, Lin and Chu (2013) used a dynamic panel ARDL, Jalil et al. (2014), Tule et al. (2019) and Fasanya et al. (2021) also used the ARDL approach, Adinevand (2015) used the (3SLS) Instrumental Variable technique and Ssebulime and Edward (2019) used the cointegration, error correction technique and Granger causality technique.

In examining the inflation-CF nexus, Choi et al. (1996) used the panel OLS technique; Ahortor and Adenutsi (2009) used a panel VECM approach; Olanipekun and Akeju (2013) used cointegration and ECM, and Srinivasakumar et al. (2015) used the causality approach.

Two major gaps can be identified from the methodological literature review. First, studies on Nigeria ignored the potential effect of endogeneity in the DF-inflation nexus. Secondly, they fail to capture the indirect effect ofDFon inflation andCF. In

filling these gaps, this study adopted the use of instrumental variables. This is because, as noted by Ishaq and Mohsin (2015), there is the likely presence of endogeneity in the DF and inflation relationship.

However, to capture the dynamic structure of the relationship between DF, inflation, and CF, this study adopted instrumental variables. This is because of the strong potential for endogeneity in the DF and inflation variable, especially the potential for reverse causation, noted byIshaq and Mohsin (2015). This econometric approach's choice is based on the fact that most economic models are endogenous in nature. That is, a theoretical relationship that does not follow the path of dependent variable is regressed on the regressor variable; but on the premise that theresponse variable is influenced by but does not jointly determine the regressors (Wooldridge, 2009). Thus,when there is endogeneity,the usual OLS methodologybecomes inefficient and gives compromising and inconsistent estimates.Another important factor in the use of IV relates to measuring indirect effects. Thus, to properly investigate the direct and indirect channel through which DF impact inflation and CF, the use of IV is adequate.

2.5 Empirical Literature Review

In order to identify and address the potential gaps identified in the literature, this section presents an in-depth review of empirical studies on the relationship between DF and inflation, DF and CF and inflation and CF.

2.5.1 Studies on Deficit Financing and Inflation

Olaloku (1975), in assessing the trend of DF in Nigeria between 1965 to 1970, observed that the Central Bank's essential functioninvolves ensuring the price stability goalof economic development. On this note, the closenexus between monetary policy and debt policy becomes of much significance. The study noted that such would need closer collaboration between the Central Bank and the Government in order to derive an optimum synergy of policies for the attainment of set economic goals. Although the study noted thatDF could not be done away with completely, it, however, stressed that it is the continuing duty of the apex bank to warn about the inflationary dangers of raising the money supply above the benchmark regarded to be appropriate with price stability. While also adding that the Government is obliged to take such warnings to attain stable prices required for economic development.

Sargent and Wallace (1981) exceptional studylargelyseparated “monetary and fiscal dominance” regimes from each other, in the fiscal deficits-inflation association through the use of two explicit phenomena. First, the study demonstrates that a phenomenon that entails funding the deficit in the budget, simultaneously through sales of bond to members of the public, and seigniorage initiated by the monetary authority; tend to produce a situation where if the monetary authority decides to carry-out a monetary policy without regard to the fiscal authority, then the later will be restrictedbase on the conduct of the formerin formulating fiscal policy. Reason being that the monetary authority holds the advantage in deciding the money supply. Hence, inflationary indication from government fiscal deficits becomes absent but rather emerge from monetary dominance. On the other hand, it is expected that a fiscal dominance regime can produce inflation through a fiscal deficit when it restricts the monetary authority's impactin determining the money supply.

Bruno and Fischer (1990), in their study “Seigniorage, Operating Rules, and the High Inflation Trap”; observed that there might be simultaneously upward anddownward inflation equilibrium when the government’s choice of financing the deficit is through seigniorage. Testing for equilibrium conditions under both rational and adaptive expectations, they submit that the upward inflationary equilibrium is stable under rational expectations, and the downward inflationary equilibrium unstable. However, they found that under adaptive expectations or lagged monetary balances embedded with rational expectations, the downward inflationary equilibrium may be stable. They further noted that by incorporating bond financing, double equilibria persist so long as the government controls the real interest rate. Nevertheless, a distinct equilibrium still persistsas long as the government determines the nominal anchor for the economy. The persistence of double equilibria is hencethe outcome of the government's fiscal dominance.

Moser (1995) assessed the main inflationarytriggers in Nigeria for the period 1962 to 1992. The finding confirms that expansionary monetary policy,determine to a substantial degree the inflationary process in Nigeria. This is because concurrent fiscal and monetary policies were shown to have had a major influence on the devaluation of the naira due to inflation. The fall in the value of the naira triggered higher prices, however, the effect can be defused by implementing suitable financial policies. The

study noted that in 1986 and 1990, a contractionary fiscal and monetary policy stance during and shortly after the naira devaluation substantially reduced the effect on domestic prices. On the contrary, devaluation during a period of excessive expansionary financial policies highlights the effect on inflation, as was observed in 1992.

The study by Metin (1998) was centred on establishing the association between inflation and Turkey's budget deficit, from 1950 to 1987. The study observed that increasing the government budget deficit and raising the level of income growth and debt monetization; substantially impacted the level of inflation in Turkey. Hence, indicating that the monetization of the government deficit affects the level of inflation. However, it was noted in the study that such submission is in line with the institutional and common knowledge of the economy.

Onwioduokit (1999) conducted an empirical causal study on fiscal deficit and inflation dynamics in Nigeria from 1970 to 1994. The study noted that publicoutlay in Nigeria has consistently overwhelmed revenue for most of the study period particularly from the 1980s. It was also empirically revealed that although fiscal deficit has a causal link with inflation, there was no feedback effect from inflation to fiscal deficit. However, the result supported a feedback effect from inflation to fiscal deficit per GDP (this was used to capture the economy's absorptive capacity). The study also noted that it takes about two years for the fiscal deficit to impact inflation in Nigeria. Hence, concluding that what should be of utmost concern to policy makers regarding inflation should not so much be the level of fiscal deficits; but rather the sources of its financing and the absorptive capacity of the economy.

Solomon and Wet (2004) assessed the budget deficit-inflation nexus in Tanzania from 1967-2001. The study tested a steady long-termassociation between the budget deficit, GDP, inflation and the exchange rate. Findings from the study suggest a substantial impact of the budget deficit on inflation,which the study believe could not be refuted under the assumption of long-term monetary neutrality. They submitted that the previous Tanzanian government have often monetised its budget deficit. The effect of this is an upward inflationary path for Tanzania. The study’s simulated findings revealed that upward trends in budget deficit profoundly affects aggregate prices.

Indicating that inflation highly responds to emanating shocks from the budget deficit. Furthermore, due to the budget deficit monetisation, significant inflationary effects were also found for increases in the budget deficit.

Boariu and Bilan (2007) tried to analyse the relationship between the different ways of financing budget deficit and inflation, underlining the terms of these relations and the involved social and economic effects.It was found that a crucialfactor that gives rise to inflation can be traced to the financing option of the fiscal deficits by means of a direct appeal to the central bank's resources. However, this approach is considered unfavourable in a significant numberof countries around the world due to its negative impact. Nevertheless, the more acceptable DF source in contemporary economies, which is debt financing, can still trigger inflation when it indirectly involves the increase in the amount of money available to the economy above what's necessary.

Kreiter and Paul (2010) considered the four likely sources of inflation in Bangladesh for 1999 to 2008. Specifically, the study focused on the impact of government DF on inflation. The study's empirical findings indicate that the strongest determinants of the current inflationary level are the previous inflationary levels and net credit to the government from both the domestic banking system and non-banking system. These findings indicate that while domestic borrowing by the government does have a part in aggravating inflation, borrowing to the private sector, which was noted to have been the exclusive determinant of economic growth in Bangladesh, showed no significant effect on prices proportionally or directionally.

In the study by Murota (2010) entitled "inflation, fiscal deficits and multiple states in a cash-in-advance Model", it was shown that it is possible to have a high inflation trap and a poverty trap can ensue in the economy. The rationale flows from the fact that having two steady states can generate high-inflationary trap. Consequently, the economy stands the chance of operating at a high-inflationary steady state. If the steady states are three, then, it is anticipated the poverty trap should exist, and the initial CF will suggest which steady-state is attained by the economy. If it is smaller than a threshold, the economy is premised to operate at a high-inflation and declined capital steady state. On the contrary, if the Federal Government deficit is adequately reduced, the economy is anticipated to circumvent the poverty trap and derive a

reduced inflationary andupward capital steady-state independently of it. However, a synchronisation of the Federal deficit and the un-autonomous monetary authority will yield both of these traps, and willonly vanish by guaranteeing the monetary authority's autonomousity or in the absence of Federal deficit. Therefore,the study recommended the cutting-down on government fiscal deficits and enhancing the central bank's freedomis crucial in arriving at a controlled inflationary level, stabilising economies, and promoting economic growth.

Oladipo and Akinbobola (2011) evaluated the nature and direction of causality between the budget deficit and inflation in Nigeria for 1970-2005. Empirical findings from the study confirmed the presence of unidirectional causality from budget deficit to inflation. Thus, they recommended providing appropriate policies to ensure budget deficit does not necessarily result in inflation.

Pekarski (2011), in examining the feedback between budget deficits and inflation in high inflation economies of Argentina and Brazil, explored the Olivera-Tanzi effect.The study's crucial submission was that recurrent episodes of very high inflation in these economies stem from the lagging behind of the inflation variable to growth in public finance. This explanation aligns with the evidence that regimes switch between less excessively high and extremely high (hyper-) inflation frequently arise in the absence ofpalpable decline in public finance or sudden changes in fiscal or monetary policies. The hysteresis effect between inflation and public finance is attributable to two mechanisms: the arithmetic related to the wrong side of the inflation tax Laffer curve and the Patinkin effect (the opposite of the frequently cited Olivera–Tanzi effect). It was further revealed that the demarcation ofthe operational fiscal deficit into a segment subject to inverse inflationary feedback and the segment known to be immune to inflation has significance for explaining the inflationary effects of budget deficits design of stabilization policy.

Musa et al. (2013) evaluated the effectiveness of monetary and fiscal policies in inflation and output growth in Nigeria. The study employed the correlation, impulse response and variance decomposition techniques for its empirical analysis. Result from the study's analysis revealed that money supply and government receipts were the major determinants of inflationary growth, particularly in the long-term. Thus, the

study concluded on the effectiveness on both monetary and fiscal policies in triggering inflationary pressures in Nigeria.

Lin and Chu (2013)examined the deficit–inflation nexusfor ninety-one countries from 1960 to 2006. The study's empirical findings revealed that fiscal deficit exhibits strong inflationary effect for countries with high and middle-inflation episodes, since the money creation effect is faster with higher inflation rate. However, the reverse was found to be true for countries with lowinflation episodes. Thus, the study submitted that fiscal integration tends to provide improved effectiveness in achieving price stabilisation the more prominent inflation becomes.

Jalil et al. (2014) tried to uncover the possible determinants of inflation in Pakistan over 1972 to 2012, emphasising fiscal deficit. The study's long-term estimate showed that fiscal deficits positively impact inflation, along with other variables. Also, it was found that the study supports the inflationary impact of money supply,based on the established hypothesis. However, the study noted that the positive long-term relationship between fiscal deficit and inflation can be attributed to fiscal dominance. Furthermore, they argue that fiscal imbalances are leading to inflation and require immediate fiscal consolidation. Thus, the recommendation for the need to set some threshold level for fiscal authorities and ensure less dependency on the monetary authority.

Imegi (2014) studied the link between budget deficits and inflationary dynamics in Nigeria for the period 1998 to 2009. It was observed that the Federal Government borrowed heavily to finance its fiscal deficit within the study period; thus, the money supply often increased beyond what the economy could cope with in the short-term. The situation of excess liquidity in the financial system encouraged excess demand, which showed that DF undermined the attainment of macro-economic goals. The overall, their study submitted that there is a significant level of impact from DF to inflation in the economy. The study further concludes that any form of DF that stimulates monetary growth, will enhance inflationary growth without a corresponding increase in the economy's productivity. Therefore, it wassuggested that the government consider minimizing the deficit in the budget to an optimal level. It can raise aggregate demand to promote investment and employment.

Adinevand (2015) examined the effect of budget deficit on production, inflation, and trade balance for Iran based on 1971-2013. The study results revealed that the existing public budget-inflation link is not statistically substantial. Furthermore, the direction of the causal relationship was found to be from government budget deficit toward trade deficit with no reverse causal association existing between the variables. Also, the study found that the effect of budget deficit on gross domestic production (GDP) was negatively significant in magnitude in the long-term, while positive and significant in the short-term. However, the huge negative impact in the long-term outweighs the positive effect in the short-term, giving an overall inverse effect of budget deficit on GDP. The study recommended reducing government financing of the deficit through the banks to avoid crowding out private investment and increasing the use of bonds as the alternative to fund the deficit.

The paper by Nguyen (2015) empirically assessed the role of government fiscal deficit and broad money supply to inflationary growth in some selected Asian countries, namely Bangladesh, Cambodia, Indonesia, Malaysia,Pakistan, Philippines, Sri Lanka, Thailand, and Vietnam, for the period of 1985-2012. Findings revealed thatbroad moneysupply significantly impacts inflation in a positive wayin one method of estimation adopted. While fiscal deficit, public outlay and interest rate were revealed to be the statistically robustcontributors to inflationary growth in both methods of estimation. Hence, the study concluded that broad money supply, government fiscal deficit, publicspending and interest rate has robust inflationary implications.

Ishaq and Mohsin (2015) investigated the significance of monetary and financial institutions in understanding the inflationary implication of government deficits for eleven Asian economies for the period 1981to2010. The study findings indicated that government deficits are inflationary for the sampled countries because their governments financetheir budget deficits mainly through seigniorage. Furthermore, government deficits are known to have strong inflationary implications with the prevalence ofweak institutions. It was observed that in the presence of fragile financial markets, the government has no other alternative than to finance its deficits,and it does so by adopting the easy option of printing new money. Thus, they revealed that theCentral Bank's independence is very crucial when considering the government deficit-inflation association. They identified that having the central bank constantly

under political pressure,weakens its ability to denythe government the chance of monetising its deficits. Since political pressures usually hinder the monetary authority from following her goals, which further makes it cumbersome for the central bank to firmly implement price stability goals with serious commitment. Therefore, whenever deficits are monetised, they will ultimately lead to an increase in price.

The inflationary effect of bonds versus money financing of fiscal deficits in India was examined by Dhal (2015). A salient result in the study was when government bonds' monetary consequences are incorporated through the aggregate money supply process, fiscal deficits financed through bonds could be linked with a positive inflation effect. It was further revealed that in extreme situations, where commercial banks solely fund fiscal deficits, financing of fiscal deficits by means of money or treasury bonds would not differ from each other with regard to long-term inflation impact. In such a scenario, it was suggested that the size of fiscal deficits relative to GDP would be the one to affect the long-term inflation rate.

Oseni and Sanni (2016) examined the causal nexus between fiscal policy and inflation volatility in Nigeria for the period 1981 to 2014. The findings of the study supported a bi-directional causal flow between Federal government fiscal deficit andinflation volatility. Submission from the study findings was that volatility in the inflation rate is related to the excess government's persistent behaviour over receipt of the Nigerian economy and vice versa. They noted that this woulddictate the direction government policy and individualswould adopt in reasoning for continuous fluctuation in the country's prices of goods and services.

Ssebulime and Edward (2019) assessed the budget deficit-inflation association in Uganda for the period 1980 to 2016.Output from the study shows a unidirectional causality from budget deficit to inflation. Budget deficit was further reported to have a substantial impact on inflation in the short-term; and impacted inflation directly and indirectly through the channels of nominal exchange rate and money supply.

The paper by Tule et al. (2019) tested the validity of the fiscal theory of the price level in Nigeria. The study used quarterly data spanning from the first quarter of 2002 to the fourth quarter of 2017. To diagnose the inflationary effect of fiscal deficit, the study

used the internal and external components of DF. Findings from the study revealed a substantial inflationary implication from the components of DF in Nigeria. Hence, the study concluded that fiscal dominance is highly prevalent in Nigeria.

Ahmad and Aworinde (2019) examined the fiscal deficit-inflation nexus in twelve African countries from 1980 to 2018. Asymmetry was found in the behaviour of the study's series for most countries examined. This outcome was linked to the poor financial market development, and sudden fiscal adjustments feature in the countries. Furthermore, the study showed that while inflation responds to inverse and positive variance in most countries observed, fiscal deficits respond solely to positive variance, except South Africa where fiscal deficits response was to negative variance. The study noted that fiscal deficits are inflationary in the twelve countries examined; since public finance seldomly adjusts downwards, specifically in developing countries.

Fasanya et al. (2021) investigated the fiscal deficit-inflation nexus for Nigeria from 1980 to 2019. The study analysis showed the effect of government deficit on inflation with and without structural breaks. Empirical findings from the study revealed fiscal deficit to be inflationary alongside other macroeconomic variables. Hence, they submitted that fiscal management should be tailored towards revenue enhancement, rather than expansionary outlays to help curtail the growth of inflationary pressures in the economy.

2.5.2 Studies on Deficit Financing and Capital Formation

The study by Dalamagas (1998) assessed the nexus between fiscal deficit and the productivity of public capital for a number of countries. The focus of the study was to create a further empirical connection between government and economic prosperity, which is the main determinant of the relative productivity of public services and the comparative role of budget deficits in fostering productivity growth. Findings from the study suggested that several factors are responsible for public services' productivity through numerous avenues, however, not in a significant manner. It was further observed that the only exception is fiscal deficits. Also, it was noted that, although government services are revealed to be crucial for the growth process through the provision of infrastructure, self-sustaining growth can, however, be undermined by excessive DF that negatively impacts the productivity of public capital.

Charkraborty (2007) evaluated the effect of fiscal deficit onCF and the direct and financial crowding-out effect of the nexus on private investment in Indiabetween 1970–71 and 2002–03. Findings from the study showed no real or direct crowding out of private CF by government investment.Rather, complementarity was observed between the two. Therefore, suggesting a positive effect of fiscal deficit on private investment in India. The measure financial crowding out dynamics was achieved by employing the dual transmission mechanism through the real rate of interest. Stated differently, the study found that private CF is interest-rate sensitive. However, the fiscal deficit does not give rise to the real rate of interest.

Hadiwibowo (2010) assessed the association between fiscal policy, investment and long-term economic growth for Indonesia; for the period 1969 to 2008. The study's empirical result revealed that physical capital accumulation is the main contributor to Indonesia's economic growth. Furthermore, government revenue and current outlay affected investment and economic growth inversely. While on the contrary, development outlay had positive effects on investment and economic growth. The study submitted that the Indonesian government may use development outlay and budget deficits to stimulate economic growth; fiscal sustainability and maintain resilience.

Paiko (2012) examined the effect of government outlay on private investment; and how the financing of budget deficit has influenced the functioning of private investment and its contraction of private investment in Nigeria from 1990 to 2007. The study findings revealed an inverse impact of public DF on private investment.Thus, the paper indicated that the government should refocus its fiscal policy favouring the private sector by trimming government outlays and sustaining a low fiscal deficit. It was further suggested that to avoid the crowding out effect, the government deficit should be funded through the capital market.

Ezeabasili and Nwakoby (2013) re-examined the effect of fiscal deficits on private investment in Nigeria for 1970-2006. The study reported proof of a positive long-term association between private investment and the economy's real growth. Furthermore, the study observed that the fiscal deficit in Nigeria had a diminishing consequence on

private investment for the study period. The study also confirmed that Nigeria's debt profile had a strong inverse impact on private investment. Hence, the suggestion by the study that government expenditure is used to finance infrastructures that help improve the level of CF, rather than raising recurrent expenditures.

Kassu et al. (2014) examined the cause and effect association between government foreign debt, capital accumulation and economic growth for Ethiopia from 1970 to 2014. The quantitative analysis of the study revealed that in Ethiopia, public external debt per GDP has a robust inverse association with real GDP in the long-term and no significant effect in the short-term. External debt as percentage of export was found to exert a substantial positive influence on real GDP in the long-term but no significant effect in the short-term. On the other hand, external debt per GDP had a positive and significant effect on CF in the long-term and an inverseeffect in the short-term. In contrast, external debt to export ratio exerted a substantialadverse effect on CF both in the short and long-term. The control variables, investment and saving as percentage of GDP, also turned with positive and significant effects on both real GDP and CF in the short-term and the long-term. Overall, the study concluded that external debt had no effect on economic growth in the short-term.

Abirami and Panda (2015) assessed the significant role of fiscal deficit in private sector investment in India from 1981 to 2012. Thestudy findingsexposed the substantial negative consequence of fiscal deficit on private investments in the long-term. Furthermore, a significant positive effect of GDP on private sector investments was revealed. For short-term analysis, the result showed private investment hada sluggish response to the last period equilibrium error. The concluding result of the study was that fiscal deficit crowds out private investments in the long-term. Therefore, it was recommended that although fiscal prudence of the central government is important for encouraging private sector investments,the fiscal deficit has to be curtailed by reducing unproductive expenditure.

2.5.3 Studies on Inflation and Capital Formation

Choi et al. (1996) examined the existing nexus between inflation, financial market, and CF using stock market data; for the United States, Chile, Korea and Taiwan for different periods ranging from 1958 to 1994. The empirical findings revealed that

upward inflationary tendency diminishes the real yield rates accumulated by savers in different markets. When credits are rationed, the reduction in savings returns worsens informational frictions that come in-between the financial system's operation. Once inflation is above a particular critical rate, a likely result is that the financial system will be willing to offer a lower investment capital. The result of which is a lowerCF and long-term levels of real activity. Such forces need not function at small rates of inflation, offering an understanding of why the effect of growing inflation seems to be much harsher the moment inflation goes above some threshold level.

Dewald (1998) assessed the link between inflation, real interest tax wedges and CF. The study noted that the gains of eradicating effects of inflation on CF can be gotten by indexing the tax treatment of interest income and expense to inflation. The model specified saving to depend on an after-tax real interest rate, where the tax is based on a before-tax real interest rate. As a result, both the investment and saving function was specified to be independent of the inflation rate. It was observed that indexing for inflation would ensure a lower equilibrium nominal interest rate and a lower before-tax real rate; but a higher after-tax real rate for savers.

Ahortor and Adenutsi (2009) investigated the existing nexus between inflation, capital accumulation and economic growth in import-reliant developing economies from 1970 to 2006. The finding indicated that there is a long-term static effect,which flows from capitalaccumulation and economic growth to inflation, and it is inverse. Similarly, the inflation variable and economic growth variable were further revealed to have negative impacts on capital accumulation contemporaneously in the long-term. For short-term analysis, it was revealed that while there is the possibility for any prior disequilibriumin inflation, capital accumulation, and economic growth nexus, the rate of adjustment to equilibrium is veryslow. Such that a longer period will be required for any imbalance to becorrected.

Olanipekun and Akeju (2013) assessed the nexus between money supply, inflation and capital accumulation in Nigeria from 1970 to 2010. The long-term analysis revealed that variables employed in the study share long-term relationship. The short-term adjustment term to long-term equilibrium indicated that money supply (both broad and narrow) and inflation sufficiently and positively impacted capital accumulation in

Nigeria. Therefore, the study recommended that government focus its finances on capital investment in other to stimulate economic growth in the country. It was further recommended that the intention of the government on inflation targeting should not neglect the contribution of money growth to capital accumulation.

Khan and Rana (2013)analysed the effects of inflation on human and physical capital accumulation for 104 countries for 1971 to 2010. Their empirical findings supported the view that inflation enhances the accumulation of human capital and reduces physical capital accumulation. Their result further supported a substitution effect between work and education in the relationship between human capital and inflation. A reversed Tobin effect was observed for the inflation-physical capital accumulation nexus. However, both these effects werefound to be non-linear and are relevant only when inflation crosses certain thresholds. They further noted that different macroeconomic features, e.g., such as financial development and democracy, can alter the nexus's sensitivity between inflation and both human and physical capital accumulation.

Srinivasakumar et al. (2015) studied the impact of CF and inflation on India's economic growth. The study found that CF contributed to the growth of the country. The results of the analysis further suggested that there exist a long-term stable association among the study variables. However, it was observed that there was no causal linkage between inflation and gross domestic CF. However, there was bi-directional causality between gross domestic CF and GDP and GDP and inflation in the short-term. Furthermore, unidirectional causality was observed from gross domestic CF to inflation.

2.5.4Studies on Deficit Finance, Inflation and Capital Formation

Ahmad (1970) published a book titled “the relationship between DF, inflation and CF: The Ghanaian experience”. The book’s analysis was between the period 1960-1965. It showed a series of prime injections of financial resources by the government into the economy without any important subsequent impacts. The important questions the book seeks to answer were why did the Ghanaian government prime spending fail to increase production in the public sector? Also, why did it not lead to secondary investment and production in the private sector? Answers provided was that

government policy aimed only to stimulate direct production by the public sector; with the public sector's inefficiency, the government's efforts failed to bring about the increased production. The book showed that inflation experienced in Ghana during the early 1960s was not caused by any DF policy since there was scarcely any expansion in the system. Rather, it was simply the result of poor production conditions, which were many; of which includes financial bottlenecks.

Oyejide (1972)made empirical enquiry into the effect of DF on inflation and CF for the period 1957 to 1970 in Nigeria. The study was able to track the development of DF by pinpointing four major development periods in DF growth. Also, five DF measures were applied in the study: the overall budget deficit, external reserves, money supply, domestic credit creation, and internal credit monetization. Findings from the study showed that DF positively impacted inflation and CF; DF was used as a measure of financing CF for economic development. However, this was later accompanied by a phenomenal increase in the domestic price level. The study further submitted that, in a less developed country like Nigeria, sustained growth of DF could hardly take place without some necessary amount of inflation.

Dornbursch (1977), in the study inflation, CF and DF, for a developed economy, attempted addressing the issue of what gives rise tolong-term inflation, real capital and the composition of assets. By developing a simple model, the study found that thedeterminants are the level of budget DFalongside fiscal and financial policy. In addition, it was found that the inclusion of variables such as debt, debt service and deficit finance through the debt creation approach; gives rise to considerations in the aspect of "crowding-out" that is altogether different from the relevant determinants in conventional aggregate demand-oriented formulations. The study concludes that DF could give rise to inflation and CF or a fall in CF. Thus the relationship between the variables remains ambiguous. Since the inflationary impact of DF on CF is determined by financing the deficit.

Feldstein (1978) evaluated the long-term influence of government fiscal policies on inflation and CF in a full-employment economy such as the United States of America. Four steady-state equations were used to answer major objective questions of the study, which are: can the government raise the actual steady-state deficit without

giving rise to inflation, or reduce capital accumulation or both? What policies can be pursued to curtail the negative effects of the deficit? Lastly, what should be anticipated when the policy options of the government are constrained? The study particularly examined how excess saving can raise capital accumulation without raising the rate of inflation. The study conclusively showed that an increased deficit would trigger higher inflation rates or cause a decline in the CF of production or both. This is because the combination of higher inflationary trajectory and declining CF, is the probable result of the US tax regulations and the dominant monetary policy, that grants the interest rate the avenue to grow with inflation by means of enabling the real interest rate to remain unchanged.

Eaton (1978) investigated the existing relationship between CF, fiscal policy, inflation and government debt in a full-employment economy. Three different questions were tackled in the study, which is: does government spending influences the level of inflation and CF in a steady-state? Does the method of government funding, when the option lies between a DF and income tax, impact this magnitude? Lastly, what role does uncertainty play in the capital productivity-inflation association in a monetary economy? The findings of the study suggested that if economic agents optimize over an infinite horizon the choice between lump-sum taxation and DF of a given level of government expenditure, such a decision will not impact capital accumulation. This is because the mode of financing the deficit is essential to capital accumulation, especially when tax receipt from capital is the alternative to DF. Thus, by altering asset returns, fiscal policy impacts the structure of portfolios, the price level, alongside CF.

Furthermore, the study observed the absence of a comprise in the inflation-CF growth nexus. Since the increase in the rate of government expenditure when the tax structure remains unchanged initially increases the inflation rate and lowers the demand for money. This implies that the growth rate of return on money is independent of government expenditure and negatively related to the tax rate on anticipated earnings on capital assets; hence, diminishing the desire to hold capital.

2.5.5 Other Related Studies

Serven and Solimano (1993) conducted a study on the debt crisis, adjustment policies and CF in developing countries for the period 1976 to 1988. Their study focused on

the effect of macroeconomic adjustment and reform measures on private investment,most especially in Latin America and East Asia. The study further stressed the essentials of macroeconomic uncertainty, policy credibility, and potential coordination failures in shaping the response of investment to the changes in economic incentives brought about by structuralreforms. The study's findings indicated that output growth and public investment significantly and positively impacted private investment. However, they found that foreign debt burden, macroeconomic instability (measured by the variability of inflation and the real exchange rate), and the deterioration in world economicconditions after 1982 maintained a significantnegative influence on private investment. Furthermore, the effect of the real exchange rate level was found to be insignificant, while its variability had a negative impact on investment.

Krkoska (2002) investigated the role of foreign direct investment (FDI) in financing gross fixed CF and its relation to other sources of financing in 25 transition countries from 1989 to 2009. The study finding revealed that FDI, domestic credit, and local capital market, are essential means of financing CF. While FDI was revealed to substantially impact domestic credit and capital market financing, it was on gross fixed CF.State subsidies and foreign credit, however,were revealed to have a weak impact on gross fixed CF. Therefore, the study concluded that improvements in the investment climate would help attract higher FDI inflows, which will translate into higher gross fixed CF, thereby resulting in economic prosperity. The study recommended, in particular, improvements in capital market regulation and banking sector reforms, such as improvements in minority shareholders and creditor rights, which would increase new equity or bond issuance and allow more significant expansion of domestic credit to enterprises so as to benefitCF.

Keho (2010) assessed the causal association between fiscal deficit and growth inthe economies of seven member countries of the West African Economic and Monetary Union (WAEMU). The leading goal pursued by the study was to assess whether government deficits were growth deterrents in the WAEMU countries. A notable outcome of the revealed that despite a positive correlation between fiscal deficit andeconomic growth,undesirable growth in the economy were stilllinkedto constant

government deficits. However, the empirical results were mixed across countries. For instance, in three particular cases, there was no causality found between fiscal deficits and growth. The study furtherpointed out that there existed a two-waycausality in three countries, in which deficits exerted negative effects on growth.Generally, Keho submitted that the resultsgave support to the WAEMU budgetary rule targeted at constraining the magnitude of fiscal deficits as a precondition for growth sustainability and real convergence.

Ocran (2011) paper examined the effect of fiscal policy instruments on economic growth in South Africa for 1990 to 2004. The study used government gross fixed CF, tax expenditure and government consumption expenditure, anda budget deficit to capture fiscal policy variables. The study outcome supported three key findings: that government consumption outlay exhibit substantialappreciable impact on economic growth. Second, gross fixed CF from the government also has a boost effect on output growth; however, the magnitude of the effect was less than that attained by consumption outlay. Third, tax receipt was reported to exhibit upward trajectory effect on output growth. Nevertheless, the magnitude of the deficit seems to have insignificant robusteffect on the economy.

Bakare (2011) focussed on studying the impact of CF on economic growth for the period 1979 to 2009 in Nigeria. The result of the study showed that there was a significant association between CF and economic growth in Nigeria. Hence, the conclusion that the growth rate of national income will directly or positively be associated to the saving ratio and CF (i.e. the higher the ability of an economy to save- and invest from a defined GNP, the better is the anticipated improvement in GDP growth). It was further suggested that the government continue to encourage savings, create conducive investment climate, and improve the economy's infrastructural base to boost CF and promote sustainable growth.

Aiyedogbon (2011) explored the nexus between military expenditure and CF in Nigeria for the period 1980 to 2010. The study findings revealed that military expenditure and lending rate negatively impact gross CF in both the short-term and long-term. GDP was positively and significantly impactedCF in the long-term, but not in the short-term. The study, therefore, recommendeda reduction in military

expenditure to make funds available for the development of other sectors of the economy.

Orji and Mba (2012) examined the existing link between foreign private investment, CF, and Nigeria's economic growth. The study revealed that the long-term impact of CF and foreign private investment on economic growth is more extensive than their short-term impact. Furthermore,the study found that short-term adjustment to long-term equilibrium is sluggish.

Dinca and Dinca (2013) studied the existing correlation between fiscal policy and economic growth from 2001 to 2011. Countries used in the study were grouped into two categories: old member countries (Ireland, Spain, Austria, Belgium, Greece, Denmark, Portugal, Italy, Luxemburg, Holland, Germany, France, Finland, United Kingdom and Sweden) and new member nations of the European Union (Malta, Czech Republic, Slovenia, Lihuania, Poland, Cyprus, Hungary, Bulgaria, Latvia, Romania, Estonia and Slovakia). The study findings submitted showed that fiscal pressures positively induce economic growth, private sector's gross CF, economic openness and productivity of labour. While public outlay, exchange rate, and government debt were found to negatively influence economic growth.

Kanu and Ozurumba (2014) examined the role of CF in promotingNigeria's economic growth from 1981 to 2011. It was observed that in the short-term, the gross fixed CF does not substantially impact economic growth. However, the long-term result shows that gross fixed CF, total exports, and the lagged GDP values had a positive effect on economic growth. In addition, the study equally showed an inverse nexus between imports, total national savings and economic growth. GDP was observed to have a one-way causal association with export, gross fixed CF, import and total national saving.

Ainaboret al.(2014) investigated the impact of CF on Nigeria's economic growth from 1960 to 2010. The findings showed that national income's growth rate was directly related to saving ratio and CF. This means the greater the equality between saving and investment in the economy, the greater will be the growth of the economy.

Awe and Funlayo (2014) analysed the link between budget deficit and economic growth from the Nigerian perspective between 1980-2011.The study revealed that there was a substantiallong-term association between budget deficit and economic growth. The study further observed that interest rate, alongside budget deficit, was negatively related to the country's gross domestic product.Thus, suggestingwith decline in budget deficit, GDP is expected to rise. Likewise, the short-term nexus showed that budget deficit inversely relates with the gross domestic product, while gross CF showed an increasing effect on GDP. The study results supported the need to lower government fiscal deficit for sustainable economic growth, as its financing crowds out investment and gross saving. They observed that deficit outlay and the consequential debt could grow the economy through the promotion of liquidity supply to the economy in the short-term. However, in the long-term, the consequential debt is detrimental to growth due togrowing interest rates.

Hassan (2015) assessed the role of monetary policy in private CFin Nigeria from 1986 to 2013. The study's focal point was to investigate if monetary policy has created significant capital for private investment in other to stimulate economic growth. The empirical findings revealed that the GDP growth rate fails to impact significantly on private investment. The implication of this is that GDP has been growing at a level not sufficient to stimulate the growth of private investment in the economy. Furthermore, the study also showed that the association between money supply and the exchange rate has been relatively stable; thus, resulting in an increase in private investment, which in turn, and to an extent, encouraged sustainable economic growth through private investment.

Bawa et al. (2016) investigated factors that give rise to changes in Nigeria's inflationary process between 1981 to 2015. The study concluded that previous inflation and average rainfall are the main determinants of inflation in Nigeria. In addition, sufficient proof was found to support the significance of the money supply as an inflationary trigger. Thus, lending support to the significance of the monetarist impact on inflation dynamics in Nigeria.

In the study by Gbadebo and Mohammed (2015), the effectiveness of monetary policy variables as inflationary triggers was examined. The study employed the cointegration

and error correction approach for its analysis and used quarterly data form 1980Q1 to 2012Q4. Findings from the study showed that monetary policy variables such as: the exchange rate, the interest rate and the money supply were the crucial determinants of inflation in Nigeria alongside oil prices. Money supply in particular, was revealed to be a major trigger of inflation both in the short and long term. Thus, supporting the monetarist ideally of inflation being exclusively a monetary phenomenon.

Nwaeze (2017) empirically tested the association between fiscal deficits and macroeconomic stability in Nigeria from 1970 to 2016. To capture macroeconomic stability, the study used the inflation rate and exchange rate. While overall fiscal deficits, fiscal deficit financed by domestic borrowing, and fiscal deficit financed by external borrowing were used to capture fiscal policy.The results concluded that interest rate, overall fiscal deficits, and the size of fiscal deficits financed by domestic borrowing were the main shocks causing the variation in inflation. Hence, the submission that fiscal deficits have a significant negative impact on macroeconomic stability through inflation and exchange rates in Nigeria.

2.5.6 Synthesis of Empirical Literature

For proper comprehension of the various empirical studies reviewed, this subsection presents a synthesis of various findings on deficit finance, inflation andCF.

The relationship between DF and inflation appears to have been extensively dealt with for both developed and developing nations. For instance, Moser (1995) observed a positive effect of DF on inflation in Nigeria. The study observed that expansionary fiscal policy has been responsible for the growing level of inflation in Nigeria. However, this positive effect was revealed to occur indirectly through synchronisation of fiscal and monetary policies impacts on the exchange rate. Similarly, the paper by Onwioduokit (1999) indicated a positive impact of fiscal deficit on inflation in Nigeria. The study observed a unidirectional impact of fiscal deficit on inflation as well as a unidirectional effect of the absorptive variable (fiscal deficit as a ratio of GDP) on inflation.

The results put forward by studies examining the nexus between DF and CF have not been conclusive. For instance, Charkraborty (2007) argued that DF does not crowd out

private investment in India but rather complements it through public investment. Thereby suggesting a positive effect of DF on CF. In a similar study for Indonesia, Hadiwibowo (2010) showed that government spending indeed does positively lead to growth in CF. On the contrary, Paiko (2012) revealed an inverse effect of DF on private CF. Suggesting a crowding-out consequence of government deficit on private investment. Ezeabasili and Nwakoby (2013) also reaffirmed this finding for Nigeria; by showing that DF through public debt, had a strong inverse effect on private investment. Other studies such as Kassu et al. (2014), however, revealed that the external debt to GDP ratio had a positive significant impact on CF in the long-term; but an inverse effect in the short-term. This outcome was also similar to that of Abirami and Panda (2015), whose study found an inverse consequence of government deficit on private investment in the long-term.

In the examination of the association between inflation and CF, several studies have yielded various outcomes. For example, Choi et al. (1996) supported the complementarity hypothesis between money and capital when inflation is high. This is because, as noted by the study, once inflation surpasses a critical rate, the financial system will be less willing to provide capital for investment purposes. Thadden (2002), however, showed that the substitutability hypothesis would prevail when the restriction to extend credit is not binding. Ahortor and Adenutsi (2009) showed that for import-based economies, there is a contemporaneous inverse relationship from inflation to CF and vice versa. Olanipekun and Akeju (2013) observed that there is a substantial increasing effect of inflation on CF for Nigeria. Thus, supporting Tobin's effect hypothesis for Nigeria. Contrarily, Srinivasakumar et al. (2015) observed that there is a one-way causal association from gross CF to inflation for India.

The evaluation of the tripartite nexus between DF, inflation and CF from the above literature review reveals very little related literatures; most especially for a developing nation like Nigeria. For instance, it was observed that Ahmad (1970) was the first to conduct such a study for a developing African economy. At the same time, Oyejide (1972) was the first and only available study in the literature to examine the relationship between the three variables for Nigeria. Feldstein (1978) and Eaton (1978) are similar studies whose investigations were based on a full-employment economy.

This wide time lag and the availability of limited study as observed serve as a major lacuna this study attempted to bridge.

It could also be observed that both Ahmad (1970) and Oyejide (1972) arrived at different conclusions in their studies. While Ahmad found no link between DF and inflation for Ghana, Oyejide, on the other hand, found that DF has high inflationary implication for Nigeria. The cause of the discrepancy between the two studies is that; Ahmad observed for Ghana that DF does not increase output, which is due to the inefficiency of the public sector. Oyejide, however, noted that DF in Nigeria was used to fund CF, especially during the post-war period, with such action being a remarkable increase in general prices.

Feldstein (1978) and Eaton (1978) both agreed that DF would impact positively inflation and CF. Similarly, both studies on the relationship between inflation and CF; refuted Tobin's substitutability relation between money and capital, which arise from the increase in inflation. Eaton, like Feldstein, showed that inflation might be accompanied by declining CF when the rate of savings out of disposable income is a positive function of the interest rate. However, Feldstein differ from Eaton. The former does not explicitly associate the inflation-CF nexus to fiscal policy alone like the latter, but also the prevailing monetary policy.

In sum, there seem to be very few studies that have successfully evaluated the association between DF and inflation, DF and CF, and inflation and CF; particularly, the tripartite analysis of DF, inflation and CF in Nigeria. Although it is obvious from the review that most studies have reached a consensuson the positive impact of DFon inflation, especially in a developing nation like Nigeria, thesame cannot be said of the relationship between DF and CF, and especially between inflation and CF.

2.6General Overview of Deficit Financing

As a result of the growing desire by most African countries and developing nations to catch up with their counterparts in the developed world, various national plan documents have been drafted in the past decades to speed up the development path. However, the increase in available government wealth - or public savings, which can be seen as the surplus of current government revenue above current government

outlay, has consistently lagged very much behind. As a result, there has been a growing resort to sourcing the extra revenue from other means.

One major factor for the inability of public savings to equal national spending needs is the decline in tax receipts of the government,against the ever-growing path of public expenditure.It should be noted here that with the attainment of independence of especially African countries, there is a continuous increase in political pressure and awareness in demand for public goods.Thus, the government's positive reception to these pressures has led overtime to appreciable growth in public expenditure. In addition, the pervasive notion that increasing public spending constitutes a development path, has offered additionaljustification to the need to increase public outlay.A worrying aspect of this phenomenon,however, lies in the fact that it has always been self-reinforcing. Moreover, when most public spending is often not being invested in productive ventures, inflation often end-up being the result. This usually resultsfrom increasing demand for more wages by the unions, and the fact that a huge proportion of wage labour is embedded in the public sector suggest that a positive government response willserve as additional encouragement to increase public spending.

While government spending has continued to proliferate, the rateat which its revenue increase has been sluggish due to some factors. Important among these factors is thedeveloping feature of most developing economies. A large part of their export is concentrated on primary resources, hence, subjecting revenue to volatile resource prices. This has further highlighted the revenue-expenditure gap with the consequence of growing budget deficits. Solving the foregoing challenge would likely require a cut in the rate of growth of public spending, as well as explore other taxable possibilities more effectively. However, most governments would find a cut in public spending politically unacceptable. At the same time,the exploration of other taxable possibilities may be seen as unfeasible from the economic perspective. Hence, African countries are confronted with a fiscal dilemma that often justifies having a budget deficit. To fund the deficits in the budget, there has been a mounting tendency in developing countriesto rely on borrowing as an important means of DF.

2.7Overview of Deficit Financing in Nigeria

Not long after Nigeria's independence in 1960, deficits began to show up in the Federal Government's yearly budgets.As earlier noted, the slow pace of growthin tax revenue and the accelerating pace of public expenditure growth were the two determining factors. Hence, with tax income lagging behind public spending, the Federal Government's budget situation in the 1970s showed rising deficits. A situation whereby there is an excess of aggregate public spending, including capital spending, above aggregate government revenue.As could be observed from Table 2.1, the growth of the Federal Government's budget deficits from1970 to 2018suggest an overwhelming average annual increasefrom ₦0.402 billion between the 1970-1980 period to ₦1949.08billion between the 2001-2018 period. Further revelations in Table 2.1 are the role of Federal Government domestic borrowing as a major source of financing these deficits compared to other available sources.

DF was first recorded in Nigeria in the 1970 budget, and ever since, it has remained an annual norm. The 1970 budget, which was meant for post-civil war reconstruction of damaged infrastructure and national integration, saw the Federal Government outlay lying above estimated revenue for the first time. Thus, Federal budget deficits stood at an average annual of about ₦0.402 billion in the 1970-1980 period (Table 2.1),whileDFasa share of Gross Domestic Product(GDP), and the overall budget in Nigeria, stood at an average annual of 4.31 and 22.4percentrespectively (see, Figure 2.1). To fund the deficit, the Federal Government relied on foreign and domestic sources and other fundsmade up of public, special and trust funds, treasury clearance funds, etc.Interestingly, although foreign financing accounted for about 16.19 percent of the total DF within the period, domestic and other source financing accounted for about 47.61 percent and 36.20percent, respectively (Table 2.1). Thus, domestic and other source financingof the deficit offered the Federal government a means of financing its deficits and a means of having surplus cash balances.

The period between 1981-1990witnessed tremendous growth in Federal Government deficits, rising to an average annual of about ₦8.26 billion (Table 2.1). Similarly, there was a corresponding average annual increase inDF per GDP to 5.43 percent, and 32.9percent as a share of the overall budget (see, Figure 2.1). This period corresponds with the huge plunge in oil receipts,due to the oil glut experienced in the international

oil market in the early 1980s. As a consequence, there was a major shortfall in revenue needed to fund the budgets.Thus, the Federal Government only hope of maintianing its growing outlay wasthrough borrowing, importantly from domestic and other source financing. As observed from Table 2.1, foreign financing increased marginally on average to about 17.01percent in the total financing option. Domestic borrowing, however, declined marginally to about 41.56 percent. Other source financingincreased to an annual average of about 41.43 percent. Thus, domestic and other source financing still constitute the main sources of funding the deficits.

Budget deficits grewtremendously to about ₦70.49 billion (Table 2.1) within the active period of the rolling plans (1991-2000).The rolling plans were meant to rehabilitate and provide economic and social infrastructures for job creation in the economy; hence, the deficits in the budgets. To finance the total deficit within the period, the Federal Government increased its use of domestic financing above other sources significantly. For instance, Table 2.1 shows an average annual decline in foreign financing and other funds sources to about 12.53 and 32.66percent, respectively, while domestic borrowing increased significantly to about 54.81percent.DF per GDP and the budget declined to an average annual of 4.05percent, and 25.8percent, respectively (Figure 2.1).

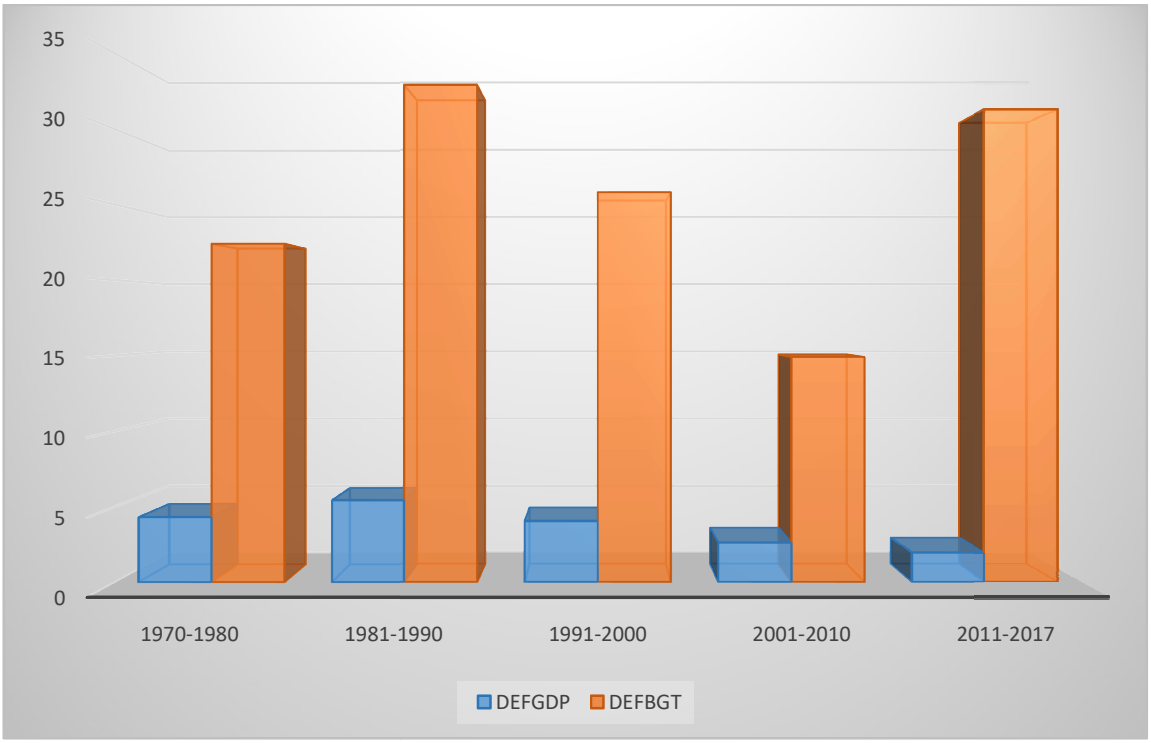

Figure 2.1: Trend of DFper GDP and the Budget (1970-2016)

Source: Author's Computation from CBN Statistical Bulletin (2009 and 2017).

For periods in the 2000s, the total deficit grew from an annual average of about ₦324.06 billion in the 2001-2010 period to about ₦1,949.08 trillion in the 2011-2018 period (Table 2.1). On the other hand, fiscal operations in financing the deficits continued to improve from the previous period (i.e., 1991-2000). There was a continuous decline in DF per GDP and the budget,an average annual of2.62percent, and 14.9 percent respectively in the 2001-2010 period (Figure 2.1). Although DF per GDP declined further to 1.91 percent in the 2011-2018 period,it rose per budget to 31.3 percent within the same period (Figure 2.1). Two factors accounted for the decline in DF in the 2000s. The first was enacting the CBN Act of 2007, which accorded full operational autonomy to the CBN. The act empowered the CBN to refuse the Federal Government'srequest to finance its deficit beyond 5 percent of the preceding year's actual revenue. At the same time, the second was the enactment of the fiscal responsibility act (2007), which also limits the government's spending in excess of 3 percent of the country's GDP. Both laws were measures aimed at synchronising the fiscal policy stance of the Federal Government with the monetary policy goals of the CBN. Both laws helped slow down the growth of DF from 2001 to 2018.

Table 2.1: Annual Average Deficit Financing Sources in Nigeria

	1970-1980		1981-1990		1991-2000		2001-2010		2011-2018	
Source of Financing	₦ billion	% share in total financing	₦ billion	% share in total financing	₦ billion	% share in total financing	₦ billion	% share in total financing	₦ billion	% share in total financing
Foreign Financing	0.234	16.19	1.4224	17.01	9.778	12.53	10.484	3.25	298.38	15.31
Domestic Financing:	0.688	47.61	3.4757	41.56	42.77	54.81	270.526	83.80	801.30	41.11
Banking System	0.475		1.8350		38.433		148.481		544.61	
CBN	0.283		1.4030		29.498		23.381		90.80	
DMB	-		0		8.935		125.1		453.81	
Non-bank Public	0.2134		1.6419		4.333		120.71		199.01	
Privatization Proceed	-		-		-		1.335		57.68	
Other Sources	0.523	36.20	3.4645	41.43	25.484	32.66	41.81	12.95	849.40	43.58
Total Financing	1.445		8.363		78.032		322.82		1949.08	
Recurrent Spending	2.3813		15.611		217.920		1642.318		4025.36	
Capital Spending	3.1308		8.98		184.374		618.183		1010.16	
Spending difference	0.7495	51.869	-6.631	-79.29	-33.546	-42.99	-1024.14	-317.25	-3015.2	-154.70
Total Deficit	0.402		8.261		70.494		324.06		1949.08	

Note: Spending difference =Capital Spending – Recurrent Spending.Minus denote recurrent spending above capital spending.
Source: Computed by Author from Central Bank of Nigeria Statistical Bulletin (2009 and 2018).

Furthermore, the significance of domestic borrowing in financing the deficits in the 2000s continued, as clearly shown in Table 2.1. For instance, despite the decline in domestic financing from 83.80 percent in the 2001-2010 period to about 41.11 percent in the 2011-2018 period, it remains the most significant source of financing Federal Government deficits. However, foreign borrowing climbed from an annual average of 3.25 percent in the 2001-2010 period to about 15.31 percent in the 2011-2018 period (see Table 2.1). Likewise, other fund sources increased on an average annual from 12.95 percent in the 2001-2010 period to 43.58 percent in the 2011-2018 period (see Table 2.1).

It is obvious that from the 1970s, domestic borrowing did not only serve as a source of providing a significant amount of the financing needed for the Federal Government deficits. It further offered a surplus which significantly increased the Federal Government's cash balances. Perhaps, of much significance than the size of domestic financing is the impact its various components have on Federal Government borrowing. Table 2.1 reveals that from 1970 to 2000, the banking system, specifically the CBN, was the main domestic financing source. While in the later periods (i.e., 2001 to 2018), the Deposit Money Banks (DMB) serve as the main source of Federal Government domestic financing. The Non-Bank Public's contribution in domestic financing can also be seen to have grown from the 1970s. Specifically, it rose on average from ₦0.2134 billion in the 1970-1980 period to ₦199.01 billion in the 2011-2018 period (Table 2.1). Privatisation proceeds were only explored as a means of domestic financing from 2001 to 2018. Its domestic financing contribution grew from an annual average of ₦1.335 billion in the 2001-2010 period to ₦57.58 billion in the 2011-2018 period (see Table 2.1).

2.7.1Stages in the Development of Deficit Financing in Nigeria

Prior to the 1970s, Oyejide (1972) attempted to track the development of DF in Nigeria; and pinpoint four major development periods in the growth of DF in Nigeria. These are the 1957-1959 period that captured the pre-independence colonial era and the pre-Central Bank creation stage. The second stage was from 1959-1962, which marked the country's political independence; as well as the establishment of the Central Bank of Nigeria and a growing domestic money market. 1962-1967 marked the third developmental stage, with the primary focus on the implementation of the

1962-1968 National Development Plan. The civil war of 1967-1970 marked the fourth stage, as the Federal Government policy's primary focus in terms of monetary management was to finance the war. The study nevertheless submits that there is some amount of overlapbetween the stages, but each stage had a unique characteristic of its own.

