DETERMINANTS OF FISCAL DISCIPLINE IN NIGERIA 1980-2015

BY

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CERTIFICATION

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DEDICATION

I dedicate this work to God Almighty, for His abundant love and unmerited favour to complete this research.

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Ololade Periola

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ACRONYMS

AERC	African Economic Research Consortium
ARDL	Autoregressive Distributed Lag Model
CBN	Central Bank of Nigeria
GDP	Gross Domestic Product
FRA	Fiscal Responsibility Act
FRC	Fiscal Responsibility Commission
FSP	Fiscal Strategy Paper
IMF	International Monetary Fund
MDA	Ministries, Departments and Agencies
MTFF	Medium-Term Fiscal Framework
NBS	National Bureau of Statistics
NNPC	Nigerian National Petroleum Corporation
OLS	Ordinary Least Squares
PFM	Public Financial Management
PIB	Petroleum Industry Bill
RE	Recurrent Expenditure
SWFs	Sovereign Wealth Funds
TE	Total Expenditure
TFR	Total Federal Revenue
VAT	Value Added Tax
WDI	World Development Indicator

ABSTRACT

Fiscal Discipline (FD) is the ability of government to efficiently maintain smooth and long-term financial operations in relation to total revenue, financial balance, public debt and total spending. The growing fiscal deficit across countries and, the European sovereign debt crisis of 2010 underscored the need for FD. In Nigeria, the growing debt, unmanageable budget deficit, consistent imbalance in expenditure and revenue variance, and unnecessary delay in budget processes have made FD critical. However, little attention has been devoted to the identification of the determinants of FD in Nigeria. This study, therefore, examined the determinants of FD in Nigeria from 1980 to 2015.

The Common pool resource theory provided the framework for the econometric model in the mould of Auto-Regressive Distributed Lag (ARDL). Data were sourced from Central Bank of Nigeria's Statistical Bulletin, World Development Indicators, Quality of Governance Basic Data Set, and Approved Annual Budgets. The extent of FD was assessed using four complementary measures: Primary Balance (PB), Debt Sustainability (DS), Expenditure Variance (EV) and Revenue Variance (RV). The examined determinants of FD included spending units, capital inflows, government size, political regime, trade openness and transparency. The time-series properties of these variables were examined. The Bounds test approach and Error Correction Modeling technique were deployed for the long-run and short-run analyses, respectively. All estimates were validated at $p \leq 0.05$.

The FD models, (except DS) exhibited a long-run path (PB, F-Stat. 29.4; EV, F-Stat.14.6; RV, F-Stat.55.0) in which spending units exerted significant influence on the measures of FD. A percentage increase in spending units led to rise in PB (2.0%, t=4.77) and EV (0.4%, t=2.96) and decline in RV (2.6%, t=5.94). Similarly, a percentage increase in government size also led to rise in PB (23.5%, t=4.84) and EV (22.1%, t=3.61) and a fall in RV (52.7%, t=3.81). Conversely, trade openness reduced the PB (6.9%, t=3.27), while political regime (0.09, t=3.94) indicated that military regimes were more disciplined than democratic regimes. Capital inflows reduced EV (42.2%, t=3.92).

The short-run estimates showed that a percentage increase in spending units deteriorated RV (1.6%, t=6.30), and increased the PB (1.3%, t=8.13) and EV (0.4%, t=2.11). In contrast, a percentage increase in capital inflows lowered the PB (26.1%, t=5.57) and EV (33.3%, t=3.39) and increased the RV (37.8%, t=5.99). A percentage increase in transparency lowered PB (0.4%, t=9.54) and EV (0.6%, t=5.14).

Fiscal discipline was evidently lacking in Nigeria from 1980 to 2015, as primary balance, debt sustainability, expenditure variance and revenue variance indicated fiscal indiscipline. The indiscipline was essentially determined by spending units, government size, and regime type, as military regime was more discipline than democratic regimes. Therefore, there is the need to ensure fiscal discipline in fiscal operations accordingly.

Keywords: Fiscal discipline, Fiscal performance, Spending units, Budget processes in Nigeria.

Word count: 451

CHAPTER ONE

INTRODUCTION

1.1 Preamble

Over the past three decades, the problems of deficit bias, unsustainable debt and the deplorable state of budget process have subjugated the fiscal structure of several countries, including Nigeria and hence, brought about the need for an effectual resource management scheme. The fiscal structure of a country either unitary or federal system has its associated benefits and challenges, but its survival and growth rest on their ability to manage their resources. Among the major challenges with federalism are the distribution and management of power, resources, and functions. Fiscal discipline generally describes the competence of government to maintain facile and long-lasting financial operation which relates to all the key indicators of government fiscal conduct: total revenue, total spending, fiscal and financial balance, budgeting and public debt.

The issue of fiscal discipline has been thoroughly investigated with regards to different macroeconomic phenomenon such as exchange rate regimes, budget process, fiscal decentralisation, public debt, and its effects on growth. However, the concept of fiscal discipline as used by previous researchers has been subjected to differing perspectives based on data availability and the structure of the country under investigation, but the concept has been mostly linked to the budget deficit, debt sustainability, budget adoption time, fiscal health stability, budget processes, implementation, and execution.

While the measures of fiscal discipline are closely related to its determinant, they differ from each other. Acosta and Coppedge (2001) identify possible political determinants of fiscal discipline as size of parties, budget institutions, party institutionalisation, electoral budget cycle, the number of parties, policy distance or ideological polarisation and, party discipline. And the major indicators of fiscal discipline in literature are balanced budget and debt sustainability (Alesina and Perotti, 1996). However, Hou and Willoughby (2010) further indicated that fiscal discipline included budget adoption time, deviation of actual from budgeted revenue and expenditure, balanced budget, gauging the future fiscal impact of fiscal decisions, and ability to maintain the balance such as anti-cyclical fiscal tool in a period of need (fund reserve account).

Nigeria, being a Federal State, allocates spending and resources to the different tiers of government as a form of decentralised government. Since its independence in 1960, Nigeria had experienced both military and civilian rules; each with its own unique features of politics, governance, and economy. In a decentralised structure as Nigeria, fiscal indiscipline stems more from the activities of the ministries, departments, and agencies of the government, which are further exacerbated through the common pool problem. These activities can compound fiscal profligacy by the central government, or undermine their efforts to ensure fiscal discipline, thereby jeopardising economic stability.

McConnell and Brue (1999) noted that fiscal discipline reduces vulnerabilities and enhances financial and fiscal management capacities that can lead to healthy governance, stabilisation and eventually, sustained growth, by influencing real GDP, inflation, employment, and economic growth through government taxation/revenue and expenditure. Discipline is critical if countries, developing as well as developed, are to progressively meet their macroeconomic problems.

1.2 Statement of the Problem

The recent deterioration of budget balances and the growing deficit across the countries of the world has deepened the enthusiasm of policy makers, analysts and scholastics in fiscal policy. As of late, the issue of fiscal discipline, depicted as control of budgetary activities (Harden and Von Hagen, 1995), is a prevalent problem in present-day politics both in the developing and developed countries. The precarious performance of governments, fiscal programmes and the accompanying loss of integrity have mostly been accountable for these recurring problems (Fata's and Mihov, 2005).

The European Union debt crisis in 2010 is an undesirable warning that no nation should disregard