The post-1970 periods have witnessed continuous growth in DF in Nigeria. However, this growth is a result of factors variant to those from the pre-1970 periods earlier identified. They include the oil boom era of 1970-1980, the crash in global oil price from 1980-1990, the tremendous size and trend of public debt from 1990-2000, and the increase in recurrent expenditure from 2000-2016. These identified factors account for the four stages of growth in DF in Nigeria and determined the general path of Federal Government DF from 1970 to 2017. Similar to Oyejide (1972) submission, these stages do not also have a clear cut distinction from one another, as there is some amount of overlap between the stages. These stages are discussed in the following sub-sections.

2.7.1.1 The Oil Boom Era (1970-1980)

Since the mid-1950s, when crude oil was discovered in commercial quantity in Nigeria, growth in the agricultural sector has been dwindling. The fate of the agricultural sector was further exacerbated by the oil boom of 1973, emanating from the oil embargo imposed on the USA by the Arab members of the Organisation of Petroleum Exporting Countries (OPEC).To date, the Nigerian economy has continued to be heavily dependent on oil. For instance, in 1971, the share of agriculture in GDP stood at 45.6 percent;by 1977, it had declined to 23.5 percent (see Figure 2.3B). Exports of agricultural productsper total exports, which stood at 20.7 percent in 1971, declined to 5.71 percentby 1977. Within this period, oil revenue constituted almost 80percent of total foreign exchange income (see, Figure 2.2 panel A) and about 85 percent of aggregate exports. While the oil boom provided the Federal Governmentwith the needed revenue, it also created serious structural problems.

After an initial lag in 1973 and 1974, when enormous surpluses were saved and invested overseas, consolidated public spending grew tremendously. Such that by 1976, it absorbed an enormous share of the entire oil windfall (Fig 2.2 panel B). Also,

the 1970s saw thecountry's GDP grow at an alarming rate, such that a 10.5 percent GDP growth rate in 1976 was regarded unimpressive.Nevertheless, the period also witnessed growth in inflation rates, fuelled mainly by the increase in Federal Government outlay.Between 1975 and 1976, inflation ratehad climbed to 23 percent, before slowing down in the 1976 and 1977 period to about 16 percent (Olowu et al., 2007). Federal government capital spending continued to grow, and by 1977, ithad increase six-fold over its 1970 level (CBN Bulletin 2009). The accelerated growth in the Federal government's capital expenditure in the 1970s was intense, such that alone, itgulpedover half of the whole oil windfall (Olowu et al., 2007).

The oil boom of the early 1970s ensured that theOPEC price of crude-oil (i.e., Bonny Light 37 AP I) enjoyed an astronomical rise from 1973 to 1980. Figure 2.3A shows that crude oil price rose from $2.83 per barrel in 1973 to $13.65 per barrel in 1978. This upward trend in crude oil price continued in l979, rising further to $29.25 per barrel, and by 1980, the price reached $36.96per barrel (see Figure 2.2 panel B).

Despite the 1973-1979 rising crude oil prices led to a serious energy crisis and triggered economic depression in most industrialised economies, it, created a boom in oil revenue for Nigeria and other oil-exporting countries. Figures 2.2gives a picture of the share of oil revenue intotal Federal government's revenue, and expenditure respectively. Figure 2.2reveals that oil per aggregate Federal Government's revenue climbed from 26 percent in 1970 to 77percent in 1975, before slowly declining to 61.8 percent in 1978. In Figure 2.2, it is further revealed thatrevenue from crudeoil provided thebulk of funds required in Federal Government outlay in the 1970s. Income from oil as a share of aggregate Federal government's outlay grew from 26 percent in l970/71, to about 82 percent in the 1974/75 period; before declining to 62 percent in the 1978/79 period.

The growth in oil revenue continued until its first decline between the 1976 and 1978 fiscal periods. Oil revenue fell from about₦5.37 billion in 1976 to about ₦4.55 billion in 1978 (see Figure 2.2 panel A) due to a temporary glut in the international oil market. However, oil revenue picked up in 1979, rising to about₦8.89 billion,and peaked for the decade at ₦12.35 billion in 1980 (see Figure 2.2 panel A).

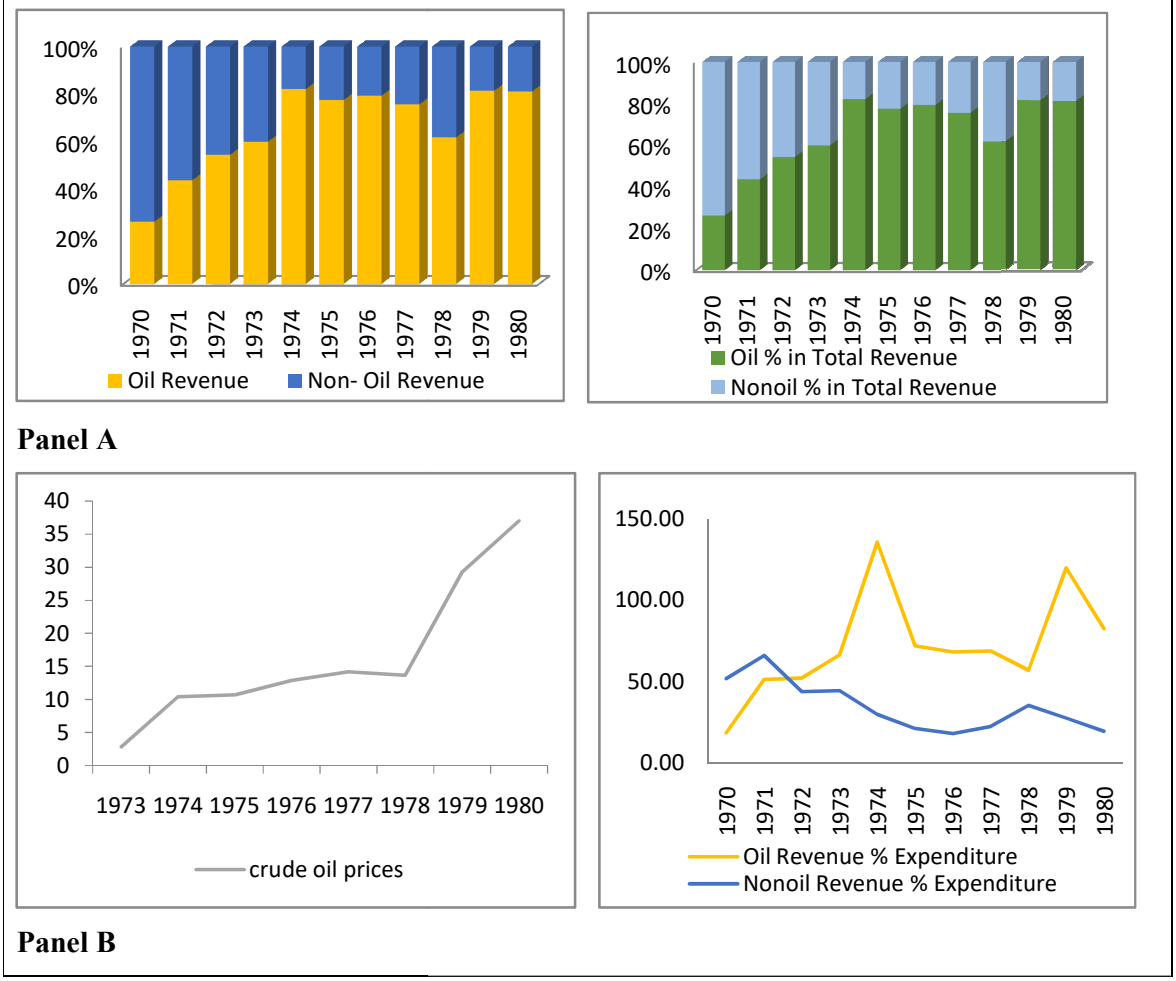

Figure 2.2: The Dynamics of Federal Government Revenue and Expenditure
Source: Author's computation from CBN Statistical Bulletin and OPEC Annual Statistical Bulletin (2009).

The oil boom of the 1970s encouraged less attention given to the agricultural sector within the decade. This is because the economy managers mistook the revenue boom in the oil sector to mean economic self-sufficiency. Consequently, public spending on imported foodstuffs, raw materials, and manufactured goods grew tremendously(Anyanwu et al. 1997). Figure 2.3Bfurther captures this phenomenon by revealing the structure of the Nigerian economy in the 1970s. Obviously, the share of agriculture in the country's GDPconstantly depreciated from 48.79 percent in 1970 to 21.95 percent in 1979 (see, Figure 2.3B). On the contrary, mining as a share of GDP increased from 0.62percent in 1970 to 1.76percent in 1979 (see, Figure 2.3B). As a share, manufacturing increased from 7.17 percent in 1970 to 8.44percentin 1974 and further climbed to 9.09 percent in 1979 (see Fig 2.3B).

From a policy perspective, it clear that the Neo-Keynesian management style was favoured in this period. As policymakers encouraged the Federal Governmentto increase its business by investing in sectors such as petroleum and mining andto engage in dictating the level of activities in the banking, insurance, clearing and forwardingsectors,among others(Anyanwu et al. 1997). In response, the Federal Government enacted the Nigerian Enterprises Promotion Decree in 1972. The degree gave legal backing to the Federal Government's direct engagement in almost every Nigerian economy sphere. More importantly, that scarcity of foreign exchange was no longer thought to be a limiting factor to economic development.

However, this era had its prevailing challenges to include intensifying primitive accumulation, corruption, theft, real estate speculation, outright looting of Federal Government treasury, and other fraudulent practices (Mbat, 1988). Independently, the existing State Governments intensified the growth of a business class that relied exclusively on Federal Governmentcontracts, as against being productive. As a consequence, the inequality between the rich and the poor grew significantly in the country. In addition, the use of unnecessary ad-hoc committees, and wrongly conceived Federal Government policies, were contributing factors that further exacerbated the problem. For instance, the 100 percentminimum wage increase recommended by the 1972 Udoji public service review commission and implemented in 1975; inversely affectedthe Nigerian economy as pricesof goods and services more

than doubled. More so, the defrayment of a year's salary increase arrears to workers only helped to worsen the situation(Anyanwu et al. 1997).

However, Nigeria's persistentdecline in measures of educational success or infrastructure quality; suggests that much of this outlay was conceived too hastily and ended up significantly resulting to waste and corruption. Weak institutions and poor governance have led substantially to Nigeria’s public debt troubles. The majority of projects funded through government debtthroughout the late 1970s and 1980s could notstimulate an adequate rate of return expected to better the repayment capacity of the country. Furthermore, the oil-boom era did not help the manufacturing sector, as the sector performed abysmally and was significantlyreliant on imported raw materials.Example, for each₦1.00 of manufacturing production cost in Nigeria at the time, a minimum of 60 kobo wasexpended on imported raw material (Olowu, 2007). Thus, the manufacturing sector collapsed when the oil boom era ended due to constraint in acquiring foreign exchange needed to importraw materials (Olowu, 2007).

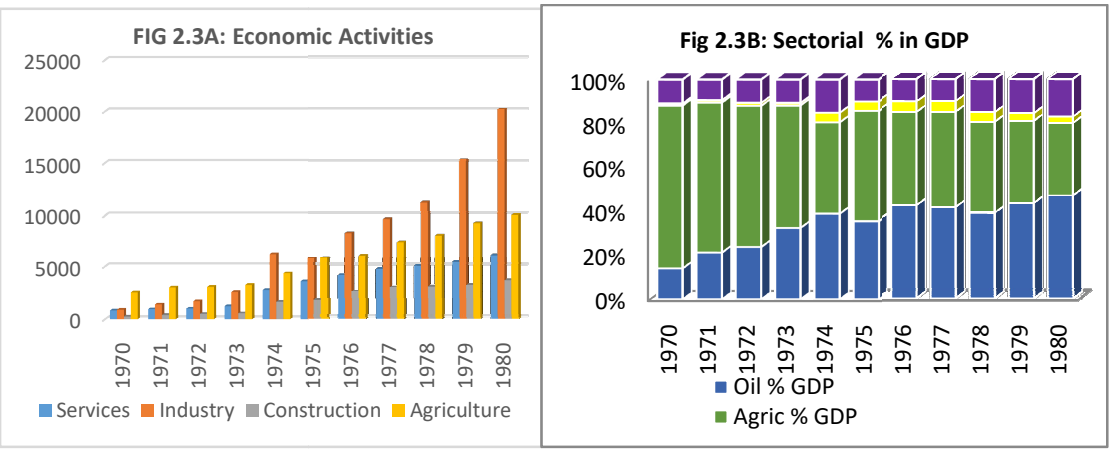

Figure 2.3: Structure of the Nigerian Economy (1970-1980)
Source: Author's computation from CBN Statistical Bulletin (2009)

2.7.1.1.1 Federal GovernmentEconomic Policy Measures in the 1970s

The Second National Development Plan (1970-1974)

The unpalatable experience of the civil war and its lessons depicted the level to which the economy was vulnerable to external dependency and manipulation. In the backdrop of the political, social, and economic crisis of the war, those who drafted the second national development plan (NDP) aimed at reflecting the desire for self-sufficiency of the military administration in power (Usoro 1983). To ensure a feeling of purpose, direction, and urgency, the planners took on a new thinking process. The guiding philosophy was inward-looking; for the purpose of achieving structural changes in the growth mechanism.

The five major long-term goals of the plan were to create:

- An indivisible, firm and autonomous nation
- A great dynamic economy
- A just and egalitarian society
- A land full of hope and opportunity for the citizenry and
- A free and democratic society

In addition, the plan also emphasised the crucial urge to promote an even national development between different parts of the country. Proposed spending for the second NDP was ₦2 billion andwas later raised to ₦3.3 billion. Nevertheless, the Federal Governmentwas only able to spend₦2.2 billion, which happened to exceed the initially proposed spending by 10 percent (Anyanwu et al. 1997). The use of this spending for post-war reconstruction programmes and the rise in oil production and sale led to impressive growth in GDP (Yesufu, 1996). Hence, the Nigerian economy experienced a structural change due to the growing contribution of crude oil to GDP. On the other hand, the contribution from agriculture to GDP gradually began to decline (see, Figure 2.2 Panel B)

The Third NDP (1975-1980)

The third NDP was mainly a continuation of the second NDP. The proposed capital outlay under the second NDP was valued at₦30 billion, which was thirteen times higher than the original spending under the second NDP (Yesufu, 1996). Aside from

the second NDP's set goals, other key short-term goals of the plan included the following.

- Raising per capita income
- Achieving greater equality in income distribution
- Achieving a lower unemployment level
- Improvement in the availability of sophisticated level of manpower
- Diversifying the economy
- Achieving balanced development and pursuing the policy of nationalisation of economic activities.

Nevertheless, not long into the life of the plan, important events of national interest made plans unrealisable. They included the change of the military Federal Governmentin July 1975;seven new states were created in February 1976, the relocation of the Federal Capital Territory to Abuja, and the falling level of crude oil price and production during the 1975/76 fiscal year.

In addition, the revenue accruing from oil exploration in the 1970s made the demand for imports to rise. This was further encouraged by the prevailing exchange rate regime. Thus, the Nigerian economy,to a great extent, became reliant on imports; even 'trivial' goods such as toothpicks to toothpaste dispensers were being imported (Eyiuche 2000). No concrete measure was taken by the economy's managers to invest the excess returns gotten from oil in CF. In essence, Nigeria became a victim of a commonphenomenon known as the "Dutch disease".

Figure 2.5 shows that from 1970 to 1972, 1975-1976, and 1978, import as a percentage of GDP was above export. At the same time, the GDP growth rate was falling. Although General Olusegun Obasanjo introduced austerity measures in 1977, failure to tackle the structural bottlenecks in the economy ensured that impacts of the measure were short-termed. Nigeria's GDP, grown to about 9.04 percent in 1976, depreciated to 5.8 percent in 1978 before rising to 6.8 percent in 1979 (Figure 2.4). This economicdownturn led to a recessionary phase.Thus, additional stabilisation measures were required to jump-start the economy.

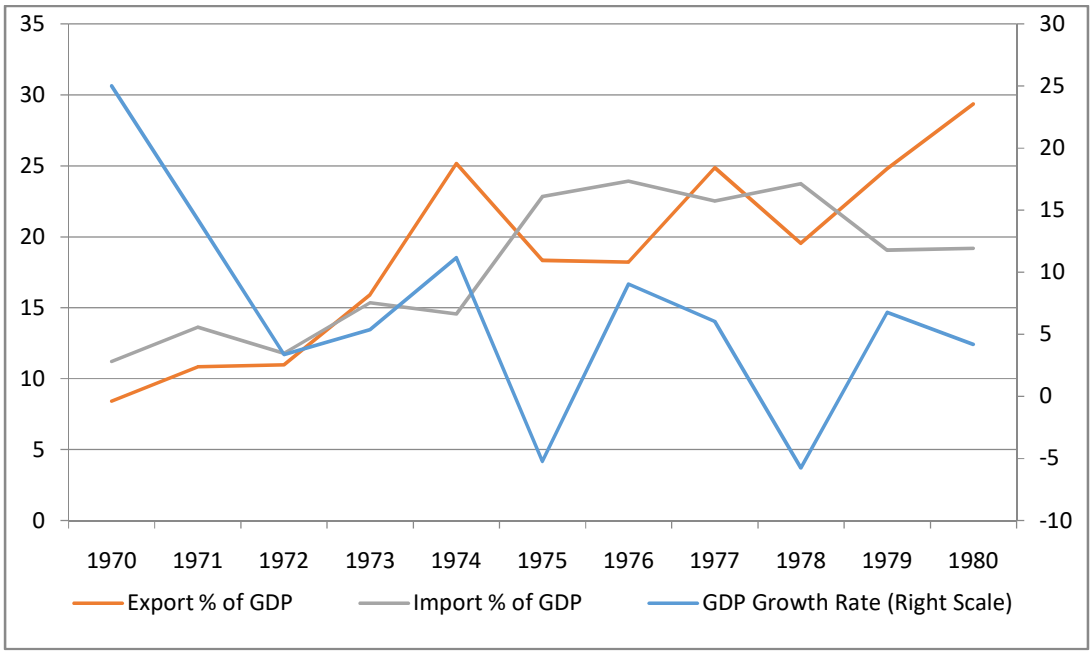

Figure 2.4: Economic Growth Rate and Trade balance (1970-1980)
Source: Author's Computation from WDI (2019)

2.7.1.2Crash in Oil Boom (1980-1990)

Following the rise in revenue from the oil boom of the 1970s, there was a notion of self-sufficiency. However, the occurrence of an oil-glut in mid-1981 led to a drastic fall in oil prices, such that itdeclinedper barrel from $36.18 in 1981 to $29.54in 1983 and $14.46in 1986 (Fig 2.5A). Respite came in 1987 when oil prices marginally increased to $18.39 per barrel but declined to $15 per barrel in 1988, before rising to $23.85 per barrel in 1990 (Fig 2.5A). The negative oil-glut effect on oil prices led to OPEC reducing production quotas for member countries; this was one major factor responsible for Nigeria's woes economically in the 1980s. Since the economy experienced some structural changes due to a decline in oil revenue.

These structural changes are captured in Figure 2.5B, and reflected inslow production growth in almost every sector of the economy. Figure 2.5A shows that agriculture as a share of GDP accelerated from 20.17 percent in 1980 to 40.3 percent in 1986.Even though for 1988, the agricultural sector recorded a growth decrease of 37.25 percent, the sector was however known to offer a cushion toa depressed economy in the 1980s since both government and public emphasis were placed on the sectoras a way out of the economic recession prevalent at the time.

In addition, mining sector per GDP dropped from 1.76 percent in 1980 to 0.35 percent in 1986 and further to 0.26 percent by 1988 (Figure 2.5B). Likewise, the manufacturing sector's contribution to the GDP witnessed a significant crash from 10.4 percent in 1980 to 0.1 percent in 1982, and further fell to 0.05 percent in 1984, before staying constant at 0.1 percent through to 1989. Furthermore, due to the crash in oil prices, oil as a GDP share also crashed from 28.48 percent in 1980 to 13.82 in 1986. Although estimates showed, it later rose to 25.82 percent in 1988. Construction also went down from 7.4 percent in 1980 to 4.24 percent in 1983 and dipped further to 2.3 percent in 1988. This reveals that different sectors of the economy witnessed significant negative growth in this period, with the exception of the agricultural sector.

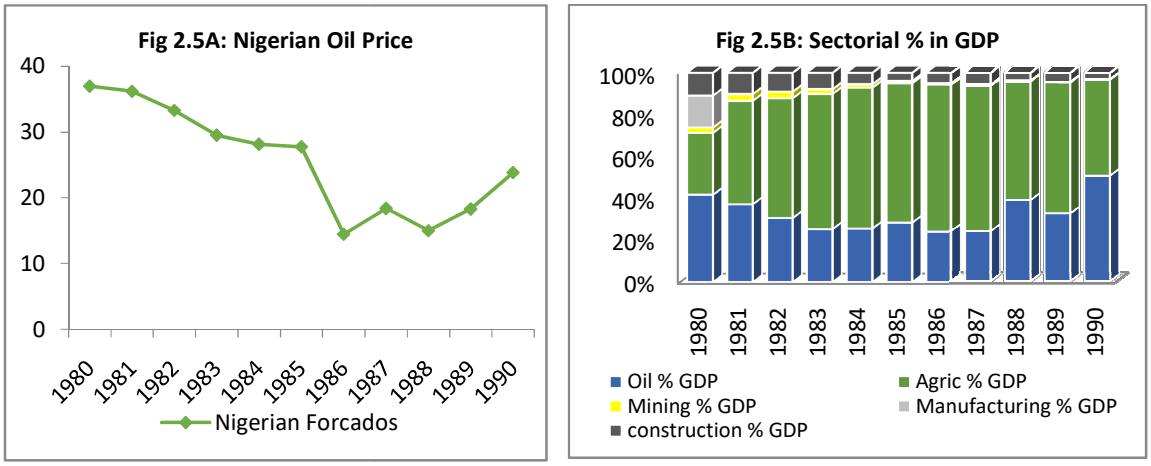

Figure 2.5: Structure of the Nigerian Economy (1980-1990)
Source: Author's computation from OPEC Annual Report (2017).

Also, in the 1980s, the economic problem of Nigeria was worsened with the foreign exchange rate crisis; due to a decline in crude-oil earnings. The foreign exchange problem became evidentwith thebalance of paymentchallenge, mounting foreign debt, and high debt servicing burden in the economy. Nigeria's challengewith the importation ofcritical capital and intermediate goods further exacerbated her inability to prosecute developmental projects and programmes.Figure 2.6revealsome Federal Governmentfiscal activities from 1980 to 1990.

Figure 2.6 reveals that between 1981 and 1983, Nigeria's balance of payments as a share of GDP was negative. Within this period, the nation's oil export and non-oil export earnings were₦26.620 billion and ₦0.739 billion,respectively;thus, bringing the total export revenue to ₦27.3586 billion (Central Bank Report, 1983, P.89). However, there were recorded surpluses in the Nigerian balance of payments as a percentage of GDP between 1984 and 1987, except 1986. Accordingly, the overall deficit declined between 1980 and 1987. In funding the deficits between 1980-1987, the country's external reserves declined significantly (see Figure 2.7).

The inability of the country to meet her import obligations,coupled with the depreciating foreign reserves, encouraged theaccumulation of trade debtfrom 1980 to June 1986,which predates the era for the commencement of the Second-tier Foreign Exchange Market (SFEM)(Olowu et al. 2007). Hence, having the challenge of accumulated trade and relying on foreign borrowing cumulated into a growing national debt and service burden problem (see Figure 2.6). Between 1980 and 1986, Nigeria's debt as a share of export grew from 71 percent, to 783 percent (Figure 2.6). Likewise, debt servicing as a percentage of export rose from 4 percent to 38 percent within the same timeframe (Figure 2.6). The astronomical growth in debt service payment requirements crowded away funds that could have been utilised on development inducing programmes and projects. Thereby imposing a huge burden on the economy.

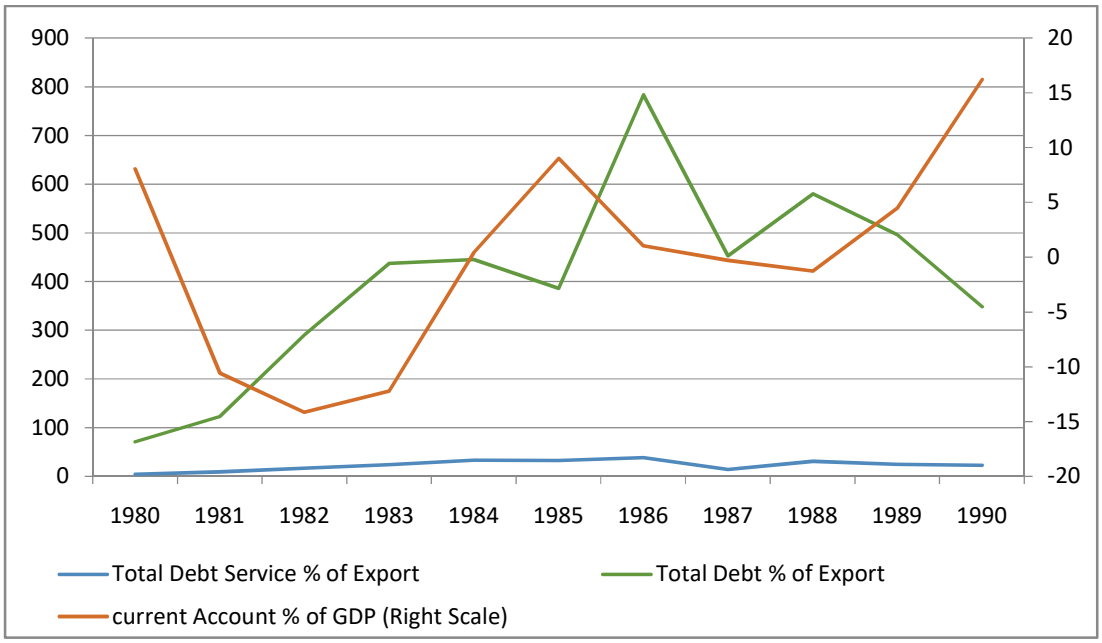

Figure 2.6: Selected Fiscal Activities of the Federal Government (1980-1990)
Source: Author's Computation from WDI (2019).

Furthermore, stagflation ensued in the economy, as the country kept experiencing galloping inflation from 1980 to 1990 (Figure 2.8). For example, inflation retrogressed from 20.8 percent in 1981 to 17.8 percent in 1984, peaked at 54.5 percent in 1988, and diminishedto 50.5 percent in 1989. Similarly, the Naira exchange rate to the United State (US) dollar depreciated from 0.55 kobo/$ in 1980 to 0.72 kobo/$ in 1983. It further dipped from 0.76 kobo/$ in 1984 to ₦4.54K/$ in 1988 (Figure 2.8).

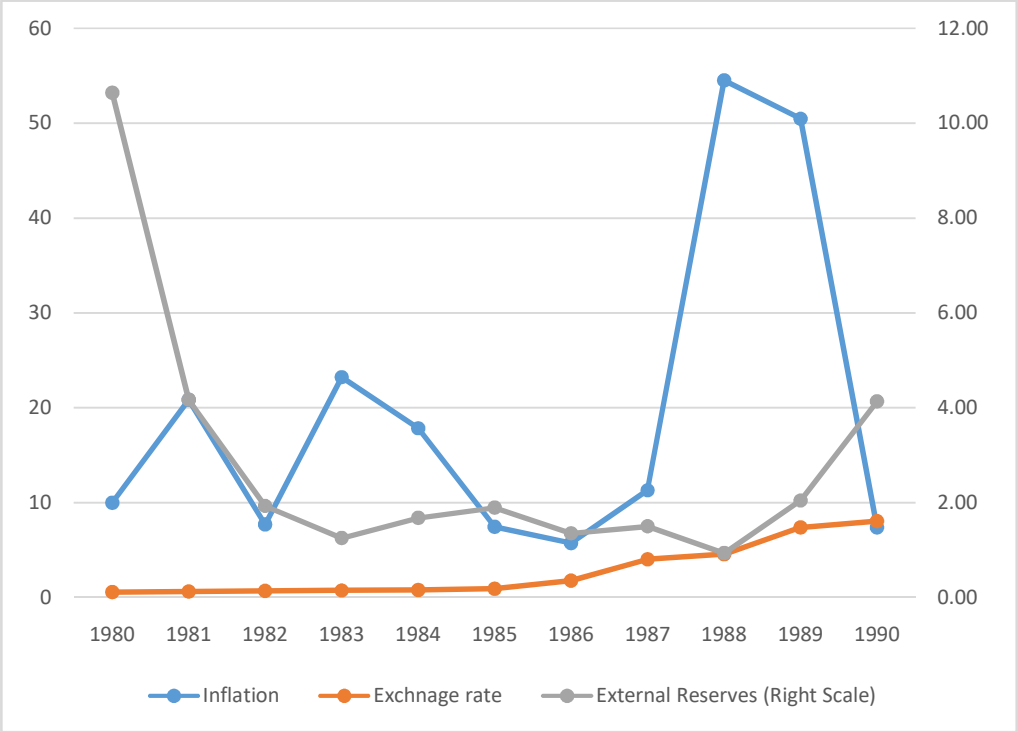

Figure 2.7: Macroeconomic Indicators (1980-1990)
Source: Author's Computation from WDI (2019).

2.7.1.2.1 Federal GovernmentEconomic Policy Measures in the 1980s

The intense impact of the economic challengesin the 1980s obviously negatesthe 1970soil boom experience.As prior noted, the 1980 oil-glut ushered in series of economic problems which included sluggish national output growth, poor balance of payment, escalating national debt and serviceburden, a weak manufacturing sector, rising unemployment and galloping inflation (stagflation), and depreciating livingconditions. However, there are two crucial policy measures of the Federal Government to the 1980s economic crisis. These policy measures are the fourth National Development Plan (1981-1985) and the SAPlaunched in July 1986.

The Fourth NDP (1981-1985)

The fourth NDP was formed primarilyto advancesocial equity, economic growth and development, and price stability. Suitable fiscal and monetary policies were to be synergised in the NDP, simply to achieve accelerated economic growth and structural changes, with the relative stability of prices. The plan targeted growth in the price level to fall below 10 percent, economic growth was to increase at 7.2 percent per annum, and GDP per capita was to grow from ₦427 to ₦535 (Anyanwu et al. 1997).

Furthermore, proposed public capital spending under the plan was ₦70.5 billion, which showed over a 230 percentincrease above actual spending in the preceding plan (Anyanwu et al. 1997). The plan gave much priority to agriculture, health and housing, educational development, infrastructural development, and manpower development, all considered main drivers of growth in the economy.

However, as the 1980 oil glut persisted intensely, coupled with the country's worsening balance of payments problem, theconsequential effect was a drastic fall in the country’s external reserves. Hence, the Federal Government saw the urgencyto draw-up plans aimed at salvaging the balance of payments problem and ‘jump-starting’ the economy to the path of recovery. This led to the fiscal authority proposing emergency stabilisation bills to the then National Assembly, which were assented to without hold-up. The stabilisation measures were laterknown as the Economic Stabilisation (Temporary Provisional) Act of 1982. Some key steps of the 1982 budget, constituting the focal point for debate at the national assembly, were also

added to the stabilisation measures (Central Bank of Nigeria, 1982). In April of 1982, the President revealed the following stabilisation measures.

1. Exchange Rate Control Measures

The foreign exchange rate control measures include:

-Cutting down of Basic Travel Allowance (BTA) from ₦800.00 to ₦500.00 per person within the age of 16 and beyond yearly, and without allowance for children below sixteen.

-Pegging of the number of pilgrims allowed to partake in the 1982 Hajj to a maximum of ₦50,000, though BTA was pegged at ₦800.00 per individual yearly.

-Cutting down of business travel allowance from ₦3,00.00 to ₦2,500- yearly for registered companies.

-The duration of form 'M' was limited to 6 months, rather than the usual one year,while registration was centralised in the Lagos Headquarters of the Central Bank.

-Reintroduction of pre-shipment inspection for spare parts, raw materials and books and the introduction of pre-shipment inspection for frozen and canned fish; and

-Restricted the right of genuine dealers to permit exclusion from pre-shipmentinspection to seek for amounts above₦5,000 as against the usual₦10,000.

2.Monetary Policy Control Measures

The following monetary policy control measures were initiated.

Importers of certain categories of goods were compelled to make deposits in advance on imports of raw materials (252%), spare parts (25%), food (with exception to rice) (50%), medicaments (50%), building materials (50%), capital goods (50%), motor vehicles and trucks (200%), motor cars (250%), and other goods (200%) percent.

However, advance deposits for goods such as raw materials and spare parts were lowered in October 1982 to 10 and 15 percent, respectively (Central Bank of Nigeria, 1982). The banks werealso compelled to have different accounts for received deposits

from complying importers and lodged the sum with the CBN on an interest-free base. On the other hand,imports with more than six-month credit facilities from the date of shipment were exempted from the advance deposit.In addition,there was an upward review of interest rates across the board by 2percent from their current levels. The rates were, however, reviewed downwards by 1 percent in November 1982.

3.Fiscal Policy Measures

The fiscal policy measures adopted by the Federal Government include the following:

- An item such as frozen chicken and gaming machines were completely prohibited from being imported; likewise, the status of twenty-nine other commodities waschanged from open general licence to specific import licence requirement.

- Imposed tariff on forty-nine import goods was changed, with most of the changes being upward review in their rate of duties, while other changesentail the introduction of new import duties.

- For the purpose of generating revenue, new excise duty rates between five to forty-fivepercent were enforced on some goods. These commodities include cigarettes, towels, fabrics, cosmetics and perfumes, paper napkins, electric fans, locks, bicycles and motor cycles.

- Measures aimed at intensifying anti-smuggling activities were also introduced, and they includere-enforcing the anti-smuggling task force and the X squad, ensuring that custom officers, as well as informants, are well motivated through adequate remuneration and training, increasing the number of container depots and x-ray equipment, increasing raids on markets, seaport, and airport to counter smuggling.

Elements of the 1986 SAP

Due to the over-reliance of the economy on crude oil exports for income, the SAP was designed to efficaciously change and reconstitutethe consumption and production patterns of the economy. The aim was toeradicate price distortions, over-reliance on

volatile crude oilproceeds, and the importation of consumer and producer commodities in the economy.

The major components of the SAP included the rescheduling of publicdebt, eradication of complicated administrative controls, implementation of a feasible exchange rate policy, adopting a tariff plan that dissuades imports and stimulates exports, implementation of appropriate pricing policies in all sectors solely based on market forces, rationalisation and restructuring of public expenditure, and privatisation and commercialisation of public enterprises.

In 1986, the first attempt at talks to reschedule Nigeria's external borrowingbegan with creditors such as the London Club and the Paris Club and ended in 1987.At the end of the exercise, Nigeria was privileged to obtain a debtrescheduling plan for about ten years. Further success was recorded in 1988 during the second round of negotiations, with Nigeria securing a 22-year debt rescheduling deal. This enabled the Federal Governmentto cut down the proportion of foreign exchange earnings used in servicing public debt to within 28 percent, as againstthe 40 percentmark in 1986 (Yesufu, 1996).

In the eradication of complex administrative controls,some reforms were introduced. One of such include the scrapping of commodity boards and the liberalisation of export pricing.Thereby farmers were allowed to maximise profits on their products in the world market.The newly adopted foreign exchange system led to the significant increase in domestic prices of export products.

Perhaps of all the SAP policyelement, the most crucial was the foreign exchange rate system. In 1985, the value ofa naira was trading for about $1.6 (CBN statistical bulletin 2016). The naira at this exchange rate was perceived as over-valued. Thus, the monetary authorities saw the need of having a more realistic and sustainable market-determined exchange rate.This led to the creation of an SFEM that commenced operationin late September 1986. It was anticipated that having a realistic market-determined exchange rate will eradicateall known distortions in the essential sectors of the economy, correct the imbalance between the demand and supply of foreign exchange, scale down on imports, promote exports, and fashion out the path for a more self-sufficient and sustainable economic growth.

In the first fewmonths of the SFEM, it was operated alongside the First-tier-market.However, the following transactions,such as Federal Governmentborrowing,procured shares in foreign organisations and transfers to Nigerian mission abroad, were excluded from the SFEM. At the same time, all other transactions had to go through the SFEM. Eventually, the SFEM and the First-tier exchange market rates were merged to form the Foreign Exchange Market (FEM). The traditional bidding per week was replaced with a fourth-night bidding plan.

Nevertheless, an autonomous market was created with two parallel rates, which are: the SFEM rate and the higher independent market rate. The value of the naira depreciated due to the autonomous market's operation (Figure 2.8).Hence, the urgency to find a realistic naira exchange rate resulted in the cancellation of the autonomous market in 1989 and the introduction of the Bureau De Change system; as a way of having more authorised or legal foreign exchange dealers. A floating exchange rate system was introduced and used to replace the fortnightly biddings. Nigeria operationalised the floating exchange rate system, which involves the daily determination of the nairaexchange rate against other major international currencies (Anyawu et al. 1997).

Despite the introduction of the SFEM in late 1986, the value of the naira continued to depreciate widely. For instance, the pre-SFEM rate as of 1985 was about ₦0.89 to $1.00. The efficacious SFEM rate ascertained from the marginal rate gotten from the market as at 1987 was ₦4.61 to $1, and thereafter rose to about ₦7.39 to a dollar as at 1989 (Figure 2.8). As the naira depreciated, Nigeria had to grapple with the challenges of galloping inflation in her import dominated economy. Since the effects of an inflationary foreign exchange system unleashed much burden on the citizens,resulting in wide spread anti-SAP demonstrations in the country. In a quickresponse, the Federal Governmentrolled out series of SAP-alleviation initiatives to help cushion the social cost of SAP.

Another component of the SAP announced in 1988 is interest rate liberalisation. The policy was initiated to stimulate savings and encourage a market-determined interest rate to counter every form of capital market distortions. However, there were notable

side effects of the policy, one of such was the high lending rate which discouraged investors from borrowing. Those who especially felt much of the impactarethe small-scale industrialists.

In addition, the SAP was meant to rationalise and restructure Federal Governmentspending, transform government-owned enterprises through the implementation of privatisation and commercialisation policies. Furthermore, the SAP policy also involved the Federal Government'spursuit of petroleum subsidyremoval, which saw transportation costs rise by many folds. Thus, this also added to the inflationary problem of the economy.

2.7.1.3The Growing Size of Public Debt (1990-2000)

The introduction of the SAP in mid-1986 to tackle the economic crisis then; saw tremendous growth in fiscal outlay. The year 1986 witnessed a fall in household incomes. Furthermore, the significant fall in oil price happened within the year alone (see Figure 2.2 Panel B), leading to growth in public outlay from 1986 to 1992 (see Figure 2.8), which was attributed to the loss in the value of the naira (see Figure 2.7). Within this period, the naira depreciated by 80 percent in real terms to the United States dollar in the Second Tier Foreign Exchange Market (Anyanwu et al. 1997).

The widened gap between available domestic savings and the investment level to be implemented; due to low tax returns, prevalence of low productivity, poor income from exports, fragile terms of trade, and prolonged mono-cultural nature of export commodity from the earlier decades culminated in the need for borrowing to augment the shortfalls in the public budget. Ever since the Federal Governmenthas continued to borrow with the goal of accelerating the economic growth of the country. Government debt is often being divided into domestic/internal and foreign/external debt. A brief profile of both types of debt is presented below.

Domestic debt Profile of Nigeria

Prior to the 1980s, the three major domestic debt instruments were treasury bills, treasury certificates and domestic stocks. However, the instruments of domestic debt in

Nigeria are the treasury bills, treasury certificates, development stocks, treasury bonds commenced in 1989, Federal Government of Nigeria bond (FGN bond), which commenced in 2003 promissory notes. Therefore, domestic debt is mainly made up of borrowings by the government from the banking sector through the treasury debt instruments excluding debt owed to local contractors since there is no accurate information about the exact amount owed to such contractors (Omoruyi, 1999).

Figure 2.8 shows that domestic debt as a ratio of GDP climbed from 14.7 percent in 1987 to 19.5 in 1991, and by 1994, it got to 23 percent. It, however, declined in the 1995/1996 periods, before rising steadily to the late 1990s.

External debt Profile of Nigeria

Aftermath of the introduction of the SAP was a continuous rise in fiscal deficit levels in the late 1980s and 1990s. Fiscal policy during the SAP period was unstable as the primary and overall fiscal balances deteriorated extensively between 1987 and 1994, improving during the 1995-1997 periods (Figure 2.8). The sharp rise in federal deficits in the 1990s brought inflation to over 57.2 percent in 1993 and moved sharply to crowding out domestic private sector investment (Adam and Bankole, 2000). For example, net private savings (private investment minus private savings), which averaged 1 percent of the GDP in 1986 to 1989, averaged a negative 5 percent of the GDP between 1990-1992 (Chhibber and Pahwa, 1994).

In addition, external debt witnessed a steady rise. The major external borrowing sources within this period were the multilateral, Paris club and other sources. From 1987 to 2000, Nigeria's foreign debt profile was characterised by tremendous changes in volume and structure. Figure 2.8 reveals that the external debt to GDP ratio stood at 40.4 percent in 1987, then rose to 59.8 percent in 1990. Nevertheless, the value declined to 36.8 percent and 14 percent in 1994 and 1998, respectively.

Furthermore, since the introduction of the SAP was to redeem the economy from its downward spiral as at then, theFederal Government outlay as a percentage of GDP from the late 1980s to 1993 (Figure 2.8) was in the upward swing. Likewise, revenue and budget deficit per GDP increased from 1988 to 1993. They, however, went down between 1995 to 1997 period due to earlier economic sanctions placed upon Nigeria in 1993 by the commonwealth organisation. For instance, in 1995, budget deficit and

expenditure ratios to GDP were down to 0.03 percent and 8.6 percent, respectively. It was also discovered that the growth in both debt components to GDP ratio was high up until 1994, a year after the economic sanctions. The increase also corresponds to the rise in expenditure to GDP ratio between 1987 and 1994.

The country's political transition from military rule to civilian administration in 1999 saw both domestic and external debt as percentage of GDP rise andthe budget deficit and expenditure per GDP. Specifically, external debt and expenditure per GDP both rose significantly within the transition year alone (Figure 2.8). While expenditure and deficit to GDP ratios dropped substantially in 2000, both components of debt to GDP ratio only dropped marginally.

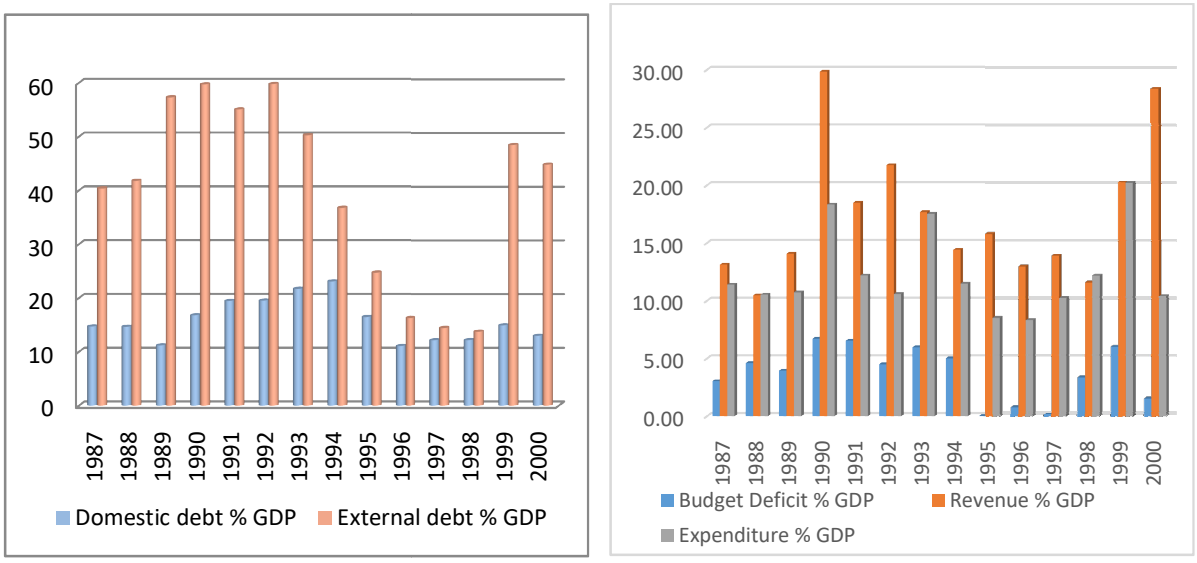

Figure 2.8: Federal Government Fiscal Profile (1987-2000)
Source: Author's Computation from WDI (2019) and CBN Annual Bulletin (2017)

The two main components of total Federal Government outlay are presented as a percentage of total expenditure in Figure 2.9. It is an obvious truth that most of the Federal Government spending had been expended on recurrent ventures. For example,

from 1987 to 1995, recurrent expenditure was above capital expenditure. Capital outlay as a percentage of GDP only exceeded recurrent spending from 1996 to 1999. A factor responsible for the massive increase in recurrent spending over capital spending could be attributed to include the growing size of the civil service and the salary increases granted to Federal Government workers in 1991 and 1993 (see, Aminu 2011).

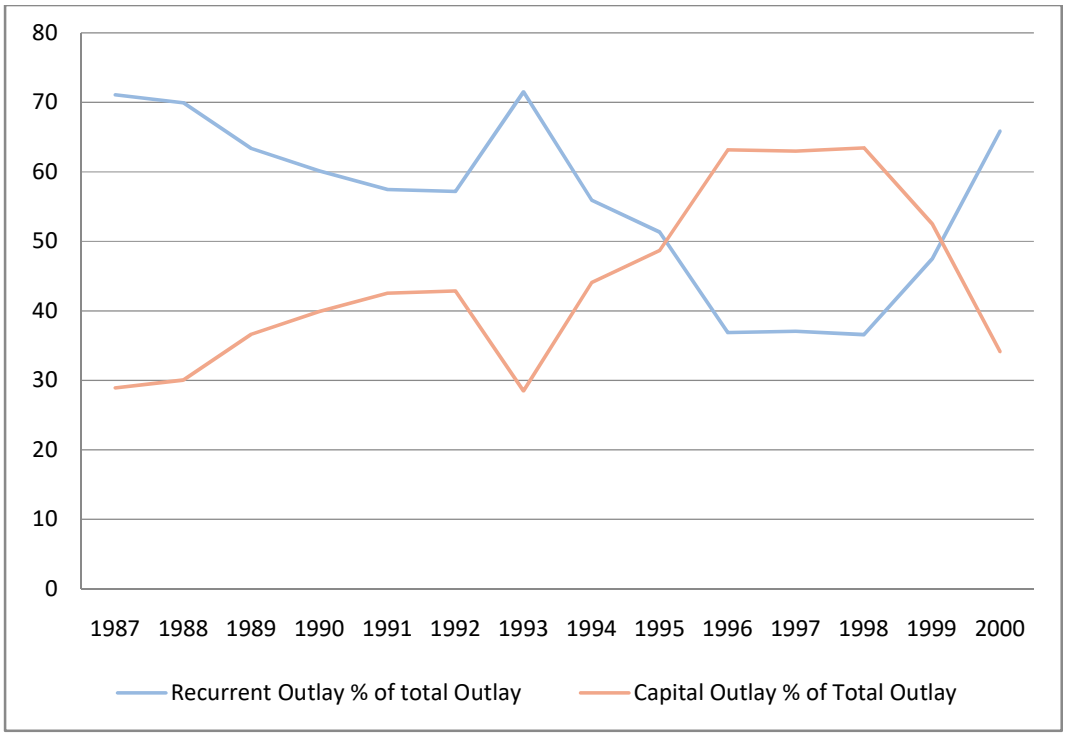

Figure 2.9: Total Federal Government outlay (1987-2000)
Source: Author's Computation from CBN Statistical Bulletin (2017).

The structure of the Nigerian economy from 1987 to 1994 showed that growth in the agriculture sector, followed next by the manufacturing sector and oil sector, account for the most shares in GDP. However, from 1995 to 1997, the oil sector's contribution to GDP came in second to the agriculture sector's contribution in GDP. 1998-1999 period saw the manufacturing sector returned as the second major contributor to GDP growth after agriculture.

Despite the tremendous contribution of both the agricultural and manufacturing sector to GDP, non-oil imports constituted about 80 percent of total imports for the most of 1987-2000 (Figure 2.11). This indicates that the growth in the agriculture and manufacturing sectors (see Figure 2.10) was due significantly to importing inputs, machineries, and raw materials in both sectors. Thus, making the growth in both sectors unrealistic, just like in the oil boom era; since industrialisation is supposed to meanachieving a process whereby the capacity of the nation is enhanced to handle and source within its borders, all that is required for an efficient industrial production process. For the most of 1987-2000, oil import as a percentage of total import was below 20 percent (Figure 2.11).

On the other hand, oil export constituted for over 90 percent of aggregateexport in 1987-2000 (Figure 2.11). An indication that most of the agriculture and manufacturing sectors' outputs within the same time frame (Figure 2.10) were mostly consumed locally. For this reason, the country relied heavily on imported goods to augment the short fall in consumption. Little wonder why the rise in expenditure and especially in the country's external debt profile (see Figure 2.8).

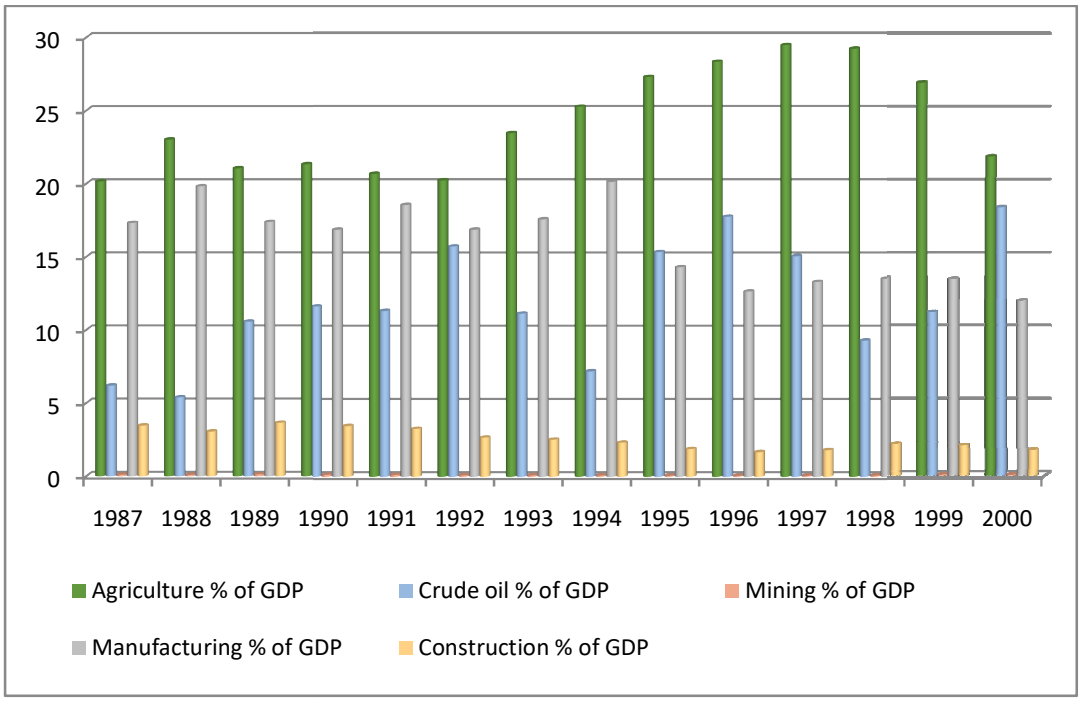

Figure 2.10: Structure of the Nigerian Economy (1987-2000)
Source: Author's computation from CBN Statistical Bulletin (2017).

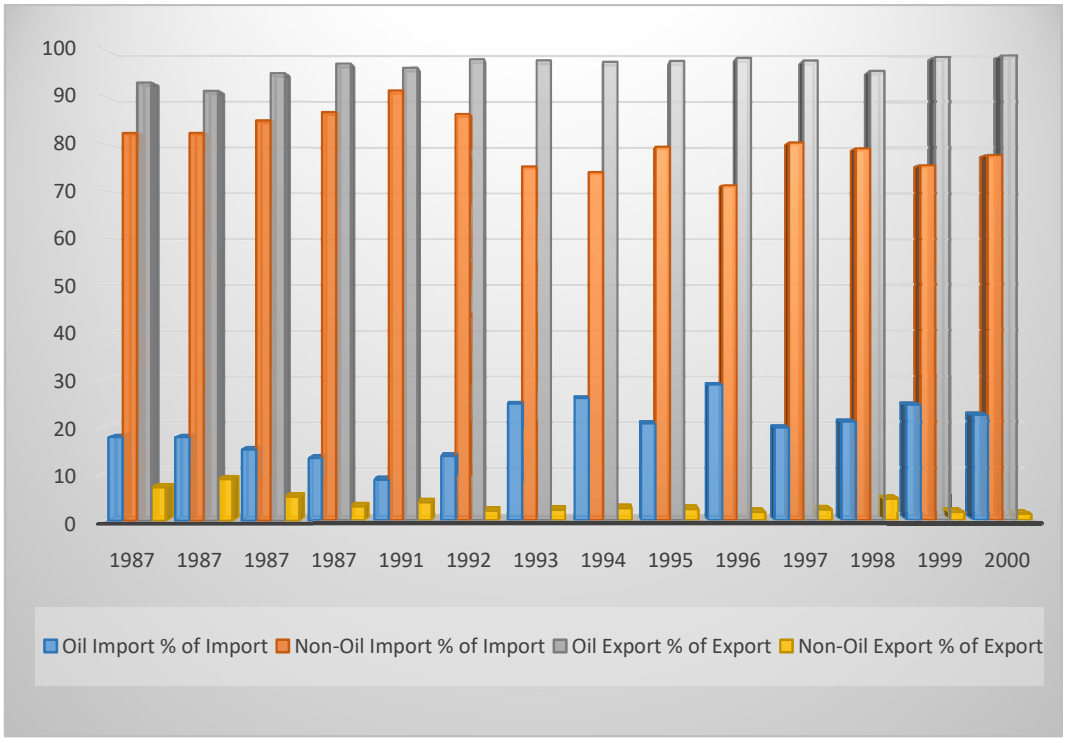
100
90
80
70
60
50
40
30
20
10
0
1987
1987
1987
1987
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
Oil Import % of Import
Non-Oil Import % of Import
Oil Export % of Export
Non-Oil Export % of Export

Figure 2.11: Total Trade Structure (1987-2000)
Source: Author's Computation from CBN Statistical Bulletin (2017).

2.7.1.3.1 Federal GovernmentEconomic Policy Measures in the 1990s

The Rolling Plan Era (1990-1998)

The first national rolling plan covered the period 1990-1992. The plan's primary goal was to build on the successes recorded in the execution of the SAP and tackle the core challenges further confronting the economy from the pre-SAP era. A priority programme of the first national rolling plan involves strengthening the existing programmes of the National Directorate of Employment (NDE). Federal Governmentcapital expenditure was increased to fulfil the goal of job creation in the economy. Capital expenditure per total expenditure increased from 40 percent in 1990 to 43 percent in 1992; recurrent spending, on the other hand, depreciated from 60 percent in 1990 to 57 percent in 1992 (see Figure 2.9).

The general policy measure of the second national rolling plan, which lasted through the 1990s, was to consolidate the first plan's goals. Thus, the second rolling plan was designed mainly to tackle the recognised ills and inefficiencies related tothe operation of monetary and credit instruments, depreciatingamount of capacity utilisation

associated with the industrial sector, in addition to continuous reduction of youth unemployment in the country.

Similarly, the third and fourth national rolling plans between 1994/1996 and 1997/1999 have employment generation as their core priority programmes (Shehu, 2016). With the advent of democratic rule in 1999, the new civilian administration began the development planning process in 1999; by launching a four-year medium-term plan document. The document was christened the National Economic Direction (1999-2003). The plan had the major goal of attaining a strong and broad-based economy. The economy was to possess the requisite capacity to ingest externally induced generated shocks. Despite being a fresh plan document, the goals and policy path were not strikingly unique from the SAP plan the country had earlier adopted.

2.7.1.4 Increase Recurrent Expenditure (2000 to 2017)

In May 1999, Nigeria hada new democratically elected civilian administrationafter having almost two decades of military dictatorship. A new social and economic order was embarked upon by the new administration, with the intention of utilising the country's enormous resources. The objective was to stimulate economic prosperity for the purpose of alleviating the pervasive nature of poverty in the country. Against a backdrop of pressure to deliver a "democracy dividend", the new Federal Governmentincreased public outlay, which was possible since there was a sharp rise in oil price in 2000. A combination of increasedFederal Governmentspending and a buoyant oil sector impacted the weak economy temporarily. This is evident with the GDP growth rate rising to 5.02percent in 2000,against its lower growth rate of0.58percent in 1999(see, Figure 2.13).

The achieved positive GDP growth recorded in 2000 was attributed mainly to the positive terms of trade shock, following the upward trend in oil price from $18 per barrel in 1999 to $28 per barrel in 2000 (Figure 2.12). The shock's income effectgave an avenue for expansion in Federal Government outlay, which alongside the buoyant oil sector, promoted growth. The 2001 budget was based on sustaining higher Federal Governmentspending since oil price also remained high at $24 per barrel. GDP growth also continued in the upward trend to 5.92 percent in 2001 and 15.3 percent in 2002, before taking a plunge in 2003 to 7.35 percent (Figure 2.13).

From 1999 to 2016, oil continued to be the main source of Federal Governmentrevenue, constituting about 75 percent of total Federal Governmentrevenue (Figure 2.12). Due to its rising price, the windfall from oil encouraged increased fiscal spending, most of which were directed towards recurrent spending obligations (Figure 2.13).

Figure 2.14 reveals a sharp rise in recurrent spending between 1999-2000 and 2001-2003. Major factors responsible for these sharp increases are the increase in the national minimum wage in 1998 and 2000 (see, Aminu 2011), the high administrative cost of governance, and the jumbo pay of legislators in both houses of the National Assembly. Despite the rise in recurrent outlay over capital outlay in total expenditure,between 2004 and 2009, recurrent spending, however, declined. This was due to the Federal government's desire to ensure fiscal discipline and improve capital spending for the economy's growth and development. This policy shift saw recurrent spending as a percentage of total spending fall from 80.3 percent in 2003 to 61.6 percent in 2009. Capital spending as a percentage of total spending recorded improvement within the same period, increasing from 24.6 percent in 2004 to 33.4 percent in 2009. GDP growth rate climbed from 7.3 percent in 2003 to9.3percent in 2004; but later deteriorated significantly to 8.04percent in 2009 (Figure 2.13). The gains in improved capital spending over recurrent spending were short-lived beyond 2009. While recurrent spending resumed its upward trend due to further wage increase in 2011, capital expenditure as a ratio of total spending went the opposite direction. Furthermore, DF experienced tremendous growth from 2009 to 2016, after slowing down gradually between 2001 and 2008. The growth rate of GDP also gradually slowed down from 2009 to 2016 (Figure 2.13).

From 1999 to 2015, public expenditure was majorly financed from oil revenue (Figure 2.14), made possible by the rise in oil prices from $28 per barrel in 2000 to $114 in 2012 (Figure 2.12). A close examination of Figure 2.14 reveals that capital spending as percentage of non-oil revenue, which peaked at 221.6 percent in 1999, deteriorated enormously to 48 percent in 2001, and by 2015 had dropped to 26 percent. Similarly, recurrent outlay as percentage of non-oil revenue, which also peaked at 200 percent in

1999, decline substantially to 64 percent in 2001, rising to 196 percent in 2003, and deteriorating gradually to 124 percent by 2015.

Likewise, capital expenditure as percentage of oil revenue declined from 68.8 percent in 1999 to 25.7 percent in 2001 and has fluctuated between 10 percent and 36 percent from 2002 to 2015 (Figure 2.14). In a similar trend, recurrent spending as percentage of oil revenue declined from 62 percent in 1999 to 33.9 percent in 2001 and has fluctuated between 31 percent and 66.7 percent from 2002 to 2014 (Figure 2.14). In 2015 however, recurrent spending as a ratio of oil revenue was slightly above 100 percent; a factor mostly due to the economic down-turn experienced in 2015, resulting from falling oil price and exchange rate problems confronting the economy in the year alone. This led to DF spiking upward from 2015, while the growth rate of GDP declined (Figure 2.13).

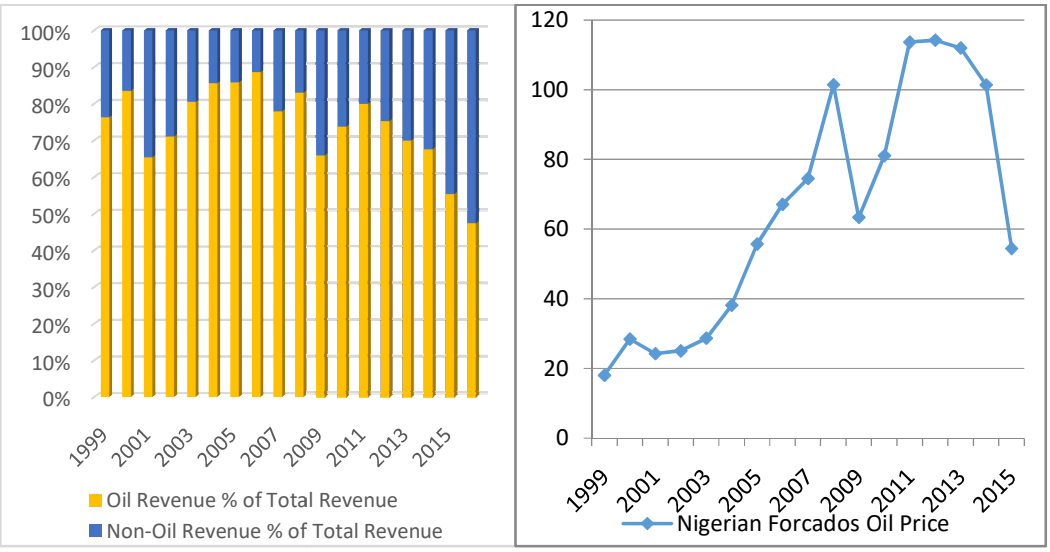

Figure 2.12: Revenue Component and Oil price (1999-2016)
Source: Author's Computation from OPEC Annual Report (2017).

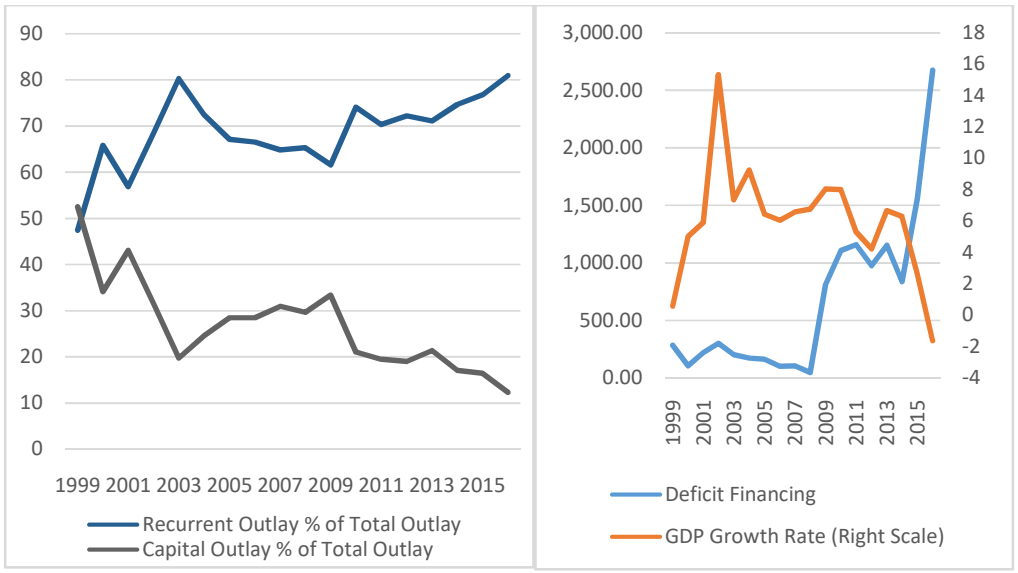

Figure 2.13: Public Expenditure, DF and Economic Growth (1999-2016)
Source: Author's Computation from CBN Annual Bulletin and WDI (2017)

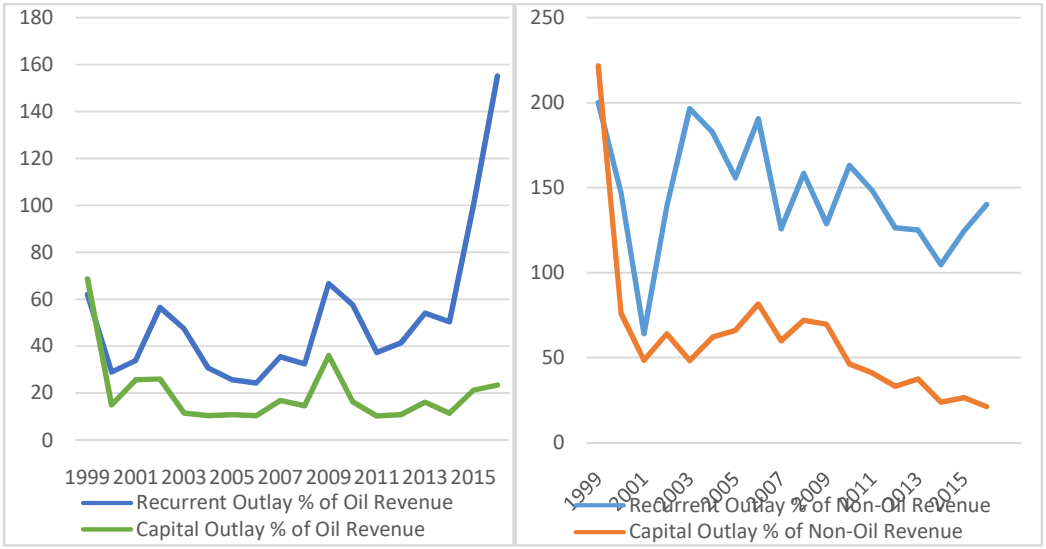

Figure 2.14: Public Expenditure as % of Federal GovernmentRevenue (1999-2016)
Source: Author's Computation from CBN Annual Bulletin (2017).

2.7.1.4.1Federal GovernmentEconomic Policy Measures from 1999 to date

The National Economic Direction (1999-2003)

After the return of Nigeria to civil rule in 1999, President Olusegun Obasanjo embarked on development planning in 1999 by introducing a four-year medium-term plan document, known as the National Economic Direction (1999-2003). The fundamental obligation of the plan was pursuing a formidable, virile and broad-based economy with adequate strength to absorb internationally generated shocks. Despite being a new plan document, the objectives and policy direction was not significantly different from that to which the country had adoptedfrom inception ofthe SAP (Marcellus, 2009). However, the plan was created to develop an economy that will betremendously competitive, reactive to incentives, driven by the private sector, diversified, open and market-based, but relying on national momentum for its growth.

Unfortunately, much was not achieved with the plan; especially its articulatedobjectives of deregulating the economy,curtailing bureaucratic bottleneck in governance and labour unemployment;curtailing the pervasiveness of poverty andinitiating programmes aimed at improving welfare and infrastructural facilitiessuch as potable water, improved health facilities, efficient supply of electricityand good roads.Furthermore, despite the enormous revenue realised from economic ventures such as improved crude oil sales, sale of privatised public enterprises, and recovered loots, the level of poverty in the countryonly got more intense. Hence, Nigeria became known as one of the world's most impoverished nations; despite being Africa largest producer of oil and the 6th largest oil-producing countryin theworld. Poor management of the nation’s rich resources over the years, particularly proceeds from oil, has helped to impoverish a supposed wealthy nation.

In the second term tenure ofPresident Obasanjo in 2003, the Federal Government saw the urgency to review development planning issues. Consequently, the conclusion that a shift from the norm to a comprehensive socio-political and economic reform is a prerequisite to the success of any development plan. Thus,the administration’s decision to introduce radical reforms in the way government business is conducted birthed the NEEDS.

The National Economic Empowerment Development Strategy (NEEDS) Vision, Objectives and Strategies (2004-2007)

The NEEDS plan was developed to offer Nigeria a path toeconomic prosperity. It was a four-year medium-term plan lasting from 2004 to 2007. NEEDS was executed at the federal level, whileat the sub-national levels of government, the State Economic Empowerment and Development Strategy (SEEDS) and the Local Government Economic Empowerment and Development Strategy (LEEDS) were to be formed v. Hence, the plan was an attempt to accommodate all government tiers to ensure that they have a uniform agenda, aside from the NEEDS plan to becomprehensive in nature. In addition, the private sector, the Non-Governmental Organizations (NGOs), and the general publicwere also encouraged to be active participants in the actualization of the plan; in cooperative endeavours,especially when pursuing developmental goals. The NEEDS plan encapsulated all policies and programmes of the Federal Governmentfor the 2003-2007 period and beyond; serving as a modelfor the much-publicised Obasanjo's reforms (Marcellus, 2009). The NEEDS plan's primary goals were to be achieved through four vital approaches namely wealth creation, poverty reduction, employment generation and value reorientation. Achieving these policy goals necessitated increased government spending, especially in capital expenditure (from 2003-2007) for infrastructural development (see, Figure 2.13).

The NEEDS differs in important ways from previous programmes. This is because it was thought to be more far-reaching, realistic and better co-ordinated, and most importantly, reflected all the country's stakeholders' input. The NEEDS initiative was thought to have yielded results by government policy makers. For instance,commenting on the gains of the NEEDS, the CBN Annual Report and Statement of Accounts (2005:34) states as follows:

> *"The policy thrust of NEEDS focused on empowerment, wealth creation, employment generation and poverty reduction, as well as value reorientation. Under NEEDS, substantial progress was made in the implementation of structural reforms, including a comprehensive banking sector consolidation programme, growing the non-oil sector, liberalization of Nigeria's import tariffs regime transactions, introduction of a Wholesale Dutch Auction System (WDAS) for foreign exchange, fight against*

corruption, and restructuring and privatising state-owned enterprises, in order to improve the environment for private–sector led growth and increase investor's confidence."

However, the improvements in macroeconomic indicators within the policy's time frame could be attributed largely to the high oil prices within the NEEDS time frame (see, Figure 2.12) as against the effect of the policy itself. Trend analysis inFigure 2.13 indicates thatthe growth in GDP to 8 percent in 2006, which was, however, lower than the NEEDS medium-term target estimate of 10 percent per annum (OECD/AFDB, 2006).

The Seven Point Economic Agenda (2007-2010)

On assumption of office on 29thMay 2007, President Umaru Musa Yar'Adua, rolled out his election promises to the people of Nigeria, known as the Seven-Point Agenda.The aim of the agenda was to Propel Nigeria into becoming one of the 20 largest economies in the world by 2020. Two earlier policies, namely the economic development blueprint as well as the NEEDS programme influenced to a great deal the creation of the 7-Point Agenda.

The Priority Policies, on which the 7-Point agenda hinged on, are:

- Sustainable growth in the real sector of the economy
- Physical Infrastructure: Power, Energy & Transportation
- Agriculture
- Human Capital Development: Education & Health
- Security, Law and Order
- Combating Corruption, and
- Niger Delta Development

In other to deliver on the goals contained in the administration's seven-point agenda, the Federal Government outlay was increased. The reason for the increased outlay was due to the significant role infrastructural development was being given in the Federal government's policy direction. The increased infrastructural spending by the administration saw DF rise in 2007-2009. Fluctuations in oil prices between 2007 and 2009 saw the Federal Governmentoil revenue also fluctuating (Figure 2.12).

Consequently, the deficit in the budget grew since expenditure was increasing, and DF had to rise to deliver on the administration's seven-point agenda.

Capital expenditure as a share of oil revenue rose from 17 percent in 2007 to 36 percent in 2009 (Figure 2.14). Nevertheless, recurrent expenditure as a share of oil revenue also increased from 35.6 percent in 2007 to 66.7 percent in 2009 (Figure 2.14). Specifically, investments in power plants and transportation boosted capital expenditure in total expenditure, from 31 percent in 2007 to 33 percent in 2009. At the same time, recurrent expenditure in total expenditure reduced from 64.8 percent in 2007 to 61.6 in 2009. The rationalisation of recurrent outlay through cost-saving measures implemented under the administration, was responsible for the decline in recurrent spending.

The Federal Governmentalso tried enhancing public sector financial management, with greater emphasis on increasing non-oil revenue through the Customs Service reform, and the Federal Inland Revenue Service, as well as the audit of independently generated revenue. These reforms yielded positive outcome, with nonoil revenue as percentage of total revenue increasing from 22.08 percent in 2007 to 34.11 percent in 2009. Oil revenue as percentage of total revenue, on the other hand, decelerated from 77.9 percent in 2007 to 65.89 percent in 2009 (see Figure 2.12). Thus, the goal to diversify the economy from an oil-based economy to non-oil driven economic growth was on course.However, the GDP growth rate was stable at about 7 percent through 2007-2009 (see Figure 2.13).

The Transformation Agenda 2011-2015

After the era of President Yar'adua, President Goodluck Jonathan 2010 launched the transformation agenda for a planned period between 2011 and 2015. The transformation agenda was an offshoot of the earlier vision 20:2020 upon which the Yaradua's seven-point agenda was founded and the National Economic Direction of President Obasanjo's administration. The agenda was designed to deepen the effects of both the seven-point agenda and the NEEDS plan, with the hopes of forginga new path for the economy. Furthermore, it was based on a group of priority policies and programmes that were supposed to equip the Nigerian economy to meet the future demands of her growing population when initiated.

Macroeconomic framework and economic direction of the Transformation Agenda

For the period 2011-2015, which was the duration period of the agenda, the Federal Governmentprojected minimum GDP growth rate was 11.7 percent per annum. As anticipated by the policy developers, the excepted growth rate of GDP for the period was to be driven largely by selected sectors of the economy such as the oil and gas, solid minerals, agriculture, information communication and technology (ICT) equipment and software,telecommunication, wholesale and retail trade, tourism and entertainment, manufacturing and building and construction sectors. However, the economy's actual average growth rate between 2011 and 2015 was 4.70 percent (Figure 2.13).

In addition, the agenda proposed a total investment worth₦40.75trillion in nominal terms for the period. This indicated that public sector spending was to increase; since the public sector was to account for ₦24.45trillion or 60 percent of the total investment, while the remaining₦16.30trillion or 40 percent was anticipated to come from the private sector.

The agenda's key policies being pursued by the Federal Governmentwere:

- Ensuring better synchronisation between fiscal and monetary policy. For this purpose, the National Economic Management Team wasto be empowered to facilitate effective alignment between fiscal and monetary policies.

- Pursuit of reliable macroeconomic policies, including fiscal prudence aided by suitable monetary policy to contain inflation at a single digit.

- The budget process was to be reviewed to offer better clarity of roles between the executive and legislature and ensure speedy enactment of the appropriation bill.

- The prevailing revenue allocation formula was to be revised for the purpose of realising a better balanced fiscal federalism. This was anticipated to allow formore effective implementation of programmes at the sub-national level.

- Institutionalising the culture of development planning at all levels of government and ensuring that the annual capital budget allocation takes a cue from medium and long term development plans.

Public Expenditure Management during the Transformation Agenda

Although the Federal Government was aware of the unfavourable profile of itstotalexpenditure,which had been highly skewed towards recurrent spending at the expense of capital spendingsince 1999. Hence, making recurrent spending consistently surpass capital expenditure. As noted by the Jonathan's administration, the situation only helped further to exacerbate the deplorable state of infrastructure in the country. For instance, capitalexpenditure as a share of total expenditure droppedfrom 52.55 percent in 1999 to 19.7 percent in 2003. On the other hand, recurrent expenditure grew from 65 percent of total expenditure in 1999 to 80.3 percent in 2003 (Figure 2.14). Nevertheless, the situation improved by 2009, with capital spending rising to 33.3 percent and recurrent expenditure falling to 61.3 percent of total expenditure.

By 2011, recurrent spending per total expenditure climbed to 70.3 percent; with theFederal Governmentresulting inborrowing to finance recurrent expenditures. The year 2015, which was the final year in the life span of the programme, was also not different, as recurrent expenditure further grew to 76.8 percent of total expenditure (see Figure 2.14). Capital outlay as percentage of total spending, on the other hand, declined from 19.49 percent in 2011 to 16.4 percent in 2015 (see Figure 2.14). Thus, ridiculing the Federal government's public expenditure management thrust.

Furthermore, DF grew tremendously under the Federal Government's policy thrustmore than any preceding democratic administration. As stated earlier, most of the funds borrowed to finance the deficit in the budget were expended on recurrent expenditure, as against capital expenditure, which is needed to promote infrastructural development. For instance, one primary factor responsible was the minimum wage increase in 2010; the Federal Governmenthad increased the minimum wage from

₦7,500 to ₦18.000. The crowding out of capital expenditure by recurrent spending and the falling oil price, began in 2013 (see Figure 2.13), led to the economy slowing down and eventually ending in a recession by 2016. As presented in Figure 2.14, by 2015, the growth rate of GDP had fallen to 2.7 percent from 4.9 percent in 2011.

The Economic Recovery and Growth Plan (ERGP) from 2016 to 2020

In 2016, President Muhammadu Buhari led Federal Government launched an economic plan christened the Economic Recovery and Growth Plan. The ERGP was thought necessary after the country witnessed an economic recession in mid-2016. A primary feature of the plan entails the combination of the expected yearly budgets from2017 through to 2020. Thus, making the ERGP a medium-term outlay framework. Its launch in 2016 was preceded by meticulously recognising the negative socio-economic indices in almost every aspect of Nigerians' national welfare (Kyarem and Ogwuche, 2017). The ERGP was designed to pull the Nigerian economy out of recession and place it on a path of sustainable growth.Unlike the previous growth plans initiated by preceding governments, the ERGP is based on a 4-year budget implementation plan. For instance, the 2017 budget was more or less an extension of the 2016 budget; since it appeared more in terms of a re-calibration of adjustments for inflation changes only (Kyarem and Ogwuche, 2017).

Another key element of the ERGP is that the plan is supposed to aid public and private sector decision making. This is because business entities now have a framework that could be assessed and used to predict the government's fiscal stance. Thereby, it is simple for businesses to decide what is expected in terms of taxes and tariffs.

Objectives and Targets of the ERGP

The ERGP has a three-fold objective: economic growth restoration, human capital development, and building a competitive economy.

First, the ERGP aims at economic growth restoration, ensuring the stability of macroeconomic variables, and cause economic diversification. To fulfil this objective,the ERGP aim to propel fiscal stimulus by scaling public expenditure upward, 1guaranteeing stability in monetary policy, ensure a robust balance of trade, and concentrate on critical sectors necessaryto drive and guarantee economic

growth;such as agricultural, manufacturing and service sectors, as well as Micro, Small and Medium Enterprises (MSMEs). This was to be achieved by leveraging advancements in information technology.

Secondly, the ERGP's objective is to grow human capital in the country. This is to be attained by accelerating investment in the Nigerian people through sustained support for those regarded as economically disadvantaged, reducing unemployment, providing better accessibility and affordability to quality healthcare across the country; and ensuring improved investment general access for all citizens to basicquality education.

Thirdly, the ERGP objective is to substantially grow investment ininfrastructure by having robust Public-Private Partnership (PPP) arrangements, ease and improve the legal and regulatory model required forsmooth business activities in Nigeria, and encouragedigital-ledeconomic growth through an elaborate broad band coverage.

In order to achieve these goals with ease, ten specific targets were laid out in the duration of the ERGP. However, the ten targets can be compartmentalized into four broad targets: oil, foreign exchange (FOREX) andtaxation, agriculture, and job creation. The cumulative impact of these four broad targets is anticipated to generate a GDP expansion of 2.19 percent in 2017, an annual mean of 4.62percentbetween 2018-2019, before hitting 7 percent by 2020.

For the oil-based target, oil production is to increase from 1.4mbpd to 2.5mbpd. Furthermore, the country is to become a net exporter of refined oil. It is also anticipated that an enormous sale of assets, specifically in the oil sector, is to be achieved by the country. Similarly, the FOREX related target specifies an evaluation of the FOREX market by direct government interventions, through the CBN,for the purpose ofderiving a sustainable market given exchange rate. For this purpose, proper management of the inflation forecast from 15.74percent in 2017 to 12.42 percent in 2018 is to be pursued; and further to an unspecified single digit by 2020. The tax goal of the plan is focused on achieving a better tax policy and implementation, aimed to improve public revenue to ₦350billion annually; through an overall improvement in the tax per GDP ratio to 15 percent. Lastly, unemployment is anticipated to decline from 13percent (in the third quarter of 2016) to 11.23percentby 2020.

To achieve this would mean substantial investment in agriculture to promote self-sufficiency for the country in tomatopaste production in 2017, rice production in 2018 and wheat production in 2020.

2.8 Overview of Inflation

Inflation is often regarded as a sustainedupward trajectory in the overall prices of goods and services in an economywithin a defined period of time. An appreciation of the price level results in each unit of a currency purchasing fewer goods and services. Therefore, inflation portrays a decline in the purchasing strength per unit of money – a depreciation in the ability of money to function as a medium of exchange and unit of account within an economy. In most countries around the world, a primary measure of price inflation is the inflation rate, the annualized percentage change in a general price index, usually known as the Consumer Price Index (CPI).

Inflation has been researched to impact the economies of countries in diverse positive and inverseaspects. Some of the inverse or unpleasant consequence of inflation include; raising the opportunity cost of money demand, increasing doubtsin the economy,which may dissuade investment and savings; and in the event whereby the growth in inflation is rapid, there is bound to be a shortage of goods, as suppliers will take to hoarding out of concern of a likely increase in prices in the future.On the contrary, the positive effects include reducing the real burden of public and private debt, keeping nominal interest rates above zero to enable the central bank in adjusting interest rates for the aim of stabilizing the economy and reducing unemployment due to nominal wage rigidity.

Evaluation from the fiscal perspective shows that there are a number of avenues through which inflation can be affected by both theFederal deficit and debt. These avenues include the contractionary effect onCF, the sale of public securities (such as: bonds, treasury bills and certificates, etc.), and the wealth-creating capacity of government debt (Kia, 2006). From another point of view, monetary policy through its instruments (such as the exchange rate, the interest rate and the money supply,) hasfurther been extensively indicated in empirical studies as substantial inflationary sources. This, was the reason Milton Friedman, who was reckoned as the frontier advocatorfor the monetary school of thought, to conclude that“inflation everywhere is

always a monetary issue."Moreover, most developing economies are characterised for beingheavily import dependent and needing foreign financing of debt. Thus, indicating thatin the event of variations in foreign interest rates and terms of trade, developing countries' inflation rates will be impacted.

However, recent explanations on the causes of inflation believe that when there is agrowth in general prices, it is attributable to the association between fiscal and monetary policies (Leeper, 1991, Sims, 1994). When the fiscal authorities of a country try to make budget decisions for both the present and the future, the consequential effect can be higher prices. Furthermore, if such a country's debt profile is heavy, then the interest rate is anticipated to take an upward flight. To fund government deficits in such situations, especially when fiscal regime dominates, the monetary authorities might be prevailed upon to act in line with sourcing the funds needed to meet the government's fiscal obligations. The effect of such intervention from the monetary authority is higher prices. Suppose, on the other hand, a dominant monetary regime prevails in the economy, with the central bank empowered in monetary policy formulation and implementation.The monetary authorities will control the printing of new notes, thereby making funding the Federal Governmentdeficit a challenge. Both phenomena indicate that the choice to harmonize both policies should be well embraced, especiallyinflation targeting. Thus, evaluating the inflationary effect of a fiscal deficit relies much onfiscal and monetary policy's relative dominance.

In recent time, economists have favoured a slow and steady rate of inflation. Slow (as against zero or inverse) inflation diminishes the gravity of economic recessions by permitting the labour market to adaptfaster in downturns and lower the threats of a liquidity trapfrom preventingmonetary policy stabilisation of the economy. The duty of keeping inflation in-check and ensuring its stability is often invested in themonetary authorities. Generally, these monetary authorities are the central banks that formulate and implement monetary policy through periodic setting of interest rates, open market operations, and through the setting of banking reserve requirements.

2.8.1 Inflation in Nigeria

One of Nigeria's policy makers' most difficult macroeconomic problems today is how to ensure inflation is placed under effective control. Overtime, this problem has proved

a major concern to monetary and fiscal policy makers, often revealed in various budgets and policy statements.

Generally, the history of recent inflationary problems can be traced back to the 1970s, accruing Federal Governmentreceipts from oil resources rose sharply. With the growth in fiscal outlay, stimulated by oil revenues, the agricultural sector gradually became neglected. The contribution of agriculture to the economy decreased, while the mining sector's role (specifically petroleum) increased remarkably. Due to the revenue from oil, the neglect of the agricultural sector further led to a growing food import bill. Such that, by 1979, the food import bill had skyrocketed to ₦1.106 billion in comparison to its level before 1973, which wasunder₦100 million, and 1970 values of below₦50 million. However,by 198l,the cost of food importation had risen substantially to about₦1.5 billion (Eyiuche, 2000). The inflation rateduring this period, which coincides with the development plan era (1970-1980), was an average annual of 11.86percent (see, Figure 2.15).

There were considerable fiscal and monetary policy measures introduced from the second to the third national development plans. These policies ensured stability in prices, inflation declined from 12.6 percent in 1971/72 to 9 percent in the 1973/74 period (Anyanwu et al. 1997). This fall inthe price level was associated with the underlisted fiscal measures.

- A post-Adebo wage freeze
- Import liberalisation policy
- Price control
- Rent control through the use of the Federal government’s edicts and special rent tribunals
- Direct importation of important products through the defunct Nigeria National Supply Company (NNSC).

Obviously, these fiscal policy measures suggest the prevalence of a state-regulated economy. With regards to monetary policy, the credit guidelines of the CBN ensured success in the following areas.

- Sustaining confidence in the Naira

- Support for improving the level of agriculture and industrial output. Though the support was given, there was however less improvement in productivity.
- Supplementing the Federal government's revenues and providing funding for deficit finance.

In the 1980s, Nigeria witnessed a major national economic crisis, which was an offshoot of the oil-glut re-emergence in 1980. Oil prices crashed in the international market from $36.98 per barrel in 1980 to $14.46 per barrel in 1986 (Figure 2.16). This elicited a series of developments in the economy. For instance, the state's fiscal crisiswas reflected in the persistent and substantial budget deficit, whichcumulated to approximately N17.4 billion in the five years between 1980 and1984 (CBN Statistical Bulletin, 2009). These deficits were meant to address economic imbalances such as slow national output growth, balance of payment crisis, a growing national debt and debt servicing burden, an accumulating food shortage crisis, collapsing manufacturing sector, and a mounting unemployment problem (Asekunowo, 2016). Hence, the SAP's introduction as a Federal Governmentanchor economic measure to correct the economic imbalances.

In addition, the monetary policyattained a highly expansionary form, as a significantportion of thedeficits incurred during the SAPwere funded through the creation ofcredit (Egwaikhide et al. 1994).Devaluation of the naira to make domestic exports cheaper due to the SAP policies' introduction; saw the naira also lose its value against the dollar. At the same time, oil revenue dwindled from a high of ₦12.35 billion in 1980 to ₦8.27 billion in 1984 (see, Figure 2.16).

To control inflation in the 1980s, the CBN embarked on the policy of moderating inflation. This was done through the use of direct monetary instruments. Such instruments include credit ceilings, selective credit controls, administered interest and exchange rates, etc. The CBN could not deploy market-oriented instruments as at then; due to the underdeveloped nature of the financial markets. However, the country experienced galloping inflation, such that the average annual inflation ratefrom 1981-1990 deteriorated to 14.09percent (Figure 2.15).

From the 1990s to the 2000s, the CBN embarked on the policy of inflation targeting, such that the average annual inflation target from 1991-2000 was 13percent (Table 2.2). However, the actual average annual inflation rate for the period rose to 30.60 percent (see, Figure 2.15). This culminated from over-bloated money supply, limited foreign exchange, and acute shortages in commodity supply (Bawa et al., 2016). Other contributing factors include continual labourdemands, the political unrest that characterized the annulment of the June 1993 elections; as well as the transition from military to civilian rule in 1999, whichfurther aggravated inflationary pressures.

Inflation slowed down between 2001 and 2010, and 2011 and 2017 from an average annual of 16.3percent, to 13.68percent, respectively (Figure 2.15).Improvements in fiscal discipline arising from cuts in the fiscal deficits and the 2006 debt forgiveness deal were contributing factors. Furthermore, the enactment of the CBN Act of 2007 enabled the CBN to have better control overthe money supply. Nevertheless, inflation rates still fell short of the CBN targeted average annual rates of 9.17 percent (2001-2010) and 9.9percent (2011-2017),respectively (see Table 2.2).

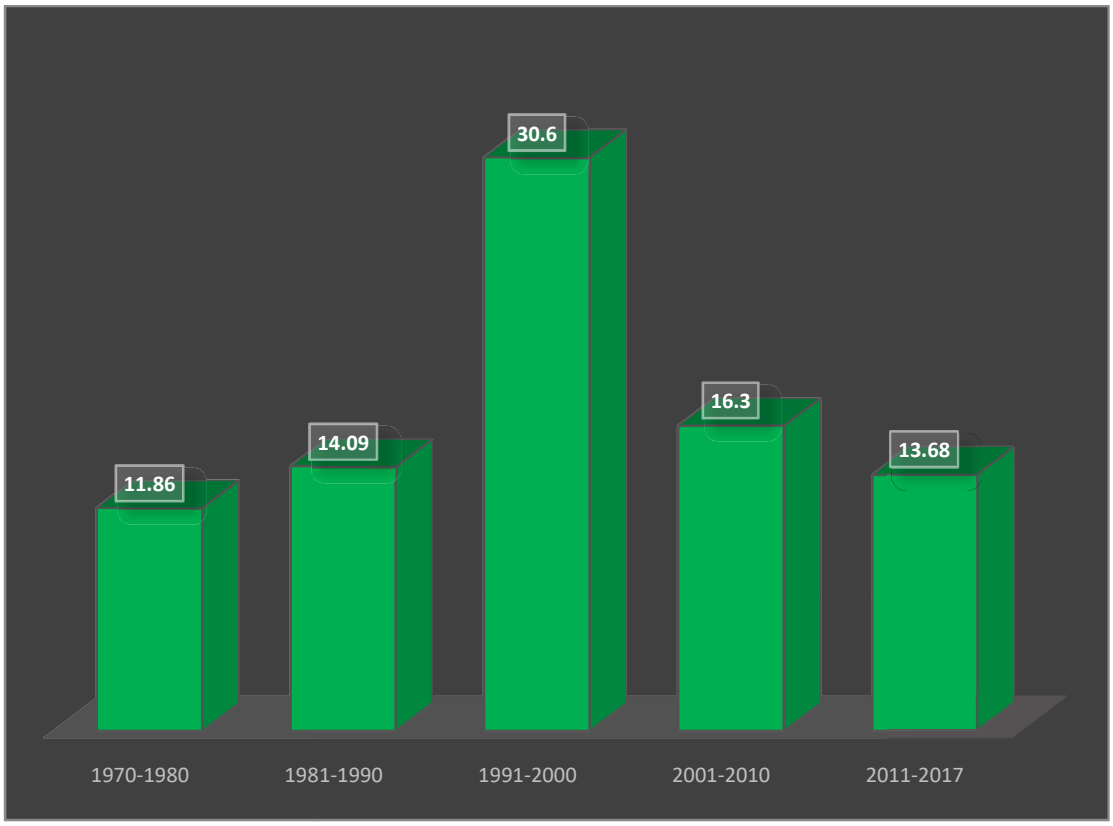

Figure 2.15: Average Annual Inflationary Trend from 1970-2017
Source: Author's Computation from WDI data (2019).

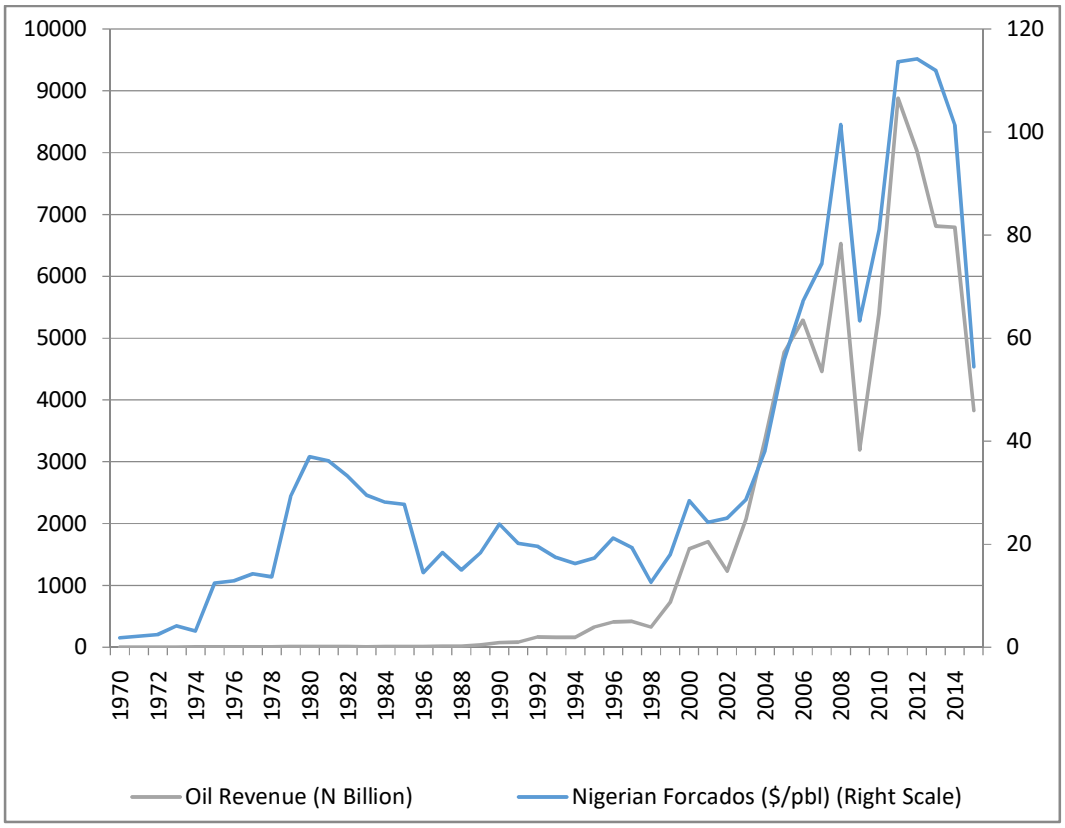

Figure 2.16: Trend of Oil Revenue and Oil Price (1970-2015)
Source: Author's Computation from OPEC Annual Report (2017).

2.9 Overview of Capital Formation in Nigeria

CF or accumulationis the amount of present wealth saved and invested on capital goods for the purpose accelerating future output and wealth levels. It emanates from the possession of new factories plusequipment, machinery and all productive capital goods. Furthermore, Capital accumulation is tantamount to a growth in a nation's physical capital stock with investment in social and economic infrastructure.

CF serves as a vital part of the growth and development process of every nation. CF determines the national capacity to produce, which in turn affects economic growth. The short fall in capital has happened to be a major constraint to sustainable economic growth in most developing countries. It is, therefore, not surprising that the analysis of CF is fast becominga cardinal issue in empirical macroeconomics. One notable theory from the 1970s, is the "Big Push" theory. It proposed that economies need to take a leap from one level of development to another througha virtuous cycle involving massive investments in infrastructure and human development, coupled with investment from the private sector to propel the economy further to a more productive stage.Thereby enabling the break-away from economic paradigms considered necessaryfor a smaller productivity stage. As for the growth theoriesthat Romer (1986) and Lucas (1988) propounded suggest that stimulating the level of CF can translate to a permanent upward surge in economic growth rates for a country.

The link between a nation’s level of CF andthe growth of its economy has been well research in variety of empirical investigations. A general conclusion from such studies also suggests thatthere is causality between CF and economic growth.However,a proper grasp ofCFdeterminants is considered a prerequisite when is comes to developingpolicy interventions in attaining economic growth. The process of CF is cumulative and self-feeding. It entails three inter-connected conditions; (a) the presence and growth of real savings; (b) the presence of credit and financial institutions capable of mobilising savings and channelling them to their desired points; and (c) to put to use these savings by investing them in capital goods (Jhingan, 2006). Therefore, it is easy to comprehend the role of savings as an essential determinant of CF. This perception about the role of saving in CF has helped to heighten the general belief that increasing the share of national income committed to CFserves asone of the avenues to realising economic growth. Thus, suggestingthat people are motivated to

save beyond their level of consumption. Since having a growing economy entails having a perpetual stream of fund for investment, which inturn ensures a supply of capital goods considered enough for the manufacturing of consumer goods and for substitutingoutdated machinery.

2.9.1 Capital Formation Profile in Nigeria

CFhas fluctuated in Nigeria from 1970 to 2015. This suggests a state of capacity under-utilisation as resources (human and material) have not beensufficiently mobilised to realisesignificant economic growth. In Nigeria'spursuit of rapid economic growth, as well as her vision to be one of the leading economies in the world,experts' viewsuggeststhat the economy will need to attain at least a steady growth rate of about 15percent per annum. Attainment of such growth will only be feasible if there is sustained growth in the country's level of capital stock through enormous investment from both the public and private sectors of the country.

Despite the windfall proceeds from oil in the 1970s and the rise in DF, CFdeclined marginally from an average annual of 12.54percent between 1970-1980 to 9.46percent between 1981 and 1990 (Figure 2.17). The situation did not improve between 1991 and 2000, with the CF average annual value falling further to 3.1percent (Figure 2.17). Between 2001 and 2010, the average annualCF had improved to 3.91 percent, and further went up to 8.75 percent between 2011 and 2017 (Figure 2.17).

Although DF average annual growth had been on a decline since the rolling plan eras of the 1990s; the 2000s have, however, recorded massive Federal Government intervention in infrastructural development through policies such as the National Economic Direction (1999-2003), the NEEDS (2004-2007), the Seven-Point agenda (2007-2010), and the Transformation agenda (2011-2015). For instance, the Federal Government invested a total sum of ₦2.74 trillioninto the power sector from 1999-2015, of which ₦1.64 trillion was sourced from the excess crude oil account (Energy Commission of Nigeria, 2015). This and many other interventions accounted for the growth in CF in the 2000s.

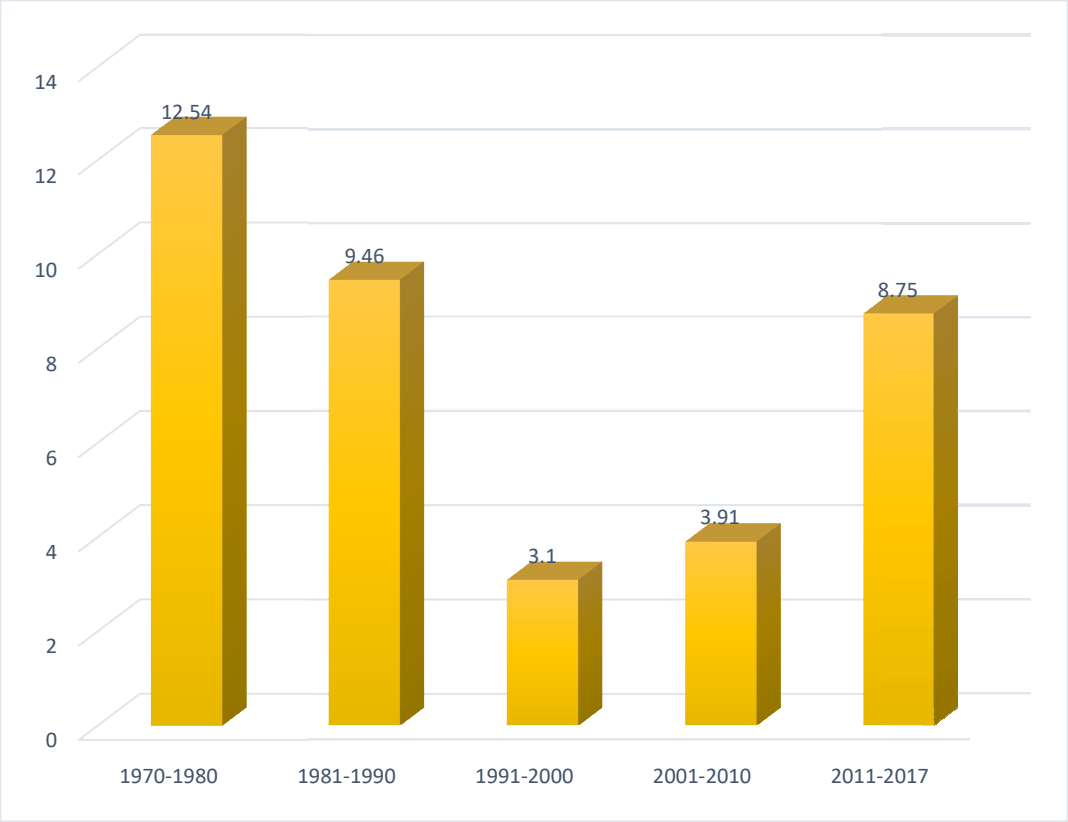

Figure 2.17: Average Annual Gross FixedCF per GDP in Nigeria (1970-2017)
Source: Author's Computation from IMF Fiscal Affairs data (2017)

2.9.2 Major Challenges of Capital Formation in Nigeria

The inefficient level of real capital is a main distinguishing attribute of most under-developed economies, which makes them be often referred to as “capital-poor economies”. In Nigeria, the low level of capital per head of population is mainly one of the responsible factors for the weak growth of the economy. Not only is the nation having atiny amount of capital stock, but the rate at which CF grows in the immediate is also very low. As noted by Seth (2016), CF only gulps about 5-8 percent of the national income of most under-developed countries; whereas, countries such as the United States, Western European countries and Japan, devote between 15-20percent of their national income to accumulating capital, and can as well exceed such amount. Nigeria’s low level of capital stock can be attributed to the following reasons.

Low Level of Domestic Savings

Nigeria is currently experiencing a low level of savings specifically traceable to thepoor level of per capita income or national income. Accordingly, much of the citizens' incomeis expended, while a meagre amount is left for investment utilisation. This makes Nigeria, like other developing countries beentangled in what is commonly referred to as the vicious circle of poverty;i.e., poor level of income—yields insignificant amount of savings—resulting in weak investment levels—poor capital—less productivity, and back at poor level of income.

Apart from the low level of total income, the low relative level of real income in the country compared to the advanced countries also diminishes the nation’s capacity to save. Income inequality keeps growing, thereby making the standard of living very poor. The negative effect of this is that income earned is being consumed almost totally without provision for savings. Even those at the highest ladder of income in Nigeria havenot helped make CF savings available. This is because individuals with access toa large volume of income generally expend a huge portion of their income on conspicuous consumptions such as buying of land and real estate, accumulation of luxury vehicles, yachts and private jets, engage in speculative transactions, and hoarding of gold and jewellery; as againstinvesting inventures capable of raising the level of domestic savings.

Poor Entrepreneurship

Another culpable cause for the poor investmentin CF in the country is the absence of creative entrepreneurs who can transform available savings into innovative ideas. An outstanding Economist in the person of Schumpeterallotted much significance to the role of innovative and audacious entrepreneurs in the realisation of economic development.

An attribute of most entrepreneurs we have today is thereinterest in quick returns and lack of audacity to embark on enormous risks required in making capital goods. Thus, for investment to grow by significant amount; would require Federal government's participation in playing genuine entrepreneurial role in the economy, as and providing daring capital goods entrepreneurs.

Weak Inducement to Invest

Nurkse (1966) postulated that just as the market size constrains division of labour, likewiseis the motivation to investalso constrained by the magnitude of the market. The market size in Nigeria, like in other developing countries, is still petite due to the people's low per capita income levels. Per capita income in the country is very small as a result of the constrained use of capital in the production process. The application of capital equipment in the production of goods and services for the domestic market is not being helped by the market's small size. Thus, a vicious circle also operates on the demand side of CF (Seth 2016).

As Nurkse (1966) stated, the incentive to invest may be low due to the low purchasing power of the people, which is a direct result of their low real income; again,resulting from weak level of productivity. The low level of productivity further serves as the reason just a small fraction of capital is used in production, partly emanating from low incentive to invest.

2.10The Deficit Financing-Inflation Nexus in Nigeria

Empirical studies on the DF-inflation nexus are vast. Furthermore, the contention that deficits are always inflationaryis neither new nor conclusively settled at the levels of theory and empiricism. This debate has been further fuelled by one of the most quoted sentences in the economics literature credited to Milton Friedman, a primary

advocatorfor the monetary school of thought that “inflationat all times and everywhere is a monetary phenomenon”. Hence, the question economists and researchers have always attempted to answer, especially in developing countries, is:“Does growth in DF always result in direct inflationary problems in the economy?”The answer to this question has continued to remain contentious. This is because the source of funding the deficit and the use to which the DF funds are engaged could give a direct inflationary effect.Conversely, it is possible for DF to be inflationary, but rather passing through a moderating variable to trigger inflation in the economy; hence, an indirect effect of DF on inflation.

In dominant fiscal regimes such as Nigeria, Oyejide (1972) noted that deficits financing was being funded through seignorage rather than borrowing in the 1957-1970 period. Hence, the direct inflationary effect of DF. One of the reasons for seignorage financing of deficits as at then was due to the absence of an independent monetary authority. The post-1970 studies (see Moser, 1995; Onwioduokit, 1999; Oladipo and Akinbobola, 2011; and Ahmad and Aworinde, 2019) on the DF-inflation nexus have argued that the direct effect of DF on inflation can be traced to the consistent expansionary fiscal policy of the Federal Government. However, it is noteworthy to stress that DF does not create inflation through higher prices, but through persistency, in the higher prices-when, too much money chases few goods and services.

Table 2.1 reveals that DF in the post-1970 periods was funded through foreign, domestic, and other source financing,occurring through the issuance of the Federal Government’s debt instruments such as bonds, treasury bills, treasury certificates, development stocks, etc.These instruments are known to have a substantial effect on the economy’s money supply, which can lead to inflationary problems in the economy.Thus,the similartrajectory of DF per GDP and inflation (see Table 2.2) could be the result of the moderating role of money supply in theDF-inflation nexus in Nigeria.

2.11The Deficit Financing-Capital Formation Nexus in Nigeria

In developing countries, the imbalance between savings and investment has always aided the use of DF for CF growth. Nigeria’s use of DF since the 1970s has always

been linked to various economic policy interventions aimed at improving CF. However, Table 2.2 shows that both variables have a divergent path for a significant part of the study period. For instance, despite the yearly rise in DF from the 1970s, CF continued to decline into the late 1990s. The use of DF funds for stabilisation of States created within the periods and the funding of import demands in the economy limited the impact of DF onCF in Nigeria.

Federal Government's effort at redeeming the fall in CF began from the mid-1980s when the SAP policy was introduced. The Federal Government began to anchor growth in DF on its economic diversification agenda through plans to invest in CF substantially. However, Nigeria has continued to remain plagued with a huge infrastructure gap valued at $100 billion annually (Proshare, 2020). Intuitively, this is due to the annual inadequacy of DF funds(see Table 2.1) in eroding the infrastructure deficit and using the existing funds mostly forrecurrent outlays.

Improvements in CF from the 2000s can be linked mainly to special interventions on the part of the governmentrather than through DF. Such intervention includes sourcing funds from the excess crude oil account, engaging in Public-Private Partnership (PPP), concessionary ventures, etc.To further validate this point, Table 2.1 revealed thatthe difference between Federal Government's recurrent and capital spending almost tripled the value of DF in the 2000s.

2.12The Inflation-Capital Formation Nexus in Nigeria

Empirically, inflation has been known to be the cause of numerous economic distortions. For example, when consumable products increase, households' real income is anticipated to shrink and, consequently,household purchasing power falls. Also, the rising inflation rate is known to discourage economic agents from saving since money losses its future value. Hence, the economy's long-term growth will decline since an amount of savings is essential infundingsuch growth through investment in capital projects.

Table 2.2: Average Annual Deficit Financing per GDP (DEFGDP), Deficit Financingper National Budget (DEFBGT), Inflation rate (INF), and Gross Fixed Capital Formation per GDP (GFCGDP).

YEAR	DEFGDP	DEFBGT	INF	GFCGDP
1970-1980	4.31	22.4	11.86	12.54
1981-1990	5.43	32.9	14.09	9.46
1991-2000	4.05	25.8	30.60 (13)	3.1
2001-2010	2.62	14.9	16.3 (9.17)	3.91
2011-2017	1.91	31.3	13.68 (9.9)	8.75

Note: values in parenthesis are targeted CBN rates.
Source: Author's Computation from CBN Annual Bulletin, IMF Fiscal Affairs Dept. and WDI dataset (2017).

Furthermore, inflation can have devastating long-term effects on CF growth Nigeria due to the planning challenges it creates for entrepreneurs. Important of these challenges is how much to produce in inflationary periods since predicting the level of effective demand and the average costs of production becomes cumbersome. This is because as inflation rises, the transaction and information costs in the economy follow suit, which discourages economic growth. For example, due to the high uncertainty in nominal values usually associated with rising inflation rates in Nigeria, entrepreneurs are more likely to commit to contracts terms especially on long-term basis unwillingly. Such unwillingness has the long-term tendency to lower CF and undermine economic growth.

Furthermore, inflation is a de-motivator of financial intermediaries in providing long-term financing for CF. Hence, the monetary authority (i.e., the CBN) have been known to try to mitigate the effects of high inflation on the growth of the economy by adopting policies such as inflation moderating in the 1980s, inflation targeting from the 1990s to date, and pegging long-term lending rates for sectors considered critical to the overall growth of the Nigerian economy.

CHAPTER THREE
THEORETICAL FRAMEWORK AND METHODOLOGY

3.1 Preamble

In the literature, we have noted the variety of theoretical propositions expressing the association between DF, inflation and CF. Empirical evidence obtained from country case studies also reveal a variety of methodologies used by scholars. The resulting outcomesso far have been diverse empirical submissions or conclusions. Therefore, the goal of this section is to formulate an acceptable model that explicitly and appropriately subsumes the relationship between our study variables. The formulated model will then be estimated to achieve our study objectives.

3.2 Theoretical Framework

The theoretical model employed in this study is the Keynes-Wicksell three-asset monetary growth, which diverges from the conventional money growth model of the neoclassical Economists. Rather than assuming all taxes are lump sum levies, this study considers capital income taxes that diminishes the profitability or the net rate of return of capital. A little innovationto the Keynes-Wicksell was made by replacing the business sector with the government sector by introducinga Federal Government deficit. Such deficit is to be financedthrough tax collections, increasing the money supply,and issuing to the public interest–yielding government bonds.

Hence, if we have an economy whose population growth is exogenous in nature

$$N = N_o e^{nt} \qquad (3.1)$$

where the labour force is taken as an invariant part of the population, and technical advancement is included in the population growth. The production function takes the form of constant returns to scale, while the link between per capita output (y) and the per capita CF (k) can be expressed as:

$$y = f(k) (3.2)$$

With $f' > 0$, and$f'' < 0$, while output is gauged as net of depreciation, and depreciation of capital not precisely added into the analysis. Thus, Equations 3.1-3.2 shows the productivity level of an economy whose population growth is exogenously determined.

The Federal Government budget constraint

Denoting Federal Government outlay as (G), plus the remittance of interest on the Federal Government bond, which must be funded either through tax revenues, money creation, or borrowing. Furthermore, the total real tax revenues (T) constitute the aggregation of a lump sum tax (T_0) and the revenue that originates from real capital at rate τ. The Federal Government is also the creator of the only money in the economy (M),whichbears no interest. It would also take the nominal money stock a DM time rate to change; while the real value of the extra money is DM/p. If government bonds are seen to yield interest at rate I, and the nominal market equivalent of these bonds is given as B, while the real equivalence of fresh borrowing is expressed as DB/p, then the Federal Government's budget constraint can be expressed as:

$$G + \frac{iB}{p} = T + \frac{DM}{p} + \frac{DB}{p} \qquad (Equ. 3.3)$$

We can alternatively represent the real Federal Government deficit by Δ to have:

$$\Delta = \frac{DM}{p} + \frac{DB}{p} \qquad (Equ. 3.4)$$

In a steady-state, the ratio of real money per unit of real capital expressed as; M/pk must be constant. Suggesting that the rate at which M grows should be equal to the rate at which pk grows, or with $DP/p = \pi$. Since in a steady-state, $k = K/N$ is constant, also indicating that $DK/K = n$. Thus:

$$\frac{DM}{M} = \pi + n \qquad (Equ. 3.5)$$

Likewise, the steady-state rate of growth of nominal Federal Government bonds is equal to the inflation rate, plus the economy's actual growth rate expressed as:

$$\frac{DB}{B} = \pi + n \qquad (Equ. 3.6)$$

Equations 3.5-3.6 reveals that the steady-state growth of nominal money is equal to the steady-state growth of Federal Government bonds. Substituting these expressions into Equation 4.4 and dividing by the population yields the following steady-state per capita deficit:

$$\frac{\Delta}{M} = (\pi + n)\frac{M}{pN} + (\pi + n)\frac{B}{pN} \qquad (Equ. 3.7)$$

Where lower case letters denote real per capita values. Equation 3.7 can further be re-written as:

$$\delta = (\pi + n)(m + b) \qquad (Equ. 3.8)$$

Equation 4.8 shows that δ, which is the real per capita deficit, is equal to the product of the economy's nominal growth rate and actual per capita Federal Government liabilities.

The portfolio behaviour

The definition of portfolio behaviour and saving in our model is based on the assumption that households in general considers Federal Government bond as net wealth. At the same time, failing to consider the corresponding tax burden they and future generations must incur to enable repayment of the interest and principal on these bonds.

Thus, the real worth of household assets constitutes the summation of the real per capita values of Federal Government liabilities $(b + m)$ and CF(k) shown as:

$$a = b + m + k \qquad (Equ. 3.9)$$

We can simplify the definition of the household's portfolio behaviour base on the premise that the equilibrium ratio of real bonds to CF rely on the difference between the net real yields on CF (τ), as well as the real yield on government bonds $(i = \pi)$:

$$\frac{k}{b} = \beta[r + \pi - i]\beta' < 0 \qquad (Equ. 3.10)$$

Since the method of depreciation in Nigeria is founded on actual cost of plant and machinery, the tax burden per unit of capital can be said to be an increasing function of the rate of inflation. Hence, the net rate of return can be express as:

$$r = f' - \tau(f' + \lambda\pi) \qquad (Equ. 3.11)$$

Where the coefficient λ captures the magnitude to which growth in the inflation rate raises the tax burden. This is because stimulated depreciation impacts τ and λ; however, λ is above zero even if at the equilibrium value of π; tax depreciation will still exceed economic depreciation. Substituting Equation 3.11 into Equation 3.10 yields the equilibrium bond portfolio condition expressed as:

$$\frac{b}{k} = \beta[(1-\tau)f' + (1-\tau\lambda)\pi - i]\beta' < 0 \qquad (Equ.3.12)$$

With the availability of short-term interest-bearing Federal Government bonds, households' demand for money should be solely for transaction reasons. This varies positively alongsidethe volume of incomeand negatively with the rate of interest. This is explained based on the premise that households consider the interest-bearing Federal Government bonds as against the real capital as a substitute to transaction balances. Also, transaction balances are premised to rely on income rather than wealth. Hence, we have:

$$\frac{m}{y} = L(i), L' < 0 \qquad (Equ.3.13)$$

A crucial characteristic of an economy where money and other government liabilities exist is the likelihood that citizens may choose not to demand for capital except its return exceeds some benchmark. The Keynesian two-asset model denotes this as the liquidity trap; that is, a situation of an infinitely elastic demand for money when the interest rate is meagre. A more factual definition is likely in our three-asset model. Since when the real net return on capital turns extremely minimal, proportional to the real return on government bonds, investors will demand for government bonds rather than holding capital. The expression of Equation 3.12, reveals that the absolute worth of β' turns infinite if the real differential turns minute. This reluctance to acquire real capital has the potential to raise the demand for money. However, the impact has the potentialto be minimal proportional to the growing desire to hold government bonds. One of the reasons investors will favour government bonds in this situation is linked to the fact that the pre-tax profitability of private capital is unsure. Hence, the bond-demand behaviour will be taken as a 'safety preference' relation to differentiating it from the liquidity preference nexus that determines the desire for holding money.

The supply and demand for savings

Taking the supply of savings (S) to be proportional to the households' real disposable income (H) expressed as:

$$S = \sigma . H \qquad (Equ. 3.14)$$

The propensity to save will be anchored on the premise to be constant. While disposable income equals the national income (Y), minus the Federal Government's tax revenues (T) and the decline in the actual value of the population's money and government bonds ($\pi M/p \; and \; \pi B/p$). In this analysis, it is assumed that households take government bonds as net worth. Saving can hence be expressed as:

$$S = \sigma \left(Y - T - \frac{\pi M}{p} - \frac{\pi B}{p} + \frac{iB}{p} \right) \qquad (Equ. 3.15)$$

Or, if we use Equation 4.3, we have:

$$S = \sigma \left(Y - G + \frac{DM}{p} + \frac{DB}{p} - \frac{\pi M}{p} + \frac{\pi B}{p} \right) \qquad (Equ. 3.16)$$

Where $DM/p - \pi M/p = nM/p$ (with a similar equivalence for bonds),

$$S = \sigma \left(Y - G + \frac{nM}{p} + \frac{nB}{p} \right) \qquad (Equ. 3.17)$$

In the steady-state, Federal Government outlay must produce a staticassociation to national income. The exposition that follows is based on the premise that a part γ of national income is dedicated to Federal Government outlay, which is exclusive of interest on the Federal Government bonds—suggesting that any rise in interest on the Federal Government bonds creates a corresponding rise in the Federal Government deficit or lump-sum taxes.

Having all saving captured in either the real CF or additional real money and bonds yields the following:

$$S = DK + D(M/p) + D(B/p) \qquad (Equ. 3.18)$$

The constant ratio of capital to labour in steady-state growth indicates $DK = nK$. Likewise, the constancy of $m = M/pN$ and $b = B/pN$ suggesting that $D(M/p) = nM/p$ and $D(B/p) = nB/p$. Hence,

$$S = nK + \frac{nM}{p} + \frac{nB}{p} \qquad (Equ. 3.19)$$

If we substitute for S in Equation 3.19 by inserting Equation 3.17, and substitutingγY for G, and dividing by N, gives the per capita growth equilibrium condition:

$$\sigma[y(1-\gamma) + nm + nb] = nk + nm + nb \qquad (Equ. 3.20)$$

Equation 3.20 completes the monetary growth three-asset model, which was used to analyse the effect of DF on inflation and CF in this study. Collecting the four steady-state equations:

$$\delta = (\pi + n)(m + b)\big(previously\ (Equ. 3.8)\big) \qquad (now\ Equ. 3.21)$$

$$m = L(i) * f(k)\big(previously\ (Equ. 3.13)\big) \qquad (now\ Equ. 3.22)$$

$$b = \beta[(1-\tau)f'(k) + (1-\tau\lambda)\pi - i] * k \qquad (previously\ Equ. 3.12)) \qquad (now\ Equ. 3.23)$$

$$\sigma = (1-\gamma)f(k) + nm + nb = n[k + m + b] \quad (previously\ (3.20)) \quad (nowEqu. 3.24)$$

Wherey has been replaced with $f(k)$in Equations 3.22 and 3.24. The government exhibit authority over the following policy instruments: the size of the deficit (δ), the fraction of Federal Government outlay in national income (γ), the interest rate on Federal Government bonds (i), and the tax rates on capital income (τ and λ). Base on the given values of these policy instruments and the exogenous growth rate (n), the above steady-state equations determine the values of b, k, π, and m.

A Federal budget deficit that creates inflation and lowers capital formation

Following the nature of the debt policy that has been embarked upon in Nigeria in recent times, a rise in the steady-state deficit has the potential to create both upward inflationary trajectory and a lower CF. The fundamental reasoning to the negative implication of inflation on CF is captured in the total differential of Equation 3.23, subject to $di = d\pi$(Since investment in CF is less profitable to bonds):

$$db = (\beta + k\beta'(1-\tau)f'')dk - k\beta'\tau\lambda d\pi \qquad (Equ. 3.25)$$

The partial impact of an increase in the level of inflation will aggravate the demand for bonds as againstCF. Since the real returns on CF will be lower by $\tau\lambda d\pi$, than the real returns on bond investment. If this upwardinflationary effect on the desire to

holdbonds is substantially big to counter the inverse inflationary impact on money demand, which is indicated by the total differential of Equation 3.22with $di = d\pi$, then:

$$dm = Lf'dk + fL'd\pi \qquad (Equ.3.26)$$

The impact of a rise in government deficit can be expressed explicitly to lower capital asset. To show this, note that Equation 3.24 indicates that:

$$d(m+b) = \frac{\sigma(1-\gamma)f' - n}{(1-\sigma)n}dk \qquad (Equ.3.27)$$

By adding Equations 3.25 and 3.26, and then using Equation 3.27 to eliminate $d(m + b)$ gives:

$$\frac{\sigma(1-\gamma)f' - n}{(1-\sigma)n}dk = (Lf' + (\beta + k\beta'(1-\tau)f'')dk + (fL' - k\beta'\tau\lambda)d\pi \qquad (Equ.3.28)$$

Likewise, taking the total differential of Equation 3.21 yields:

$$d\delta = \frac{\sigma(1-\gamma)f' - n}{(1-\sigma)n}dk + (m+b)d\pi \qquad (Equ.3.29)$$

By employing Equation 3.28 to clear-out$d\pi$ from Equation 3.29 produces:

$$\frac{dk}{d\delta} = [(1-\sigma)n(fL' - k\beta'\tau\lambda)]/[(\pi+n)(\sigma(1-\gamma)f' - n)(fL' - k\beta'\tau\lambda) + (m+b)(\sigma(1-\gamma)f' - n - n(1-\sigma) * (Lf' + \beta + k\beta'(1-\tau)f''))] \qquad (Equ.3.30)$$

With the rise in the demand for Federal Government bonds, influenced by upward inflationary trajectory being above the lowered money demand, $fL' - k\beta'\tau\lambda > 0$,the numerator is positive. It is important to observe that the steady state of the less complicated nonmonetary economy demands $\sigma(1-\gamma)f' - n < 0$; with this premise, the denominator will be inverse. Thus, under this reasonable state, an increase in Federal Government deficit will lower CF. Also, since Equation 4.28 suggest thatdk and $d\pi$ are of opposite signs, the increased deficit will increase the level of inflation.

3.3 Methodology of the Study

The objective of having the study's econometric model consistent with the theoretical structure as specified in the preceding subsection; calls for the use of an instrumental variable method. The IV approach produces an efficient estimate when the regressor

variablesare correlated with the error term in a regression model. Such correlation exists when at least a regressor variable responds to changes in the regressand variable ("reverse" causation). That is when there are omitted variables (known as instruments) that impact the regressand variable indirectly, and directly the regressor variables; or when the regressor variables are subject to measurement error. Regressor variables with such features in regression are referred to as endogenous. In this situation, OLS is known to produce bias and unstable estimates (Bullock et al. 2010). Nevertheless, with the availability of an *instrument*, stable estimates are still derivable. An instrument isa variable that is indirectly associated with the explanatory equation by being correlated with the identified endogenous regressor variables and conditional on the value of other independent variables (Wooldridge, 2009). In linear models, two conditions lend credence to the use of IV.

- The instrumental variable must correlate significantly with the endogenous regressor variables andconditional on other exogenous regressor variables. Thus, an instrumental variable with a high statistically significant correlation with an endogenous variable is said to have a **strong first stage**. A weak correlation,on the other hand, may provideunreliable inferences about parameter estimates and standard errors (Wooldridge, 2009).

- The instrumental variableand the error term in the explanatory equation mustboth be independent of each other. In other words, the instrumental variableshould not be plagued with the initial problem as the original predicting variable. Fulfilling this condition means the instrumental variable has satisfied the **exclusion restriction** criterion(Wooldridge, 2009).

- For the purpose of evaluating IV estimates, a major requirement entails the IV specification complying with the *order condition* for identification, which says that there must be at least as many instruments as there are coefficients in the equation.

The simultaneous equation type of modelling is adopted due to the anticipated inter-relationship between DF, inflation, and CF. This is due to its ideal nature for investigating relationships in which feedbacks are anticipated or hypothesised.

Therefore, the structural model for this research is one of such models. Hence, the use of the instrumental variables approaches in this study.

3.3.1 Model Specification and Method of Data Analysis

The simple, functional form of Equation 3.30 can be expressed as:

$$GFC = f(DEFGDP, CPI, T) \qquad (Equ. 3.31)$$

where: GFC is gross fixed CF, DEFGDP is aggregate DF per GDP, CPI is consumer price index which proxy for inflation and T is a vector of control variables.

Specifically, the simple, functional form of the study model is re-specified as:

$$lGFC_t = b_0 + b_1 DEFGDP_t + b_2 lCPI_t + b_3 lT_t + u_t \qquad (Equ. 3.32)$$

where b_0 is a constant, $b_1 to\ b_3$ are the parameters of the explanatory variables, l is the logarithm transformation, u_t is the white noise error term.

However, this study considers inflation as an endogenous variable rather than exogenous, as stated in Equation 3.32. The reason being that studies such as Nguyen (2015), and Ishaq and Mohsin (2015), suggest that DF indirectly impact inflation through money supply. While Musa et al. (2013); Gbadebo and Mohammed (2015); Bawa et al. (2016); and Asekunowo (2016) further found a stronglink from money supply to inflation in Nigeria. Thus:

$$CPI = f(DEFGDP, GFC, BM, V) \qquad (Equ. 3.33)$$

where BM is broad money supply and V is a vector of control variables.

Equation 3.33 is re-specified in an explicit form as:

$$lCPI_t = \beta_0 + \beta_1 DEFGDP_t + \beta_2 lGFC_t + \beta_3 lBM_t + \beta_4 lV_t + e_t \qquad (Equ. 3.34)$$

where β_0 is a constant, $\beta_1 to\ \beta_4$ are the parameters of the explanatory variables, l is the logarithm transformation, e_t is the white noise error term.

Furthermore, in line with our theoretical model, growth in DF is revealed to give rise to money supply; when the Federal Government creates money or through sales of Federal Government bonds. It, therefore, suggests that broad money supply is dependent on DF. Indicating that broad money supply is also an endogenous variable. Thus:

$$BM = f(DEFGDP, CPI, GFC, Z) \qquad (Equ. 3.35)$$

Where Z is a vector of control variables.

Equation 3.35 is re-specified in an explicit form, as shown below.

$$lBM_t = \varphi_0 + \varphi_1 DEFGDP_t + \varphi_2 lCPI_t + \varphi_3 lGFC_t + \varphi_4 lZ_t + \varepsilon_t \qquad (Equ. 3.36)$$

where φ_0 is a constant, $\varphi_1 to\ \varphi_4$ are the parameters of the explanatory variables, l is the logarithm transformation, ε_t is the white noise error term.

Explicitly incorporating the control variables (T, V, and Z) in Equations 3.32, 3.34 and 3.36 yields the direct relationship between the study variables as shown below.

$$lGFC_t = b_0 + b_1 DEFGDP_t + b_2 lCPI_t + b_3 lGFC_{t-1} + b_4 lRGDP_t + u_t \qquad (Equ. 3.37)$$

$$lCPI_t = \beta_0 + \beta_1 DEFGDP_t + \beta_2 lGFC_t + \beta_3 lBM_t + \beta_4 lCPI_{t-1} + e_t \qquad (Equ. 3.38)$$

$$lBM_t = \varphi_0 + \varphi_1 DEFGDP_t + \varphi_2 lCPI_t + \varphi_3 lGFC_t + \varphi_4 lBM_{t-1} + \varepsilon_t \qquad (Equ. 3.39)$$

where T in Equation 3.32 is GFC_{t-1}(lagged gross fixed CF), and RGDP (Real Gross Domestic Product) in Equation 3.37. V in Equation 3.34 isCPI_{t-1} (lagged consumer price index) in Equation 3.38.Z in Equation 3.36 is BM_{t-1} (lagged broad money supply) in Equation 3.39. Other variables remain as defined. The inclusion of the lagged dependent variablesin the model is to capturethe effect of the previous levels of

CF, inflation, and money supply on their current levelsin Equations 3.37, 3.38, and 3.39, respectively. For instance, the lagged CPI in Equation 3.38 is to control for the persistence in inflation in the equation.

The direct effect of deficit financing:

The outcome of the coefficients $b_1$in Equation 3.37 andβ_1 in Equation 3.38 were used to determine the direct effects of DF on inflation and CF for objectives 1 and 3, respectively. Also, the coefficients $b_2$in Equation 3.37, and β_2 in Equation 3.38 were used to determine the direction of the relationship between inflation and CF, which is our *second study objective*. Another primary question relates to the indirect channels through which DF affectsinflation and CF. To this end, we investigate the indirect effect of DF on inflation and CF. To compute the indirect effects of objective 1 and 3, Equations 3.37, 3.38, and 3.39 were solved simultaneously, while a chain rule effect was applied to derive the actual coefficients for the indirect effects of DF on inflation and CF.

The indirect effect of deficit financing:

on inflation: $\frac{\partial CPI}{\partial DEFGDP} = \frac{\partial CPI}{\partial BM} * \frac{\partial BM}{\partial DEFGDP} = \beta_3 * \varphi_1 \qquad (For\ Objective\ 1)$

on CF: $\frac{\partial GFC}{\partial DEFGDP} = \frac{\partial GFC}{\partial CPI} * \frac{\partial CPI}{\partial BM} * \frac{\partial BM}{\partial DEFGDP} = b_2 * \beta_3 * \varphi_1\ (For\ Objctive\ 3)$

A priori expectations: $\beta_3 * \varphi_1 > 0, b_2 < 0$, and $b_2 * \beta_3 * \varphi_1 < 0$

3.3.1.1 The direct and indirect effects of deficit financingcomponents on inflation and capital formation

The direct and indirect effects of DF components which are domestic, external and other source financing were also assessed for the robustness of the study's analysis.

Equations 3.40-3.42 captures DF through domestic financing

$$lGFC_t = \gamma_0 + \gamma_1 DMFGDP_t + \gamma_2 lCPI_t + \gamma_3 lGFC_{t-1} + \gamma_4 lRGDP_t + u_{t1} \qquad (Equ.3.40)$$

$$lCPI_t = \omega_0 + \omega_1 DMFGDP_t + \omega_2 lGFC_t + \omega_3 lBM_t + \omega_4 lCPI_{t-1} + e_{t1} \qquad (Equ.3.41)$$

$$lBM_t = \delta_0 + \delta_1 DMFGDP_t + \delta_2 lCPI_t + \delta_3 lGFC_t + \delta_4 lBM_{t-1} + \varepsilon_{t1} \quad (Equ.3.42)$$

where $DMFGDP$denote domestic financing per GDP, and all other variables remain as previously defined.γ_0,ω_0, and$\delta_0$are constants, $\gamma_1 \; to \; \gamma_4$, $\omega_1 \; to \; \omega_4$, and $\delta_1 \; to \; \delta_4$are the parameters of the explanatory variables, l is the logarithm transformation, $u_{t1}, e_{t1} \; and \; \varepsilon_{t1}$ are the white noise error terms.

The direct effect of domestic financing:

The outcome of the coefficients $\omega_1$in Equation 3.41 andγ_1 in Equation 3.40 were used to determine the direct effects of domestic financing on inflation and CF. Also, the coefficients $\gamma_2$in Equation 3.40, and ω_2 in Equation 3.41 were used to determine the direction of the relationship between inflation and CF.

The indirect effect of domestic financing:

on inflation: $\frac{\partial CPI}{\partial DMFGDP} = \frac{\partial CPI}{\partial BM} * \frac{\partial BM}{\partial DMFGDP} = \omega_3 * \delta_1$

on CF: $\frac{\partial GFC}{\partial DMFGDP} = \frac{\partial GFC}{\partial CPI} * \frac{\partial CPI}{\partial BM} * \frac{\partial BM}{\partial DMFGDP} = \gamma_2 * \omega_3 * \delta_1$

For DF through external financing, Equations 3.43-3.45 were used.

$$lGFC_t = \propto_0 + \propto_1 XTFGDP_t + \propto_2 lCPI_t + \propto_3 lGFC_{t-1} + \propto_4 lRGDP_t + u_{t2} \quad (Equ.3.43)$$

$$lCPI_t = \rho_0 + \rho_1 XTFGDP_t + \rho_2 lGFC_t + \rho_3 lBM_t + \rho_4 lCPI_{t-1} + e_{t2} \quad (Equ.3.44)$$

$$lBM_t = \pi_0 + \pi_1 XTFGDP_t + \pi_2 lCPI_t + \pi_3 lGFC_t + \pi_4 lBM_{t-1} + \varepsilon_{t2} \quad (Equ.3.45)$$

where $XTFGDP$ denote external financing per GDP, and all other variables remain as previously defined.$\propto_0$,ρ_0, and$\pi_0$are constants, $\propto_1 \; to \; \propto_4$, $\rho_1 \; to \; \rho_4$, and $\pi_1 \; to \; \pi_4$are the parameters of the explanatory variables, l is the logarithm transformation, $u_{t2}, e_{t2} \; and \; \varepsilon_{t2}$ are the white noise error terms.

The direct effect of external financing:

The outcome of the coefficients ρ_1 in Equation 3.44 and $\propto_1$ in Equation 3.43 were used to determine the direct effects of external financing on inflation and CF. Also, the coefficients $\propto_2$ in Equation 3.43, and ρ_2 in Equation 3.44 were used to determine the direction of the relationship between inflation and CF.

The indirect effect of external financing:

on inflation: $\frac{\partial CPI}{\partial XTFDP} = \frac{\partial CPI}{\partial BM} * \frac{\partial BM}{\partial XTFGDP} = \rho_3 * \pi_1$

on CF: $\frac{\partial GFC}{\partial XTFGDP} = \frac{\partial GFC}{\partial CPI} * \frac{\partial CPI}{\partial BM} * \frac{\partial BM}{\partial XTFGDP} = \propto_2 * \rho_3 * \pi_1$

For DF through other funds sources, Equations 3.46-3.48 were used.

$$lGFC_t = \tau_0 + \tau_1 OSGDP_t + \tau_2 lCPI_t + \tau_3 lGFC_{t-1} + \tau_4 lRGDP_t + u_{t3} \quad (Equ. 3.46)$$

$$lCPI_t = \sigma_0 + \sigma_1 OSGDP_t + \sigma_2 lGFC_t + \sigma_3 lBM_t + \sigma_4 lCPI_{t-1} + e_t \quad (Equ. 3.47)$$

$$lBM_t = \vartheta_0 + \vartheta_1 OSGDP_t + \vartheta_2 lCPI_t + \vartheta_3 lGFC_t + \vartheta_4 lBM_{t-1} + \varepsilon_t \quad (Equ. 3.48)$$

where $OSGDP$ denote other sources of financingper GDP, and all other variables remain as previously defined. τ_0, σ_0, and ϑ_0 are constants, τ_1 to τ_4, σ_1 to σ_4, and ϑ_1 to ϑ_4 are the parameters of the explanatory variables, l is the logarithm transformation, u_{t3}, e_{t3} and ε_{t3} are the white noise error terms.

The direct effect of other sources of financing:

The outcome of the coefficients σ_1 in Equation 3.47 and τ_1 in Equation 3.46 were used to determine the direct effects of other funds financing on inflation and CF. Also, the coefficients τ_2 in Equation 3.46, and σ_2 in Equation 3.47 were used to determine the direction of the relationship between inflation and CF.

The indirect effect of other funds financing:

on inflation: $\frac{\partial CPI}{\partial OSGDP} = \frac{\partial CPI}{\partial BM} * \frac{\partial BM}{\partial OSGDP} = \sigma_3 * \vartheta_1$

on CF: $\frac{\partial GFC}{\partial OSGDP} = \frac{\partial GFC}{\partial CPI} * \frac{\partial CPI}{\partial BM} * \frac{\partial BM}{\partial OSGDP} = \tau_2 * \sigma_3 * \vartheta_1$

3.3.1.2 Unit Root Test

The hypothesis underlyingthe Autoregressive Moving Average (ARMA) estimation is founded on theassumption of stationary time series. A series is assumed (weakly or covariance) *stationary* if the mean and auto-covariances of the series is not a function of time. Any series that is not stationary is said to be *nonstationary*.A common example of a non-stationary series is the *random walk*:

$$y_t = y_{t-1} + \epsilon_t \qquad (Equ. 3.28)$$

where ϵ is a stationary random disturbance term. The series$y$ has a constant forecastvalue, conditional on *t*, and the variance is increasing over time. The random walk is a differencestationary series since the first difference is stationary:

$$y_t = y_{t-1} = (1 - L)y_t = \epsilon_t \qquad (Equ. 3.29)$$

When a series is found to be difference stationary, it denotes"*integration of order 1"*; and hence, signified as I(*d*), having*d* to represent order of integration. The order of stationarityrepresents the number of differencing operations required before the series attains stationarity. For therandom walk in Equation 3.28,a one-unit root can be identified. Thus, it is an I(1) series.

Essentially, it should be noted that the standard inferential process does not apply to regressions with an integrated regressandor regressor variables. Thus, as a pre-condition, confirming a series' stationarity status is important before itsuse in regression. The formal approach used in ascertaining the stationarityof a series is by conducting a unit root test.

For this study, both the Augmented Dickey-Fuller (1979) and Phillips-Perron (1988) tests were used for investigating the series (or the levelor first difference of the series) for the presence of a unit root.

3.3.1.3 Correlation Test

One major objective of regression analysis is to isolate the nexus between each regressor variable and the response variable. This is because the regression parameter analysis signifies the mean change in the response variable for every unit change in a regressor variable; when all the other regressor variables are held constant (Gujarati 2004). This later portion is important in understanding the effect of multi-collinearity. The reasoning is that one can alter the value of one regressor variable and not the others. However, when regressor variables are correlated, it shows that changes in one variable are linked to shifts in another variable. While the stronger the level of correlation, the more tedious it becomes to change a variable without altering another. Hence, it becomes difficult for a model to estimate the nexus existing between each regressor variable and the response variable, uniquely or independently, due to the fact that the regressor variables have the tendency to vary together at the same time.

To diagnose for multi-collinearity between the regressor variables in our model, correlation analysis will be conducted. If a high level of correlation is found between the regressor variables, it can result in biasing the inferences reached from estimating such an equation. Hence, a Variance Inflation Factor (VIF) test will be conducted. The VIF measures the extent to which the variance of a regressor's parameter is "inflated" due to linear dependence with other regressor variables. It simply involves conducting a linear regression of the high correlating regressor variable on the other regressor variables.There are two types of VIF, which are the centred VIF and the uncentered VIF. First, the centredVIF constitute the ratio of the variance of the estimated coefficient from the initial equation, and deflated by the variance derived from the estimated coefficient from an equation with only that independent variable and an intercept term. The uncentered VIF, on the other hand isthe ratio of the variance of the estimated coefficient from the initial equation and divided by the variance derived from the estimated coefficient of an equation having just one independent variable (and no intercept term).

3.3.1.4 IV Diagnostics Tests

This study conducted two major diagnostic tests on the instruments, which are:

- The *regressor endogeneity test*, or the Durbin-Wu-Hausman test, is deployed for determiningsome or all of the equation regressors' endogeneity. Conducting an endogeneity test helps to reveal if a subset of the endogenous variable is truly exogenous. The involved procedure requires a secondary estimation in which the test variables are assumed exogenous as against being endogenous. This is followed by comparing Hansen'sJ-stat. derived from the secondary estimation with the original estimation.

- The *Weak Instrument Diagnostics*test offers essential information about the strength of the instrumentsused during estimation. This information includes the Cragg-Donald statistic, the associated Stock and Yogo critical values, and Moment Selection Criteria (MSC). The Cragg-Donald statistic and its critical values are usually reportedfor equations estimated by TSLS and GMM. At the same time, the MSC are usually reported for equations estimated by TSLS or GMM only. The Cragg-Donald statistic, as postulated by Stock and Yogo,can beused to ascertain the strength of instruments in IV regressions. Hence, having marginally valid instruments, are tagged"weak instruments". Such instruments are bound to yield bias inferences in an IV estimate. Therefore, examining the strength of instruments in IV techniques should be considered essential.

3.3.1.5 Residual Test

The process of empirical research is known to be highly interactive, starting with a functional and mathematical specification of the nexus to be estimated. In formulating the desired equation, there are important factors to consider: the choice of variables that correctly captures the relationship of interest, the linking functional form of these variables,and the nature of the series to be used.

It is important to note that there is bound to be uncertainty with regards to the suitability of this initial specification. Consequently, there is the need to evaluate the strength of ourspecification along defined tests. Noteworthy, the output from these tests are likely to impact the chosen specification, necessitating a repetition of the process. Hence, three types of residual test were adopted for this study. They include the Breusch-Godfrey Lagrange multiplier test for general, high-order, Auto-Regressive

Moving Average (ARMA) errors or serial correlation. The Jarque-Bera residual normality test and the residual Breusch-Pagan-Godfery heteroskedasticity test.

For acceptance that the study model residuals are stable, the null hypothesis of normality, absence of serial correlation, and homoscedastic nature of residuals must be accepted. Otherwise, if the individual statistical values of these test are significant at the 5 percent level, then the alternative hypothesis can be said to be true. In a situation where the null hypothesis of the normality of the residual is rejected, the outcome does not invalidate the 2SLS or GMM output, as it rarely signifies bias or inefficient regression result. Since the normality distribution premise in multiple regression only applies to the stochastic term and not to the regressors in the equation. However, the presence of heteroskedasticity in the 2SLS model at any significance level will further make the GMM estimator more efficient. This is because the GMM estimator has the advantage of being consistent in the face of arbitrary heteroskedasticity (Baum et al., 2003).

3.3.2 Model Justification

The major problems associated with the use of OLS in studies such as Oyejide, 1972; Onwioduokit, 1999; Paiko, 2012; and Ezabasili and Nwakoby, 2013; includes the nonlinearity in most economic relationships and the possibility of high correlation between a subset of the explanatory variables, discriminatory results for simultaneous equations and the problem of endogeneity; made the use of OLS not reliable. Thus, study such as Advinevad (2015) used the IV approach in order to escape endogenous effect.

However, in order to capture the dynamic structure of the relationship between DF, inflation and CF, this study adopted the use of Instrumental Variables (IV). This is because of the endogenous nature of the inflation and money supply variable (Ishaq and Moshin, 2015). Since there are lists of variables that influences their behaviour, which includes the real money balance, external balance on goods and services, real interest rate, etc. The choice of the 2SLS/GMM econometric approach is appropriate based on the suitability of the method in dealing with cases of one or two endogenous variables in a model (Adinevad, 2015). The value addition of this study to Adinevad (2015) is the inclusion of CF to the deficit-inflation nexus. Furthermore, the IV

approach is very efficient in measuring channel effects. Thus, to properly investigate the channel through which DF impact inflation and CF in Nigeria, the use of instrumental Variables is adequate.

3.3.3Sources of Data and Variable Description

CPIis the consumer price index computed using annual data to measure the effect of inflation. The CPI is a measure of the change in the prices of a "basket" of goods consumed by a typical household. The CPI gauges the weighted average of prices of a basket of consumer goods and services, including transportation, food and medical care, etc. Any change in the CPI can be applied in examining price changes associated with the cost of living (WDI, 2019). It is one of the most frequently used statistics in the literature for identifying periods of inflation or deflation. Data on CPI was sourced for the period 1970 to 2017 from the World Bank WDI.

BM,which represents broad money, constitute the amount of money outside bank tills; demand deposits from other economic agents aside the Federal government, as well as the time, savings, and foreign currency deposits of residents which also do not belong to the Federal government; bank and traveller's checks; plus, securities such as certificates of deposit and commercial paper (WDI 2019).Data on BM was sourced for the period 1970 to 2017 from the World Bank WDI.

GFC is used to measure the expenditure in addition to fixed capital assets (such as plants, machinery, equipment and buildings) as well as the purchase of new fixed capital assets, plus the net change in inventories (such as work in progress, which are partially completed goods that remain in production) by the Federal government, business sector and households. Data on GFC was sourced for the period 1970 to 2017 from the IMF investment and capital stock dataset.

DEFGDP is aggregate DF per GDP. It is used to gauge the impact of aggregate DF on the Nigerian economy's size and how such an impact affects inflation and CF. It is the difference between total government revenue and total Federal Government outlay. Aggregate DF was adopted for this study's main analysis since it encompasses the three main sources of DF, which are domestic, foreign and other funds sources financing. However, the disaggregated effects from the three financing sources were

used for robustness check. Data on DEFGDP was sourced for the period 1970 to 2017 from the CBN Statistical Bulletin.

DMFGDP is domestic financing as a share of GDP. Domestic financing constitutes one of the three sources of DF in Nigeria. In this study, it is used to robustly check the direct and indirect effects of DF on inflation and CF.Data on DMFGDP was sourced for the period 1970 to 2017 from the CBN Statistical Bulletin.

XTFGDPis external financing as a share of GDP. External financing is another major source of DF in Nigeria. XTFGDP is used to robustly check the direct and indirect effects of DF on inflation and CF.Data on XTFGDP was sourced for the period 1970 to 2017 from the CBN Statistical Bulletin.

OSGDP is other sources of financing as a share of GDP. Other funds sources (i.e., public, special and trust funds, treasury clearance funds, excess reserves, etc.) complete the DF sources in Nigeria. Its inclusion in this study is to robustly check the direct and indirect effects of DF on inflation and CF.Data on OSGDP was sourced for the period 1970 to 2017 from the CBN Statistical Bulletin.

BGSGDP denotes the external balance on goods and services as a share of GDP. It is derived by deducting goods and services from total exports of goods and services (WDI, 2019). It is used in the study as an instrument of the broad money supply.Data on BGSGDP was sourced for the period 1970 to 2017 from the World Bank WDI.

EXCH represents the Naira (₦) official selling rate to the U.S dollar ($). Its justification in this study is to serve as an instrument for inflation. Since it can show the depreciating effect of the naira on the general price level in the country. The assumption is anchored on the intuition thata rise in the cost of imported inputs and finished goods, stemming from a depreciated Naira, will result in a rise in local prices (a proposition arising from the cost-push inflation theory).Furthermore, such an inflationary effect is likely to impact CF.Data on EXCH was sourced for the period 1970 to 2017 from the World Bank WDI.

Table 3.1: Variable List and Definitions

Endogenous Variable	**Definition**	**Source**
CPI	Consumer Price Index	World Development Indicator
BM	Broad Money Supply	World Development Indicator
GFC	Gross Fixed Capital Formation	International Monetary Fund Investment and Capital Stock Dataset
Regressors/Instruments	**Definition**	**Source**
DEFGDP	Deficit Financing as a share of GDP	Central Bank of Nigeria Statistical Bulletin
DMFGDP	Domestic financing as a share of GDP	Central Bank of Nigeria Statistical Bulletin
XTFGDP	External financing as a share of GDP	Central Bank of Nigeria Statistical Bulletin
OSGDP	Other fund sources as a share of GDP	Central Bank of Nigeria Statistical Bulletin
RGDP	Real Gross Domestic Product	World Development Indicator
BGSGDP	Balance on Goods and Services per GDP	World Development Indicator
BSY	Banking System	Central Bank of Nigeria Statistical Bulletin
EXCH	Nominal Exchange Rate	World Development Indicator
M1	Nominal Money Supply	Central Bank of Nigeria Statistical Bulletin
RMB	Real Money Balance	Central Bank of Nigeria Statistical Bulletin
DCRGDP	Domestic credit provided to the private sector per GDP	World Development Indicator
CRES	Central Bank of Nigeria Reserve	Central Bank of Nigeria Statistical Bulletin
RINT	Real Interest Rate	World Development Indicator
GXGDP	Federal Government Gross Expenditure per GDP	Central Bank of Nigeria Statistical Bulletin
CRR	Cash Reserve Ratio	Central Bank of Nigeria Statistical Bulletin
FGRGDP	Federal Government Revenue per GDP	Central Bank of Nigeria Statistical Bulletin
PUMPR	Pump Price of Petroleum	http://nigeria.opendataforafrica.org accessed on 8/08/2018

Source: Author's Computation.

M1 is the narrow definition of money, including currency notes and coins in circulation and checking account deposits. These assets explicitly serve as money due to their high level of liquidity or ability to make direct use of them as a medium of exchange (Mishkin, 2004). Hence, it is also used as an instrument in this study.Data on M1 was sourced for the period 1970 to 2017 from the CBN Statistical Bulletin.

RGDP is the real gross domestic product used to measure the total economic output of goods and services in the country, with adjustment for price changes (i.e., net of inflation). Thus, the RGDP can be taken as a more consistent measure of economic growth. It is used as a control variable in the CF equation in this study's model.Data on RGDP was sourced for the period 1970 to 2017 from the World Bank WDI.

RMB denotes the real money stock balance.RMB is defined as the nominal amount of money balance deflated by a price index (Friedman 1971). It is employed in this study to determine the real purchasing power of money supplied in the economy. The justification for its inclusion in this study is to serve as an instrument for broad money supply.Data on RMB was sourced for the period 1970 to 2017 from the CBN Statistical Bulletin.

DCRGDP represents domestic credit to the private sector per GDP. DCRPGDP refers to purchases of non-equity securities, loans, trade credits and other accounts receivable that demonstrate a claim for refundby other deposit-accepting institutions aside the central bank (WDI 2019). To gauge the contribution of such facilities in the economy, their aggregate size is being measured by their percentage in the GDP. It is also used as an instrument of inflation and broad money supply in this study.Data on DCRGDP was sourced for the period 1970 to 2017 from the World Bank WDI.

BSY denotes the banking system lending to the Federal Government. It is used to show the funding of the Federal Government budget deficit through the banking system, which comprises the CBN and the deposit money banks (DMBs) in Nigeria. The inclusion of this variable in this study is to serve as an instrument of inflation. Since such Federal Government borrowing from our theoretical model is expected to

be correlated with inflation. Data on BSY was sourced for the period 1970 to 2017 from the CBN Statistical Bulletin.

RINT is the real or nominal interest rate adjusted for the difference in inflation. RINT is to reflect the real cost of funds borrowed by the Federal Government to finance the deficit in the budget and the cost of borrowing to invest in new capital stock. It is used as an instrument of inflation and broad money supply in this study.Data on RINT was sourced for the period 1970 to 2017 from the World Bank WDI.

GXGDP is the aggregation of Federal Government outlay, take a share of GDP. This comprises both Federal Government capital and recurrent expenditure in a fiscal year. Its inclusion in this study serves as an instrument of the broad money supply.Data on GXGDP was sourced for the period 1970 to 2017 from the CBN Statistical Bulletin.

CRES is Central Bank reserve. It is the amount of money in the Central Bank's vaults. That is, it constitutes the amount of currency deposit not lent out to the Central Bank's customers. Such currencies are usually kept to cater for emergency situations within the operational mandate of the bank. CRES is used to instrument for broad money supply in this study. Data on CRES was sourced for the period 1970 to 2017 from the CBN Statistical Bulletin.

CRR denotes cash reserve requirement. It is the stipulated minimum amount of bank customers' total deposits, which the deposit money banks are required to hold as reserves in cash with the central bank. The central bank is responsible for setting the rate in line with its prevailing monetary policy. It is used as an instrument for broad money supply in this study.Data on CRR was sourced for the period 1970 to 2017 from the CBN Statistical Bulletin.

PUMPRis the pump price of petroleum. It is used as an instrument in this study since an increase in the pump price of petrol has the tendency to push up prices. This is because economic activities in the country are being affected whenever there is a change in fuel price, making it a likely inflationary causeData on PUMPR was sourced for the period 1970 to 2017 from open data for Africa.

FGRGDP is Federal Government retained revenue as a share of GDP. The exclusive revenue accrues to the Federal Government from the total federally collected revenue, which is composed of total oil and non-oil revenues. Its justification in this study is to serve as an instrument for both inflation and broad money supply.Data on FGRGDP was sourced for the period 1970 to 2017 from the CBN Statistical Bulletin.

CHAPTER FOUR
RESULT AND DISCUSSION

4.1 Preamble

In this chapter, we present both the 2SLS and GMM results for discussion. At the same time, the most robust result is being chosen for analyses. Also,the necessary preliminary test, which are the unit root tests and the correlation test, were presented.

4.2 Presentation of the ADF and PP Unit Root Test Results

The size of the sample period (i.e. 48 years) gives rise to the possibility of having non-stationary variables for estimation. Furthermore, if the dependent variable happens to be non-stationary, then the GMM estimation procedure will be inappropriate. Another challenge will also be making the right choice of unit root test to adopt.In light of this, Enders (1995) proposed that a conventional approach should be the adoption of both the Augmented Dickey-Fuller (ADF) test and the Phillips–Perron (PP) test. If they reinforce each other, then we can have confidence in the results. Therefore, to test for stationarity in our series, we conduct the two widely used methods of unit root tests—the ADF and the PP test.

The unit root tests were performed at level with the symbol ‘a’ used to denote stationarity in the level form. Further probe for stationarity was conducted for un-stationary series in the level form,at the first difference level. The symbol ‘b’ is used to denote stationarity in the first difference form. In addition, three criteria were adopted to adjudge for stationarity at the level and first difference form. They are: stationary with a constant, stationaryconstant and trend term, and stationary without a constant and trend term.A summary of the ADF and PP unit root test results are presentedin Table 4.1. The 5 percent significance level is strictly adopted to adjudge the stationarity of a variable both at the level and first difference form.

Table 4.1:Stationarity Test on Study Variables

Variable	ADF Test			PP Test		
	With Constant	With Constant& Trend	Without Constant& Trend	With Constant	With Constant & Trend	Without Constant& Trend
$lGFC$	-6.6018 ***0.0000**[b]***	-6.5236 ***0.0000**[b]***	-6.6746 ***0.0000**[b]***	-8.1177 ***0.0000**[b]***	-8.0654 ***0.0000**[b]***	-8.3085 ***0.0000**[b]***
$DEFGDP$	-5.6146 ***0.0000**[a]***	-5.5650 ***0.0002**[a]***	-4.2937 ***0.0001**[a]***	-5.7309 ***0.0000**[a]***	-5.6861 ***0.0002**[a]***	-4.5076 ***0.0000**[a]***
$lCPI$	-3.4012 ***0.0160**[b]***	-4.1959 ***0.0095**[b]***	-1.9026 ***0.0552***	-3.2375 ***0.0265**[b]***	-3.2202 ***0.0932***	-1.7299 ***0.0792***
lBM	-4.1610 ***0.0020**[b]***	-4.2455 ***0.0083**[b]***	-1.9103 ***0.0543***	-4.1144 ***0.0023**[b]***	-4.1537 ***0.0104**[b]***	-1.7362 ***0.0782***
$lRGDP$	-5.1094 ***0.0001**[b]***	-5.3808 ***0.0003**[b]***	-4.3490 ***0.0001**[b]***	-5.2660 ***0.0001**[b]***	-5.4345 ***0.0003**[b]***	-4.5282 ***0.000**[b]***

Note: figures in bold italics are probability values,** denotes 5% significance level, a and b denotes level and first difference, respectively.
Source: Author's Estimated Result.

In Table 4.1, the ADF test result shows that apart from DF as a share of GDP being a level stationary variable at 5 percent significance level, all other variables such as gross fixed CF, consumer price index, broad money supply, and real GDP attain stationarity at the first difference and at 5 percent significance level. The PP test further confirms the ADF output, showing only DF per GDP as the sole variable to attain stationarity in the level form and at a 5 percent significance level. At the same time, all other variables were revealed to be stationarity only at the first difference and at a 5 percent significant level. Thus, based on the unit root test result, we conclude that there is the presence of level (i.e. I(0)) and first difference (i.e., I(1)) series in the study model.

Conventionally, a cointegration test would have been required in this study, suppose the study objective had been to establish stable, long-term effect of DF on inflation and CF. This would have also aided the analysis if we are interested in the short-term dynamic movement towards long-term equilibrium by adopting an error correction model. However, since this study's objective is focused on establishing the direct and indirect link through which DF affects inflation and CF, as well as determining the direction of the relationship between inflation and CF in Nigeria, a cointegration test is not necessary. Hence, its absence in this study. Besides, one of the criteria for conducting a cointegration test requires all variables to be of the same order of stationarity (Wooldridge 2009). This condition is violated in this study, as shown in the unit root test result in Table 4.1. Since there is evidence of both level and first difference variables in the model.

4.3 Correlation Analysis

Table 4.2 shows the correlation matrix for all variables in the study model. The perfect collinearity of each variable to itself, as reflected on the matrix's diagonal axis is in line with the theoretical expectation of each variable having a perfect correlation with itself. However, a weak correlation is revealed between gross fixed CF and all the other variables used in the study model. Specifically, a weak negative correlation

exists between gross fixed CF, DF as a share of GDPand consumer price index.At the same time, a weak positive correlation is, however, revealed to exist between gross fixed CF, broad money supply, and real GDP. Both correlation results are indicative of the reduced severity of the problem of multi-collinearity between gross fixed CFand all the variables in the study model.Similarly, DF as a share of GDP is shown to have a weak negative correlation with the consumer price index, broad money supply, and real GDP. Also suggesting the less severity of multi-collinearitybetween these variables.

Table 4.2: Correlation Matrix of Variables

	lGFC	*DEFGDP*	*lCPI*	*lBM*	*lRGDP*
lGFC	1				
DEFGDP	-0.12445	1			
lCPI	-0.07631	-0.01777	1		
lBM	0.01277	-0.01999	0.98895	1	
lRGDP	0.243796	-0.16156	0.863424	0.911283	1

Source: Author's Estimated Result.

On the other hand, the consumer price index, which proxy for inflation in our model, is revealed to positively and highly correlate with the broad money supply and real GDP variables. Thus, indicating the possibility of the problem of multi-collinearity between these variables. Similarly, the broad money supply variable is also revealed to be positively and highly correlated with the real GDP variable. Also suggesting the possibility of a collinearity problem between these variables. To check for the severity of collinearity between these variables, the variance inflation factor analysis is conducted.

4.4 Variance Inflation Factor (VIF) Analysis

TheVIF is a techniqueforevaluating the extent of collinearitybetween the regressor variables in an equation. It reveals the magnitude to which the variance of a coefficientestimate of an explanatory variable has been made biggeras a result of collinearity with the other regressor variables (Gujarati 2004). The VIF is measured by deflating the variance of a coefficient estimate by the variance ofthat coefficient had other regressor variables not been captured in the equation.

Table 4.3 reveals that theVIF coefficient variance of consumer price index to broad money supply and real GDP is very low. Hence, to judge the severity of multicollinearity between the regressor variables, the centred VIF is used due to the presence of a constant term in the initiallyestimated equation.Furthermore, this study adopts the VIF rule of thumb, which states that the larger the VIF value, specifically if it exceeds 10, then the more serious the problem of collinearity in the variables (Gujarati 2004).

Table 4.3: Variance Inflation Factor Output

	Correlating Regressor: *lCPI*			Correlating Regressor: *lBM*		
	Coefficient Variance	Uncentered VIF	Centred VIF	Coefficient Variance	Uncentered VIF	Centred VIF
C	38.04275	19704.20	NA	155.6152	4256.345	NA
lBM	0.001148	408.8180	5.897479	-	-	-
lRGDP	0.050618	25101.71	5.897479	0.162532	4256.345	1.000000

Source: Author's Estimated Result.

From Table 4.3, the consumer price index centred VIF values of approximately 5.9 for broad money supply and real GDP is revealed to be less than the VIF rule of thumb value of 10. We can thus conclude that the problem of multi-collinearity is less between the regressor variables. Similarly, the VIF coefficient variance of the broad money supply to real GDP is revealed to be lower. Therefore, the broad money supply's centred VIF value to real GDP of 1 also falls below the rule of thumb value of 10. This indicates that the problem of collinearity is much more minor between the regressor variables.

Generally, we can conclude that the problem of collinearity or multi-collinearity is inconsequential between the study variables. Hence, inferences reached in this study can be relied upon and used for policy formulation.

4.5Instrumental Variable Analysis

To achieve our study objectives and control for endogeneity issues in the study model, two different instrumental variable techniques were explored for analyses. They are thetwo stages least square (2SLS) and the generalized method of moment (GMM). The outputs from the two techniques are presented in Table 4.4. Outputsfrom the 2SLS and GMM estimates for Equations 3.37, 3.38, and 3.39 are contained in the first, second, and third panel of Table 4.4. It should be noted that the statistical significance level generally adopted in this study is strictly at the 5 percent level.

Observing the general output of Table 4.4, the GMM estimates appear to be more robust thanthe 2SLS estimates. A plausible cause could be that, despite the suitability of the 2SLS approach in handling endogeneity issues, the inclusion of the lagged endogenous variables as regressor variables makes the GMM yield better estimates compared to the 2SLS approach. This is because the endogenous variables are transformed into predetermined variables and are no longer correlatedwith the stochastic term (Ishaq and Mohsin, 2015).Furthermore, the nature of the variables used as instruments is crucial in determining one IV technique's superiority to another (Arellano and Bond, 1991). For instance, the use of level variables, less strictly exogenous variables, and the inclusion of the lagged endogenous variables as instruments, makes the GMM approach also yield better estimates when compared to

the 2SLS approach (Arellano and Bond, 1991). Therefore, the GMM outputs are considered over the 2SLS output.

For Equation 3.37, its estimates are as contained in the first panel of Table 4.4. Its estimate revealed that a percentage increase in DF would result in an approximately 0.02 percentage increase in CF. However, this effect is insignificant despite forming a crucial part of this study's third objective.The CPI (inflation) coefficient revealed an inverse but significant effect on CF. The result showed that a percentage increase in the rate of inflation significantly generatedan approximately0.2 percentage decline in CF. The coefficient of this nexus forms a part requirement in computing the indirect effect of DF onCF as well as a part determinant in the inflation-CF nexus. Also, thelagged CF coefficient, used as a control variable,is significant and negative. Judging from the value, a percentage rise in the previous level of CF will result in the current level of CF declining significantly by approximately 0.48 percent. Real GDP, which also serves as a control variable, is revealed to significantly affectCF. The coefficient suggests that a percentage increase in Real GDP will significantly yield approximatelya 1.1 percentage increase in CF.

Table 4.4 Estimated IV Regression Output using DEFGDP

Regressor	2SLS Output	GMM Output
Equation 3.37		
Constant	-29.3223 (-3.2168)**	-33.5573 (-4.9169)**
$DEFGDP$	0.0101 (0.4873)	0.01897 (1.3147)
$lCPI$	-0.1829 (-3.0940)**	-0.1992 (-4.8840)**
$lGFC_{t-1}$	-0.5126 (4.2846)**	-0.4825 (5.8125)**
$lRGDP$	0.9980 (3.2976)**	1.1379 (5.0166)**
Equation 3.38		
Constant	-1.0986 (-0.9930)	-1.6324 (-2.4602)**
$DEFGDP$	0.0061 (1.0116)	0.0088 (1.7921)
$lGFC$	-0.0625 (-1.6627)	-0.0241 (-1.3461)
lBM	0.0590 (1.2254)	0.0755 (2.6195)**
$lCPI_{t-1}$	0.9198 (15.4547)**	0.8976 (24.4295)**
Equation 3.39		
Constant	2.0850 (1.6785)	3.7263 (1.3073)
$DEFGDP$	-0.0093 (-1.3277)	0.1367 (2.6064)**
$lCPI$	0.0957 (1.3751)	0.3079 (1.8268)
$lGFC$	0.0401 (0.8818)	0.1503 (1.7747)
lBM_{t-1}	0.9179 (16.5395)**	0.8098 (6.3286)**

Note: ** denote 5% significance level, while figures in parenthesis are t-Statistic

Source: Author's Estimated Result.

For Equation 3.38, its estimates are as contained in the second panel of Table 4.4. The result showed that a percentage rise in DF would generate an insignificant 0.01 percentage increase in inflation. Similarly, a percentage rise in CF will generate an insignificant 0.02 percentage decline in the inflation rate. These two results constitute an important part in determining the deficit-inflation and inflation-CF nexus, which are this study's first and second objectives respectively. Likewise, the effect of broad money supply on inflation is also crucial. This is because this effect's coefficient forms a part requirement in computing the two indirect effects in this study. From the estimated GMM result, the broad money supply variable has a substantial and positive influence on the rate of inflation. The result indicates that a percentage growth in broad money supply will generate approximately a 0.1 percentage growth in the inflation rate. Furthermore, the lagged rate of inflation coefficient used as a control variable shows a substantial upward effect on inflation's current level. The result shows that a percentage rise in the previous level of inflation will yield approximately a 0.9 percentage increase in the current level of inflation.

Estimates for Equation 3.39 are captured in the third panel of Table 4.4. From the table, DF has a substantial increasing effect on the broad money supply. The coefficient suggests that a percentage increase in DF will significantly generate approximately a 0.1 percentage increase in the broad money supply. This effect's coefficient is also important since it forms a part requirement in computing the two indirect effects in this study. Similarly, a unit increase in the inflation rate is revealed to generate a significant increase of 0.2 percent in the broad money supply. However, CF is revealed to have an insignificant inverse effect on the broad money supply. Its coefficient indicates that a percentage rise in CF will yield an insignificant 0.10 percentage decline in the broad money supply. Assessing the coefficient of the lagged broad money supply variable used as a control variable shows a substantial decreasing effect on the broad money supply. Its coefficient reveals that a percentage increase in the previous level of broad money supply will yield a 0.86 percentage decline in the current level of the broad money supply.

4.6IV Diagnostic and Residual Tests

4.6.1 IV Diagnostic Tests

The endogeneity tests, as contained in Table 4.5, confirm the inflation and broad money supply variables' endogenous nature. Recall that the endogenous variable in Equation 3.37 is the consumer price index, Equation 3.38 is the broad money supply, and Equation 3.39 is the consumer price index. Furthermore, in determining the significance of the variables' endogenous nature, the difference in Hansen's J-stat. is used. At the same time, statistical significance is exclusively confirmed at the 5 percent level. The GMM technique significantly supports the study model's assertion of the endogenous nature of the broad money supply and inflation variables from the diagnostic output. Since the J-stat. of the endogenous variables, which are 3.91 for Equation 3.37, 5.80 for Equation 3.38, and 4.65 for Equation 3.39, are significant at the 5 percent level. The 2SLS endogenous outputs, on the other hand, are revealed not to be statistically significant at the 5 percent level.

Furthermore, for the purpose of providing diagnostic information on the strength of the instruments used in the estimation of our model, the weak instrument diagnostic test is conducted for each equation, and its output is as contained in Table 4.6. To determine the strength of the instruments used in each equation, a comparison of the Cragg-Donald F-stat. to the Stock-Yogo critical values forrelative bias and size, is conducted. If the Cragg-Donald F statistic value exceeds the Stock-Yogo relative bias and size's critical values, the instruments can be adjudged strong. However, if the reverse is true, then the instruments are adjudged weak.

Table 4.5 Endogeneity test

2SLS Endogeneity Test			**GMM Endogeneity Test**	
Equation	Diff in J-stats	Probability	Diff in J-stats	Probability
3.37 (CPI)	3.0750	0.0795	3.9059	0.0481**
3.38 (BM)	0.1960	0.6579	5.7988	0.0160**
3.39 (CPI)	3.0474	0.0809	4.0174	0.0450**

Note: where endogenous variables are in parenthesis, and ** denote 5% significance level.

Source: Author's Estimated Result.

Output on Table 4.6 reveals that both the 2SLS and the GMM estimates happen to have the same Cragg-Donald F-stat. values and Stock-Yogo critical values for relative bias and size for the equations in the study model. The test result affirms that the Cragg-DonaldF-stat. for each equation exceeds their corresponding Stock-Yogo critical values for relative bias and size at the 5 percent significance level. That is, the Cragg-Donald F-stat. values of 639.42 for Equation 3.37, 63.46 for Equation 3.38, and 47.26 for Equation 3.39; exceed their corresponding Stock-Yogo critical values for relative bias of 20.25, 20.90, and 19.86, respectively; as well as their corresponding Stock-Yogo critical values for size which are 33.84, 40.90, and 31.50 respectively. Thus, confirming that instruments used in correcting for the effect of endogeneity in the inflation and broad money supply variables in this study model are robust. Thus, validating the reliability of the inferences reached in this study.

Table 4.6: Weak Instrument Diagnostic Test

Cragg-Donald F-stat: EQ.3.37= 639.4219, EQ.3.38= 63.4636, EQ.3.39=47.2636				
	2SLS Instrument Test		GMM Instruments Test	
Equation	Stock-Yogo critical values (relative bias)	Stock-Yogo critical values (size)	Stock-Yogo critical values (relative bias)	Stock-Yogo critical values (size)
3.37	20.25**	33.84**	20.25**	33.84**
3.38	20.90**	40.90**	20.90**	40.90**
3.39	19.86**	31.50**	19.86**	31.50**

Note:** denote 5% significance level.
Source: Author's Estimated Result.

4.6.2 Residual Test

Table 4.7 shows the result of the three residual tests conducted, namely, the Jarque-Bera normality test, Breusch-Godfrey higher-order serial correlation test, and the Breusch-Pagan-Godfrey heteroscedasticity test. However, the residual test for higher-order serial correlation and heteroscedasticity test on the estimated GMM residuals are not applicable. Reason being that the GMM estimator is superior to the 2SLS estimate.Since it automatically adjusts for the potential presence of heteroskedasticity and autocorrelation that may be present in the error structure through the adoption of a consistent estimator (Checherita and Rother, 2010).

The normality test results on the residuals of Equation 3.37, 3.38, and 3.39 for both the 2SLS and GMM estimates, are revealed to be insignificant at the 5 percent level. Hence, indicating the validation of the null hypothesis that the residuals are normally distributed. Similarly, the higher-order serial correlation test on the residuals of the three equations also support the validation of the null hypothesis of no serial correlation in the model residuals up to lag 8. This conclusion is based on the insignificant value of the observed R-squared value for the Breusch-Godfrey serial correlation test at the 5 percent significance level. Furthermore, the Breusch-Pagan-Godfrey heteroskedasticity test on the three study model equations shows that the null hypothesis is that the study 2SLS model residuals are homoscedastic. This conclusion is also base on the insignificant value of the observed R-squared for the heteroscedasticity test, only at the 5 percent significance level.

Table 4.7: Residual Diagnostic and GMM Sargan-Hansen Test

Test	Equation 3.37	Equation 3.38	Equation 3.39
Normality: Jarque-Bera values	2SLS= 5.2613 GMM= 4.3044	2SLS= 4.5440 GMM= 3.6633	2SLS= 2.9178 GMM= 2.3044
Serial Correlation: Obs. R-squared	2SLS= 13.8114 GMM= NA	2SLS=12.7750 GMM=NA	2SLS= 9.0212 GMM= NA
Heteroskedasticity: Obs. R-squared	2SLS= 7.9396 GMM= NA	2SLS= 5.8272 GMM= NA	2SLS= 8.6471 GMM= NA
2SLS S-H Tests			
Prob. Values	0.925148	0.019362	0.031075
GMM S-H Tests			
Prob. Values	0.679425	0.466585	0.474110

Note: NA denotes not applicable; S-H Tests is Sargan-Hansen Test.
Source: Author's Estimated Result.

Lastly, the Sargan-Hansen (S-H) test, also known as the over-identifying restriction or J-test, was conducted. The null of the test states that the instruments as a group or additional instruments are exogenous. For the applicability of the test, it is fundamental to have more instruments than exogenous independent variables. In this study, the test was conducted on both the 2SLS and the GMM model. There are three pre-conditions for accepting the S-H test null hypothesis. These three conditions are: S-H test probability value must be >5% (0.05), >10% (0.1), and must be >0.25 (25%). From the result as contained in Table 4.7, we can conclude that the S-H test's null is valid; hence, the instruments as a group are exogenous.

4.7 Robustness Check Using Deficit FinancingComponents

Outputsfrom the 2SLS and GMM estimates for Equations 3.40, 3.41, and 3.42 are contained in the first, second, and third panel of Table 4.8, respectively.Observing the general output of Table 4.8, the GMM estimates still appear to be more robust than the 2SLS estimates.

4.7.1 Using domestic financing

Objective 1

Table 4.8 shows that a percentage rise in domestic financing will lead to a direct 0.003 percentage decline in inflation. However, the result is insignificant, thus, conforming with the aggregate DF's direct effect on inflation.

Domestic financing indirect effect on inflation: $\frac{\partial CPI}{\partial DBTGDP} = \frac{\partial CPI}{\partial BM} * \frac{\partial BM}{\partial DMFGDP} = \beta_3 * \varphi_1$

Where the product of the identified significant values of $\frac{\partial CPI}{\partial BM}$ which is β_3= 0.2, and $\frac{\partial BM}{\partial DMFGDP}$ which is φ_1 = 0.03; and their product yields $\beta_3 * \varphi_1$ = 0.01.

Table 4.8 Estimated IV Regression Output using DMFGDP

Regressor	2SLS Output	GMM Output
Equation 3.40		
Constant	-26.5012 (-2.6891)**	-32.2021 (-5.4110)**
$DMFGDP$	-0.0069 (-0.4188)	-0.0039 (-0.3684)
$lCPI$	-0.1731 (-2.8993)**	-0.2037 (-6.0711)**
$lGFC_{t-1}$	0.5171 (4.3121)**	0.4453 (5.7976)**
$lRGDP$	0.9095 (2.8072)**	1.0999 (5.5869)**
Equation 3.41		
Constant	-1.6725 (-1.6205)	-4.0895 (-4.1087)**
$DMFGDP$	0.0120 (2.6920)**	0.0030 (0.8136)
$lGFC$	-0.0475 (-1.3367)	-0.0719 (-2.9666)**
lBM	0.0752 (1.6912)	0.1811 (4.2289)**
$lCPI_{t-1}$	0.9083 (16.5521)**	0.7664 (13.9967)**
Equation 3.42		
Constant	2.6031 (2.0231)**	-0.3301 (-0.3446)
$DMFGDP$	-0.0011 (-0.1873)	0.0310 (4.3538)**
$lCPI$	0.1242 (1.7752)	0.0116 (0.2306)
$lGFC$	0.0547 (1.1941)	-0.0193 (-0.6576)
lBM_{t-1}	0.8942 (15.9110)**	1.0042 (24.3174)**

Note: ** denote 5% significance level, while figures in parenthesis are t-Statistic

Source: Author's Estimated Result.

This result showed that a percentage rise in domestic financing will pass through the broad money supply channel to trigger a 0.01 percentage increase in the rate of inflation. This result conforms with the indirect effect of aggregate DF on inflation.

Objective 2

The effect of inflation on CFshowed that a percentage rise in inflation will result in a significant 0.2 percentage decline in CF. This result is also in conformity with the aggregate DF estimate of a significant negative effect of inflation on CF. Similarly, a percentage rise in CF will result in a significant 0.1 percentage decline in inflation. This result's non-conformity does not invalidate the aggregate DF measure's output since the external and other funds financing measures are aligned.

Objective 3

The direct effect of domestic financing on CF showed that a percentage rise in the former will result in a -0.004 decline in the latter. However, just as the aggregate DF measure, the effect is insignificant.

Domestic financing indirect effect on CF: $\frac{\partial GFC}{\partial DMFGDP} = \frac{\partial GFC}{\partial CPI} * \frac{\partial CPI}{\partial BM} * \frac{\partial BM}{\partial DMFGDP} = b_2 * \beta_3 * \varphi_1$

Where the product of the identified significant coefficients of $\frac{\partial GFC}{\partial CPI}$ which is b_2= -0.2,$\frac{\partial CPI}{\partial BM}$ which isβ_3= 0.2, and $\frac{\partial BM}{\partial DMFGDP}$ which isφ_1= 0.03; and their product yields $b_2 * \beta_3 * \varphi_1 = -0.2 * 0.2 * 0.03 = -0.001$

This result showed that a percentage rise in domestic financing will pass through the broad money supplyand inflation channels to trigger a 0.001 percentage decline in the rate of inflation. This result conforms with the indirect effect of aggregate DF on CF.

Table 4.9 Endogeneity test

2SLS Endogeneity Test			**GMM Endogeneity Test**	
Equation	Diff in J-stats	Probability	Diff in J-stats	Probability
3.40 (CPI)	8.0811	0.0045**	2.8161	0.0933
3.41 (BM)	0.3746	0.5405	3.3194	0.0685
3.42 (CPI)	1.4163	0.2340	1.2459	0.2643

Note: where endogenous variables are in parenthesis, and ** denote 5% significance level.

Source: Author's Estimated Result.

Similar to the baseline model, output on Table 4.10 reveals that both the 2SLS and the GMM estimates have the same Cragg-Donald F-stat. values and Stock-Yogo critical values for relative bias and size for the equations in the study model. The test result affirms that the Cragg-DonaldF-stat. for each equation exceeds their corresponding Stock-Yogo critical values for relative bias and size at the 5 percent significance level. Thus, confirming that instruments used in correcting for the effect of endogeneity in the inflation and broad money supply variables in this study model are robust. Thus, validating the reliability of the inferences reached in this study.

Table 4.10: Weak Instrument Diagnostic Test

Cragg-Donald F-stat: EQ.3.40= 901.392, EQ.3.41= 63.4636, EQ.3.42=50.2092				
	2SLS Instrument Test		GMM Instruments Test	
Equation	Stock-Yogo critical values (relative bias)	Stock-Yogo critical values (size)	Stock-Yogo critical values (relative bias)	Stock-Yogo critical values (size)
3.40	20.53**	36.19**	20.53**	36.19**
3.41	20.90**	40.90**	20.90**	40.90**
3.42	19.86**	31.50**	19.86**	31.50**

Note:** denote 5% significance level.

Source: Author's Estimated Result.

Table 4.11 shows the result of the three residual tests conducted, namely, the Jarque-Bera normality test, Breusch-Godfrey higher-order serial correlation test, and the Breusch-Pagan-Godfrey heteroscedasticity test. However, the residual test for higher-order serial correlation and heteroscedasticity test on the estimated GMM residuals are not applicable. Reason being that the GMM estimator is superior to the 2SLS estimate.Since it automatically adjusts for the potential presence of heteroskedasticity and autocorrelation that may be present in the error structure through the adoption of a consistent estimator (Checherita and Rother, 2010). From the result as contained in Table 4.11, we can conclude that the S-H test's null is valid for particularly for the GMM output; hence, the instruments as a group are exogenous.

Table 4.11: Residual Diagnostic and GMM Sargan-Hansen Test

Test	Equation 3.40	Equation 3.41	Equation 3.42
Normality: Jarque-Bera values	2SLS= 20.3545** GMM– 14.2596**	2SLS= 8.8577** GMM– 13.785**	2SLS= 4.1815 GMM– 26.15**
Serial Correlation: Obs. R-squared	2SLS= 9.2682** GMM= NA	2SLS=13.9000** GMM=NA	2SLS= 9.779** GMM= NA
Heteroskedasticity: Obs. R-squared	2SLS= 8.1540 GMM= NA	2SLS= 8.7043 GMM= NA	2SLS= 8.0319 GMM= NA
2SLS S-H Tests			
Prob. Values	0.939684	0.047161	0.029669
GMM S-H Tests			
Prob. Values	0.5997	0.230287	0.117378

Note: NA denotes not applicable; S-H Tests is Sargan-Hansen Test.

Source: Author's Estimated Result.

4.7.2 Using external financing

Objective 1

Table 4.12 shows that a percentage rise in external financing will lead to a direct 0.002 percentage decline in inflation. However, the result is insignificant, thus, conforming with the aggregate DF's direct effect on inflation.

External financing indirect effect on inflation: $\frac{\partial CPI}{\partial XTFGDP} = \frac{\partial CPI}{\partial BM} * \frac{\partial BM}{\partial XTFGDP} = \beta_3 * \varphi_1$

Where the product of the identified significant values of $\frac{\partial CPI}{\partial BM}$ which is β_3= 0.1, and $\frac{\partial BM}{\partial XTFGDP}$ which is φ_1 = 0.01; and their product yields $\beta_3 * \varphi_1$ = 0.001.

This result showed that a percentage rise in external financing will pass through the broad money supply channel to trigger a 0.001 percentage increase in the rate of inflation. This result conforms with the indirect effect of aggregate DF on inflation despite its lower coefficient.

Objective 2

The effect of inflation on CFshowed that a percentage rise in inflation will result in a significant 0.2 percentage decline in CF. This result is also in conformity with the aggregate DF estimate of a significant negative effect of inflation on CF. Similarly, a percentage rise in CF will result in a 0.01 percentage decline in inflation. This effect is, however, insignificant, thus, aligning with the estimate in the aggregated DF estimate.

Table 4.12 Estimated IV Regression Output using XTFGDP

Regressor	2SLS Output	GMM Output
Equation 3.43		
Constant	-23.3688 (-2.3866)**	-28.6685 (-4.4414)**
$XTFGDP$	-0.0044 (-1.0397)	-0.0022 (-0.9450)
$lCPI$	-0.1559 (-2.5674)**	-0.1835 (-4.5517)**
$lGFC_{t-1}$	0.4578 (3.5141)**	0.4422 (4.6777)**
$lRGDP$	0.8120 (2.5275)**	0.9847 (4.5896)**
Equation 3.44		
Constant	-1.6731 (-1.6250)	-2.3721 (-2.0390)**
$XTFGDP$	0.0029 (2.7634)**	0.0022 (1.5108)
$lGFC$	-0.0161 (-0.4082)	-0.0142 (-0.4799)
lBM	0.0763 (1.7198)	0.1039 (2.1380)**
$lCPI_{t-1}$	0.8995 (16.3975)**	0.8674 (13.8049)**
Equation 3.45		
Constant	2.1556 (1.6982)	0.6519 (0.9929)
$XTFGDP$	0.0021 (1.4905)	0.0052 (4.8827)**
$lCPI$	0.1101 (1.5904)	0.0523 (1.5412)
$lGFC$	0.0935 (1.9083)	0.0787 (2.9316)**
lBM_{t-1}	0.9067 (16.4126)**	0.9659 (34.3611)**

Note: ** denote 5% significance level, while figures in parenthesis are t-Statistic

Source: Author's Estimated Result.

Objective 3

The direct effect of external financing on CF showed that a percentage rise in the former will result in a -0.002 decline in the latter. However, just as the aggregate DF measure, the effect is insignificant.

External financing indirect effect on CF: $\frac{\partial GFC}{\partial XTFGDP} = \frac{\partial GFC}{\partial CPI} * \frac{\partial CPI}{\partial BM} * \frac{\partial BM}{\partial XTFGDP} = b_2 * \beta_3 * \varphi_1$

Where the product of the identified significant coefficients of $\frac{\partial GFC}{\partial CPI}$ which is b_2= -0.18,$\frac{\partial CPI}{\partial BM}$ which isβ_3= 0.1, and $\frac{\partial BM}{\partial XTFGDP}$ which isφ_1= 0.01; and their product yields $b_2 * \beta_3 * \varphi_1 = -0.2 * 0.1 * 0.01 = -0.0002$

This result showed that a percentage rise in external financing will pass through the broad money supplyand inflation channels to trigger a 0.0002percentage decline in the rate of inflation. This result conforms with the indirect effect of aggregate DF on CF despite its smaller coefficient.

Table 4.13 Endogeneity test

2SLS Endogeneity Test			**GMM Endogeneity Test**	
Equation	Diff in J-stats	Probability	Diff in J-stats	Probability
3.43 (CPI)	3.0426	0.0811	3.8713	0.0491**
3.44 (BM)	0.3502	0.5540	1.3218	0.2503
3.45 (CPI)	0.5547	0.4564	0.6672	0.4140

Note: where endogenous variables are in parenthesis, and ** denote 5% significance level.

Source: Author's Estimated Result.

Similar to the baseline model, output on Table 4.14 reveals that both the 2SLS and the GMM estimates have the same Cragg-Donald F-stat. values and Stock-Yogo critical values for relative bias and size for the equations in the study model. The test result affirms that the Cragg-DonaldF-stat. for each equation exceeds their corresponding Stock-Yogo critical values for relative bias and size at the 5 percent significance level. Thus, confirming that instruments used in correcting for the effect of endogeneity in the inflation and broad money supply variables in this study model are robust. Thus, validating the reliability of the inferences reached in this study.

Table 4.14: Weak Instrument Diagnostic Test

Cragg-Donald F-stat: EQ.3.43= 594.2812, EQ.3.44= 51.0382, EQ.3.45=58.3947				
	2SLS Instrument Test		GMM Instruments Test	
Equation	Stock-Yogo critical values (relative bias)	Stock-Yogo critical values (size)	Stock-Yogo critical values (relative bias)	Stock-Yogo critical values (size)
3.43	20.25**	33.84**	20.25**	33.84**
3.44	21.10**	45.64**	21.10**	45.64**
3.45	19.86**	31.50**	19.86**	31.50**

Note:** denote 5% significance level.

Source: Author's Estimated Result.

Table 4.15 shows the result of the three residual tests conducted, namely, the Jarque-Bera normality test, Breusch-Godfrey higher-order serial correlation test, and the Breusch-Pagan-Godfrey heteroscedasticity test. However, the residual test for higher-order serial correlation and heteroscedasticity test on the estimated GMM residuals are not applicable. Reason being that the GMM estimator is superior to the 2SLS estimate.Since it automatically adjusts for the potential presence of heteroskedasticity and autocorrelation that may be present in the error structure through the adoption of a consistent estimator (Checherita and Rother, 2010). From the result as contained in Table 4.15, we can conclude that the S-H test's null is valid for particularly for the GMM output; hence, the instruments as a group are exogenous.

Table 4.15: Residual Diagnostic and GMM Sargan-Hansen Test

Test	Equation 3.43	Equation 3.44	Equation 3.45
Normality: Jarque-Bera values	2SLS= 16.7909** GMM– 15.5813**	2SLS= 22.4527** GMM– 27.6524	2SLS= 10.917** GMM– 30.09**
Serial Correlation: Obs. R-squared	2SLS= 9.6354** GMM= NA	2SLS=15.2695 GMM=NA	2SLS= 8.5511** GMM= NA
Heteroskedasticity: Obs. R-squared	2SLS= 7.4583 GMM= NA	2SLS= 6.8631 GMM= NA	2SLS= 5.6833 GMM= NA
2SLS S-H Tests			
Prob. Values	0.979984	0.048352	0.023657
GMM S-H Tests			
Prob. Values	0.781479	0.875590	0.243650

Note: NA denotes not applicable; S-H Tests is Sargan-Hansen Test.

Source: Author's Estimated Result.

4.7.3 Using other funds sources

Objective 1

Table 4.16 shows that a percentage rise in other funds sources will lead to a direct 0.01 percentage decline in inflation. However, the result is insignificant, thus, conforming with the aggregate DF's direct effect on inflation.

Other fund sources indirect effect on inflation: $\frac{\partial CPI}{\partial OSGDP} = \frac{\partial CPI}{\partial BM} * \frac{\partial BM}{\partial OSGDP} = \beta_3 * \varphi_1$

Where the product of the identified significant values of $\frac{\partial CPI}{\partial BM}$ which is β_3= 0.1, and $\frac{\partial BM}{\partial OSGDP}$ which is φ_1 = -0.2; and their product yields $\beta_3 * \varphi_1$ = -0.02.

This result showed that a percentage rise in other funds sources will pass through the broad money supply channel to trigger a 0.02percentage decrease in the rate of inflation. Despite this result being the only one not conforming with the aggregate DF indirect effect on inflation, it does not invalidate the output; since the other two sources aligned.

Objective 2

The effect of inflation on CFshowed that a percentage rise in inflation financing will result in a significant 0.2 percentage decline in CF. This result is also in conformity with the aggregate DF estimate of a significant negative effect of inflation on CF. Similarly, a percentage rise in CF will result in a 0.04 percentage decline in inflation. This effect is, however, insignificant, thus, aligning with the estimate in the aggregated DF estimate.

Table 4.16 Estimated IV Regression Output using OSGDP

Regressor	2SLS Output	GMM Output
Equation 3.46		
Constant	-29.3576 (-3.2841)**	-33.9407 (-5.8566)**
$OSGDP$	-0.0189 (0.6888)	0.0289 (2.1240)**
$lCPI$	-0.1898 (-3.1271)**	-0.2194 (-6.2856)**
$lGFC_{t-1}$	0.5229 (4.3684)**	0.5289 (5.4923)**
$lRGDP$	0.9995 (3.3625)**	1.1483 (5.9361)**
Equation 3.47		
Constant	-1.0068 (-0.9186)	-1.1758 (-1.9627)
$OSGDP$	-0.0108 (-1.1630)	-0.0055 (-1.4545)
$lGFC$	-0.0703 (-1.9103)	-0.0445 (-1.6524)
lBM	0.0576 (1.2136)	0.0604 (2.2530)**
$lCPI_{t-1}$	0.9179 (15.7216)**	0.9143 (26.8682)**
Equation 3.48		
Constant	2.3295 (1.8658)	2.3035 (1.3500)
$OSGDP$	0.0069 (0.6230)	-0.1847 (-3.3671)**
$lCPI$	0.1146 (1.6513)	0.0884 (0.9539)
$lGFC$	0.0551 (1.2186)	-0.0159 (-0.3297)
lBM_{t-1}	0.9044 (16.3212)**	0.9199 (12.4388)**

Note: ** denote 5% significance level, while figures in parenthesis are t-Statistic

Source: Author's Estimated Result.

Objective 3

The direct effect of other funds financing on CF showed that a percentage rise in the former will result in a 0.03 increase in the latter. This result's non-conformity does not invalidate the aggregate DF measure's output since the borrowing and external financing measures are aligned.

Other fund sources indirect effect on CF: $\frac{\partial GFC}{\partial OSGDP} = \frac{\partial GFC}{\partial CPI} * \frac{\partial CPI}{\partial BM} * \frac{\partial BM}{\partial OSGDP} = b_2 * \beta_3 * \varphi_1$

Where the product of the identified significant coefficients of $\frac{\partial GFC}{\partial CPI}$ which is b_2= -0.2,$\frac{\partial CPI}{\partial BM}$ which isβ_3= 0.1, and $\frac{\partial BM}{\partial OSGDP}$ which isφ_1= -0.2; and their product yields $b_2 * \beta_3 * \varphi_1 = -0.2 * 0.1 * -0.2 = 0.004$

This result showed that a percentage rise in other funds financing will pass through the broad money supplyand inflation channels to trigger a 0.004percentage increase in the rate of inflation. This result's non-conformity with the indirect effect of the aggregate DF measure on CF does not invalidate it since the borrowing and external financing measures are aligned.

Table 4.17 Endogeneity test

2SLS Endogeneity Test			**GMM Endogeneity Test**	
Equation	Diff in J-stats	Probability	Diff in J-stats	Probability
3.46 (CPI)	3.0381	0.0813	5.7205	0.0168**
3.47 (BM)	0.001	0.9808	1.8219	0.1771
3.48 (CPI)	2.2580	0.1329	6.3938	0.0115**

Note: where endogenous variables are in parenthesis, and ** denote 5% significance level.

Source: Author's Estimated Result.

Similar to the baseline model, output on Table 4.18 reveals that both the 2SLS and the GMM estimates have the same Cragg-Donald F-stat. values and Stock-Yogo critical values for relative bias and size for the equations in the study model. The test result affirms that the Cragg-DonaldF-stat. for each equation exceeds their corresponding Stock-Yogo critical values for relative bias and size at the 5 percent significance level. Thus, confirming that instruments used in correcting for the effect of endogeneity in the inflation and broad money supply variables in this study model are robust. Thus, validating the reliability of the inferences reached in this study.

Table 4.18: Weak Instrument Diagnostic Test

Cragg-Donald F-stat: EQ.3.46= 614.3812, EQ.3.47= 60.6723, EQ.3.48=48.0884				
	2SLS Instrument Test		GMM Instruments Test	
Equation	Stock-Yogo critical values (relative bias)	Stock-Yogo critical values (size)	Stock-Yogo critical values (relative bias)	Stock-Yogo critical values (size)
3.46	20.25**	33.84**	20.25**	33.84**
3.47	21.01**	43.27**	21.01**	43.27**
3.48	19.86**	31.50**	19.86**	31.50**

Note:** denote 5% significance level.

Source: Author's Estimated Result.

Table 4.19 shows the result of the three residual tests conducted, namely, the Jarque-Bera normality test, Breusch-Godfrey higher-order serial correlation test, and the Breusch-Pagan-Godfrey heteroscedasticity test. However, the residual test for higher-order serial correlation and heteroscedasticity test on the estimated GMM residuals are not applicable. Reason being that the GMM estimator is superior to the 2SLS estimate.Since it automatically adjusts for the potential presence of heteroskedasticity and autocorrelation that may be present in the error structure through the adoption of a consistent estimator (Checherita and Rother, 2010). From the result as contained in Table 4.15, we can conclude that the S-H test's null is valid particularly for the GMM output; hence, the instruments as a group are exogenous.

Table 4.19: Residual Diagnostic and GMM Sargan-Hansen Test

Test	Equation 3.46	Equation 3.47	Equation 3.48
Normality: Jarque-Bera values	2SLS= 20.3798** GMM– 14.9591**	2SLS= 19.0791** GMM– 27.176**	2SLS= 3.0976 GMM– 12.126**
Serial Correlation: Obs. R-squared	2SLS= 11.1587** GMM= NA	2SLS=17.9733** GMM=NA	2SLS= 11.6488** GMM= NA
Heteroskedasticity: Obs. R-squared	2SLS= 7.7509 GMM= NA	2SLS= 7.0268 GMM= NA	2SLS= 10.5909** GMM= NA
2SLS S-H Tests			
Prob. Values	0.951668	0.016846	0.029716
GMM S-H Tests			
Prob. Values	0.881754	0.526676	0.287794

Note: NA denotes not applicable; S-H Tests is Sargan-Hansen Test.

Source: Author's Estimated Result.

4.8Discussion of Findings

4.8.1 Objective 1

The direct effect of deficit financing on inflation

The direct effect of DF on inflation is revealed to be positive but insignificant. Thus, contradicting prior studies such as Oyejide 1972, Onwioduokit (1999), Oladipo and Akinbobola (2011), Imegi (2014), Ahmad and Aworinde (2019) and Tule et al. (2019) who found a significant direct effect of DF on inflation.

The indirect effect of deficit financing on inflation

In determining the indirect channel through which DFaffects inflation, the following chain function earlier stated wasanalysed.

DF indirect effect on inflation:$\frac{\partial CPI}{\partial DEFGDP} = \frac{\partial CPI}{\partial BM} * \frac{\partial BM}{\partial DEFGDP} = \beta_3 * \varphi_1$

Where the product of the identified significant values of$\frac{\partial CPI}{\partial BM}$ which is β_3= 0.1,

and$\frac{\partial BM}{\partial DEFGDP}$which is φ_1 = 0.1;and their product yields $\beta_3 * \varphi_1$ = 0.01.

This result shows that a percentage rise in DF will pass through the broad money supply channel to triggera 0.01 percentage growth in the inflation rate.

Analysing the first effect, which is the significant positive effect of broad money supply on inflationindicates that if the CBN choose to buy domestic financial assets such as bonds from the DMBs. Banks, inturn will witness an increase in their balances, and thus, a growth in the broad money supply. This will also elevate the ability of the DMBs to give out loans. Since there is excess liquidity at their disposal, which will lower the interest rate on lending. The reduced lending rates will furtherincrease the amount that bank customers are willing to borrow, thereby increasing aggregate spending in the economy. Aggregate demand is expected to rise, likewise prices. If prices continue to rise, inflation will ensue.

The second effect, which is the significant positive effect of DF on broad money supply, is also plausible. For instance, as noted in our theoretical model, the Federal Government can finance its deficit through money creation and through the sale of FederalGovernment interest yielding securities. The purchase of these Federal Government securities by the CBN, or the creation of new money through granting of direct credit to the Federal Government by the CBN to fund the deficit, tends to aggravate the level of money supply by the amount of the credit granted. This is because the Federal Government will experience an initial increase in its balances.

However, as the Federal Government expends this credit, part of the loans obtained from the CBN will find their way into balances with the DMBs; through,for instance,payment to government contractors, transfer payments, etc. Also, if the DMBs choose to hold more cash in relation to income-yielding assets;then the monetary base, which includes currency notes and coins in circulation, and the DMBs' reserves with the CBN, is expectedto expand through the credit multiplier (i.e., the ratio of a change in deposits to bank reserves). Thus, the more significant the change in deposits in relation to the reserves of the DMBs, the larger the money created by the banks. Hence, the monetary effect of DF through the DMBs is a function of the expansion in direct loans, which creates a growth inthe broad money supply.

The product of the positive effects of broad money supply on inflation, andDF on broad money supply, yields a significant positive indirect effect of DF on inflation. This outcome agrees with our a priori expectation for this study. A justifiable reason for this outcome is that, since it has been established that DF adds to the broad money supply by way of expanding DMBs' cash portfolio, banks have the tendency to lower their lending rates in other to loan out the excess liquidity at their disposal to their customers. Hence, aggregate demand is expected to rise, which encourages investorsalso to increase their aggregate output. However, the situation in Nigeria is such that the saleable output increases at a slower rate compared to the growing money

supply. It, therefore,suggests that the additional money supply is not being fully utilized as loans.

One major cause of this in Nigeria is the perceived high lending rate of the DMBs by investors. This has seen the CBN in recent times peg the lending rates for sectors considered critical to the growth of the economy at a level below the prevailing market rates. For example, the long-term credit interest rate to agriculture and manufacturing was pegged at a consolidated 9 percent in 2018, against the prevailing market rate of 25-30 percent.Also, the CBN's directive to the DMBs to increase their loan-to-deposit ratio (LDR) from 60 percent to 65 percent in 2019 was aimed at boosting output growth, especially in the real sector (though the LDR is subject to quarterly review by the CBN).However,theslow pace of output growth to aggregate demand creates a demand-supply imbalance in the economy. Consequently, the aggregate price in the economy is excepted to rise, and as the situation persists (i.e., demand exceeding supply),inflation is created in the economy.

4.8.2 Objective 2

The nexus between inflation and capital formation

To identify the direction of the relationship between inflation and CF, the valuesfor two coefficients which are b_2 (the measure for the effect of inflation on CF) and β_2 (the measure for the effect of CF on inflation) are analysed.

As prior observed from the estimated GMM output, b_2 value of approximately -0.2 shows that inflation has a significant inverse effect on CF. Thus, agreeing with this study's a priori expectation, as well as the inverse effect of inflation on capital in the adopted Keynes-Wicksell three asset model. Interpreting the value for$b_2$suggest that a percentage increase in the inflation rate will result in CF declining significantly by about 0.2percent.This result also contradicts prior findings by Olanipekun and Akeju (2013) that found a significant positive effect of inflation on Nigeria's CF.

Similarly, the coefficientβ_2 has a value of approximately -0.02,which also indicated a negative effect of CFon inflation. However, this effect is revealed to be insignificant. Hence, suggesting that in the inflation-CF nexus, higher inflation rates significantly and inversely affectsCF. While there is no significant feedback effect from CF to inflation.

The significant inverse effect of inflation on CF can be related to two plausible effects. The firstsuggeststhat at higher rates of inflation, the real value of money is expected to decline. Hence,there is the tendency for real rates of return on savings to also reduce in various markets. When this occurs, it is expected that the level of savings by owners of capital willdecline.This, inturn will give rise to the financial system raising their lending rates due to the scarcity of loanable funds. Hence, the quantum of loanable funds given to investors will decline.

Furthermore, the ability of the DMBs to invest in government securities will also reduce. The implication of a shortage in investable fundswill yield a reduction in CF; since, the cost of addition and investment in new CF will rise due to the increase in the lending rate triggered by inflation.

The second reasoning for the substantial inverseeffect of inflation on CFpoints to the fact that upward inflationary trends will result in a downward net return in utility terms from adding or investing in new CF. For instance, when the value of money decline due to the high rate of inflation, accruing profits from adding or investing in new capital assets such as plants and machinery, equipment, buildings, etc., will decline in real terms. When this occurs, it is expected that new or additional investment in CF should also decline. This is further true if considering the increased cost of acquiring such capital asset due to higher rates of inflation; which tends to reduce the profit margin from the new or additional capital asset.

4.8.3 Objective 3

The direct effect of deficit financing on capital formation

The GMM result for Equation 3.37 reveals a positive insignificant direct effect of DF on CF. Thus, contradicting findings by Oyejide (1972) for Nigeria, Charkarborty (2007) for India, and Hadiwibowo (2010) for Indonesia, who reported a direct positive effect of DF on CF. This outcome further validates our study's objective of assessing the indirect effect of DF on CF.

The indirect effect of deficit financing on capital formation

To understand the indirect channel through which DFaffectsCF, the following multivariate chain function, as prior stated, is being evaluated.

DF indirect effect onCF: $\frac{\partial GFC}{\partial DEFGDP} = \frac{\partial GFC}{\partial CPI} * \frac{\partial CPI}{\partial BM} * \frac{\partial BM}{\partial DEFGDP} = b_2 * \beta_3 * \varphi_1$

Where the product of the identified significant coefficients of $\frac{\partial GFC}{\partial CPI}$which is b_2= -0.2,$\frac{\partial CPI}{\partial BM}$ which isβ_3= 0.1, and$\frac{\partial BM}{\partial DEFGDP}$ which isφ_1= 0.1; and their product yields $b_2 * \beta_3 * \varphi_1 = -0.2 * 0.1 * 0.1 = -0.002$

This result shows that a percentage increase in DF will first pass through the broad money supply channel,then to the inflation channel, before resulting in a 0.002percentagedecrease in CF. Like previous a priori expectations, this outcome is also in line with this study's expectation. However, despite the statistically significantindirect inverse effect of DF on CF, the value is revealed to bequantitatively small. The economic justification for this minute statistically significant,indirect inverse effect of DF on CF is explained as follows.

As noted earlier, DF creates an increase in the broad money supply, when part of Federal Government outlay finds its way into balances with the DMBs. Thus, increasing the broad money supply. However,due to the high lending rate regime

prevalent in the financial system, loans granted by the DMBs do fall short of what is required to offset the increase in aggregate demand created by the increase in Federal Government spending. Thus, a demand-supply imbalance ensues in the economy. Aggregate prices will continue to rise with inflation as the result.

Furthermore, the effect of the rising inflationary pressures on CFhas also been prior revealed to be negative in two ways. First,inflation increases the cost of adding to existing or purchasing new capital stock. While the second is that inflation has the tendency to diminish the expected yield from new and existing capital stock. Especially when the cost of purchasing the capital stock is put into consideration. Hence, the inverse indirect effect of DFon CF.

For the quantitatively small coefficient of the indirect effect of DF on CF, our initial analysis hasalready established that DFsignificantly adds to the broad money supply by expanding the DMBs' cash portfolio. It is important to note that the spending pattern of the Federal Government's borrowed fundscan be held responsible for theminute response of CF to the increases in DF. This is because empirical evidence has shown that a large portion of the funds meant for DF from the 1970 to date usually get expended on recurrent outlay.For instance, despite the continuous rise in DF from 1970 to 2017, the Federal Government's capital expenditure only exceeded its recurrent spending in 1975-1983, 1986, and 1996-1999; that is, a total of fourteen years (CBN statistical bulletin, 2009). While the recurrent federal expenditure exceeded capital spending for the remaining thirty-three years,in some cases, it rose three times higher than capital spending, especially from the 2000s (CBN statistical bulletin, 2017). This shows that from 1970-2017, very little investment in CF through DF has taken place.

The situation is further exacerbated by the continuous demand for imported goods in the economy, for which the Federal Government has had to borrow at different intervals to finance. Thereby making the fraction available for investment in

CFdiminish significantly. For instance, the Federal Government had been solely responsible for the payment of subsidies on imported petroleum products for over two decades. Evidence from aBudgiT policy brief report in 2019 showed that Nigeria had paid over ten trillion naira in subsidising imported refined petroleum products from 2006 to 2018. While capital expenditure within the same period was just about thirteen trillion naira (CBN statistical bulletin 2018). Thus, crowding-out a significant amount of funds that could have been invested inCF.These two phenomena are significant reasons why regardless of the yearly growth in DF from 1970 to 2017, the magnitude of response by CF has continued to be very small.

CHAPTER FIVE
SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Preamble

This chapter provides a summary of the entirestudy in section 5.2. Section 5.3 captures the study conclusions derived from findings base on the empirical analysis. In section 5.4, the study presents some policy recommendations. While the study limitations, as well as ground for future research, are captured in section 5.5.

5.2 Summary

This study's focus has been to analysethe effect of DF on inflation andCF in Nigeria. The study period covers 1970 to 2017,and unlike prior studies that based their analysis on the direct effect of DFon inflation and the direct effect of DF onCF in Nigeria;this study's specific objectives were to identify the direct and indirect effect ofDFoninflation and CF; and the direction of the nexus between inflation and CF in Nigeria.

The Keynes-Wicksell three asset money growth theoretical framework, which is applicable to firms,was modified to suit the study. The modification involvedreplacing the firm agentwith the Federal Government by introducing a government deficit into the Keynes-Wicksell model, which is financed either by tax collection, increasing the money supply, and issuing to the public interest–yielding government bonds. Furthermore, the instrumental variable technique was adopted for the empirical modelling of the study's objectives. The IV methodology was adopteddue to its suitability in identifying indirect effects and when feedbacks are anticipated or hypothesized between economic variables, which form the core of this study's objectives.

The empirical study results revealed a significant positive indirect effect of DF on inflation. It was further showed that inflation has a significant inverse

effect on CF, while there was no significant reverse effect of CF on inflation. Lastly, the indirect effect of DF on CF was negative and significant. However, the magnitude of the effect was small.

5.3 Conclusions

This study concludes thatthe direct effect of DF on inflation is insignificant.However, the indirect effect of DF on inflation in Nigeria is through the broad money supply. This indirect effect is positive and significant within the study period (1970-2017).The indirect effect is justified since DF adds to the broad money supply when part of Federal Government spending finds its way into the balances with the DMBs inform of transfer payments, subsidy payments, contract payments, etc., thus, increasing the money supply. However, the failure of the DMBs to fully utilize the excess funds at their disposal for loan purpose due to their high lending rates creates a demand-supply imbalance, and inflation ensues. Thus, contradicting the direct significant positive assertions made in empirical studies such asOyejide (1972), Onwioduokit (1999), Oladipo and Akinbobola (2011), Imegi (2014), Ahmad and Aworinde (2019), Tule et al. (2019) and Fasanya et al. (2021). None of these studies explicitly admitted the indirect effect of DF on inflation through the broad money supply as done in this study.

In the nexus between inflation and CF, we conclude that the effect is from inflation to CF; and it is significantly harmful.This is because inflation diminishes the expected real returns on savings which increases lending rate and increases the cost of adding to or purchasing new CF. Although CFalso had a negative effect on inflation, it is however insignificant. Hence, contradictingstudies such as Ahortor and Adenutsi (2009) who found a significant bi-directional negative effect; and Olanipekun and Akeju (2013)who found a robust increasing impact of inflation onCF in Nigeria.

Finally, this study submits thatDF passes through the broad money supply and the inflation channel to adversely affect CF. In addition, the negative indirect effect of DF on CFis quantitatively small and significant for the study period (1970-2017). The quantitatively small effect results from Federal Government’s devotion of much of the DF funds to recurrent spending and funding of import demands in the economy. Also,

the adverse indirect effect of DF on CF contradicts findings by Oyejide (1972), who reported a significant direct positive effect of DF on CF for Nigeria.

5.4 Policy Recommendations

Ever since DF started in Nigeria in the 1970s, theFederal Governmenthas justified using the fiscal policyas a necessity for achieving planned projects in their political programmes often anchored on economic growth. Hence, the execution of DF to improve the growth rate of the economy through investment in infrastructural development. Nevertheless, empirical findings from this study suggest otherwise. Since theFederal Governmenthas mainly used DF more in funding its recurrent spending, such as increasing administrative cost, growing wage bill of the civil service, importing consumables goods, payment of subsidies, etc.Therefore, the Federal Government should reduce the use of DF in funding recurrent expenditures. At the same time, the dedication of DF funds primarily for ventures that can guarantee repayment of the borrowed funds and the accruing interest will be profitable.The reason being that if recurrent spending at the expense of capital spending continues to gulp a larger part of the borrowed funds. Then, the future generation of Nigerians will inevitably have the burden of higher taxes to pay. Since today's borrowed funds expended on consumption will have to be repaid by future generations in form of increased taxes. Hence, ensuring thatDFis strictly used for investment in CF willguaranty that the future growth path for the economy is not inhibited.

In light of the above, there is the need for strict adherence to the fiscal responsibility act of 2007, which limits the deficit in the budget from rising beyond 3 percent of the country's GDP. At the same time, the CBN should also help discourage unnecessary rise in budget deficits by exercising its autonomy,in line with the CBN act of 2007. The act,which empowers the CBN to disregard funding the deficit any time it is in excess of 5 percent of the previous year's actual revenue, can be a valuable tool in slowing the growth path of DF in Nigeria. Such a move will ensure that Federal Governmentbudget planners only requireDF to fund productive ventures, capable of growing CF and ensuring repayment of the borrowed funds. As against ventures that help to exert pressure on domestic prices, which creates inflation.

In addition, the Federal Government's fiscal policy goalsneeds to be in tandem with the monetary policy objectives of the CBN for effective control of inflation and CF's growth. The CBN cannot be grappling with controlling rising inflation in the economy, in the hopes of trying to safeguard investment returns by adopting contractionary monetary policy; while the Federal Government on the other hand is exerting more pressures on prices through expansionary fiscal policy.

CF cannotalso grow without a significant expansion in the size of the economy;and for the economy to expand, lending rates in the financial system cannot continue being unfavourable to borrowers of investable funds. Hence,the CBN will have to do more in ensuring flexibility in lending rates. The idea of pegging rates for certain sectors may be counter-productive due to the bottlenecks that may arise in an attempt by investors in such sectors to assess the concessionary loans. Thus, having a lending rate that is truly flexible to the forces of demand and supply for loanable funds, will be ideal in reducing the deficit between aggregate demand and output to curb inflationary pressures in the economy. Collaboratively, the Federal Government will have to focus on stimulating and safeguarding private investments to reduce the unemployment of factors of production. Such measures should include directing DF towards critical sectors of the economy such as education, health, science and technology, agriculture and manufacturing.

Finally, since a large part of thefunds meant for DFisusually expended on consumables, there is a need to be cautious of a current account deficit's potent threat. This could arise if the nation's import exceeds its export (i.e., having an unfavourable balance of trade), thus, creating what is known as the "Twin Deficits" (i.e. having a budget and current account deficitsimultaneously). The consequences of the twin deficitsinclude making the economy vulnerable to the dangers of imported inflation and limiting the growth of CF. Hence, the CBN should endeavour to sustain net capital inflows to keep the total trade balance in the positive. This also means the Federal Government will have to ensure more growth in foreign direct investments, as against foreign portfolio investments to have stability in the money supply and inflation variables. To achieve this, there is the need to provide a better and secured business environment by building necessary infrastructures, strengthening institutions,

andinsuring consistency in Federal Governmentpolicies. Thesewill help attract inflows of foreign direct investments into the economy.

5.5 Contribution to the Body of Knowledge

This study has theoretically shown how DF can increase inflation and lead to a fall in CF by slightly modifying the Keynes-Wicksell three asset model. The modification involved replacing the business sector in the model with a government sector by introducing a government budget deficit.Financing the budget deficit is done either through increasing government taxes, increasingthe money supply and public borrowing through issuing of interest yielding government bonds. This slight modification to Keynes-Wicksell's model captures the dynamism in DF in the post-1970 periods in Nigeria.Methodologically, it has shown the direct and indirect effects of DF on inflation and CF through the use of the IV technique. Thus, enabling the study to control the effect of endogeneity,especially in the DF-inflation nexus for Nigeria. Empirically, it has enriched the literature in terms of the study of the tripartite relationship by not only evaluating the direct and indirect effects of aggregate DF, but also, evaluated the effects from its three broad components on inflation and CF for Nigeria.

5.6Limitation of the Study/Agenda for Further Studies

This study is only limited to Federal Government assessment. Hence, the evaluation of the channel effect of DF on inflation and CF at the State and Local Government Levels was not feasible due to lack of data sources. These thus, constitute areas for future studies that could be explored toenrich the literature further.

REFERENCES

Abel, A.B.1985. Dynamic Behaviour of Capital Accumulation in a Cash-in-Advance Model. *NBER Working Paper Series*, No.1549: 1-28.

Abirami, R.M, and Panda, P. K.2015. Fiscal Deficit, Private Sector Investment and Crowding Out in India. *The Empirical Econometrics and Quantitative Economics Letters*. Vol.4: 88-94.

Adam. J. A. and Bankole, A. S. 2000. The Macroeconomics of Fiscal Deficits in Nigeria. *The Nigerian Journal of Economic and Social Studies*. Vol.42(3): 263-290.

Adinevand, M. 2015. Effect of Budget Deficit on Production, Inflation and Trade Balance OF Iran-Based on the Synchronous Equations' Model. *Bulletin of the Georgian National Academy of Sciences*. Vol.9(1): 246-255.

Agundu, U. C., and Dagogo, D. W. 2008. Deficit Financing Grill: Theoretic and Reflections on Nigeria's Transitional Military Dispensation: 1989-2000. *Journal of Financial Management and Analysis*. Vol.21(1): 47-57.

Ahmad H. A. and Aworinde, O. B. 2019. Are Fiscal Deficits Inflationary in African Countries? A New Evidence from an Asymmetric Cointegration Analysis. *The North American Journal of Economics and Finance.* Vol. 50: 1-11.

Ahmad, N. 1970. Deficit financing, inflation and capital formation: The Ghanaian experience 1960-65. *Weltforum Verlag Publishers*, Denmark.

Ahortor, C.R. and Adenutsi, D. E. 2009. Inflation, Capital Accumulation and Economic Growth in Import-Dependent Developing Economies. A Paper Prepared for the 14th Annual Conference on Econometric Modelling for Africa. Abuja, Nigeria.

Ainabor, A.E, Shuaib I.M, and Kadiri, A. K. 2014. Impact of Capital Formation on the Growth of Nigerian Economy 1960-2010: Vector Error Correction Model (VECM).School of Business Studies.*Readings in Management and Social Studies*.Vol.1(1): 132-154

Aiyedogbon, J. O. C. 2011. Military Expenditure and Gross Capital Formation in Nigeria, 1980-2010. *European Journal of Humanities and Social Sciences*. Vol.7(1): 290-310.

Aladejare, S. A. 2018. Resource Price, Macroeconomic Distortions, and Public Outlay: Evidence from Oil-Exporting Countries. *International Economic Journal.* Vol. 32(2): 199-218.

Alesina, A., Ardagna, S., Perotti, R., and Schiantarelli, F. 2002. Fiscal Policy, Profits, and Investment.*The American Economic Review*. Vol.92(3): 571–89.

Aminu, A. 2011. Federal Government Wage Review Policy and Public-Private Sector Wage Differential in Nigeria. *AERC Research Paper* 223: 1-42.

Anusic, Z. and Svaljek, S. 1996. Olivera-Tanzi Effect: Theory and its Manifestation in the Croatian Stabilization Programme.*Croatian Economic Survey*: 73-102.

Anyanwu, J. C., Oyefusi, A., Oaikhenan, H., and Dimowo, F. A. 1997. The structure of Nigerian economy (1960-1997). *Joanee Educational Publishers Limited*. Onitsha, Nigeria.

Aregbeyen, O. and Mohammed, T. I. 2016. Public Investment and Output Performance: Evidence from Nigeria. *Zagreb International Review of Economics and Business.* Vol.19(1): 1-24.

Arellano, M., and Bond, S. 1991. Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *The Review of Economic Studies.*Vol.58(2): 277-297.

Aschauer, D. A. 1989. Is Public Expenditure Productive? *Journal of Monetary Economics*. Vol.23: 177-200.

Asekunowo, V. O. 2016. The Causes of Persistent Inflation in Nigeria. *CBN Journal of Applied Statistics*, Vol.7(2): 49-75.

Asogwa, F. O., and Chetachukwu, O. I. 2013. The Crowding Out Effect of Budget Deficits on Private Investment in Nigeria. European *Journal of Business and Management*. Vol.5(20): 161-165.

Awe, A. A. and Funlayo, A. K. 2014. The Short and Long-term Implication of Budget Deficit on Economic Growth in Nigeria (1980-2011). *Canadian Social Science*. Vol.10(5): 201-205.

Bakare, A. S. 2011. A Theoretical Analysis of Capital Formation and Growth in Nigeria. *Far East Journal of Psychology and Business.* Vol.3(1): 12-24.

Barro, R. J. 1996. Determinants of Economic Growth: A Cross-Country Empirical Study. *NBER Working Paper.* No.5698: 1-117.

Baum, C. F., Schaffer, M. E., and Stillman, S. 2003. Instrumental Variables and GMM: Estimation and Testing. *Stata Journal*. 3-1: 1-31.

Baum, C. F. 2007. Instrumental variables estimation in Stata. Boston College, Boston. USA.

Bawa, S., Abdullahi, I. S., and Ibrahim, A. 2016. Analysis of Inflation Dynamics in Nigeria (1981-2015). *CBN Journal of Applied Statistics*. Vol.7(1b): 255-276.

Becker, G. 1975. Human capital: A theoretical and empirical analysis, with special reference to education. *NBER books, Second Edition*, Cambridge USA.

Bello, M. S. 2004. Financial Publication Under Inflationary Condition and Current Democratic Settings in Nigeria. *Journal of Business and Finance*. Vol.1(1): 215-216.

Blejer, M. I. and Cheasty, A. 1993. Measuring the Fiscal Deficit: overview of issues. In Mario Blejer and A. Cheasty, eds. How to Measure the Fiscal Deficit*International Monetary Fund*. Washington D.C.: 3-10.

Blejer, M.I. and Khan, M. S. 1984. Federal Government Policy and Private Investment in Developing Countries. *FMIStaff Papers*. Vol.31(2): 379-403.

Blinder, A. and Solow, R. 1973. Does Fiscal Policy Matter? *Journal of Public Economics*. Vol.2(4): 319-337.

Blinder, A. S. 1982. On the Monetization of Deficits. *NBER Working Papers.* 1052: 39-73.

Boariu, A. and Bilan, I. 2007. Inflationary Effects of Budget Deficit Financing in Contemporary Economies. *Analele Stiinţifice ale Universităţii Alexandru loan Cuza din laşi-Stiinte Economice*. Vol.54: 77-82.

Boschi, M., and Girardi, A. 2007. Euro-area Inflation: Long-term Determinants and Short-termDynamics. *Applied Financial Economics*. Vol.17: 9–24.

Boujelbene, T., and Boujelbene, Y. 2010. Long-term Determinants and Short-term Dynamics of Inflation in Tunisia. *Applied Economic Letters*. Vol.17: 1255–1263.

Bruno, M. and Fischer, S. 1990. Seigniorage, Operating Rules, and the High Inflation Trap.*Quarterly Journal of Economics*.Vol.108: 353–74.

Bryant, J., and Wallace, N. 1979. The Inefficiency of Interest-Bearing National Debt. *Journal of Political Economy*. Vol.87: 365-381.

Budina, N., Pang, G., and Wijnbergen, S. 2007. Nigeria's Growth Record: Dutch Disease or Debt Overhang? *World Bank Policy Research Working Paper*. 4256: 1-32.

BudgiT. 2019. Nigeria's Petrol Subsidy Regime: Dilemma of the world's most populous black nation (Policy brief). Available at https://yourbudgit.com/ accessed on 15/02/2020.

Buiter, W. H. 1990. Principles of Budgetary and Financial. *The MIT Press*. Vol.1(1). No.0262524139.

Bullock, J. G., Green, D. P., and Ha, S. E. 2010. Yes, But What's the Mechanism? (Don't Expect an Easy Answer). *Journal of Personality and Social Psychology*. Vol.98(4): 550–558.

Byrne, J. P. and Davis, E. P. 2004. Permanent and Temporary Inflation Uncertainty and Investment in the United States. *Economics Letters*. Vol.85(2): 271-277.

Calderon, C. and Liu, L. 2003. The Direction of causality between Financial Development and Economic Growth. *Journal of Development Economics*. Vol.72(1): 321-334.

Catão, L. A., and Terrones, M. E. 2005. Fiscal deficits and inflation. *Journal of Monetary Economics*. Vol. 52 (3): 529–554.

Central Bank of Nigeria. 1982. Annual Report of Statement of Accounts.

_____. 2005. Annual Report of Statement of Accounts.

_____. 2009. Annual Statistical Bulletin.

_____. 2017. Annual Statistical Bulletin.

_____. 2019. Annual Statistical Bulletin.

Central Intelligence Agency. 2015. World Fact Book.

Chakroborty, L. S. 2007. Fiscal Deficit, Capital Formation & Crowding out: Evidence from India. *National Institute of Public Finance and Policy Working paper*. No-43: 1-44.

Chang, W. and Tsai, H. 2003. Money, Social Status, and Capital Accumulation in a Cash-in-Advance Model. *Journal of Money, Credit and Banking*. Vol.35(4): 657-661.

Checherita, C. and Rother, P. 2010. The Impact of High and Growing Government Debt on Economic Growth: An Empirical Investigation for the Euro Area. *European Central Bank Working Paper Series*. No.1237: 1-42.

Chiarella, C. and Flaschel, P. 2000. The dynamics of Keynesian monetary growth: Macro foundations. First edition. *Cambridge University Press*. United Kingdom: 10-29.

Chhibber, A. and Pahwa, S. 1994. Investment Recovery and Growth in Nigeria: The Case for Debt Relief. Selected papers for the 1994 Nigerian Economic Society May Conference.

Choi, S., Smith, B. D., and Boyd, J. H. 1996. Inflation, Financial Markets and Capital Formation. *Review for the Federal Reserve Bank of Minneapolis and the Federal Reserve System*. Review (May-June): 1-35.

Clague, C. C., Keefer, P., Knack, S. and Olson, M. 1996. Property and Contract Rights in Autocracies and Democracies. *Journal of Economic Growth*. Vol.1(2): 243-276.

Dalamagas, M. B. 1998. Fiscal Deficits and the Productivity of Public Capital. *Revue économique*. Vol.49(5): 1241-1268.

Dewald, W. G. 1998. Inflation, Real Interest Tax Wedges, and Capital Formation. *The Federal Reserve Bank of St. Louis*, Working paper series. Vol.80(1): 29-36.

Dickey, D. A., and Fuller, W. A. 1979. Distribution of the Estimators for Autoregressive Time Series with a Unit Root. Journal of the American Statistical Association. Vol.74(366): 427–431.

Dinca, G. and Dinca, M. S. 2013. The Impact of Fiscal Policy upon Economic Growth in the European Union. *International Journal of Education and Research*. Vol.1(10): 1-12.

Dornbusch, R. 1977. Inflation, Capital and Deficit Finance. *Journal of Money, Credit and Banking*. Vol.9(1): 141-150.

Durevall, D. 1998. The Dynamics of Chronic Inflation in Brazil (1968-1985). *Journal of Business and Economic Statistics*. Vol.16(4): 423-432.

Easterly, W. and Hebbel, K. S. 1993. Fiscal deficits and Macroeconomic Performance in Developing Countries. *The World Bank Research Observer*. Vol.8(2): 211-237.

Eaton, J. 1978. Fiscal Policy, Inflation and the Accumulation of Risky Capital. Econometric Research Program Research Memorandum No. 226: 1-33.

Egwaikhide, F. O., Chete, L. N., and Falokun, G. O., 1994. Exchange rate depreciation, budget deficit and inflation- the Nigeria experience. AERC Research Paper 26: 1-45.

Enders, W. 2004. Applied Econometric Time Series." 2nd edition, John Wiley Publishers. New York, USA. Vol.463.

_____. 1995. Applied Econometric Time Series." 1st edition, John Wiley Publishers. New York, USA.

Energy Commission of Nigeria. 2015. www.energy.gov.ng Accessed on 18/8/2016.

Erenburg, S. 1993. The Real Effects of Public Investment On Private Investment: A Rational Expectations Model. *Applied Economics*. Vol.25: 831–837.

Eyiuche, A. C. 2000. Evaluation of The Relationship Between Deficit Financing and Fiscal Operation in Nigeria. *African Banking and Finance Review*. Vol.1(1): 65-73.

Ezeabasili V. N., and Nwakoby, C. N. 2013. Fiscal Deficits and Private Investment: Econometric Evidence from Nigeria. *International Journal of Innovative Research in Management*. Vol.3(2): 1-18.

Fasanya, O. I., Fajobi, A., and Adetokunbo, A. 2021. Are Fiscal Deficits Inflationary in Nigeria? New Evidence from Bounds Testing to Cointegration with Structural Breaks. *Economic Annals*. Vol.LXVI(228): 1-25.

Feldstein, M. 1978. Fiscal Policies, Inflation and Capital Formation. *NBER Working Paper* No.275:1-24.

Fischer, S. 1979. Capital Accumulation on the Transition Path in a Monetary Optimizing Model. *Econometrica*. Vol.47(6): 1433-1439.

Friedman, M. 1981. Deficit and Inflation. *Newsweek*. Vol.44: 1-23.

Gbadebo, A. D., and Mohammed, N. 2015. Monetary Policy and Inflation Control in Nigeria. *Journal of Economics and Sustainable Development*. Vol.6(8):108-115.

Gbosi, A. N. 2012. Contemporary issues in Nigeria's public finance and fiscal policy. *Pack Publisher*, Abakaliki. Nigeria.

Greene, J., and Villanueva, D. 1990. Private Investment in Developing Countries: An Empirical Analysis. *International Monetary Fund Staff Papers*. Vol.38(1): 33-58.

Grier, K. B. 1986. A Note on Unanticipated Money Growth and Interest Rate Surprises: Mishkin and Makin Revisited. *Journal of Finance*. Vol.41(4): 981–85.

Gujarati, D. N. 2004. Basic econometrics. Fourth edition. The McGraw-Hill Companies. USA.

Hadiwibowo, Y. 2010. Fiscal Policy, Investment and Long-term Economic Growth: Evidence from Indonesia. *Asian Social Science*. Vol.6(9): 3-11.

Hamburger, M. J. and Zwick, B. 1981. Deficit, Money and Inflation. *Journal of Money Economics*. Vol.7(1): 141-150.

Hanif, M. N. 2012. A Note On Food Inflation in Pakistan. *Pakistan Economic and Social Review*: 183-206.

Hassan, O. M. 2015. The Impact of Monetary Policy on Private Capital Formation in Nigeria. *Journal of Empirical Economics*. Vol.4(3): 138-153.

Hein, S. E. 1981. Deficits and inflation. *Federal Reserve Bank of St. Louis*. 63: 3-10.

Ikhide, S. I. 1995. Must a Fiscal Deficit Be Inflationary in a Developing African Country? *Journal of Economic Management*. Vol.2(1): 15-22.

Imegi, J. C. 2014. Budget Deficits and Inflationary Dynamics in Nigeria. *International Journal of Business and Economic Development*. Vol.2(1): 70-77.

International Monetary Fund Fiscal Affairs Department 2017. Investment and Capital Stock Dataset, 1960-2015.

Ishaq, T. and Mohsin, H. M. 2015. Deficits and Inflation; are monetary and financial institutions worthy to consider or not? *Borsa Istanbul Review*. Vol.15(3): 180-191.

Iwayemi, A. 1981. An Econometric Analysis of the Demand for Electricity in Nigeria. *Research for Development*. Vol.1(1): 23-32.

Jalil, A., Tariq, R., and Bibi, N. 2014. Fiscal deficit and inflation: New Evidences from Pakistan Using a Bounds Testing Approach. *Journal of Economic Modelling*. Vol.37: 120-126.

Jhingan, M. L. 2006. Economic development. New Delhi, *Vrinda Publications (P) Ltd*. India: 162-168.

Kanu, S. I., and Ozurumba, B. A. 2014. Capital Formation and Economic Growth in Nigeria. *Global Journal of Human-Social Science*. Vol.14(4): 1-17.

Kassu, T., Mishar, D. K., and Asfaw, M. 2014. Public External Debt, Capital Formation and Economic Growth in Ethiopia. *Journal of Economics and Sustainable Development*. Vol.5(15): 222-232.

Keho, Y. 2010. Budget Deficits and Economic Growth: Causality Evidence and Policy Implications for WEAMU Countries. *Journal of Economics and International Finance*. Vol.2(1): 1-11.

Khan, M. and Rana, A. T. 2013. Is The Relationship Between Inflation and Capital Accumulation Linear? *WebmeetSICom*: 1-26.

Kia, A. 2006. Deficits, Debt Financing, Monetary Policy and Inflation in Developing Countries: Internal or External Factors? Evidence from Iran. *Journal of Asian Economics*. Vol. 17: 879–903.

Komolafe, O. S. 1993. Exchange Rate Policy in Nigeria: (1960-1992). (unpublished) Doctoral Dissertation, University of Sussex, Brighton, United Kingdom.

Kose, N., Furkan, E., Sezgin, A. 2012. The Interest Rate–Inflation Relationship Under an Inflation Targeting Regime: The Case of Turkey. *Journal of Asian Economy*. Vol.23: 476–485.

Kreiter, Z., and Paul, T. K. 2010. Deficit Financing and Inflation in Bangladesh: A Vector Autoregressive Analysis. *The Jahangirnagar Economic Review*. Vol.21: 9-26.

Krkoska, L. 2002. Foreign Direct Investment Financing of Capital Formation in Central and Eastern Europe. European Bank for Reconstruction Development *Working Paper*. Vol.67: 1-18.

Kurzman, C., Werum, R. and Burkhart, R. E. 2002. Democracy's Effect on Economic Growth: A Pooled Time-Series Analysis, 1951-1980. *Studies in Comparative International Development*. Vol.37(1): 3-33.

Kyarem, R. N., and Ogwuche, D. D. 2017. Nigeria's Economic Recovery and Growth Plan: Tackling the Macroeconomic Downside Risks. *International Journal of Advanced Studies in Economics and Public Sector Management*. Vol.5(3): 1-10.

Leeper, E. M. 1991. Equilibria Under Active and Passive Monetary and Fiscal Policy. *Journal of Monetary Economics*. Vol.27: 129–147.

Levhari, D. and Patinkin, D. 1968. The Role of Money in a Simple Growth Model. *American Economic Review*. Vol.584: 713-753.

Lin, H. Y., and Chu, H. P. 2013. Are Fiscal Deficits Inflationary? *Journal of International Money Finance*. Vol 32: 214-233.

Lucas, R. E. 1998. On the Mechanics of Economic Development. *Econometric Society Monographs*. Vol.29: 61-70.

Mbat, D. O. 1988. Public Debt Policy and Management in Nigeria 1965-1983: A Critical Appraisal. *Journal of Public Finance*. Vol.43(3): 403-413.

Madsen, J. B. 2003. Inflation and Investment. *Scottish Journal of Political Economy*. Vol. 50(4): 375-397.

Marcellus, I. O. 2009. Development Planning in Nigeria: Reflection on the National Economic Empowerment and Development Strategy (NEEDS) 2003-2007. *Journal of Social Science*. Vol.20(3): 197-210.

Metin, K. 1998. The Relationship Between Inflation and the Budget Deficit in Turkey. *American Statistical Association Journal of Business and Economic Statistics*. Vol.16(4): 412-422.

Miller, P. 1983. Higher Deficit Policies Lead to Higher Inflation. *Federal Reserve Bank of Minneapolis*. Quarterly Review: 8-19.

_____, and Sargent, T. J. 1984. A Reply to Darby. *Federal Reserve Bank of Minneapolis*. Quarterly Review. Vol.8: 21-26.

Mitsui, T. and Watanabe, S. 1989. Monetary Growth in a Turnpike Environment. *Journal of Monetary Economics*. Vol.24(1): 123-137.

Mishkin, F. S. 2004. The economics of money, banking, and financial markets. *Pearson Publishers*. 7th edition. New York, USA.

Moser, G. 1995. The Main Determinants of Inflation in Nigeria. *Palgrave Macmillian Journals*. Vol.42(2): 270-289.

Murota, R. 2010. Inflation, Fiscal Deficits, and Multiple Steady States in a Cash-In-Advance Model. *Faculty of Economics, Kinki University Working Paper Series*. No.E-14: 1-23.

Musa, Y., Asare, B. K., and Gulumbe, S. U. 2013. Effect of Monetary-Fiscal Policies Interaction on Price and Output Growth in Nigeria. *CBN Journal of Applied Statistics*. Vol.4(1): 55-74.

Nagatani, K. 1970. A Note on Professor Tobin's Money and Economic Growth. *Econometrica*. Vol. 38(1): 171-175.

Nguyen, V. B. 2015. Effects of Fiscal Deficit and Money (M2) Supply on Inflation: Evidence from Selected Economies of Asia. *Journal of Economics, Finance and Administrative Science*. Vol.20: 49-53.

Nurkse, R. 1966. Problems of capital formation in underdeveloped countries. Oxford University Press. London: 1-163.

Nwaogwugwu, I. C. 2005. Public expenditure and fiscal deficits in Nigeria: In Fakiyesi, O.O and Akano, S. O. (eds) Issues in Money, finance and economic management in Nigeria, Yaba, University of Lagos.

Nwaeze, N. C. 2017. Fiscal Deficit, Financing Options and Macroeconomic Stability in Nigeria: A Disaggregated Approach. *Greener Journal of Economics and Accountancy*. Vol.6(2): 43-64.

Ocran, M. K. 2011. Fiscal Policy and Economic Growth in South Africa. *Journal of Economic Studies*. Vol. 38(5): 604-618.

Oladipo, S. O, Akinbobola, T. O. 2011. Budget Deficit and Inflation in Nigeria: A Causal Relationship. *Journal of Emerging Trends in Economics and Management Sciences*. Vol.2(1): 1-8.

Olaloku, F. A. 1975. Deficit Financing in Nigeria, 1965-1970. *The Journal of Modern African Studies*. Vol.13(1): 140-147.

Olanipekun, D. B., and Akeju, K. F. 2013. Money Supply, Inflation and Capital Accumulation in Nigeria. *Journal of Economics and Sustainable Development*. Vol.4(4): 173-181.

Oluranti, S. K. 1999. Fiscal policy planning and management in Nigeria. In Oluranti S. K., Hossein J., Mark H., (Ed.) Measurement and financing fiscal deficit in Nigeria. *National Centre for Economic Management and Administration*. Nigeria.

Olowu, D., Laleye, M., and Ayeni, V. 2007. Impact of the Economic Crisis on the Nigerian Public Administration System. *Research paper of African Association for Public Administration and Management*: 221-237.

Omoruyi, S. E. 1999. Public Debt: structure, trend and consequences. Fiscal Policy Planning and Management in Nigeria. Eds. Komolafe O.S, Jalilian, H. and Hiley, M. *National Centre for Economic Management and Administration*. Nigeria.

Onwioduokit, E. A. 1999. Fiscal Deficits and Inflation Dynamics in Nigeria: An Empirical Investigation of Causal Relationship. *Central Bank of Nigeria Economic and Financial Review*. Vol.37(2): 1-16.

Organisation of the Petroleum Exporting Countries. 2016. Annual Statistical Bulletin.

Organisation for Economic Cooperation and Development/African Development Bank: African Economic Outlook. 2002.

Organisation for Economic Cooperation and Development/African Development Bank: African Economic Outlook. 2006.

Orji, A., and Mba, P. N. 2012. Economic growth in Nigeria: A macroeconomic analysis of the role of foreign private investment and capital formation. *LAP Lambert Academic Publishing GmbH & Co. KG*. USA.

Oseni, I. O., and Sanni, H. Y. 2016. Does Fiscal Deficit Granger Cause Impulsiveness in Inflation Rate in Nigeria? *Acta Universitatis Danubius*. Vol.12(4): 208-216.

Oyejide, T. A. 1972. Deficit Financing, Inflation and capital formation: An Analysis of the Nigeria Experience, 1957-1970. *The Nigeria Journal of Economic and Social Sciences*. Vol.14(1): 22-43.

Ozurumba, B. A. 2012. Fiscal Deficits and Inflation in Nigeria: The Causality Approach. *Journal of Research in National Development*. Vol.10(3): 357-368.

Paiko, I. I. 2012. Deficit Financing and its Implication on Private Sector Investment: The Nigerian Experience. *Arabian Journal of Business and Management Review* (OMAN Chapter). Vol.1(9): 45-62.

Parker, K. 1995. The Behaviour of Private Investment. *International Monetary Fund Occasional Paper*. No.134: 1-32.

Pekarski, S. 2011. Budget Deficits and Inflation Feedback. *Structural Change and Economic Dynamics*. Vol.22: 1-11.

Phillips, P. C., Perron, P. 1988. Testing for a Unit Root in Time Series Regression. *Biometrika*. Vol.75(2): 335–346.

Pindyck, R., and Solimano, A. 1993. Economic Instability and Aggregate Investment. *NBER Macroeconomics Annual*. Vol.8: 259-303.

Pradhan, B. K., Ratha, D. K., and Sarma, A. 1990. Complementarity between Public and Private Investment in India. *Journal of Development Economics*. Vol. 33(1): 101–16.

Proshare. (2020). Infrastructure Development in Nigeria: The PPP Approach. Available at https://www.proshareng.com/news/Nigeria%20Economy/Infrastructure-Development-in-Nigeria-The-PPP-Approach/54712.Sourced on 19/03/2021.

Romer, D. 1993. Openness and inflation, theory and evidence. *Quarterly Journal of Economics*. Vol.8: 870–903.

Romer, P. M. 1986. Increasing Returns and Long-term Growth. *Journal of Political Economy*. Vol.94(5): 1002-1037.

Samimi, A. J., Ghaderi, S., Hosseinzadeh, R., and Nademi, Y. 2012. Openness and inflation: new empirical panel data evidence. *Economic Letters*. Vol.117: 573–577.

Sargent, T., and Wallace, N. 1981. Some unpleasant monetarist arithmetic. *Federal Reserve Bank of Minneapolis Quarterly Review*. Vol.5(3): 1-17.

Serven, L. 1996. Does Public Capital Crowd our Private Capital? Evidence from India. *The World Bank Policy Research Working Paper 1613*: 1-36.

Serven, L. and Solimano, A. 1993. Debt Crisis, Adjustment Policies and Capital Formation in Developing Countries: Where do we stand? *World Development*. Vol.21(1): 127-140.

Shafik, N. 1992. Modelling Private Investment in Egypt. *Journal of Development Economics*. Vol.39: 263–277.

Shehu, M. 2016. National Development Plan and Planning from 1968 till date: The Nigerian Experience. *An Unpublished Research Project*.

Sims, C. A. 1994. A simple model for study of the determination of the price level and the interaction of monetary and fiscal policy. *Economic Theory*. Vol.4: 381–399.

Sidrauski, M. 1967. Rational Choice and Patterns of Growth in a Monetary Economy. *American Economic Review*. Vol.57(2): 534-544.

Solomon, M. and Wet, W. A. 2004. The Effect of a Budget Deficit on Inflation: The Case of Tanzania. *SAJEMS*. Vol.7(1): 100-116.

Solow, R. M. 1956. A Contribution to the Theory of Economic Growth. *The Quarterly Journal of Economics*. Vol.70(1): 65-94.

Sprinkle, B. 1981. Testimony in Conduct of Monetary policy: Hearings Before the Committee on Banking, Finance and Urban Affairs, House of Representatives, U.S. Congress, July 23, 97th Congress: Serial 97-17: 428-492

Srinivasakumar, V. Renganathan, R., and Vijayabanu, C. 2015. Capital Formation and Inflation on Economic Growth in India: A Causality Analysis. *Research Journal of Applied Sciences, Engineering and Technology*. Vol.9(12): 1148-1152.

Stein, J. L. 1969. Neoclassical and Keynes-Wicksell Monetary Growth Models. *Journal of Money, Credit and Banking*. Vol.1(2): 153-171.

Ssebulime, K., and Edward, B. 2019. Budget Deficit and Inflation Nexus in Uganda 1980-2016: A Cointegration and Error Correction Modelling Approach. *Journal of Economic Structures*. Vol.8(3): 1-14.

Stockman, A. C. 1981. Anticipated Inflation and the Capital Stock in a Cash-in-Advance Economy. *Journal of Monetary Economics*. Vol.8: 387-393.

Swan, T. W. 1956. Economic Growth and Capital Accumulation. *The Economic Society of Australia*. Vol.32(2): 334-361.

Thadden, L. 2002. Money, Inflation, and Capital Formation in a Model of Overlapping Generations with Multiple Means of Payment. *Oxford Economic Papers*. Vol. 54: 534-560.

Tobin, J. 1955. A Dynamic Aggregative Model. *Journal of Political Economy*, Vol. 63(2): 103-115.

Tobin, J. 1965. Money and Economic Growth. *Econometrica*, Vol. 33(4): 671-684.

Tsoulfidis, L. 2008. Quantity theory of money. In International encyclopaedia of social sciences. Second edition, *Thomson Gale Publisher*: 659-661.

Tule, M. K., Nuruddeen, U., Ogundele, O. S., and Martins, A. O. 2019. A Test of the Fiscal Theory of Price Level: Case Study of Nigeria. *International Journal of Economics and Financial Issues*. Vol.9(6): 67-76.

Tun, W. U., and Wong, C. 1982. Determinants of Private Investment in Developing Countries. *Journal of Development Studies*. Vol.19(1): 19–36.

Usoro, E. J. 1983. Development planning and economic change in Nigeria (1960-1980). In Development economics and planning: Essays in honour of Ojebunji Aboyade: 130-149.

Uzawa, H. 1966. On a Neoclassical Model of Economic Growth. *Economic Studies Quarterly*. Vol.17(1): 1-14.

Wacziarg, R. 2001. Measuring the Dynamic Gains from Trade. *The World Bank Economic Review*. Vol.15(3): 393-429.

Walsh, C. E. 2010. Monetary Theory and Policy. *Cambridge, MA: MIT Press*.

Wooldridge, J. M. 2009. Introductory econometrics: A modern approach. 4th edition. *South-Western Cengage Learning*. USA.

World Development Indicator. 2019. *World Bank*, Washington D.C.

_____. 2018. *World Bank*, Washington D.C.

Yakita, A. 2008. Sustainability of Public Debt, Public Capital Formation, and Endogenous Growth in an Overlapping Generations Setting. *Journal of Public Economics*. Vol.92: 897-914.

Yesufu, T. M. 1996. The Nigerian Economy: Growth Without Development. *Benin Social Science Series for Africa*. University of Benin, Benin City: 89-110.

APPENDICES

Appendix 1: Unit Root

Unit Root Test Table (PP) At Level								
With Constant	LN(GFC)	DEFGDP	LN(CPI)	LN(BM)	LN(RGDP)	DMFGDP	XTFGDP	OSGDP
t-Stat.	-2.7287	-5.7309	-0.7788	-0.8483	0.3645	-2.8369	-1.8074	-5.8593
Prob.	***0.0768***	***0.0000***	***0.8158***	***0.7957***	***0.9792***	***0.0608***	***0.3725***	***0.0000***
With constant & trend								
t-Stat.	-2.7003	-5.6861	-1.1194	-1.9448	-1.0786	-2.8188	-1.7442	-7.2619
Prob.	***0.2413***	***0.0001***	***0.9147***	***0.6154***	***0.9219***	***0.1981***	***0.7155***	***0.0000***
Without Constant & Trend								
t-Stat.	-0.0572	-4.5076	0.9750	7.2397	2.8705	-1.3422	-1.3292	-4.4483
Prob.	***0.6586***	***0.0000***	***0.9103***	***1.0000***	***0.9987***	***0.1639***	***0.1676***	***0.0000***
PP At First Difference								
With Constant	LN(GFC)	DEFGDP	LN(CPI)	LN(BM)	LN(RGDP)	DMFGDP	XTFGDP	OSGDP
t-Stat.	-8.1177	-31.5853	-3.2375	-4.1144	-5.2660	-5.7099	-5.0459	-20.070
Prob.	***0.0000***	***0.0001***	***0.0241***	***0.0023***	***0.0001***	***0.0000***	***0.0001***	***0.0001***
With constant & trend								
t-Stat.	-8.0654	-36.8117	-3.2202	-4.1537	-5.4345	-5.5838	-5.0262	-24.493
Prob.	***0.0000***	***0.0000***	***0.0932***	***0.0104***	***0.0003***	***0.0002***	***0.0009***	***0.0000***
Without Constant & Trend								
t-Stat.	-8.3085	-30.8213	-1.7299	-1.7362	-4.5282	-5.7827	-5.1021	-16.721
Prob.	***0.0000***	***0.0000***	***0.0792***	***0.0782***	***0.0000***	***0.0000***	***0.0000***	***0.0000***

Unit Root Test Table (ADF) At Level								
With Constant	LN(GFC)	DEFGDP	LN(CPI)	LN(BM)	LN(RGDP)	DMFGDP	XTFGDP	OSGDP
t-Stat.	-2.6947	-5.6146	-1.1449	-1.1022	0.7628	-2.6918	-1.9365	-2.7385
Prob.	***0.0825***	***0.0000***	***0.6897***	***0.7070***	***0.9923***	***0.0830***	***0.3132***	***0.0756***
With constant & trend								
t-Stat.	-2.6657	-5.5650	-1.7986	-2.9739	-1.2204	-2.6181	-1.8881	-7.6216
Prob.	***0.2549***	***0.0002***	***0.6892***	***0.1504***	***0.8943***	***0.2745***	***0.6445***	***0.0000***
Without Constant & Trend								
t-Stat.	-0.4071	-4.2937	0.4902	3.2469	2.3469	-1.3427	-1.0516	-2.0126
Prob.	***0.5315***	***0.0001***	***0.8174***	***0.9995***	***0.9948***	***0.1638***	***0.2603***	***0.0434***
ADF At First Difference								
With Constant	LN(GFC)	DEFGDP	LN(CPI)	LN(BM)	LN(RGDP)	DMFGDP	XTFGDP	OSGDP
t-Stat.	-6.6018	-4.8994	-3.4012	-4.1610	-5.1094	-5.4843	-5.0313	-11.355
Prob.	***0.0000***	***0.0002***	***0.0160***	***0.0020***	***0.0001***	***0.0000***	***0.0001***	***0.0000***
With constant & trend								
t-Stat.	-6.5236	-4.8781	-4.1959	-4.2455	-5.3808	-5.4037	-5.0370	-11.232
Prob.	***0.0000***	***0.0015***	***0.0095***	***0.0083***	***0.0003***	***0.0003***	***0.0009***	***0.0000***
Without Constant & Trend								
t-Stat.	-6.6746	-4.9561	-1.9026	-1.9103	-4.3490	-5.5528	-5.0880	-11.477
Prob.	***0.0000***	***0.0000***	***0.0552***	***0.0543***	***0.0001***	***0.0000***	***0.0000***	***0.0000***

Source: EViews Estimated Output

Appendix 2: Equation 3.37 GMM and 2SLS Outputs

2.1 GMM and 2SLS Outputs

Regressand Variable: LN(GFC)				
Technique: GMM				
Instrument specification: LN(GFC(-1)) DEFGDP LN(CPI(-1)) LN(RGDP) LN(PUMPR(-1)) LN(EXCH(-1)) FGRGDP(-1) LN(M1(-1)) RINT(-1) BSY(-1) DCRGDP(-1)				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-33.55732	6.824944	-4.916864	0.0000
DEFGDP	0.018970	0.014429	1.314696	0.1965
LN(CPI)	-0.199224	0.040791	-4.883976	0.0000
LN(GFC(-1))	0.482527	0.083015	5.812511	0.0000
LN(RGDP)	1.137870	0.226820	5.016629	0.0000
R^2	0.631771		Mean dep. var	2.58487
Adj. R^2	0.593010		S.D dep. var.	0.60774
S.E of reg.	0.387715		Sum sq. resid.	5.71227
D-W stat.	1.079502		J-stat.	5.54827
Instru. Rank	12		Prob(J-stat.)	0.59337
Regressand Variable: LN(GFC)				
Technique: 2SLS				
Instrument specification: LN(GFC(-1)) DEFGDP LN(CPI(-1)) LN(RGDP) LN(PUMPR(-1)) LN(EXCH(-1)) FGRGDP(-1) LN(M1(-1)) RINT(-1) BSY(-1) DCRGDP(-1)				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-29.32233	9.115383	-3.216797	0.0026
DEFGDP	0.010127	0.020781	0.487337	0.6288
LN(CPI)	-0.182920	0.059121	-3.093980	0.0037
LN(GFC(-1))	0.512602	0.119637	4.284643	0.0001
LN(RGDP)	0.998043	0.302657	3.297607	0.0021
R^2	0.636619		Mean dep. var.	2.58487
Adj. R^2	0.598368		S.D dep. var.	0.607744
S.E of reg.	0.385154		Sum sq. resid.	5.63706
F-stat.	16.84062		D-W stat.	1.13419
Prob(F-stat.)	0.000000		2nd-Stage SSR	5.52001
J-stat.	3.141769		Instru. Rank	12
Prob(J-stat.)	0.871585			

Source: EViews Estimated Output.

2.2GMM and 2SLS Endogeneity Test

GMM Endogeneity Test				
H_0: LN(CPI) are exogenous				
Equation: **CAPMODEL**				
Specification:LN(GFC) C DEFGDP LN(CPI) LN(GFC(-1))				
Instrument specification: C LN(GFC(-1)) DEFGDP LN(CPI(-1))LN(RGDP) LN(PUMPR(-1)) LN(EXCH(-1)) FGRGDP(-1) LN(M1(-1)) RINT(-1) BSY(-1) DCRGDP(-1)				
Endogenous variable to handle as exogenous: LN(CPI)				
	Value	Df		Prob.
Diff. in J-stat	3.905938	1		0.0481
J-stat. sum.:	Value			
Restricted J-stat.	9.451808			
Unrestricted J-stat.	5.545870			
Restricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-25.95386	5.786519	-4.485229	0.0001
DEFGDP	0.013142	0.014050	0.935368	0.3555
LN(CPI)	-0.156766	0.036279	-4.321133	0.0001
LN(GFC(-1))	0.541684	0.078992	6.857484	0.0000
LN(RGDP)	0.884946	0.192320	4.601438	0.0000
R^2	0.635346		Mean dep. var..	2.584866
Adj. R^2	0.596961		S. D. dep. var.	0.607744
S.E. of reg.	0.385828		Sum sq. resid.	5.656813
D-W stat..	1.162854		J-stat.	9.451808
Instru. rank	13		Prob(J-stat.)	0.305626
Unrestricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-32.74435	6.433943	-5.089313	0.0000
DEFGDP	0.017846	0.013421	1.329717	0.1915
LN(CPI)	-0.194476	0.039079	-4.976448	0.0000
LN(GFC(-1))	0.487551	0.079148	6.160001	0.0000
LN(RGDP)	1.110962	0.213926	5.193207	0.0000
R^2	0.632887		Mean dep. var..	2.584866
Adj. R^2	0.594243		S. D. dep. var.	0.607744
S.E. of reg.	0.387127		Sum sq. resid.	5.694958
D-W stat.	1.088288		J-stat.	5.545870
Instru. rank	12		Prob(J-stat.)	0.593657
2SLS Endogeneity Test				
H_0: LN(CPI) are exogenous				
Equation: **CAPMODEL**				
Specification:LN(GFC) C DEFGDP LN(CPI) LN(GFC(-1))				
Instrument specification: C LN(GFC(-1)) DEFGDP LN(CPI(-1))LN(RGDP) LN(PUMPR(-1)) LN(EXCH(-1)) FGRGDP(-1) LN(M1(-				

1)) RINT(-1) BSY(-1) DCRGDP(-1)				
Endogenous variable to handle as exogenous: LN(CPI)				
	Value	Df		Prob.
Diff. in J-stat	3.075032	1		0.0795
J-stat. sum.:	Value			
Restricted J-stat.	6.218341			
Unrestricted J-stat.	3.143309			
Restricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-28.20616	9.090893	-3.102683	0.0036
DEFGDP	0.009562	0.020773	0.460327	0.6479
LN(CPI)	-0.174875	0.058928	-2.967590	0.0052
LN(GFC(-1))	0.521480	0.119500	4.363835	0.0001
LN(RGDP)	0.960789	0.301836	3.183151	0.0029
R^2	0.636797		Mean dep. var.	2.584866
Adj. R^2	0.598565		S. D. dep. var.	0.607744
S.E. of reg.	0.385060		Sum sq. resid.	5.634300
F-stat.	16.65617		D-W stat..	1.145992
Prob(F-stat.)	0.000000		2nd-Stage SSR	5.634300
J-stat.	6.218341		Instru. Rank	13
Prob(J-stat.)	0.622789			
Unrestricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-32.74435	6.433943	-5.089313	0.0000
DEFGDP	0.017846	0.013421	1.329717	0.1915
LN(CPI)	-0.194476	0.039079	-4.976448	0.0000
LN(GFC(-1))	0.487551	0.079148	6.160001	0.0000
LN(RGDP)	1.110962	0.213926	5.193207	0.0000
R^2	0.636619		Mean dep. var..	2.584866
Adj. R^2	0.598368		S. D. dep. var.	0.607744
S.E. of reg.	0.385154		Sum sq. resid.	5.637063
D-W stat.	1.134189		J-stat.	3.143309
Instru. rank	12		Prob(J-stat.)	0.871436

Source: EViews Estimated Output.

2.3 GMM and 2SLS weak instrument diagnostic

Weak Instrument Diagnostics: GMM and 2SLS Equation: CAPMODEL		
Cragg-Donald F-stat.	639.4219	
	GMM	2SLS
Stock-Yogo TSLS critical values (relative bias)		
5%	20.25	20.25
10%	11.39	11.39
20%	6.69	6.69
30%	4.99	4.99
Stock-Yogo critical values (size)		
10%	33.84	33.84
15%	18.54	18.54
20%	13.24	13.24
25%	10.50	10.50
Moment selection criteria		
SIC-based:	-20.78014	-23.18663
HQIC-based:	-13.09080	-15.49730
Relevant MSC:	-11.26133	-7.074928

Source: EViews Estimated Output.

2.4 2SLS Serial Correlation Test

Breusch-Godfrey Serial Correlation LM Test				
Obs. R^2	13.81135	Prob. Chi-Sq. (8)		0.0868
Regressand Variable: RESID.				
Technique: 2SLS				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-26.37317	15.71940	-1.677747	0.1038
LN(GFC(-1))	-0.548584	0.324101	-1.692634	0.1009
DEFGDP	0.017049	0.021735	0.784382	0.4390
LN(CPI)	-0.165877	0.107151	-1.548079	0.1321
LN(RGDP)	0.907118	0.537539	1.687538	0.1019
RESID.(-1)	0.820745	0.366906	2.236933	0.0329
RESID.(-2)	0.155582	0.271268	0.573536	0.5706
RESID.(-3)	-0.142449	0.229480	-0.620746	0.5395
RESID.(-4)	0.155717	0.206243	0.755016	0.4561
RESID.(-5)	-0.360216	0.190249	-1.893398	0.0680
RESID.(-6)	0.087399	0.198104	0.441180	0.6622
RESID.(-7)	-0.075529	0.200932	-0.375894	0.7096
RESID.(-8)	-0.264850	0.199463	-1.327810	0.1943
R^2	0.321194		Mean dep. var.	-5.86E-16
Adj. R^2	0.049672		S. D. dep. var.	0.366355
S.E. of reg.	0.357140		AIC	1.023271
Sum sq. resid.	3.826471		SIC	1.555727
Ln likelihood	-9.000328		H-Q criter.	1.219624
F-stat.	1.182939		D-W stat..	1.641337
Prob(F-stat.)	0.338415			

Source: EViews Estimated Output.

2.5 2SLS Heteroskedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey				
F-stat.	2.151311	Prob. F(4,38)		0.0932
Obs. R^2	7.939568	Prob. Chi-Sq.(4)		0.0938
Scaled explained SS	16.12614	Prob. Chi-Sq.(4)		0.0029
Regressand Variable: RESID.^2				
Technique: Least Squares				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	4.139029	6.780258	0.610453	0.5452
DEFGDP	-0.007742	0.015493	-0.499696	0.6202
LN(CPI)	0.046666	0.043951	1.061788	0.2950
LN(GFC(-1))	-0.147617	0.089127	-1.656251	0.1059
LN(RGDP)	-0.119451	0.225118	-0.530616	0.5988
R^2	0.184641		Mean dep. var.	0.131094
Adj. R^2	0.098814		S. D. dep. var.	0.302525
S.E. of reg.	0.287189		AIC	0.451592
Sum sq. resid.	3.134147		SIC	0.656383
Ln likelihood	-4.709234		H-Q criter.	0.527113
F-stat.	2.151311		D-W stat.	1.448068
Prob(F-stat.)	0.093246			

Source: EViews Estimated Output.

Appendix 3: Equation 4.38 GMM and 2SLS Outputs

3.1 GMM and 2SLS Outputs

Regressand Variable: LN(CPI)				
Technique: GMM				
Instrument specification: DEFGDP LN(GFC) LN(BM(-1)) LN(CPI(-1)) LN(RMB) LN(RGDP) LN(CRES) CRR(-1) RINT(-1) GXGDP BGSGDP(-1) FGRGDP(-1) DCRGDP(-1) DCRGDP				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-1.632386	0.663517	-2.460201	0.0181
DEFGDP	0.008802	0.003153	1.792060	0.1078
LN(GFC)	-0.024090	0.017897	-1.346060	0.1855
LN(BM)	0.075549	0.028841	2.619475	0.0122
LN(CPI(-1))	0.897592	0.036742	24.42954	0.0000
R^2	0.87593		Mean dep. var.	1.826472
Adj. R^2	0.83364		S.D dep. var.	2.514956
S.E of reg.	0.129134		Sum sq. resid.	0.700378
D-W stat.	0.747312		J-stat.	10.72496
Instru. rank	15		Prob(J-stat.)	0.379344
Regressand Variable: LN(GFC)				
Technique: 2SLS				
Instrument specification: LN(GFC(-1)) DEFGDP LN(CPI(-1)) LN(RGDP) LN(PUMPR(-1)) LN(EXCH(-1)) FGRGDP(-1) LN(M1(-1)) RINT(-1) BSY(-1) DCRGDP(-1)				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-1.098602	1.106299	-0.993043	0.3264
DEFGDP	0.006067	0.005997	1.011602	0.3175
LN(GFC)	-0.062544	0.037617	-1.662673	0.1038
LN(BM)	0.059044	0.048183	1.225416	0.2272
LN(CPI(-1))	0.919803	0.059516	15.45466	0.0000
R^2	0.87593		Mean dep. var.	1.826472
Adj. R^2	0.83364		S.D dep. var.	2.514956
S.E of reg.	0.120371		Sum sq. resid.	0.608546
F-stat.	5009.665		D-W stat.	0.870666
Prob(F-stat.)	0.000000		2nd-Stage SSR	0.606101
J-stat.	22.71848		Instru. Rank	15
Prob(J-stat.)	0.011835			

Source: EViews Estimated Output.

3.2GMM and 2SLS Endogeneity Test

GMM Endogeneity Test				
H_0: LN(BM) are exogenous				
Equation: **CPIMODEL**				
Specification:LN(CPI) C DEFGDP LN(GFC) LN(BM) LN(CPI(-1))				
Instrument specification: C DEFGDP LN(GFC) LN(BM(-1)) LN(CPI(-1)) LN(RMB) LN(RGDP) LN(CRES) CRR(-1) RINT(-1) GXGDP BGSGDP(-1) FGRGDP(-1) DCRGDP(-1) DCRGDP				
Endogenous variable to handle as exogenous: LN(BM)				
	Value	Df		Prob.
Diff. in J-stat	5.798806	1		0.0160
J-stat. sum.:	Value			
Restricted J-stat.	13.30403			
Unrestricted J-stat.	7.505222			
Restricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-1.479138	0.861410	-1.717112	0.0933
DEFGDP	0.027287	0.008104	3.366971	0.0016
LN(GFC)	0.022804	0.027835	0.819241	0.4173
LN(BM)	0.061238	0.037381	1.638217	0.1088
LN(CPI(-1))	0.924355	0.048059	19.23387	0.0000
R^2	0.996558		Mean dep. var.	1.826472
Adj. R^2	0.996231		S. D. dep. var.	2.514956
S.E. of reg.	0.154407		Sum sq. resid.	1.001350
D-W stat.	0.900922		J-stat.	13.30403
Instru. rank	16		Prob(J-stat.)	0.273920
Unrestricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-1.159407	0.819170	-1.415344	0.1643
DEFGDP	0.010563	0.008135	1.298429	0.2012
LN(GFC)	-0.016875	0.026313	-0.641319	0.5248
LN(BM)	0.054629	0.035493	1.539155	0.1313
LN(CPI(-1))	0.927499	0.045508	20.38120	0.0000
R^2	0.997588		Mean dep. var.	1.826472
Adj. R^2	0.997359		S. D. dep. var.	2.514956
S.E. of reg.	0.129255		Sum sq. resid.	0.701687
D-W stat.	0.796352		J-stat.	7.505222
Instru. rank	15		Prob(J-stat.)	0.677042
2SLS Endogeneity Test				
H_0: LN(BM) are exogenous				
Equation: **CPIMODEL**				
Specification:LN(CPI) C DEFGDP LN(GFC) LN(BM) LN(CPI(-1))				
Instrument specification: C DEFGDP LN(GFC) LN(BM(-1)) LN(CPI(-1)) LN(RMB) LN(RGDP) LN(CRES) CRR(-1) RINT(-1) GXGDP BGSGDP(-1) FGRGDP(-1) DCRGDP(-1) DCRGDP				
Endogenous variable to handle as exogenous: LN(BM)				
	Value	Df		Prob.

Diff. in J-stat	0.196025	1		0.6579
J-stat. sum.:	Value			
Restricted J-stat.	22.91936			
Unrestricted J-stat.	22.72334			
Restricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-0.996376	1.081816	-0.921022	0.3623
DEFGDP	0.006167	0.005993	1.029180	0.3093
LN(GFC)	-0.060538	0.037339	-1.621326	0.1124
LN(BM)	0.054579	0.047110	1.158529	0.2532
LN(CPI(-1))	0.925281	0.058210	15.89562	0.0000
R^2	0.997909		Mean dep. var.	1.826472
Adj. R^2	0.997710		S. D. dep. var.	2.514956
S.E. of reg.	0.120358		Sum sq. resid.	0.608416
F-stat.	5010.697		D-W stat.	0.875894
Prob(F-stat.)	0.000000		2nd-Stage SSR	0.608416
J-stat.	22.91936		Instru. Rank	16
Prob(J-stat.)	0.018144			
Unrestricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-1.098602	1.106181	-0.993149	0.3263
DEFGDP	0.006067	0.005997	1.011710	0.3175
LN(GFC)	-0.062544	0.037613	-1.662851	0.1038
LN(BM)	0.059044	0.048178	1.225547	0.2272
LN(CPI(-1))	0.919803	0.059510	15.45632	0.0000
R^2	0.997908		Mean dep. var.	1.826472
Adj. R^2	0.997709		S. D. dep. var.	2.514956
S.E. of reg.	0.120371		Sum sq. resid.	0.608546
D-W stat.	0.870666		J-stat.	22.72334
Instru. rank	15		Prob(J-stat.)	0.011815

Source: EViews Estimated Output.

3.3 GMM and 2SLS Weak Instrument Diagnostic Test

Weak Instrument Diagnostics: GMM and 2SLS Equation: CPIMODEL		
Cragg-Donald F-stat.	63.46358	
	GMM	2SLS
Stock-Yogo TSLS critical values (relative bias)		
5%	20.90	20.90
10%	11.51	11.51
20%	6.56	6.56
30%	4.80	4.80
Stock-Yogo critical values (size)		
10%	20.90	20.90
15%	11.51	11.51
20%	6.56	6.56
25%	4.80	4.80
Moment selection criteria		
SIC-based:	-27.77651	-15.78300
HQIC-based:	-16.37208	-4.378565
Relevant MSC:	-27.36248	-19.25100

Source: EViews Estimated Output.

3.4 2SLS Serial Correlation Test

Breusch-Godfrey Serial Correlation LM Test				
Obs. R^2	12.77500	Prob. Chi-Sq. (8)		0.1054
Regressand Variable: RESID.				
Technique: 2SLS				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-1.402672	1.278539	-1.097090	0.2803
DEFGDP	-0.002296	0.005128	-0.447785	0.6571
LN(GFC)	-0.044449	0.037960	-1.170941	0.2498
LN(BM)	0.063249	0.055143	1.147006	0.2594
LN(CPI(-1))	-0.078233	0.068681	-1.139081	0.2626
RESID.(-1)	0.608499	0.170334	4.746555	0.0568
RESID.(-2)	-0.404696	0.219965	-1.839817	0.0745
RESID.(-3)	0.299082	0.231104	1.294144	0.2043
RESID.(-4)	-0.111958	0.233728	-0.479009	0.6350
RESID.(-5)	0.170544	0.240404	0.709406	0.4829
RESID.(-6)	-0.027408	0.234367	-0.116945	0.9076
RESID.(-7)	-0.115477	0.218625	-0.528195	0.6008
RESID.(-8)	-0.099210	0.187991	-0.527736	0.6011
R^2	0.463298		Mean dep. var.	7.62E-17
Adj. R^2	0.273874		S. D. dep. var.	0.115019
S.E. of reg.	0.098011		AIC	-1.578074
Sum sq. resid.	0.326608		SIC	-1.066331
Ln likelihood	50.08473		H-Q criter.	-1.385501
F-stat.	2.445821		D-W stat.	2.071285
Prob(F-stat.)	0.020239			

Source: EViews Estimated Output.

3.5 2SLS Heteroskedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey				
F-stat.	1.486081	Prob. F(4,38)		0.2236
Obs. R^2	5.827243	Prob. Chi-Sq.(4)		0.2124
Scaled explained SS	9.082764	Prob. Chi-Sq.(4)		0.0591
Regressand Variable: RESID.^2				
Technique: Least Squares				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	0.005975	0.227664	0.026246	0.9792
DEFGDP	0.001025	0.001261	0.812556	0.4211
LN(GFC)	-0.014529	0.007858	-1.848955	0.0715
LN(BM)	0.001825	0.009914	0.184059	0.8549
LN(CPI(-1))	-0.003234	0.012250	-0.263986	0.7931
R^2	0.123984		Mean dep. var.	0.012948
Adj. R^2	0.040554		S. D. dep. var.	0.025859
S.E. of reg.	0.025329		AIC	-4.413451
Sum sq. resid.	0.026945		SIC	-4.216626
Ln likelihood	108.7161		H-Q criter.	-4.339384
F-stat.	1.486081		D-W stat.	0.977188
Prob(F-stat.)	0.223613			

Source: EViews Estimated Output.

Appendix 4: Equation 4.39 GMM and 2SLS Outputs

4.1 GMM and 2SLS Output

Regressand Variable: LN(BM)				
Technique: GMM				
Instrument specification: LN(CPI(-1)) DEFGDP LN(GFC) LN(BM(-1)) GXGDP FGRGDP RINT(-1) LN(M1(-1)) BSY(-1) LN(EXCH(-1))				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	3.726270	2.850375	1.307291	0.1984
DEFGDP	0.136700	0.052448	2.606373	0.0127
LN(CPI)	0.307889	0.168544	1.826755	0.0750
LN(GFC)	0.150256	0.084663	1.774749	0.0834
LN(BM(-1))	0.809814	0.127962	6.328559	0.0000
R^2	0.971194		Mean dep. var.	26.11162
Adj. R^2	0.968384		S.D dep. var.	3.143645
S.E of reg.	0.558971		Sum sq. resid.	12.81040
D-W stat.	1.134861		J-stat.	6.577888
Instru. rank	11		Prob(J-stat.)	0.361652
Regressand Variable: LN(BM)				
Technique: 2SLS				
Instrument specification: LN(CPI(-1)) DEFGDP LN(GFC) LN(BM(-1)) GXGDP FGRGDP RINT(-1) LN(M1(-1)) BSY(-1) LN(EXCH(-1))				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	2.085028	1.242213	1.678479	0.1009
DEFGDP	-0.009269	0.006981	-1.327734	0.1916
LN(CPI)	0.095730	0.069617	1.375104	0.1766
LN(GFC)	0.040076	0.045446	0.881835	0.3830
LN(BM(-1))	0.917887	0.055496	16.53955	0.0000
R^2	0.978199		Mean dep. var.	26.11162
Adj. R^2	0.968023		S.D dep. var.	3.143645
S.E of reg.	0.139774		Sum sq. resid.	0.801012
F-stat.	5679.972		D-W stat.	1.015226
Prob(F-stat.)	0.000000		2nd-Stage SSR	0.836875
J-stat.	15.41119		Instru. Rank	11
Prob(J-stat.)	0.017289			

Source: EViews Estimated Output.

4.2GMM and 2SLS Endogeneity Test

GMM Endogeneity Test				
H_0: LN(CPI) are exogenous				
Equation: **BMMODEL**				
Specification:LN(BM) C DEFGDP LN(CPI) LN(GFC) LN(BM(-1))				
Instrument specification: C LN(CPI(-1)) DEFGDP LN(GFC) LN(BM(-1)) GXGDP FGRGDP RINT(-1) LN(M1(-1)) BSY(-1) LN(EXCH(-1))				
Endogenous variable to handle as exogenous: LN(CPI)				
	Value	df		Prob.
Diff. in J-stat	4.017390	1		0.0450
J-stat. sum.:	Value			
Restricted J-stat.	6.577894			
Unrestricted J-stat.	2.560504			
Restricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	3.730998	2.074720	1.798314	0.0795
DEFGDP	0.136807	0.049700	2.752644	0.0088
LN(CPI)	0.308212	0.127139	2.424211	0.0198
LN(GFC)	0.150439	0.065296	2.303953	0.0264
LN(BM(-1))	0.809579	0.091165	8.880382	0.0000
R^2	0.971160		Mean dep. var.	26.11162
Adj. R^2	0.968347		S. D. dep. var.	3.143645
S.E. of reg.	0.559299		Sum sq. resid.	12.82543
D-W stat.	1.134972		J-stat.	6.577894
Instru. rank	12		Prob(J-stat.)	0.474110
Unrestricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	3.105937	2.693098	1.153295	0.2555
DEFGDP	0.040219	0.049556	0.811591	0.4217
LN(CPI)	0.187828	0.159240	1.179527	0.2450
LN(GFC)	0.063555	0.079980	0.794638	0.4314
LN(BM(-1))	0.863283	0.120899	7.140506	0.0000
R^2	0.975184		Mean dep. var.	26.11162
Adj. R^2	0.964714		S. D. dep. var.	3.143645
S.E. of reg.	0.228552		Sum sq. resid.	2.141681
D-W stat.	1.318493		J-stat.	2.560504
Instru. rank	11		Prob(J-stat.)	0.861636
2SLS Endogeneity Test				
H_0: LN(CPI) are exogenous				
Equation: **BMMODEL**				
Specification: LN(BM) C DEFGDP LN(CPI) LN(GFC) LN(BM(-1))				
Instrument specification: C LN(CPI(-1)) DEFGDP LN(GFC) LN(BM(-1)) GXGDP FGRGDP RINT(-1) LN(M1(-1)) BSY(-1) LN(EXCH(-1))				
Endogenous variable to handle as exogenous: LN(CPI)				
	Value	Df		Prob.
Diff. in J-stat	3.047353	1		0.0809

J-stat. sum.:	Value			
Restricted J-stat.	18.57972			
Unrestricted J-stat.	15.53237			
Restricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	2.744786	1.178225	2.329594	0.0248
DEFGDP	-0.008586	0.006943	-1.236687	0.2232
LN(CPI)	0.133172	0.065944	2.019470	0.0500
LN(GFC)	0.055215	0.044429	1.242756	0.2210
LN(BM(-1))	0.888251	0.052608	16.88427	0.0000
R^2	0.978213		Mean dep. var.	26.11162
Adj. R^2	0.968039		S. D. dep. var.	3.143645
S.E. of reg.	0.139228		Sum sq. resid.	0.794763
F-stat.	5725.176		D-W stat..	1.041059
Prob(F-stat.)	0.000000		2nd-Stage SSR	0.794763
J-stat.	18.57972		Instru. Rank	12
Prob(J-stat.)	0.009611			
Unrestricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	2.085028	1.237357	1.685065	0.0996
DEFGDP	-0.009269	0.006954	-1.332944	0.1899
LN(CPI)	0.095730	0.069345	1.380500	0.1749
LN(GFC)	0.040076	0.045268	0.885296	0.3812
LN(BM(-1))	0.917887	0.055280	16.60445	0.0000
R^2	0.978199		Mean dep. var.	26.11162
Adj. R^2	0.968023		S. D. dep. var.	3.143645
S.E. of reg.	0.139774		Sum sq. resid.	0.801012
D-W stat.	1.015226		J-stat.	15.53237
Instru. rank	11		Prob(J-stat.)	0.016497

Source: EViews Estimated Output.

4.3 GMM and 2SLS Weak Instrument Diagnostic Test

Weak Instrument Diagnostics: GMM and 2SLS Equation: BMMODEL		
Cragg-Donald F-stat.	47.26356	
	GMM	2SLS
Stock-Yogo TSLS critical values (relative bias)		
5%	19.86	19.86
10%	11.29	11.29
20%	6.73	6.73
30%	5.07	5.07
Stock-Yogo critical values (size)		
10%	31.50	31.50
15%	17.38	17.38
20%	12.48	12.48
25%	9.93	9.93
Moment selection criteria		
SIC-based:	-16.39396	-7.560660
HQIC-based:	-9.612782	-0.779482
Relevant MSC:	-10.38500	-18.94394

Source: EViews Estimated Output.

4.4 2SLS Serial Correlation Test

Breusch-Godfrey Serial Correlation LM Test				
Obs. R^2	9.02123	Prob. Chi-Sq. (8)		0.1054
Regressand Variable: RESID.				
Technique: 2SLS				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	1.120664	1.168757	0.958851	0.3446
DEFGDP	-0.006276	0.006927	-0.905959	0.3715
LN(GFC)	0.069981	0.066996	1.044560	0.3038
LN(BM)	0.039564	0.046794	0.845494	0.4039
LN(CPI(-1))	-0.051294	0.052815	-0.971193	0.3385
RESID.(-1)	0.534535	0.176886	3.021910	0.1348
RESID.(-2)	-0.162785	0.189657	-0.858310	0.3969
RESID.(-3)	-0.210807	0.190115	-1.108838	0.2755
RESID.(-4)	-0.228304	0.192016	-1.188983	0.2429
RESID.(-5)	0.037611	0.202967	0.185307	0.8541
RESID.(-6)	-0.154229	0.201163	-0.766686	0.4487
RESID.(-7)	-0.209457	0.191288	-1.094984	0.2815
RESID.(-8)	0.025624	0.187675	0.136532	0.8922
R^2	0.391766		Mean dep. var.	-1.78E-15
Adj. R^2	0.170590		S. D. dep. var.	0.133418
S.E. of reg.	0.121506		AIC	-1.144622
Sum sq. resid.	0.487203		SIC	-0.627832
Ln likelihood	39.32630		H-Q criter.	-0.951029
F-stat.	1.771286		D-W stat.	1.855014
Prob(F-stat.)	0.095667			

Source: EViews Estimated Output.

4.5 2SLS Heteroskedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey				
F-stat.	2.372833	Prob. F(4,38)		0.0679
Obs. R^2	8.647055	Prob. Chi-Sq.(4)		0.0706
Scaled explained SS	5.016700	Prob. Chi-Sq.(4)		0.2856
Regressand Variable: RESID.^2				
Technique: Least Squares				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	0.232520	0.169988	1.367865	0.1788
DEFGDP	-0.001693	0.001002	-1.690318	0.0986
LN(CPI)	0.010087	0.009514	1.060178	0.2953
LN(GFC)	0.008177	0.006410	1.275676	0.2093
LN(BM(-1))	-0.009674	0.007590	-1.274563	0.2096
R^2	0.187979		Mean dep. var.	0.017413
Adj. R^2	0.108758		S. D. dep. var.	0.021277
S.E. of reg.	0.020087		AIC	-4.875163
Sum sq. resid.	0.016543		SIC	-4.676398
Ln likelihood	117.1288		H-Q criter.	-4.800705
F-stat.	2.372833		D-W stat..	1.500111
Prob(F-stat.)	0.067949			

Source: EViews Estimated Output.

Appendix 5: Equation 4.40 GMM and 2SLS Outputs

5.1 GMM and 2SLS Output

Regressand Variable: LN(GFC)				
Technique: GMM				
Instrument specification: LN(GFC(-1)) DMFGDP LN(CPI(-1)) LN(RGDP) LN(PUMPR(-1)) LN(EXCH(-1)) FGRGDP(-1) LN(M1(-1)) RINT(-1) BSY(-1) DCRGDP(-1) DMFGDP(-1)				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-32.20212	5.951210	-5.411021	0.0000
LN(GFC(-1))	0.445310	0.076809	5.797632	0.0000
DMFGDP	-0.003930	0.010667	-0.368449	0.7146
LN(CPI)	-0.203651	0.033544	-6.071105	0.0000
LN(RGDP)	1.099912	0.196875	5.586851	0.0000
R^2	0.629884		Mean dep. var.	2.584866
Adj. R^2	0.590924		S.D dep. var.	0.607744
S.E of reg.	0.388707		Sum sq. resid.	5.741541
D-W stat.	1.061492		J-stat.	7.360173
Instru. rank	13		Prob(J-stat.)	0.498317
Regressand Variable: LN(GFC)				
Technique: 2SLS				
Instrument specification: LN(GFC(-1)) DMFGDP LN(CPI(-1)) LN(RGDP) LN(PUMPR(-1)) LN(EXCH(-1)) FGRGDP(-1) LN(M1(-1)) RINT(-1) BSY(-1) DCRGDP(-1) DMFGDP(-1)				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-26.50120	9.854975	-2.689119	0.0106
LN(GFC(-1))	0.517058	0.119907	4.312146	0.0001
DMFGDP	-0.006918	0.016519	-0.418773	0.6777
LN(CPI)	-0.173054	0.059687	-2.899343	0.0062
LN(RGDP)	0.909457	0.323976	2.807174	0.0078
R^2	0.636519		Mean dep. var.	2.584866
Adj. R^2	0.598258		S.D dep. var.	0.607744
S.E of reg.	0.385207		Sum sq. resid.	5.638607
F-stat.	16.87939		D-W stat.	1.150195
Prob(F-stat.)	0.000000		2nd-Stage SSR	5.494261
J-stat.	3.527389		Instru. Rank	13
Prob(J-stat.)	0.897054			

Source: EViews Estimated Output.

5.2 GMM and 2SLS Endogeneity test

GMM Endogeneity Test				
H_0: LN(CPI) are exogenous				
Equation: **CAPMODEL**				
Specification:LN(GFC) C LN(GFC(-1)) DMFGDP LN(CPI) LN(RGDP)				
Instrument specification: C LN(GFC(-1)) DMFGDP LN(CPI(-1)) LN(RGDP) LN(PUMPR(-1)) LN(EXCH(-1)) FGRGDP(-1) LN(M1(-1)) RINT(-1) BSY(-1) DCRGDP(-1) DMFGDP(-1)				
Endogenous variable to handle as exogenous: LN(CPI)				
	Value	df		Prob.
Diff. in J-stat	2.816107	1		0.0933
J-stat. sum.:	Value			
Restricted J-stat.	10.23180			
Unrestricted J-stat.	7.415697			
Restricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-24.56877	4.588423	-5.354513	0.0000
LN(GFC(-1))	0.523571	0.063829	8.202683	0.0000
DMFGDP	-0.009786	0.010001	-0.978516	0.3340
LN(CPI)	-0.160659	0.027760	-5.787344	0.0000
LN(RGDP)	0.846857	0.151537	5.588458	0.0000
R^2	0.636583		Mean dep. var.	2.584866
Adj. R^2	0.598329		S. D. dep. var.	0.607744
S.E. of reg.	0.385173		Sum sq. resid.	5.637618
D-W stat.	1.155740		J-stat.	10.23180
Instru. rank	14		Prob(J-stat.)	0.332047
Unrestricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-30.83885	5.706653	-5.404016	0.0000
LN(GFC(-1))	0.451006	0.073961	6.097872	0.0000
DMFGDP	-0.004288	0.009956	-0.430677	0.6691
LN(CPI)	-0.193886	0.032758	-5.918772	0.0000
LN(RGDP)	1.054961	0.188870	5.585661	0.0000
R^2	0.631421		Mean dep. var.	2.584866
Adj. R^2	0.592623		S. D. dep. var.	0.607744
S.E. of reg.	0.387899		Sum sq. resid.	5.717703
D-W stat.	1.070667		J-stat.	7.415697
Instru. rank	13		Prob(J-stat.)	0.492516
2SLS Endogeneity Test				
H0: LN(CPI) are exogenous				
Equation: CAPMODEL				
Specification: LN(GFC) C LN(GFC(-1)) DMFGDP LN(CPI) LN(RGDP)				
Instrument specification: C LN(GFC(-1)) DMFGDP LN(CPI(-1)) LN(RGDP) LN(PUMPR(-1)) LN(EXCH(-1)) FGRGDP(-1) LN(M1(-1)) RINT(-1) BSY(-1) DCRGDP(-1) DMFGDP(-1)				
Endogenous variable to handle as exogenous: LN(CPI)				

	Value	Df		Prob.
Diff. in J-stat	8.081097	1		0.0045
J-stat. sum.:	Value			
Restricted J-stat.	11.61126			
Unrestricted J-stat.	3.530163			
Restricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-24.99672	9.836875	-2.541124	0.0153
LN(GFC(-1))	0.528423	0.119794	4.411115	0.0001
DMFGDP	-0.007616	0.016511	-0.461239	0.6473
LN(CPI)	-0.162759	0.059554	-2.732972	0.0095
LN(RGDP)	0.859538	0.323372	2.658047	0.0114
R^2	0.636805		Mean dep. var.	2.584866
Adj. R^2	0.598574		S. D. dep. var.	0.607744
S.E. of reg.	0.385056		Sum sq. resid.	5.634176
F-stat.	16.65675		D-W stat.	1.163926
Prob(F-stat.)	0.000000		2nd-Stage SSR	5.634176
J-stat.	11.61126		Instru. Rank	14
Prob(J-stat.)	0.236122			
Unrestricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-26.50120	9.851102	-2.690176	0.0106
LN(GFC(-1))	0.517058	0.119860	4.313841	0.0001
DMFGDP	-0.006918	0.016513	-0.418938	0.6776
LN(CPI)	-0.173054	0.059664	-2.900483	0.0062
LN(RGDP)	0.909457	0.323849	2.808278	0.0078
R^2	0.636519		Mean dep. var.	2.584866
Adj. R^2	0.598258		S. D. dep. var.	0.607744
S.E. of reg.	0.385207		Sum sq. resid.	5.638607
D-W stat.	1.150195		J-stat.	3.530163
Instru. rank	13		Prob(J-stat.)	0.896836

Source: EViews Estimated Output.

5.3GMM and 2SLS Weak Instrument diagnostic test

Weak Instrument Diagnostics: GMM and 2SLS Equation: CAPMODEL		
Cragg-Donald F-stat.	901.3919	
	GMM	2SLS
Stock-Yogo TSLS critical values (relative bias)		
5%	20.53	20.53
10%	11.46	11.46
20%	6.65	6.65
30%	4.92	4.92
Stock-Yogo critical values (size)		
10%	36.19	36.19
15%	19.71	19.71
20%	14.01	14.01
25%	11.07	11.07
Moment selection criteria		
SIC-based:	-22.72943	-26.56221
HQIC-based:	-13.94162	-17.77440
Relevant MSC:	-11.85353	-7.248357

Source: EViews Estimated Output.

5.4 2SLS Serial correlation test

Breusch-Godfrey Serial Correlation LM Test				
Obs. R^2	9.268240	Prob. Chi-Sq. (8)		0.0097
Regressand Variable: RESID.				
Technique: 2SLS				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-26.31939	13.24675	-1.986857	0.0546
LN(GFC(-1))	-0.585252	0.241927	-2.419130	0.0207
DMFGDP	0.003102	0.015067	0.205857	0.8381
LN(CPI)	-0.173936	0.084805	-2.051028	0.0476
LN(RGDP)	0.908858	0.447506	2.030940	0.0497
RESID.(-1)	0.849775	0.259394	3.276000	0.0023
RESID.(-2)	0.214729	0.222999	0.962912	0.3420
R^2	0.215540		Mean dep. var.	3.72E-15
Adj. R^2	0.084797		S. D. dep. var.	0.366405
S.E. of reg.	0.350526		AIC	0.889135
Sum sq. resid.	4.423259		SIC	1.175842
Ln likelihood	-12.11640		H-Q criter.	0.994864
F-stat.	1.648578		D-W stat..	1.806651
Prob(F-stat.)	0.162290			

Source: EViews Estimated Output.

5.52SLS Heteroskedacity test

Heteroskedasticity Test: Breusch-Pagan-Godfrey				
F-stat.	2.223012	Prob. F(4,38)		0.0847
Obs. R^2	8.154007	Prob. Chi-Sq.(4)		0.0861
Scaled explained SS	16.16515	Prob. Chi-Sq.(4)		0.0028
Regressand Variable: RESID.^2				
Technique: Least Squares				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	6.982523	7.228130	0.966021	0.3401
LN(GFC(-1))	-0.135920	0.088024	-1.544121	0.1308
DMFGDP	-0.014343	0.012132	-1.182175	0.2445
LN(CPI)	0.050281	0.043760	1.149010	0.2577
LN(RGDP)	-0.207506	0.237614	-0.873291	0.3880
R^2	0.189628		Mean dep. var.	0.131130
Adj. R^2	0.104326		S. D. dep. var.	0.298963
S.E. of reg.	0.282939		AIC	0.421771
Sum sq. resid.	3.042062		SIC	0.626561
Ln likelihood	-4.068066		H-Q criter.	0.497291
F-stat.	2.223012		D-W stat..	1.398096
Prob(F-stat.)	0.084730			

Source: EViews Estimated Output.

Appendix 6: Equation 4.41 GMM and 2SLS Outputs

6.1 GMM and 2SLS output

Regressand Variable: LN(CPI)

Technique: GMM

Instrument specification: DMFGDP LN(GFC) LN(BM(-1)) LN(CPI(-1)) LN(RMB) LN(RGDP) LN(CRES) CRR(-1) RINT(-1) GXGDP BGSGDP(-1) FGRGDP(-1) DCRGDP(-1) DCRGDP

Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-4.089537	0.995325	-4.108748	0.0002
DMFGDP	0.002954	0.003631	0.813600	0.4205
LN(GFC)	-0.071940	0.024250	-2.966614	0.0050
LN(BM)	0.181097	0.042824	4.228886	0.0001
LN(CPI(-1))	0.766372	0.054754	13.99668	0.0000
R^2	0.997021		Mean dep. var.	1.826472
Adj. R^2	0.996737		S.D dep. var.	2.514956
S.E of reg.	0.143661		Sum sq. resid.	0.866816
D-W stat.	0.544283		J-stat.	14.04913
Instru. rank	15		Prob(J-stat.)	0.170762

Regressand Variable: LN(CPI)

Technique: 2SLS

Instrument specification: DMFGDP LN(GFC) LN(BM(-1)) LN(CPI(-1)) LN(RMB) LN(RGDP) LN(CRES) CRR(-1) RINT(-1) GXGDP BGSGDP(-1) FGRGDP(-1) DCRGDP(-1) DCRGDP

Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-1.672528	1.032097	-1.620515	0.1126
DMFGDP	0.011995	0.004456	2.692014	0.0102
LN(GFC)	-0.047522	0.035551	-1.336723	0.1885
LN(BM)	0.075168	0.044449	1.691087	0.0982
LN(CPI(-1))	0.908293	0.054875	16.55206	0.0000
R^2	0.998170		Mean dep. var.	1.826472
Adj. R^2	0.997995		S.D dep. var.	2.514956
S.E of reg.	0.112606		Sum sq. resid.	0.532563
F-stat.	5725.949		D-W stat.	1.106062
Prob(F-stat.)	0.000000		2nd-Stage SSR	0.528453
J-stat.	19.86963		Instru. Rank	15
Prob(J-stat.)	0.030510			

Source: EViews Estimated Output.

6.2GMM and 2SLS Endogeneity test

GMM Endogeneity Test				
H_0: LN(BM) are exogenous				
Equation: **CPIMODEL**				
Specification: LN(CPI) C DMFGDP LN(GFC) LN(BM) LN(CPI(-1))				
Instrument specification: DMFGDP LN(GFC) LN(BM(-1)) LN(CPI(-1)) LN(RMB) LN(RGDP) LN(CRES) CRR(-1) RINT(-1) GXGDP BGSGDP(-1) FGRGDP(-1) DCRGDP(-1) DCRGDP				
Endogenous variable to handle as exogenous: LN(BM)				
	Value	df		Prob.
Diff. in J-stat	3.319381	1		0.0685
J-stat. sum.:	Value			
Restricted J-stat.	14.51719			
Unrestricted J-stat.	11.19781			
Restricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-4.741764	1.055250	-4.493497	0.0001
DMFGDP	0.002906	0.003827	0.759321	0.4519
LN(GFC)	-0.085863	0.025242	-3.401557	0.0015
LN(BM)	0.209698	0.045256	4.633621	0.0000
LN(CPI(-1))	0.729867	0.057803	12.62691	0.0000
R^2	0.996797		Mean dep. var.	1.826472
Adj. R^2	0.996492		S. D. dep. var.	2.514956
S.E. of reg.	0.148948		Sum sq. resid.	0.931795
D-W stat.	0.511004		J-stat.	14.51719
Instru. rank	16		Prob(J-stat.)	0.205684
Unrestricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-3.026917	1.033488	-2.928837	0.0055
DMFGDP	0.002854	0.003631	0.786146	0.4362
LN(GFC)	-0.053233	0.024561	-2.167323	0.0359
LN(BM)	0.135312	0.044335	3.052028	0.0039
LN(CPI(-1))	0.824701	0.056420	14.61717	0.0000
R^2	0.997410		Mean dep. var.	1.826472
Adj. R^2	0.997163		S. D. dep. var.	2.514956
S.E. of reg.	0.133956		Sum sq. resid.	0.753662
D-W stat.	0.635055		J-stat.	11.19781
Instru. rank	15		Prob(J-stat.)	0.342316
2SLS Endogeneity Test				
H_0: LN(BM) are exogenous				
Equation: **CPIMODEL**				
Specification: LN(CPI) C DMFGDP LN(GFC) LN(BM) LN(CPI(-1))				
Instrument specification: DMFGDP LN(GFC) LN(BM(-1)) LN(CPI(-1)) LN(RMB) LN(RGDP) LN(CRES) CRR(-1) RINT(-1) GXGDP BGSGDP(-1) FGRGDP(-1) DCRGDP(-1) DCRGDP				
Endogenous variable to handle as exogenous: LN(BM)				
	Value	Df		Prob.

Diff. in J-stat	0.374583	1		0.5405
J-stat. sum.:	Value			
Restricted J-stat.	20.25250			
Unrestricted J-stat.	19.87792			
Restricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-1.539894	1.008869	-1.526357	0.1344
DMFGDP	0.011963	0.004455	2.685639	0.0103
LN(GFC)	-0.045083	0.035320	-1.276436	0.2088
LN(BM)	0.069420	0.043436	1.598200	0.1175
LN(CPI(-1))	0.915327	0.053646	17.06223	0.0000
R^2	0.998170		Mean dep. var.	1.826472
Adj. R^2	0.997996		S. D. dep. var.	2.514956
S.E. of reg.	0.112582		Sum sq. resid.	0.532341
F-stat.	5728.259		D-W stat..	1.111743
Prob(F-stat.)	0.000000		2nd-Stage SSR	0.532341
J-stat.	20.25250		Instru. Rank	16
Prob(J-stat.)	0.041996			
Unrestricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-1.672528	1.031882	-1.620853	0.1125
DMFGDP	0.011995	0.004455	2.692575	0.0101
LN(GFC)	-0.047522	0.035544	-1.337001	0.1884
LN(BM)	0.075168	0.044440	1.691440	0.0982
LN(CPI(-1))	0.908293	0.054864	16.55551	0.0000
R^2	0.998170		Mean dep. var.	1.826472
Adj. R^2	0.997995		S. D. dep. var.	2.514956
S.E. of reg.	0.112606		Sum sq. resid.	0.532563
D-W stat.	1.106062		J-stat.	19.87792
Instru. rank	15		Prob(J-stat.)	0.030429

Source: EViews Estimated Output.

6.3GMM and 2SLS Weak instrument test

Weak Instrument Diagnostics: GMM and 2SLS Equation: CAPMODEL		
Cragg-Donald F-stat.	62.24090	
	GMM	2SLS
Stock-Yogo TSLS critical values (relative bias)		
5%	20.90	20.90
10%	11.51	11.51
20%	6.56	6.56
30%	4.80	4.80
Stock-Yogo critical values (size)		
10%	40.90	40.90
15%	22.06	22.06
20%	15.56	15.56
25%	12.23	12.23
Moment selection criteria		
SIC-based:	-19.50734	-18.63184
HQIC-based:	-8.102907	-7.227407
Relevant MSC:	-18.20234	-20.37657

Source: EViews Estimated Output.

6.42SLS Serial correlation

Breusch-Godfrey Serial Correlation LM Test				
Obs. R^2	13.90000	Prob. Chi-Sq. (8)		0.0010
Regressand Variable: RESID.				
Technique: 2SLS				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-0.311236	1.034549	-0.300843	0.7651
DMFGDP	0.001072	0.003922	0.273219	0.7861
LN(GFC)	-0.002435	0.033183	-0.073394	0.9419
LN(BM)	0.012601	0.045069	0.279591	0.7812
LN(CPI(-1))	-0.014919	0.056101	-0.265935	0.7917
RESID.(-1)	0.605742	0.150155	4.034106	0.0002
RESID.(-2)	-0.334683	0.167751	-1.995121	0.0529
R^2	0.295745		Mean dep. var.	1.70E-15
Adj. R^2	0.190106		S. D. dep. var.	0.107599
S.E. of reg.	0.096832		AIC	-1.695067
Sum sq. resid.	0.375060		SIC	-1.419513
Ln likelihood	46.83408		H-Q criter.	-1.591374
F-stat.	2.799598		D-W stat..	1.938871
Prob(F-stat.)	0.022773			

Source: EViews Estimated Output.

6.52SLS Heteroskedasticity test

Heteroskedasticity Test: Breusch-Pagan-Godfrey				
F-stat.	2.386552	Prob. F(4,38)		0.0663
Obs. R^2	8.704265	Prob. Chi-Sq.(4)		0.0689
Scaled explained SS	9.497672	Prob. Chi-Sq.(4)		0.0498
Regressand Variable: RESID.^2				
Technique: Least Squares				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-0.042590	0.160285	-0.265714	0.7918
DMFGDP	0.001181	0.000708	1.668931	0.1026
LN(GFC)	-0.008984	0.005611	-1.600991	0.1169
LN(BM)	0.002652	0.006901	0.384345	0.7027
LN(CPI(-1))	-0.003932	0.008523	-0.461344	0.6469
R^2	0.185197		Mean dep. var.	0.011331
Adj. R^2	0.107597		S. D. dep. var.	0.018934
S.E. of reg.	0.017887		AIC	-5.109233
Sum sq. resid.	0.013437		SIC	-4.912409
Ln likelihood	125.0670		H-Q criter.	-5.035167
F-stat.	2.386552		D-W stat..	1.533749
Prob(F-stat.)	0.066273			

Source: EViews Estimated Output.

Appendix 7: Equation 4.42 GMM and 2SLS Outputs

7.1 GMM and 2SLS output

Regressand Variable: LN(BM)

Technique: GMM

Instrument specification: LN(CPI(-1)) DMFGDP LN(GFC) LN(BM(-1)) GXGDP FGRGDP RINT(-1) LN(M1(-1)) BSY(-1) LN(EXCH(-1))

Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-0.330117	0.957907	-0.344623	0.7321
DMFGDP	0.030975	0.007114	4.353844	0.0001
LN(CPI)	0.011566	0.050159	0.230595	0.8188
LN(GFC)	-0.019318	0.029376	-0.657589	0.5145
LN(BM(-1))	1.004169	0.041294	24.31739	0.0000
R^2	0.995502		Mean dep. var.	26.11162
Adj. R^2	0.995063		S.D dep. var.	3.143645
S.E of reg.	0.220892		Sum sq. resid.	2.000520
D-W stat.	0.624188		J-stat.	11.52298
Instru. rank	11		Prob(J-stat.)	0.073497

Regressand Variable: LN(BM)

Technique: 2SLS

Instrument specification: LN(CPI(-1)) DMFGDP LN(GFC) LN(BM(-1)) GXGDP FGRGDP RINT(-1) LN(M1(-1)) BSY(-1) LN(EXCH(-1))

Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	2.603074	1.286705	2.023055	0.0496
DMFGDP	-0.001065	0.005688	-0.187292	0.8524
LN(CPI)	0.124227	0.069980	1.775182	0.0833
LN(GFC)	0.054676	0.045790	1.194073	0.2393
LN(BM(-1))	0.894156	0.056197	15.91099	0.0000
R^2	0.998142		Mean dep. var.	26.11162
Adj. R^2	0.997961		S.D dep. var.	3.143645
S.E of reg.	0.141950		Sum sq. resid.	0.826137
F-stat.	5506.935		D-W stat.	1.206382
Prob(F-stat.)	0.000000		2nd-Stage SSR	0.860585
J-stat.	15.53986		Instru. Rank	11
Prob(J-stat.)	0.016449			

Source: EViews Estimated Output.

7.2GMM and 2SLS Endogeneity test

GMM Endogeneity Test				
H_0: LN(CPI) are exogenous				
Equation: **BMMODEL**				
Specification: LN(BM) C DMFGDP LN(CPI) LN(GFC) LN(BM(-1))				
Instrument specification: C LN(CPI(-1)) DMFGDP LN(GFC) LN(BM(-1)) GXGDP FGRGDP RINT(-1) LN(M1(-1)) BSY(-1) LN(EXCH(-1))				
Endogenous variable to handle as exogenous: LN(CPI)				
	Value	df		Prob.
Diff. in J-stat	1.245947	1		0.2643
J-stat. sum.:	Value			
Restricted J-stat.	11.54381			
Unrestricted J-stat.	10.29786			
Restricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-0.293948	0.920730	-0.319255	0.7512
DMFGDP	0.031442	0.006716	4.681473	0.0000
LN(CPI)	0.014547	0.045907	0.316886	0.7529
LN(GFC)	-0.016874	0.026049	-0.647794	0.5207
LN(BM(-1))	1.002089	0.038818	25.81535	0.0000
R^2	0.995462		Mean dep. var.	26.11162
Adj. R^2	0.995019		S. D. dep. var.	3.143645
S.E. of reg.	0.221872		Sum sq. resid.	2.018312
D-W stat.	0.622189		J-stat.	11.54381
Instru. rank	12		Prob(J-stat.)	0.116595
Unrestricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	0.079995	0.901571	0.088729	0.9297
DMFGDP	0.024692	0.006730	3.668860	0.0007
LN(CPI)	0.021849	0.047258	0.462332	0.6463
LN(GFC)	-0.013623	0.028078	-0.485191	0.6301
LN(BM(-1))	0.990533	0.038907	25.45883	0.0000
R^2	0.996338		Mean dep. var.	26.11162
Adj. R^2	0.995981		S. D. dep. var.	3.143645
S.E. of reg.	0.199289		Sum sq. resid.	1.628353
D-W stat.	0.699144		J-stat.	10.29786
Instru. rank	11		Prob(J-stat.)	0.112656
2SLS Endogeneity Test				
H0: LN(CPI) are exogenous				
Equation: BMMODEL				
Specification: LN(BM) C DMFGDP LN(CPI) LN(GFC) LN(BM(-1))				
Instrument specification: C LN(CPI(-1)) DMFGDP LN(GFC) LN(BM(-1)) GXGDP FGRGDP RINT(-1) LN(M1(-1)) BSY(-1) LN(EXCH(-1))				
Endogenous variable to handle as exogenous: LN(CPI)				

	Value	Df		Prob.
Diff. in J-stat	1.416346	1		0.2340
J-stat. sum.:	Value			
Restricted J-stat.	17.00967			
Unrestricted J-stat.	15.59332			
Restricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	3.053196	1.227551	2.487225	0.0170
DMFGDP	-0.001331	0.005674	-0.234536	0.8157
LN(CPI)	0.149248	0.066622	2.240232	0.0306
LN(GFC)	0.064012	0.045033	1.421451	0.1627
LN(BM(-1))	0.874237	0.053546	16.32680	0.0000
R^2	0.998149		Mean dep. var.	26.11162
Adj. R^2	0.997968		S. D. dep. var.	3.143645
S.E. of reg.	0.141706		Sum sq. resid.	0.823305
F-stat.	5526.343		D-W stat.	1.214265
Prob(F-stat.)	0.000000		2nd-Stage SSR	0.823305
J-stat.	17.00967		Instru. Rank	12
Prob(J-stat.)	0.017334			
Unrestricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	2.603074	1.284497	2.026531	0.0492
DMFGDP	-0.001065	0.005678	-0.187614	0.8521
LN(CPI)	0.124227	0.069860	1.778233	0.0828
LN(GFC)	0.054676	0.045711	1.196125	0.2385
LN(BM(-1))	0.894156	0.056101	15.93833	0.0000
R^2	0.998142		Mean dep. var.	26.11162
Adj. R^2	0.997961		S. D. dep. var.	3.143645
S.E. of reg.	0.141950		Sum sq. resid.	0.826137
D-W stat.	1.206382		J-stat.	15.59332
Instru. rank	11		Prob(J-stat.)	0.016111

Source: EViews Estimated Output.

7.3 GMM and 2SLS Weak instrument test

Weak Instrument Diagnostics: GMM and 2SLS Equation: BMMODEL		
Cragg-Donald F-stat.	50.20918	
	GMM	2SLS
Stock-Yogo TSLS critical values (relative bias)		
5%	19.86	19.86
10%	11.29	11.29
20%	6.73	6.73
30%	5.07	5.07
Stock-Yogo critical values (size)		
10%	31.50	31.50
15%	17.38	17.38
20%	12.48	12.48
25%	9.93	9.93
Moment selection criteria		
SIC-based:	-11.44887	-7.431986
HQIC-based:	-4.667690	-0.650809
Relevant MSC:	-21.89869	-19.23420

Source: EViews Estimated Output.

7.4 2SLSSerial correlation test

Breusch-Godfrey Serial Correlation LM Test				
Obs. R^2	9.779322	Prob. Chi-Sq. (8)		0.0075
Regressand Variable: RESID.				
Technique: 2SLS				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	0.551972	1.188900	0.464271	0.6450
DMFGDP	0.000125	0.005204	0.024014	0.9810
LN(CPI)	0.031283	0.064545	0.484669	0.6306
LN(GFC)	0.010918	0.042116	0.259244	0.7968
LN(BM(-1))	-0.024580	0.051853	-0.474041	0.6381
RESID.(-1)	0.498672	0.156740	3.181515	0.0029
RESID.(-2)	-0.266412	0.157856	-1.687685	0.0995
R^2	0.212594		Mean dep. var.	-1.47E-15
Adj. R^2	0.091455		S. D. dep. var.	0.135494
S.E. of reg.	0.129150		AIC	-1.116422
Sum sq. resid.	0.650505		SIC	-0.838151
Ln likelihood	32.67772		H-Q criter.	-1.012180
F-stat.	1.754953		D-W stat.	2.054482
Prob(F-stat.)	0.134130			

Source: EViews Estimated Output.

7.52SLS Heteroskedasticity test

Heteroskedasticity Test: Breusch-Pagan-Godfrey				
F-stat.	2.168306	Prob. F(4,38)		0.0896
Obs. R^2	8.031860	Prob. Chi-Sq.(4)		0.0904
Scaled explained SS	6.792421	Prob. Chi-Sq.(4)		0.1473
Regressand Variable: RESID.^2				
Technique: Least Squares				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	0.331400	0.218452	1.517036	0.1369
DMFGDP	-0.001656	0.001010	-1.639944	0.1087
LN(CPI)	0.012404	0.011856	1.046203	0.3016
LN(GFC)	0.008935	0.008014	1.114866	0.2714
LN(BM(-1))	-0.013075	0.009529	-1.372162	0.1775
R^2	0.174606		Mean dep. var.	0.017959
Adj. R^2	0.094079		S. D. dep. var.	0.026495
S.E. of reg.	0.025218		AIC	-4.420221
Sum sq. resid.	0.026073		SIC	-4.221455
Ln likelihood	106.6651		H-Q criter.	-4.345762
F-stat.	2.168306		D-W stat.	1.851597
Prob(F-stat.)	0.089613			

Source: EViews Estimated Output.

Appendix 8: Equation 4.43 GMM and 2SLS Outputs

8.1 GMM and 2SLS output

Regressand Variable: LN(GFC)				
Technique: GMM				
Instrument specification: LN(GFC(-1)) XTFGDP LN(CPI(-1)) LN(RGDP) LN(PUMPR(-1)) LN(EXCH(-1)) FGRGDP(-1) LN(M1(-1)) RINT(-1) BSY(-1) DCRGDP(-1)				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-28.66846	6.454765	-4.441442	0.0001
LN(GFC(-1))	0.442155	0.094525	4.677665	0.0000
XTFGDP	-0.002218	0.002347	-0.945013	0.3506
LN(CPI)	-0.183455	0.040305	-4.551699	0.0001
LN(RGDP)	0.984742	0.214560	4.589586	0.0000
R^2	0.640204		Mean dep. var.	2.584866
Adj. R^2	0.602331		S.D dep. var.	0.607744
S.E of reg.	0.383250		Sum sq. resid.	5.581448
D-W stat.	1.102693		J-stat.	4.773585
Instru. rank	12		Prob(J-stat.)	0.687571
Regressand Variable: LN(GFC)				
Technique: 2SLS				
Instrument specification: LN(GFC(-1)) XTFGDP LN(CPI(-1)) LN(RGDP) LN(PUMPR(-1)) LN(EXCH(-1)) FGRGDP(-1) LN(M1(-1)) RINT(-1) BSY(-1) DCRGDP(-1)				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-23.36881	9.791814	-2.386565	0.0221
LN(GFC(-1))	0.457827	0.130283	3.514097	0.0012
XTFGDP	-0.004407	0.004239	-1.039705	0.3050
LN(CPI)	-0.155943	0.060739	-2.567420	0.0143
LN(RGDP)	0.812041	0.321277	2.527546	0.0158
R^2	0.645611		Mean dep. var.	2.584866
Adj. R^2	0.608307		S.D dep. var.	0.607744
S.E of reg.	0.380359		Sum sq. resid.	5.497563
F-stat.	17.47734		D-W stat.	1.149155
Prob(F-stat.)	0.000000		2nd-Stage SSR	5.398834
J-stat.	2.032988		Instru. Rank	12
Prob(J-stat.)	0.957992			

Source: EViews Estimated Output.

2.2 GMM and 2SLS Endogeneity test

GMM Endogeneity Test				
H_0: LN(CPI) are exogenous				
Equation: **CAPMODEL**				
Specification: LN(GFC) C LN(GFC(-1)) XTFGDP LN(CPI) LN(RGDP)				
Instrument specification:LN(GFC(-1)) XTFGDP LN(CPI(-1)) LN(RGDP) LN(PUMPR(-1)) LN(EXCH(-1)) FGRGDP(-1) LN(M1(-1)) RINT(-1) BSY(-1) DCRGDP(-1)				
Endogenous variable to handle as exogenous: LN(CPI)				
	Value	Df		Prob.
Diff. in J-stat	3.871299	1		0.0491
J-stat. sum.:	Value			
Restricted J-stat.	8.612713			
Unrestricted J-stat.	4.741414			
Restricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-20.38223	5.194961	-3.923462	0.0004
LN(GFC(-1))	0.472294	0.094058	5.021331	0.0000
XTFGDP	-0.003827	0.002255	-1.697217	0.0978
LN(CPI)	-0.132496	0.032926	-4.024050	0.0003
LN(RGDP)	0.712496	0.173755	4.100581	0.0002
R^2	0.643961		Mean dep. var.	2.584866
Adj. R^2	0.606484		S. D. dep. var.	0.607744
S.E. of reg.	0.381243		Sum sq. resid.	5.523162
D-W stat.	1.157944		J-stat.	8.612713
Instru. rank	13		Prob(J-stat.)	0.376012
Unrestricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-27.91976	6.206875	-4.498199	0.0001
LN(GFC(-1))	0.446105	0.089416	4.989076	0.0000
XTFGDP	-0.002240	0.002268	-0.987483	0.3297
LN(CPI)	-0.178646	0.038836	-4.600030	0.0000
LN(RGDP)	0.959934	0.206144	4.656610	0.0000
R^2	0.640851		Mean dep. var.	2.584866
Adj. R^2	0.603045		S. D. dep. var.	0.607744
S.E. of reg.	0.382905		Sum sq. resid.	5.571418
D-W stat.	1.108768		J-stat.	4.741414
Instru. rank	12		Prob(J-stat.)	0.691485
2SLS Endogeneity Test				
H0: LN(CPI) are exogenous				
Equation: CAPMODEL				
Specification: LN(GFC) C LN(GFC(-1)) XTFGDP LN(CPI) LN(RGDP)				
Instrument specification: LN(GFC(-1)) XTFGDP LN(CPI(-1))				

LN(RGDP) LN(PUMPR(-1)) LN(EXCH(-1)) FGRGDP(-1) LN(M1(-1)) RINT(-1) BSY(-1) DCRGDP(-1)				
Endogenous variable to handle as exogenous: LN(CPI)				
	Value	Df		Prob.
Diff. in J-stat	3.042597	1		0.0811
J-stat. sum.:	Value			
Restricted J-stat.	5.076646			
Unrestricted J-stat.	2.034049			
Restricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-22.12653	9.763318	-2.266292	0.0292
LN(GFC(-1))	0.463779	0.130204	3.561934	0.0010
XTFGDP	-0.004607	0.004236	-1.087550	0.2836
LN(CPI)	-0.147418	0.060526	-2.435597	0.0197
LN(RGDP)	0.771000	0.320330	2.406895	0.0211
R^2	0.645796		Mean dep. var.	2.584866
Adj. R^2	0.608512		S. D. dep. var.	0.607744
S.E. of reg.	0.380259		Sum sq. resid.	5.494695
F-stat.	17.32073		D-W stat.	1.158109
Prob(F-stat.)	0.000000		2nd-Stage SSR	5.494695
J-stat.	5.076646		Instru. Rank	13
Prob(J-stat.)	0.749354			
Unrestricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-23.36881	9.789259	-2.387188	0.0221
LN(GFC(-1))	0.457827	0.130249	3.515014	0.0012
XTFGDP	-0.004407	0.004238	-1.039977	0.3049
LN(CPI)	-0.155943	0.060723	-2.568090	0.0143
LN(RGDP)	0.812041	0.321193	2.528205	0.0157
R^2	0.645611		Mean dep. var.	2.584866
Adj. R^2	0.608307		S. D. dep. var.	0.607744
S.E. of reg.	0.380359		Sum sq. resid.	5.497563
D-W stat.	1.149155		J-stat.	2.034049
Instru. rank	12		Prob(J-stat.)	0.957932

Source: EViews Estimated Output.

8.3 GMM and 2SLS Weak instrument test

Weak Instrument Diagnostics: GMM and 2SLS Equation: CAPMODEL		
Cragg-Donald F-stat.	594.2812	
	GMM	2SLS
Stock-Yogo TSLS critical values (relative bias)		
5%	20.25	20.25
10%	11.39	11.39
20%	6.69	6.69
30%	4.99	4.99
Stock-Yogo critical values (size)		
10%	33.84	33.84
15%	18.54	18.54
20%	13.24	13.24
25%	10.50	10.50
Moment selection criteria		
SIC-based:	-21.55482	-24.29541
HQIC-based:	-13.86548	-16.60608
Relevant MSC:	-14.17414	-10.35468

Source: EViews Estimated Output.

8.42SLS Serial correlation test

Breusch-Godfrey Serial Correlation LM Test				
Obs. R^2	9.635410	Prob. Chi-Sq. (8)		0.0081
Regressand Variable: RESID.				
Technique: 2SLS				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-19.72874	11.68137	-1.688906	0.0999
LN(GFC(-1))	-0.620251	0.250244	-2.478586	0.0180
XTFGDP	-0.004239	0.004050	-1.046548	0.3023
LN(CPI)	-0.143225	0.077700	-1.843294	0.0735
LN(RGDP)	0.700705	0.395675	1.770913	0.0850
RESID.(-1)	0.883556	0.259495	3.404902	0.0016
RESID.(-2)	0.166298	0.215318	0.772337	0.4450
R^2	0.224079		Mean dep. var.	-3.95E-15
Adj. R^2	0.094759		S. D. dep. var.	0.361793
S.E. of reg.	0.344225		AIC	0.852858
Sum sq. resid.	4.265673		SIC	1.139565
Ln likelihood	-11.33645		H-Q criter.	0.958587
F-stat.	1.732749		D-W stat..	1.867454
Prob(F-stat.)	0.141539			

Source: EViews Estimated Output.

8.5 Heteroskedasticity test

Heteroskedasticity Test: Breusch-Pagan-Godfrey				
F-stat.	1.993536	Prob. F(4,38)		0.1151
Obs. R^2	7.458284	Prob. Chi-Sq.(4)		0.1136
Scaled explained SS	14.03049	Prob. Chi-Sq.(4)		0.0072
Regressand Variable: RESID.^2				
Technique: Least Squares				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	1.938559	6.968085	0.278205	0.7824
LN(GFC(-1))	-0.157943	0.092927	-1.699644	0.0974
XTFGDP	9.04E-06	0.003023	0.002989	0.9976
LN(CPI)	0.028403	0.043198	0.657521	0.5148
LN(RGDP)	-0.047088	0.228620	-0.205968	0.8379
R^2	0.173448		Mean dep. var.	0.173448
Adj. R^2	0.086443		S. D. dep. var.	0.086443
S.E. of reg.	0.271391		AIC	0.271391
Sum sq. resid.	2.798824		SIC	2.798824
Ln likelihood	-2.276337		H-Q criter.	-2.276337
F-stat.	1.993536		D-W stat.	1.993536
Prob(F-stat.)	0.115118			

Source: EViews Estimated Output.

Appendix 9: Equation 4.44 GMM and 2SLS Outputs

9.1 GMM and 2SLS output

Regressand Variable: LN(CPI)
Technique: GMM
Instrument specification: XTFGDP LN(GFC) LN(BM(-1)) LN(CPI(-1)) LN(RMB) LN(RGDP) LN(CRES) CRR(-1) RINT(-1) GXGDP BGSGDP(-1) FGRGDP(-1) DCRGDP(-1) DCRGDP XTFGDP(-1) XTFGDP(-2)

Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-2.372054	1.163343	-2.038998	0.0479
XTFGDP	0.002180	0.001443	1.510795	0.1385
LN(GFC)	-0.014150	0.029485	-0.479930	0.6338
LN(BM)	0.103857	0.048577	2.137998	0.0385
LN(CPI(-1))	0.867382	0.062831	13.80491	0.0000
R^2	0.997745		Mean dep. var.	1.912990
Adj. R^2	0.997525		S.D dep. var.	2.471018
S.E of reg.	0.122942		Sum sq. resid.	0.619709
D-W stat.	0.787270		J-stat.	7.482778
Instru. rank	17		Prob(J-stat.)	0.824133

Regressand Variable: LN(CPI)
Technique: 2SLS
Instrument specification: XTFGDP LN(GFC) LN(BM(-1)) LN(CPI(-1)) LN(RMB) LN(RGDP) LN(CRES) CRR(-1) RINT(-1) GXGDP BGSGDP(-1) FGRGDP(-1) DCRGDP(-1) DCRGDP XTFGDP(-1) XTFGDP(-2)

Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-1.673069	1.029604	-1.624965	0.1117
XTFGDP	0.002874	0.001040	2.763430	0.0085
LN(GFC)	-0.016159	0.039589	-0.408158	0.6852
LN(BM)	0.076323	0.044380	1.719769	0.0928
LN(CPI(-1))	0.899491	0.054855	16.39752	0.0000
R^2	0.998184		Mean dep. var.	1.826472
Adj. R^2	0.998011		S.D dep. var.	2.514956
S.E of reg.	0.112171		Sum sq. resid.	0.528453
F-stat.	5770.555		D-W stat.	0.998590
Prob(F-stat.)	0.000000		2nd-Stage SSR	0.524433
J-stat.	19.78680		Instru. Rank	15
Prob(J-stat.)	0.031335			

Source: EViews Estimated Output.

9.2GMM and 2SLS Endogeneity test

GMM Endogeneity Test				
H_0: LN(BM) are exogenous				
Equation: **CPIMODEL**				
Specification:LN(CPI) C XTFGDP LN(GFC) LN(BM) LN(CPI(-1))				
Instrument specification: C XTFGDP LN(GFC) LN(BM(-1)) LN(CPI(-1)) LN(RMB) LN(RGDP) LN(CRES) CRR(-1) RINT(-1) GXGDP BGSGDP(-1) FGRGDP(-1) DCRGDP(-1) DCRGDP XTFGDP(-1) XTFGDP(-2)				
Endogenous variable to handle as exogenous: LN(BM)				
	Value	Df		Prob.
Diff. in J-stat	1.321786	1		0.2503
J-stat. sum.:	Value			
Restricted J-stat.	8.748199			
Unrestricted J-stat.	7.426413			
Restricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-3.797984	1.292791	-2.937818	0.0054
XTFGDP	0.002937	0.001175	2.499542	0.0165
LN(GFC)	-0.030520	0.023219	-1.314429	0.1960
LN(BM)	0.164368	0.053916	3.048580	0.0040
LN(CPI(-1))	0.787895	0.068901	11.43518	0.0000
R^2	0.997520		Mean dep. var.	1.912990
Adj. R^2	0.997278		S. D. dep. var.	2.471018
S.E. of reg.	0.128917		Sum sq. resid.	0.681403
D-W stat.	0.693769		J-stat.	8.748199
Instru. rank	18		Prob(J-stat.)	0.791684
Unrestricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-3.403801	1.435739	-2.370766	0.0225
XTFGDP	0.002910	0.001214	2.397119	0.0212
LN(GFC)	-0.019165	0.024230	-0.790969	0.4335
LN(BM)	0.146892	0.060118	2.443387	0.0189
LN(CPI(-1))	0.810485	0.076971	10.52978	0.0000
R^2	0.997638		Mean dep. var.	1.912990
Adj. R^2	0.997408		S. D. dep. var.	2.471018
S.E. of reg.	0.125804		Sum sq. resid.	0.648891
D-W stat.	0.737863		J-stat.	7.426413
Instru. rank	17		Prob(J-stat.)	0.828197
2SLS Endogeneity Test				
H0: LN(BM) are exogenous				
Equation: CPIMODEL				
Specification: LN(CPI) C XTFGDP LN(GFC) LN(BM) LN(CPI(-1))				
Instrument specification: C XTFGDP LN(GFC) LN(BM(-1)) LN(CPI(-1)) LN(RMB) LN(RGDP) LN(CRES) CRR(-1) RINT(-1) GXGDP				

BGSGDP(-1) FGRGDP(-1) DCRGDP(-1) DCRGDP XTFGDP(-1) XTFGDP(-2)				
Endogenous variable to handle as exogenous: LN(BM)				
	Value	Df		Prob.
Diff. in J-stat	0.350226	1		0.5540
J-stat. sum.:	Value			
Restricted J-stat.	20.14536			
Unrestricted J-stat.	19.79514			
Restricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-1.540127	1.004576	-1.533112	0.1327
XTFGDP	0.002866	0.001040	2.756008	0.0086
LN(GFC)	-0.013818	0.039383	-0.350875	0.7274
LN(BM)	0.070562	0.043290	1.630010	0.1106
LN(CPI(-1))	0.906561	0.053527	16.93649	0.0000
R^2	0.998184		Mean dep. var.	1.826472
Adj. R^2	0.998012		S. D. dep. var.	2.514956
S.E. of reg.	0.112147		Sum sq. resid.	0.528231
F-stat.	5772.913		D-W stat.	1.006937
Prob(F-stat.)	0.000000		2nd-Stage SSR	0.528231
J-stat.	20.14536		Instru. Rank	16
Prob(J-stat.)	0.043387			
Unrestricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-1.673069	1.029387	-1.625307	0.1116
XTFGDP	0.002874	0.001040	2.764012	0.0084
LN(GFC)	-0.016159	0.039581	-0.408244	0.6852
LN(BM)	0.076323	0.044371	1.720132	0.0928
LN(CPI(-1))	0.899491	0.054844	16.40097	0.0000
R^2	0.998184		Mean dep. var.	1.826472
Adj. R^2	0.998011		S. D. dep. var.	2.514956
S.E. of reg.	0.112171		Sum sq. resid.	0.528453
D-W stat.	0.998590		J-stat.	19.79514
Instru. rank	15		Prob(J-stat.)	0.031251

Source: EViews Estimated Output.

9.3GMM and 2SLS Weak instrument test

Weak Instrument Diagnostics: GMM and 2SLS Equation: CPIMODEL		
Cragg-Donald F-stat.	51.03821	57.53309
	GMM	2SLS
Stock-Yogo TSLS critical values (relative bias)		
5%	21.10	20.90
10%	11.52	11.51
20%	6.49	6.56
30%	4.71	4.80
Stock-Yogo critical values (size)		
10%	45.64	40.90
15%	24.42	22.06
20%	17.14	15.56
25%	13.41	12.23
Moment selection criteria		
SIC-based:	-38.46092	-18.71468
HQIC-based:	-24.89856	-7.310246
Relevant MSC:	-25.87829	-23.31381

Source: EViews Estimated Output.

9.4 2SLS Serial correlation test

Breusch-Godfrey Serial Correlation LM Test				
Obs. R^2	15.26948	Prob. Chi-Sq. (8)		0.0005
Regressand Variable: RESID.				
Technique: 2SLS				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-0.962294	1.113637	-0.864100	0.3927
XTFGDP	0.000280	0.000903	0.309729	0.7584
LN(GFC)	-0.010984	0.034795	-0.315689	0.7539
LN(BM)	0.040945	0.047883	0.855112	0.3976
LN(CPI(-1))	-0.050776	0.059216	-0.857482	0.3963
RESID.(-1)	0.664437	0.151828	4.376244	0.0001
RESID.(-2)	-0.208358	0.177313	-1.175087	0.2469
R^2	0.324883		Mean dep. var.	-2.60E-16
Adj. R^2	0.223615		S. D. dep. var.	0.107183
S.E. of reg.	0.094442		AIC	-1.745068
Sum sq. resid.	0.356768		SIC	-1.469514
Ln likelihood	48.00909		H-Q criter.	-1.641375
F-stat.	3.208159		D-W stat.	1.962614
Prob(F-stat.)	0.011476			

Source: EViews Estimated Output.

10.5 2SLS Heteroskedasticity test

Heteroskedasticity Test: Breusch-Pagan-Godfrey				
F-stat.	1.795406	Prob. F(4,38)		0.1478
Obs. R^2	6.863057	Prob. Chi-Sq.(4)		0.1433
Scaled explained SS	12.21887	Prob. Chi-Sq.(4)		0.0158
Regressand Variable: RESID.^2				
Technique: Least Squares				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	0.072707	0.207909	0.349706	0.7283
XTFGDP	0.000346	0.000215	1.607864	0.1154
LN(GFC)	-0.004390	0.008151	-0.538640	0.5930
LN(BM)	-0.002285	0.008959	-0.255013	0.8000
LN(CPI(-1))	0.002191	0.011078	0.197786	0.8442
R^2	0.146022		Mean dep. var.	0.011244
Adj. R^2	0.064691		S. D. dep. var.	0.023999
S.E. of reg.	0.023210		AIC	-4.588172
Sum sq. resid.	0.022626		SIC	-4.391348
Ln likelihood	112.8220		H-Q criter.	-4.514106
F-stat.	1.795406		D-W stat.	1.258392
Prob(F-stat.)	0.147772			

Source: EViews Estimated Output.

Appendix 10: Equation 4.45 GMM and 2SLS Outputs

10.1 GMM and 2SLS output

Regressand Variable: LN(BM)				
Technique: GMM				
Instrument specification: LN(CPI(-1)) XTFGDP LN(GFC) LN(BM(-1)) GXGDP FGRGDP RINT(-1) LN(M1(-1)) BSY(-1) LN(EXCH(-1))				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	0.651915	0.656561	0.992924	0.3266
XTFGDP	0.005247	0.001075	4.882657	0.0000
LN(CPI)	0.052279	0.033921	1.541209	0.1309
LN(GFC)	0.078675	0.026837	2.931565	0.0055
LN(BM(-1))	0.965938	0.028111	34.36106	0.0000
R^2	0.997368		Mean dep. var.	26.11162
Adj. R^2	0.997112		S.D dep. var.	3.143645
S.E of reg.	0.168950		Sum sq. resid.	1.170309
D-W stat.	0.897907		J-stat.	9.127233
Instru. rank	11		Prob(J-stat.)	0.166548
Regressand Variable: LN(BM)				
Technique: 2SLS				
Instrument specification: LN(CPI(-1)) XTFGDP LN(GFC) LN(BM(-1)) GXGDP FGRGDP RINT(-1) LN(M1(-1)) BSY(-1) LN(EXCH(-1))				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	2.155591	1.269304	1.698246	0.0970
XTFGDP	0.002071	0.001390	1.490490	0.1437
LN(CPI)	0.110122	0.069243	1.590376	0.1194
LN(GFC)	0.093480	0.048986	1.908282	0.0634
LN(BM(-1))	0.906698	0.055244	16.41255	0.0000
R^2	0.998234		Mean dep. var.	26.11162
Adj. R^2	0.998061		S.D dep. var.	3.143645
S.E of reg.	0.138411		Sum sq. resid.	0.785456
F-stat.	5792.899		D-W stat.	1.290832
Prob(F-stat.)	0.000000		2nd-Stage SSR	0.803434
J-stat.	16.16424		Instru. Rank	11
Prob(J-stat.)	0.012899			

Source: EViews Estimated Output.

10.2 GMM and 2SLS Endogeneity test

GMM Endogeneity Test				
H_0: LN(CPI) are exogenous				
Equation: **BMMODEL**				
Specification:LN(BM) C XTFGDP LN(CPI) LN(GFC) LN(BM(-1))				
Instrument specification: C LN(CPI(-1)) XTFGDP LN(GFC) LN(BM(-1)) GXGDP FGRGDP RINT(-1) LN(M1(-1)) BSY(-1) LN(EXCH(-1))				
Endogenous variable to handle as exogenous: LN(CPI)				
	Value	Df		Prob.
Diff. in J-stat	0.667214	1		0.4140
J-stat. sum.:	Value			
Restricted J-stat.	9.767464			
Unrestricted J-stat.	9.100250			
Restricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	1.026839	0.518873	1.978978	0.0546
XTFGDP	0.004637	0.000926	5.006711	0.0000
LN(CPI)	0.070239	0.026811	2.619769	0.0123
LN(GFC)	0.075740	0.027535	2.750683	0.0088
LN(BM(-1))	0.950774	0.022752	41.78784	0.0000
R^2	0.997441		Mean dep. var.	26.11162
Adj. R^2	0.997191		S. D. dep. var.	3.143645
S.E. of reg.	0.166614		Sum sq. resid.	1.138163
D-W stat..	0.906427		J-stat.	9.767464
Instru. rank	12		Prob(J-stat.)	0.202138
Unrestricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	0.827025	0.606736	1.363073	0.1803
XTFGDP	0.004891	0.001055	4.634580	0.0000
LN(CPI)	0.059464	0.031197	1.906050	0.0637
LN(GFC)	0.079174	0.026248	3.016421	0.0044
LN(BM(-1))	0.958954	0.025906	37.01707	0.0000
R^2	0.997495		Mean dep. var.	26.11162
Adj. R^2	0.997250		S. D. dep. var.	3.143645
S.E. of reg.	0.164841		Sum sq. resid.	1.114068
D-W stat.	0.935247		J-stat.	9.100250
Instru. rank	11		Prob(J-stat.)	0.168018
2SLS Endogeneity Test				
H_0: LN(CPI) are exogenous				
Equation: **BMMODEL**				
Specification:LN(BM) C XTFGDP LN(CPI) LN(GFC) LN(BM(-1))				
Instrument specification: C LN(CPI(-1)) XTFGDP LN(GFC) LN(BM(-1)) GXGDP FGRGDP RINT(-1) LN(M1(-1)) BSY(-1) LN(EXCH(-1))				
Endogenous variable to handle as exogenous: LN(CPI)				

	Value	Df		Prob.
Diff. in J-stat	0.554667	1		0.4564
J-stat. sum.:	Value			
Restricted J-stat.	16.73763			
Unrestricted J-stat.	16.18297			
Restricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	2.416867	1.219096	1.982507	0.0542
XTFGDP	0.002000	0.001386	1.443314	0.1565
LN(CPI)	0.124597	0.066418	1.875953	0.0678
LN(GFC)	0.097717	0.048626	2.009550	0.0511
LN(BM(-1))	0.895232	0.053022	16.88414	0.0000
R^2	0.998236		Mean dep. var.	26.11162
Adj. R^2	0.998064		S. D. dep. var.	3.143645
S.E. of reg.	0.138330		Sum sq. resid.	0.784547
F-stat.	5799.856		D-W stat..	1.293793
Prob(F-stat.)	0.000000		2nd-Stage SSR	0.784547
J-stat.	16.73763		Instru. Rank	12
Prob(J-stat.)	0.019169			
Unrestricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	2.155591	1.268570	1.699229	0.0969
XTFGDP	0.002071	0.001389	1.491353	0.1435
LN(CPI)	0.110122	0.069203	1.591297	0.1192
LN(GFC)	0.093480	0.048958	1.909387	0.0632
LN(BM(-1))	0.906698	0.055212	16.42205	0.0000
R^2	0.998234		Mean dep. var..	26.11162
Adj. R^2	0.998061		S. D. dep. var.	3.143645
S.E. of reg.	0.138411		Sum sq. resid.	0.785456
D-W stat.	1.290832		J-stat.	16.18297
Instru. rank	11		Prob(J-stat.)	0.012805

Source: EViews Estimated Output.

10.3 GMM and 2SLS Weak instrument test

Weak Instrument Diagnostics: GMM and 2SLS Equation: BMMODEL		
Cragg-Donald F-stat.	58.39471	
	GMM	2SLS
Stock-Yogo TSLS critical values (relative bias)		
5%	19.86	19.86
10%	11.29	11.29
20%	6.73	6.73
30%	5.07	5.07
Stock-Yogo critical values (size)		
10%	31.50	31.50
15%	17.38	17.38
20%	12.48	12.48
25%	9.93	9.93
Moment selection criteria		
SIC-based:	-13.84461	-6.807606
HQIC-based:	-7.063437	-0.026428
Relevant MSC:	-28.04206	-22.27053

Source: EViews Estimated Output.

10.42SLS Serial correlation test

Breusch-Godfrey Serial Correlation LM Test				
Obs. R^2	8.551119	Prob. Chi-Sq. (8)		0.0139
Regressand Variable: RESID.				
Technique: 2SLS				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	0.508135	1.197707	0.424256	0.6737
XTFGDP	-0.000182	0.001292	-0.141147	0.8885
LN(CPI)	0.028144	0.065130	0.432129	0.6680
LN(GFC)	0.008792	0.046068	0.190854	0.8496
LN(BM(-1))	-0.022312	0.051991	-0.429144	0.6702
RESID.(-1)	0.453737	0.156997	2.890101	0.0063
RESID.(-2)	-0.272376	0.158578	-1.717612	0.0938
R^2	0.185894		Mean dep. var.	-1.47E-15
Adj. R^2	0.060647		S. D. dep. var.	0.132116
S.E. of reg.	0.128047		AIC	-1.133572
Sum sq. resid.	0.639445		SIC	-0.855300
Ln likelihood	33.07215		H-Q criter.	-1.029329
F-stat.	1.484217		D-W stat.	2.059163
Prob(F-stat.)	0.209017			

Source: EViews Estimated Output.

10.52SLS Heteroskedasticity test

Heteroskedasticity Test: Breusch-Pagan-Godfrey				
F-stat.	1.444897	Prob. F(4,38)		0.2366
Obs. R^2	5.683270	Prob. Chi-Sq.(4)		0.2241
Scaled explained SS	7.336864	Prob. Chi-Sq.(4)		0.1191
Regressand Variable: RESID.^2				
Technique: Least Squares				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	0.272248	0.269017	1.012008	0.3175
XTFGDP	-0.000411	0.000306	-1.345400	0.1859
LN(CPI)	0.010363	0.014656	0.707036	0.4835
LN(GFC)	0.003922	0.010730	0.365471	0.7166
LN(BM(-1))	-0.010695	0.011700	-0.914114	0.3660
R^2	0.123549		Mean dep. var.	0.017075
Adj. R^2	0.038042		S. D. dep. var.	0.031123
S.E. of reg.	0.030525		AIC	-4.038200
Sum sq. resid.	0.038204		SIC	-3.839434
Ln likelihood	97.87859		H-Q criter.	-3.963741
F-stat.	1.444897		D-W stat.	1.875175
Prob(F-stat.)	0.236607			

Source: EViews Estimated Output.

Appendix 11: Equation 4.46 GMM and 2SLS Outputs

11.1 GMM and 2SLS output

Regressand Variable: LN(GFC)

Technique: GMM

Instrument specification: LN(GFC(-1)) OSGDPP LN(CPI(-1)) LN(RGDP) LN(PUMPR(-1)) LN(EXCH(-1)) FGRGDP(-1) LN(M1(-1)) RINT(-1) BSY(-1) DCRGDP(-1)

Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-33.94073	5.795271	-5.856625	0.0000
LN(GFC(-1))	0.528868	0.096292	5.492311	0.0000
OSGDP	0.028851	0.013583	2.124002	0.0402
LN(CPI)	-0.219426	0.034910	-6.285569	0.0000
LN(RGDP)	1.148302	0.193443	5.936136	0.0000
R^2	0.632581		Mean dep. var.	2.584866
Adj. R^2	0.593905		S.D dep. var.	0.607744
S.E of reg.	0.387288		Sum sq. resid.	5.699710
D-W stat.	1.115077		J-stat.	3.716492
Instru. rank	12		Prob(J-stat.)	0.811791

Regressand Variable: LN(GFC)

Technique: 2SLS

Instrument specification: LN(GFC(-1)) OSGDPP LN(CPI(-1)) LN(RGDP) LN(PUMPR(-1)) LN(EXCH(-1)) FGRGDP(-1) LN(M1(-1)) RINT(-1) BSY(-1) DCRGDP(-1)

Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-29.35757	8.939438	-3.284051	0.0022
LN(GFC(-1))	0.522871	0.119695	4.368368	0.0001
OSGDP	0.018926	0.027478	0.688759	0.4952
LN(CPI)	-0.189825	0.060702	-3.127130	0.0034
LN(RGDP)	0.999486	0.297246	3.362488	0.0018
R^2	0.638566		Mean dep. var.	2.584866
Adj. R^2	0.600520		S.D dep. var.	0.607744
S.E of reg.	0.384121		Sum sq. resid.	5.606856
F-stat.	16.98585		D-W stat.	1.133172
Prob(F-stat.)	0.000000		2nd-Stage SSR	5.487846
J-stat.	2.701574		Instru. Rank	12
Prob(J-stat.)	0.911170			

Source: EViews Estimated Output.

11.2GMM and 2SLS Endogeneity test

GMM Endogeneity Test				
H_0: LN(CPI) are exogenous				
Equation: **CAPMODEL**				
Specification:LN(GFC) C LN(GFC(-1)) OSGDPP LN(CPI) LN(RGDP)				
Instrument specification:LN(GFC(-1)) OSGDPP LN(CPI(-1)) LN(RGDP) LN(PUMPR(-1)) LN(EXCH(-1)) FGRGDP(-1) LN(M1(-1)) RINT(-1) BSY(-1) DCRGDP(-1)				
Endogenous variable to handle as exogenous: LN(CPI)				
	Value	Df		Prob.
Diff. in J-stat	5.720532	1		0.0168
J-stat. sum.:	Value			
Restricted J-stat.	9.501496			
Unrestricted J-stat.	3.780965			
Restricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-26.59460	4.975879	-5.344704	0.0000
LN(GFC(-1))	0.561141	0.095892	5.851774	0.0000
OSGDPP	0.024614	0.013756	1.789338	0.0815
LN(CPI)	-0.170080	0.029575	-5.750880	0.0000
LN(RGDP)	0.905722	0.166792	5.430237	0.0000
R^2	0.637328		Mean dep. var.	2.584866
Adj. R^2	0.599151		S. D. dep. var.	0.607744
S.E. of reg.	0.384778		Sum sq. resid.	5.626071
D-W stat.	1.169892		J-stat.	9.501496
Instru. Rank	13		Prob(J-stat.)	0.301770
Unrestricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-33.22551	5.437511	-6.110425	0.0000
LN(GFC(-1))	0.531527	0.090991	5.841512	0.0000
OSGDPP	0.028278	0.013022	2.171575	0.0362
LN(CPI)	-0.215180	0.033593	-6.405440	0.0000
LN(RGDP)	1.124751	0.181579	6.194265	0.0000
R^2	0.633700		Mean dep. var.	2.584866
Adj. R^2	0.595142		S. D. dep. var.	0.607744
S.E. of reg.	0.386698		Sum sq. resid.	5.682345
D-W stat.	1.121445		J-stat.	3.780965
Instru. rank	12		Prob(J-stat.)	0.804632
2SLS Endogeneity Test				
H_0: LN(CPI) are exogenous				
Equation: **CAPMODEL**				
Specification:LN(GFC) C LN(GFC(-1)) OSGDPP LN(CPI) LN(RGDP)				
Instrument specification: C LN(GFC(-1)) OSGDPP LN(CPI(-1))				

LN(RGDP) LN(PUMPR(-1)) LN(EXCH(-1)) FGRGDP(-1) LN(M1(-1)) RINT(-1) BSY(-1) DCRGDP(-1)				
Endogenous variable to handle as exogenous: LN(CPI)				
	Value	Df		Prob.
Diff. in J-stat	3.038113	1		0.0813
J-stat. sum.:	Value			
Restricted J-stat.	5.741050			
Unrestricted J-stat.	2.702937			
Restricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-28.24964	8.914552	-3.168936	0.0030
LN(GFC(-1))	0.530988	0.119574	4.440669	0.0001
OSGDPP	0.017762	0.027463	0.646762	0.5217
LN(CPI)	-0.181450	0.060497	-2.999340	0.0048
LN(RGDP)	0.962501	0.296413	3.247167	0.0024
R^2	0.638748		Mean dep. var.	2.584866
Adj. R^2	0.600722		S. D. dep. var.	0.607744
S.E. of reg.	0.384024		Sum sq. resid.	5.604030
F-stat.	16.79745		D-W stat.	1.144294
Prob(F-stat.)	0.000000		2nd-Stage SSR	5.604030
J-stat.	5.741050		Instru. Rank	13
Prob(J-stat.)	0.676212			
Unrestricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-29.35757	8.937185	-3.284879	0.0022
LN(GFC(-1))	0.522871	0.119665	4.369469	0.0001
OSGDPP	0.018926	0.027471	0.688933	0.4951
LN(CPI)	-0.189825	0.060687	-3.127918	0.0034
LN(RGDP)	0.999486	0.297171	3.363335	0.0018
R^2	0.638566		Mean dep. var.	2.584866
Adj. R^2	0.600520		S. D. dep. var.	0.607744
S.E. of reg.	0.384121		Sum sq. resid.	5.606856
D-W stat.	1.133172		J-stat.	2.702937
Instru. rank	12		Prob(J-stat.)	0.911057

Source: EViews Estimated Output.

11.3GMM and 2SLS Weak instrument

Weak Instrument Diagnostics: GMM and 2SLS Equation: BMMODEL		
Cragg-Donald F-stat.	614.3812	
	GMM	2SLS
Stock-Yogo TSLS critical values (relative bias)		
5%	20.25	20.25
10%	11.39	11.39
20%	6.69	6.69
30%	4.99	4.99
Stock-Yogo critical values (size)		
10%	33.84	33.84
15%	18.54	18.54
20%	13.24	13.24
25%	10.50	10.50
Moment selection criteria		
SIC-based:	-22.61191	-23.62683
HQIC-based:	-14.92257	-15.93749
Relevant MSC:	-11.09109	-6.537787

Source: EViews Estimated Output.

11.42SLS Serial correlation test

Breusch-Godfrey Serial Correlation LM Test				
Obs. R^2	11.15866	Prob. Chi-Sq. (8)		0.0038
Regressand Variable: RESID.				
Technique: 2SLS				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-27.09727	11.70129	-2.315751	0.0264
LN(GFC(-1))	-0.605695	0.221135	-2.739029	0.0095
OSGDPP	0.016574	0.024823	0.667666	0.5086
LN(CPI)	-0.186995	0.080568	-2.320959	0.0261
LN(RGDP)	0.937611	0.397843	2.356738	0.0240
RESID.(-1)	0.894282	0.242840	3.682604	0.0008
RESID.(-2)	0.237827	0.211507	1.124440	0.2683
R^2	0.259504		Mean dep. var.	8.02E-15
Adj. R^2	0.136088		S. D. dep. var.	0.365372
S.E. of reg.	0.339602		AIC	0.825814
Sum sq. resid.	4.151856		SIC	1.112521
Ln likelihood	-10.75500		H-Q criter.	0.931542
F-stat.	2.102675		D-W stat.	1.870144
Prob(F-stat.)	0.077020			

Source: EViews Estimated Output.

11.52SLS Heteroskedasticity test

Heteroskedasticity Test: Breusch-Pagan-Godfrey				
F-stat.	2.088935	Prob. F(4,38)		0.1013
Obs. R^2	7.750860	Prob. Chi-Sq.(4)		0.1011
Scaled explained SS	15.81945	Prob. Chi-Sq.(4)		0.0033
Regressand Variable: RESID.^2				
Technique: Least Squares				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	4.051142	6.664922	0.607830	0.5469
LN(GFC(-1))	-0.145991	0.089399	-1.633027	0.1107
OSGDPP	-0.009626	0.020533	-0.468795	0.6419
LN(CPI)	0.050782	0.045230	1.122739	0.2686
LN(RGDP)	-0.117615	0.221611	-0.530724	0.5987
R^2	0.180253		Mean dep. var.	0.130392
Adj. R^2	0.093963		S. D. dep. var.	0.301635
S.E. of reg.	0.287114		AIC	0.451067
Sum sq. resid.	3.132503		SIC	0.655858
Ln likelihood	-4.697951		H-Q criter.	0.526588
F-stat.	2.088935		D-W stat.	1.467667
Prob(F-stat.)	0.101348			

Source: EViews Estimated Output.

Appendix 12: Equation 4.47 GMM and 2SLS Outputs

12.1 GMM and 2SLS output

Regressand Variable: LN(CPI)				
Technique: GMM				
Instrument specification: OSGDP LN(GFC) LN(BM(-1)) LN(CPI(-1)) LN(RMB) LN(RGDP) LN(CRES) CRR(-1) RINT(-1) GXGDP BGSGDP(-1) FGRGDP(-1) DCRGDP(-1) DCRGDP OSGDP(-1)				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-1.175760	0.599043	-1.962730	0.0563
OSGDP	-0.005511	0.003789	-1.454495	0.1532
LN(GFC)	-0.044522	0.026945	-1.652350	0.1059
LN(BM)	0.060380	0.026800	2.252972	0.0295
LN(CPI(-1))	0.914330	0.034030	26.86819	0.0000
R^2	0.997758		Mean dep. var.	1.826472
Adj. R^2	0.997544		S.D dep. var.	2.514956
S.E of reg.	0.124634		Sum sq. resid.	0.652417
D-W stat.	0.774780		J-stat.	11.02619
Instru. rank	16		Prob(J-stat.)	0.441071
Regressand Variable: LN(CPI)				
Technique: 2SLS				
Instrument specification: OSGDP LN(GFC) LN(BM(-1)) LN(CPI(-1)) LN(RMB) LN(RGDP) LN(CRES) CRR(-1) RINT(-1) GXGDP BGSGDP(-1) FGRGDP(-1) DCRGDP(-1) DCRGDP OSGDP(-1)				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-1.006844	1.096023	-0.918634	0.3635
OSGDP	-0.010816	0.009300	-1.163020	0.2514
LN(GFC)	-0.070347	0.036826	-1.910286	0.0629
LN(BM)	0.057550	0.047420	1.213617	0.2317
LN(CPI(-1))	0.917865	0.058382	15.72160	0.0000
R^2	0.997923		Mean dep. var.	1.826472
Adj. R^2	0.997725		S.D dep. var.	2.514956
S.E of reg.	0.119951		Sum sq. resid.	0.604307
F-stat.	5044.822		D-W stat.	0.878809
Prob(F-stat.)	0.000000		2nd-Stage SSR	0.605386
J-stat.	24.59825		Instru. Rank	16
Prob(J-stat.)	0.010434			

Source: EViews Estimated Output.

12.2GMM and 2SLS Endogeneity test

GMM Endogeneity Test				
H_0: LN(BM) are exogenous				
Equation: **CPIMODEL**				
Specification:LN(CPI) C OSGDP LN(GFC) LN(BM) LN(CPI(-1))				
Instrument specification: C OSGDP LN(GFC) LN(BM(-1)) LN(CPI(-1)) LN(RMB) LN(RGDP) LN(CRES) CRR(-1) RINT(-1) GXGDP BGSGDP(-1) FGRGDP(-1) DCRGDP(-1) DCRGDP OSGDP(-1)				
Endogenous variable to handle as exogenous: LN(BM)				
	Value	Df		Prob.
Diff. in J-stat	1.821879	1		0.1771
J-stat. sum.:	Value			
Restricted J-stat.	12.84266			
Unrestricted J-stat.	11.02078			
Restricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-1.137933	0.597915	-1.903167	0.0639
OSGDP	-0.003638	0.003493	-1.041369	0.3037
LN(GFC)	-0.049625	0.026648	-1.862189	0.0696
LN(BM)	0.059404	0.026774	2.218737	0.0320
LN(CPI(-1))	0.915933	0.033989	26.94810	0.0000
R^2	0.997793		Mean dep. var.	1.826472
Adj. R^2	0.997582		S. D. dep. var.	2.514956
S.E. of reg.	0.123658		Sum sq. resid.	0.642239
D-W stat.	0.789601		J-stat.	12.84266
Instru. rank	17		Prob(J-stat.)	0.380580
Unrestricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-1.177010	0.565958	-2.079677	0.0437
OSGDP	-0.005509	0.003581	-1.538283	0.1315
LN(GFC)	-0.044540	0.025471	-1.748661	0.0877
LN(BM)	0.060434	0.025321	2.386689	0.0216
LN(CPI(-1))	0.914266	0.032154	28.43420	0.0000
R^2	0.997758		Mean dep. var.	1.826472
Adj. R^2	0.997544		S. D. dep. var.	2.514956
S.E. of reg.	0.124635		Sum sq. resid.	0.652421
D-W stat.	0.774716		J-stat.	11.02078
Instru. rank	16		Prob(J-stat.)	0.441524
2SLS Endogeneity Test				
H0: LN(BM) are exogenous				
Equation: CPIMODEL				
Specification: LN(CPI) C OSGDP LN(GFC) LN(BM) LN(CPI(-1))				
Instrument specification: C OSGDP LN(GFC) LN(BM(-1)) LN(CPI(-1)) LN(RMB) LN(RGDP) LN(CRES) CRR(-1) RINT(-1) GXGDP BGSGDP(-1) FGRGDP(-1) DCRGDP(-1) DCRGDP OSGDP(-1)				

Endogenous variable to handle as exogenous: LN(BM)				
	Value	Df		Prob.
Diff. in J-stat	0.000580	1		0.9808
J-stat. sum.:	Value			
Restricted J-stat.	24.59884			
Unrestricted J-stat.	24.59826			
Restricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-1.012161	1.073556	-0.942812	0.3512
OSGDP	-0.010811	0.009298	-1.162771	0.2515
LN(GFC)	-0.070446	0.036597	-1.924885	0.0610
LN(BM)	0.057781	0.046442	1.244155	0.2203
LN(CPI(-1))	0.917583	0.057200	16.04177	0.0000
R^2	0.997923		Mean dep. var.	1.826472
Adj. R^2	0.997725		S. D. dep. var.	2.514956
S.E. of reg.	0.119951		Sum sq. resid.	0.604306
F-stat.	5044.844		D-W stat.	0.878573
Prob(F-stat.)	0.000000		2nd-Stage SSR	0.604306
J-stat.	24.59884		Instru. Rank	17
Prob(J-stat.)	0.016842			
Unrestricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-1.006844	1.096022	-0.918634	0.3635
OSGDP	-0.010816	0.009300	-1.163020	0.2514
LN(GFC)	-0.070347	0.036826	-1.910286	0.0629
LN(BM)	0.057550	0.047420	1.213618	0.2317
LN(CPI(-1))	0.917865	0.058382	15.72160	0.0000
R^2	0.997923		Mean dep. var.	1.826472
Adj. R^2	0.997725		S. D. dep. var.	2.514956
S.E. of reg.	0.119951		Sum sq. resid.	0.604307
D-W stat.	0.878809		J-stat.	24.59826
Instru. rank	16		Prob(J-stat.)	0.010434

Source: EViews Estimated Output.

12.3GMM and 2SLS Weak instrument test

Weak Instrument Diagnostics: GMM and 2SLS Equation: BMMODEL		
Cragg-Donald F-stat.	60.67216	
	GMM	2SLS
Stock-Yogo TSLS critical values (relative bias)		
5%	21.01	21.01
10%	11.52	11.52
20%	6.53	6.53
30%	4.75	4.75
Stock-Yogo critical values (size)		
10%	43.27	43.27
15%	23.24	23.24
20%	16.35	16.35
25%	12.82	12.82
Moment selection criteria		
SIC-based:	-31.32543	-31.32543
HQIC-based:	-18.78055	-18.78055
Relevant MSC:	-25.53492	-25.53492

Source: EViews Estimated Output.

12.4 2SLS Serial correlation test

Breusch-Godfrey Serial Correlation LM Test				
Obs. R^2	17.97331	Prob. Chi-Sq. (8)		0.0001
Regressand Variable: RESID.				
Technique: 2SLS				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	-0.730213	1.027068	-0.710968	0.4812
OSGDP	-0.001017	0.007621	-0.133480	0.8945
LN(GFC)	-0.010732	0.030420	-0.352783	0.7261
LN(BM)	0.031583	0.044290	0.713096	0.4799
LN(CPI(-1))	-0.039712	0.054427	-0.729632	0.4699
RESID.(-1)	0.732470	0.150523	4.866166	0.0000
RESID.(-2)	-0.248356	0.167226	-1.485158	0.1453
R^2	0.382411		Mean dep. var.	1.19E-15
Adj. R^2	0.289773		S. D. dep. var.	0.114617
S.E. of reg.	0.096594		AIC	-1.700004
Sum sq. resid.	0.373213		SIC	-1.424450
Ln likelihood	46.95009		H-Q criter.	-1.596311
F-stat.	4.127998		D-W stat.	1.901257
Prob(F-stat.)	0.002565			

Source: EViews Estimated Output.

12.5 2SLS Heteroskedasticity test

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-stat.	1.845777	Prob. F(4,38)	0.1381
Obs. R^2	7.026818	Prob. Chi-Sq.(4)	0.1345
Scaled explained SS	10.01639	Prob. Chi-Sq.(4)	0.0402

Regressand Variable: RESID.^2				
Technique: Least Squares				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	0.010615	0.212119	0.050045	0.9603
OSGDP	-0.002344	0.001837	-1.275882	0.2090
LN(GFC)	-0.015768	0.007231	-2.180514	0.0349
LN(BM)	0.002066	0.009176	0.225157	0.8229
LN(CPI(-1))	-0.004516	0.011302	-0.399587	0.6915
R^2	0.149507		Mean dep. var.	0.012858
Adj. R^2	0.068507		S. D. dep. var.	0.024557
S.E. of reg.	0.023701		AIC	-4.546346
Sum sq. resid.	0.023592		SIC	-4.349522
Ln likelihood	111.8391		H-Q criter.	-4.472280
F-stat.	1.845777		D-W stat..	0.909132
Prob(F-stat.)	0.138055			

Source: EViews Estimated Output.

Appendix 13: Equation 4.48 GMM and 2SLS Outputs

13.1 GMM and 2SLS output

Regressand Variable: LN(BM)				
Technique: GMM				
Instrument specification: LN(CPI(-1)) OSGDP LN(GFC) LN(BM(-1)) GXGDP FGRGDP RINT(-1) LN(M1(-1)) BSY(-1) LN(EXCH(-1))				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	2.303476	1.706333	1.349957	0.1844
OSGDP	-0.184674	0.054846	-3.367125	0.0017
LN(CPI)	0.088424	0.092699	0.953890	0.3457
LN(GFC)	-0.015903	0.048234	-0.329695	0.7433
LN(BM(-1))	0.919857	0.073951	12.43882	0.0000
R^2	0.979527		Mean dep. var.	26.11162
Adj. R^2	0.977530		S.D dep. var.	3.143645
S.E of reg.	0.471236		Sum sq. resid.	9.104580
D-W stat.	1.657312		J-stat.	8.534898
Instru. rank	11		Prob(J-stat.)	0.201474
Regressand Variable: LN(BM)				
Technique: 2SLS				
Instrument specification: LN(CPI(-1)) OSGDP LN(GFC) LN(BM(-1)) GXGDP FGRGDP RINT(-1) LN(M1(-1)) BSY(-1) LN(EXCH(-1))				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	2.329533	1.248514	1.865846	0.0692
OSGDP	0.006867	0.011023	0.622983	0.5367
LN(CPI)	0.114590	0.069394	1.651309	0.1063
LN(GFC)	0.055077	0.045199	1.218558	0.2300
LN(BM(-1))	0.904448	0.055416	16.32118	0.0000
R^2	0.998153		Mean dep. var.	26.11162
Adj. R^2	0.997972		S.D dep. var.	3.143645
S.E of reg.	0.141555		Sum sq. RESID.ual	0.821546
F-stat.	5537.703		D-W stat.	1.134124
Prob(F-stat.)	0.000000		2nd-Stage SSR	0.860823
J-stat.	15.53548		Instru. Rank	11
Prob(J-stat.)	0.016477			

Source: EViews Estimated Output.

13.2 GMM and 2SLS Endogeneity test

GMM Endogeneity Test				
H_0: LN(CPI) are exogenous				
Equation: **BMMODEL**				
Specification:LN(BM) C OSGDP LN(CPI) LN(GFC) LN(BM(-1))				
Instrument specification: C LN(CPI(-1)) OSGDP LN(GFC) LN(BM(-1)) GXGDP FGRGDP RINT(-1) LN(M1(-1)) BSY(-1) LN(EXCH(-1))				
Endogenous variable to handle as exogenous: LN(CPI)				
	Value	df		Prob.
Diff. in J-stat	6.393813	1		0.0115
J-stat. sum.:	Value			
Restricted J-stat.	8.804624			
Unrestricted J-stat.	2.410811			
Restricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	3.412927	1.721202	1.982875	0.0541
OSGDP	-0.236488	0.069483	-3.403560	0.0015
LN(CPI)	0.143266	0.095973	1.492775	0.1432
LN(GFC)	-0.016467	0.055413	-0.297167	0.7678
LN(BM(-1))	0.874773	0.074780	11.69789	0.0000
R^2	0.968218		Mean dep. var.	26.11162
Adj. R^2	0.965117		S. D. dep. var.	3.143645
S.E. of reg.	0.587137		Sum sq. resid.	14.13393
D-W stat.	1.644246		J-stat.	8.804624
Instru. rank	12		Prob(J-stat.)	0.266989
Unrestricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	2.050196	2.035299	1.007319	0.3197
OSGDP	-0.070259	0.067071	-1.047522	0.3010
LN(CPI)	0.087043	0.109543	0.794606	0.4314
LN(GFC)	0.016525	0.054604	0.302636	0.7637
LN(BM(-1))	0.923457	0.087960	10.49860	0.0000
R^2	0.995207		Mean dep. var.	26.11162
Adj. R^2	0.994740		S. D. dep. var.	3.143645
S.E. of reg.	0.228001		Sum sq. resid.	2.131368
D-W stat.	1.662278		J-stat.	2.410811
Instru. rank	11		Prob(J-stat.)	0.878313
2SLS Endogeneity Test				
H0: LN(CPI) are exogenous				
Equation: BMMODEL				
Specification: LN(BM) C OSGDP LN(CPI) LN(GFC) LN(BM(-1))				
Instrument specification: C LN(CPI(-1)) OSGDP LN(GFC) LN(BM(-1)) GXGDP FGRGDP RINT(-1) LN(M1(-1)) BSY(-1) LN(EXCH(-1))				
Endogenous variable to handle as exogenous: LN(CPI)				

	Value	Df		Prob.
Diff. in J-stat	2.258001	1		0.1329
J-stat. sum.:	Value			
Restricted J-stat.	17.88244			
Unrestricted J-stat.	15.62444			
Restricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	2.894053	1.186919	2.438291	0.0192
OSGDP	0.006762	0.010991	0.615197	0.5418
LN(CPI)	0.146500	0.065857	2.224532	0.0317
LN(GFC)	0.067605	0.044292	1.526357	0.1346
LN(BM(-1))	0.879198	0.052641	16.70185	0.0000
R^2	0.998163		Mean dep. var.	26.11162
Adj. R^2	0.997984		S. D. dep. var.	3.143645
S.E. of reg.	0.141151		Sum sq. resid.	0.816869
F-stat.	5569.965		D-W stat..	1.145896
Prob(F-stat.)	0.000000		2nd-Stage SSR	0.816869
J-stat.	17.88244		Instru. Rank	12
Prob(J-stat.)	0.012512			
Unrestricted Test Equation				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	2.329533	1.244954	1.871180	0.0685
OSGDP	0.006867	0.010991	0.624764	0.5356
LN(CPI)	0.114590	0.069196	1.656030	0.1054
LN(GFC)	0.055077	0.045070	1.222042	0.2287
LN(BM(-1))	0.904448	0.055258	16.36784	0.0000
R^2	0.998153		Mean dep. var.	26.11162
Adj. R^2	0.997972		S. D. dep. var.	3.143645
S.E. of reg.	0.141555		Sum sq. resid.	0.821546
D-W stat.	1.134124		J-stat.	15.62444
Instru. rank	11		Prob(J-stat.)	0.015918

Source: EViews Estimated Output.

13.3GMM and 2SLS Weak instrument test

Weak Instrument Diagnostics: GMM and 2SLS Equation: BMMODEL		
Cragg-Donald F-stat.	48.08835	
	GMM	2SLS
Stock-Yogo TSLS critical values (relative bias)		
5%	19.86	19.86
10%	11.29	11.29
20%	6.73	6.73
30%	5.07	5.07
Stock-Yogo critical values (size)		
10%	31.50	31.50
15%	17.38	17.38
20%	12.48	12.48
25%	9.93	9.93
Moment selection criteria		
SIC-based:	-14.43695	-14.43695
HQIC-based:	-7.655773	-7.655773
Relevant MSC:	-12.92811	-12.92811

Source: EViews Estimated Output.

13.42SLS Serial correlation test

Breusch-Godfrey Serial Correlation LM Test				
Obs. R^2	11.64877	Prob. Chi-Sq. (8)		0.0030
Regressand Variable: RESID.				
Technique: 2SLS				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	0.414034	1.112652	0.372115	0.7118
OSGDP	0.012010	0.010502	1.143615	0.2598
LN(CPI)	0.029500	0.062045	0.475458	0.6371
LN(GFC)	0.010625	0.040388	0.263081	0.7939
LN(BM(-1))	-0.019734	0.049415	-0.399361	0.6918
RESID.(-1)	0.587900	0.163012	3.606476	0.0009
RESID.(-2)	-0.253448	0.154896	-1.636243	0.1098
R^2	0.253234		Mean dep. var.	-2.78E-15
Adj. R^2	0.138347		S. D. dep. var.	0.135117
S.E. of reg.	0.125423		AIC	-1.174987
Sum sq. resid.	0.613503		SIC	-0.896715
Ln likelihood	34.02470		H-Q criter.	-1.070745
F-stat.	2.204202		D-W stat.	2.019697
Prob(F-stat.)	0.063129			

Source: EViews Estimated Output.

13.52SLS Heteroskedasticity test

Heteroskedasticity Test: Breusch-Pagan-Godfrey				
F-stat.	3.065771	Prob. F(4,38)		0.0268
Obs. R^2	10.59086	Prob. Chi-Sq.(4)		0.0316
Scaled explained SS	7.645615	Prob. Chi-Sq.(4)		0.1055
Regressand Variable: RESID.^2				
Technique: Least Squares				
Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	0.160271	0.188151	0.851823	0.3993
OSGDP	0.004169	0.001742	2.393076	0.0214
LN(CPI)	0.008396	0.010440	0.804222	0.4259
LN(GFC)	0.011899	0.007021	1.694703	0.0977
LN(BM(-1))	-0.007508	0.008345	-0.899715	0.3735
R^2	0.230236		Mean dep. var.	0.017860
Adj. R^2	0.155137		S. D. dep. var.	0.024343
S.E. of reg.	0.022375		AIC	-4.659393
Sum sq. resid.	0.020527		SIC	-4.460627
Ln likelihood	112.1660		H-Q criter.	-4.584934
F-stat.	3.065771		D-W stat.	1.645398
Prob(F-stat.)	0.026774			

Source: EViews Estimated Output.

Appendix 14:Study Data

Year	GFC in Billion US $	DEFGDP (%)	CPI	BM in ₦million
1970	10.89	8.617523	0.100082	9.79E+08
1971	11.79	-2.5801	0.116094	1.04E+09
1972	13	0.818087	0.120108	1.2E+09
1973	15.26	-1.92457	0.126597	1.37E+09
1974	12.4	-9.54359	0.142643	2.59E+09
1975	16.65	1.992527	0.19109	4.04E+09
1976	23.49	4.092171	0.237525	5.71E+09
1977	27.66	2.479034	0.273363	7.68E+09
1978	27.13	8.169924	0.332708	7.52E+09
1979	23.76	-3.48234	0.371667	9.85E+09
1980	25.3	0.00398	0.40873	1.44E+10
1981	28.93	4.136866	0.493799	1.52E+10
1982	23.29	6.042992	0.53181	1.67E+10
1983	16.7	3.056857	0.655256	1.9E+10
1984	10.77	2.28808	0.772026	2.12E+10
1985	9.48	2.258563	0.829428	2.32E+10
1986	8.62	6.132315	0.876848	2.36E+10
1987	7.72	3.049664	0.975847	2.89E+10
1988	8.2	4.618745	1.507793	3.84E+10
1989	8.53	3.959253	2.268726	4.34E+10
1990	9.27	6.730278	2.435804	5.76E+10
1991	8.5	6.552503	2.752629	7.91E+10
1992	12.83	4.516232	3.979994	1.29E+11
1993	13.4	5.979528	6.255168	1.98E+11
1994	12.82	5.020393	9.822597	2.67E+11
1995	6.75	-0.0344	16.97694	3.19E+11
1996	7.74	-0.79482	21.94579	3.7E+11
1997	10.77	0.119353	23.81774	4.3E+11
1998	9.69	3.343551	26.19865	5.26E+11
1999	8.71	6.093007	27.93258	7E+11
2000	16.85	1.545783	29.86923	1.04E+12
2001	3.45	3.205838	35.50664	1.31E+12
2002	1.88	3.866226	40.07868	1.56E+12
2003	3.47	2.044932	45.70243	1.77E+12
2004	17.31	1.512578	52.5569	2.13E+12
2005	13.68	1.104699	61.9454	2.61E+12
2006	24.07	0.546188	67.04941	3.56E+12
2007	20.31	0.507632	70.65815	5.88E+12
2008	18.97	0.195016	78.83894	9.32E+12
2009	21.26	3.26685	87.93512	1.09E+13
2010	28.53	2.039269	100	1.17E+13
2011	18.81	1.818329	110.8408	1.32E+13
2012	20.81	1.344013	124.3822	1.59E+13
2013	21.78	1.423887	134.9246	1.74E+13
2014	21.27	0.92712	145.796	1.82E+13
2015	16.84	1.63672	158.9435	1.87E+13
2016	12.51	2.150494	183.8926	2.09E+13
2017	16.91	1.9997	214.2321	2.59E+13

Source: IMF Fiscal Affairs Department (2017),World Development Indicator (2019), CBN statistical bulletin (2017)

Year	RGDP in₦ million	EXCH ₦/$	PUMPR in ₦	GXGDP (%)
1970	1.43E+13	0.71	-	17.11575
1971	1.63E+13	0.7	-	14.99346
1972	1.69E+13	0.66	-	20.36313
1973	1.78E+13	0.66	0.845	17.71856
1974	1.98E+13	0.63	0.845	14.55977
1975	1.88E+13	0.62	0.845	27.67187
1976	2.05E+13	0.63	0.9	29.47466
1977	2.17E+13	0.65	0.9	27.99399
1978	2.04E+13	0.61	0.153	23.16148
1979	2.18E+13	0.6	0.153	17.64563
1980	2.27E+13	0.55	0.153	30.15878
1981	1.97E+13	0.61	0.153	12.10039
1982	1.84E+13	0.67	0.2	11.80384
1983	1.64E+13	0.72	0.2	8.755358
1984	1.62E+13	0.76	0.2	8.538242
1985	1.72E+13	0.89	0.2	9.689819
1986	1.72E+13	2.02	0.395	12.05297
1987	1.77E+13	4.02	0.395	11.4012
1988	1.9E+13	4.54	0.42	10.53934
1989	1.94E+13	7.39	0.6	10.73305
1990	2.17E+13	8.04	0.6	18.34056
1991	2.18E+13	9.91	0.7	12.20227
1992	2.28E+13	17.3	0.7	10.60127
1993	2.23E+13	22.05	5	17.54909
1994	2.19E+13	21.89	15	11.49481
1995	2.19E+13	21.89	11	8.5565
1996	2.28E+13	21.89	11	8.362909
1997	2.35E+13	21.89	11	10.22176
1998	2.41E+13	21.89	25	12.21004
1999	2.42E+13	92.69	20	20.2532
2000	2.54E+13	102.11	22	10.44229
2001	2.69E+13	111.94	22	14.76385
2002	3.11E+13	120.97	26	13.06067
2003	3.33E+13	129.36	42	12.36683
2004	3.64E+13	133.5	65	12.49839
2005	3.88E+13	132.15	65	12.47084
2006	4.11E+13	128.65	65	10.43924
2007	4.38E+13	125.83	65	11.86454
2008	4.68E+13	118.57	65	13.33872
2009	5.06E+13	149.58	65	13.92659
2010	5.46E+13	150.66	65	7.738386
2011	5.75E+13	158.27	65	7.39572
2012	5.99E+13	157.33	97	6.343545
2013	6.39E+13	157.26	97	6.40084
2014	6.8E+13	169.68	97	5.089349
2015	6.98E+13	197	87	5.24163
2016	6.87E+13	253.4923	143	5.025823
2017	6.92E+13	305.7901	143	7.02582

Source: CBN Statistical Bulletin (2017), World Development Indicator (2019), and http://nigeria.opendataforafrica.org access on 08/08/2018

Year	BGSGDP (%)	M1 in ₦million	RMB	FGRGDP in ₦billion
1970	6.311587	1.78E+11	1.78E+12	8.49823
1971	11.75515	2.08E+11	1.79E+12	17.5736
1972	6.786142	2.36E+11	1.96E+12	19.545
1973	6.689202	2.75E+11	2.17E+12	19.6431
1974	-6.79021	3.27E+11	2.29E+12	24.1034
1975	11.89267	4.01E+11	2.10E+12	25.6793
1976	32.08019	6.5E+11	2.74E+12	25.3825
1977	9.083293	8.1E+11	2.96E+12	25.515
1978	8.547744	9.03E+11	2.71E+12	14.9916
1979	4.356897	1.01E+12	2.72E+12	21.128
1980	11.87337	1.2E+12	2.94E+12	26.1791
1981	12.56558	1.52E+12	3.08E+12	5.18645
1982	21.61335	1.82E+12	3.42E+12	3.75478
1983	2.994133	3.19E+12	4.87E+12	3.84786
1984	14.79328	5.07E+12	6.57E+12	4.26534
1985	-0.26562	5.21E+12	6.28E+12	5.20166
1986	7.876846	5.72E+12	6.52E+12	3.93675
1987	9.865506	6.65E+12	6.81E+12	6.46611
1988	18.49736	7.37E+12	4.89E+12	4.86644
1989	5.050953	7.7E+12	3.39E+12	6.17696
1990	5.985058	6.85E+12	2.81E+12	7.63535
1991	-3.26E-05	8.57E+12	3.11E+12	5.1723
1992	-2.2863	7.60E+12	1.91E+12	5.85455
1993	6.311587	1.78E+11	28456469914	10.013
1994	11.75515	2.08E+11	21175662607	5.1408
1995	6.786142	2.36E+11	13901209523	8.62697
1996	6.689202	2.75E+11	12530877221	9.77121
1997	-6.79021	3.27E+11	13729262306	10.2931
1998	11.89267	4.01E+11	15306132186	7.7081
1999	32.08019	6.5E+11	23270317314	12.4843
2000	9.083293	8.1E+11	27118208270	8.65942
2001	8.547744	9.03E+11	25431862885	9.79792
2002	4.356897	1.01E+12	25200430753	6.3249
2003	11.87337	1.2E+12	26256809539	7.69264
2004	12.56558	1.52E+12	28921036058	7.23733
2005	21.61335	1.82E+12	29380712692	7.45712
2006	2.994133	3.19E+12	47576854144	6.4077
2007	14.79328	5.07E+12	71753930721	7.07269
2008	-0.26562	5.21E+12	66084094992	8.15529
2009	7.876846	5.72E+12	65047958085	5.96805
2010	9.865506	6.65E+12	66500000000	5.69908
2011	18.49736	7.37E+12	66491761157	5.61749
2012	5.050953	7.7E+12	61905964037	5.09873
2013	5.985058	6.85E+12	50769096221	5.02583
2014	-3.26E-05	6.90E+12	47326401273	4.21334
2015	-2.2863	8.57E+12	53918530799	3.64446
2016	6.311587	1.78E+11	967956296.2	2.90918
2017	-0.00447	11175.57	52.16572567	4.065195

Source: CBN Statistical Bulletin (2017), World Development Indicator (2019)

Year	RINT (%)	BSY in ₦ Billion	CRES in ₦ Billion	DCRGDP (%)	CRR (%)
1970	-29.2695	45	0.4	3.862077	5.2
1971	5.576789	68.9	0.4	4.798851	5.2
1972	3.991658	-81.6	0.4	5.448268	5.4
1973	1.569258	28.1	0.5	5.963303	5.4
1974	-25.6668	-146.9	0.7	4.624056	11.5
1975	-13.9682	294.1	1.9	6.426125	26.3
1976	-6.86748	1460	2.4	7.208665	32
1977	-2.81938	1223.4	2.8	8.735447	16.1
1978	-10.2779	1275.5	2.9	10.70951	8
1979	3.534728	-1211	3.1	10.16499	12.4
1980	8.064537	-122.9	4.8	12.02765	10.6
1981	-10.5997	3.62	5	15.41953	9.5
1982	-14.1676	2.99	5.8	17.71037	10.7
1983	-12.2189	3.27	6.1	16.84755	7.1
1984	0.430272	-1.42	5.9	16.01444	4.7
1985	9.016999	-0.57	5.7	15.30159	1.8
1986	1.017704	6.04	6.7	19.9117	1.7
1987	-0.30385	0.59	8.5	14.34982	1.4
1988	-1.27385	7.47	11.7	12.82206	2.1
1989	4.496343	-6.48	11.8	9.157394	2.9
1990	16.2182	-1.5	18.3	8.692986	2.9
1991	4.390047	18.43	29.9	8.951905	2.9
1992	7.739596	46.43	71.4	13.32934	4.4
1993	-4.94262	62.38	104.6	12.19857	6
1994	-11.7654	41.25	138.3	14.9541	5.7
1995	-9.03206	7.31	167.7	10.01618	5.8
1996	10.02308	-52.29	178.5	8.978995	7.5
1997	1.539682	12.8	190.1	10.66127	7.8
1998	-13.2591	174.88	216.9	12.98141	8.3
1999	1.409923	-	283.4	13.49416	11.7
2000	16.01101	-16.21	354.7	12.30446	9.8
2001	5.613734	225.69	545.9	16.50936	10.8
2002	1.832124	-200.17	591.4	13.02111	10.6
2003	5.011641	94.05	688.7	13.79619	10
2004	19.17037	0	732.3	13.12077	8.6
2005	32.54304	0	762.8	13.22053	9.7
2006	25.11044	0	974.9	13.16818	2.6
2007	16.60754	159.8	1195.3	24.57161	2.8
2008	14.01209	67.9	1549.1	33.65412	2.3
2009	8.182395	175.61	1653.9	38.34855	1.3
2010	3.552578	749.7	1845.7	15.3907	1
2011	2.591038	496.43	2784.1	12.46493	8
2012	3.769214	471.34	3704.5	11.78871	12
2013	3.699084	510.44	5090.2	12.58533	12
2014	0.158171	428.83	5930.9	14.48775	16.3
2015	-3.27673	834	5812.7	14.19323	24
2016	6.68532	0.2	5830.2	15.6796	22.5
2017	5.790567	-	6484.3	14.20793	22.5

Source: CBN Statistical Bulletin (2017), World Development Indicator (2019)

Year	DMFGDP %	XTFGDP %	OSGDP %
1970	20.65857	3.313704	4.292666
1971	18.44863	2.683847	-7.70723
1972	13.73635	3.695304	0.24487
1973	12.24958	3.208389	-3.19217
1974	6.706653	1.712789	-11.0726
1975	7.802008	1.629318	-0.24493
1976	9.854898	1.405324	0.093788
1977	10.80794	1.1583	-0.34752
1978	13.93655	3.625062	-0.75449
1979	17.18654	3.839217	-6.08581
1980	16.55292	3.761259	2.685347
1981	7.728033	1.609598	-0.52689
1982	9.683673	5.690729	1.57351
1983	13.63278	6.489394	-2.94442
1984	15.06775	8.691685	-0.8524
1985	14.53613	8.997923	0.739884
1986	14.04823	20.47677	3.492804
1987	14.74873	40.4063	-0.56471
1988	14.68168	41.81841	0.587022
1989	11.22376	57.34632	3.629206
1990	16.8295	59.7615	3.010526
1991	19.49496	55.10557	0.112441
1992	19.56046	59.82217	0.513891
1993	21.74909	50.28665	-0.02893
1994	23.12116	36.80555	0.092591
1995	16.50089	24.76047	-1.05546
1996	11.11301	16.33496	2.73382
1997	12.20319	14.49377	1.270892
1998	12.22121	13.79426	0.281064
1999	14.97555	48.56225	2.072339
2000	13.02287	44.90601	0.004784
2001	12.50261	39.04888	1.258017
2002	10.28922	34.70523	1.344613
2003	9.996422	33.6677	0.293199
2004	7.911216	28.2327	0.728013
2005	6.851855	12.10182	0.080406
2006	6.116916	1.575097	0.196764
2007	6.575551	1.330158	-0.28837
2008	5.925524	1.336268	-0.2638
2009	7.289125	1.33325	0.457459
2010	8.334795	1.263155	-0.14676
2011	8.927921	1.424014	0.365023
2012	9.116118	1.431945	0.312073
2013	8.888428	1.732161	0.481086
2014	8.876571	1.832248	0.237534
2015	9.386588	2.242828	0.572823
2016	10.89591	3.427852	2.111664
2017	11.07143	5.08964	1.03443

Source: CBN Statistical Bulletin (2017).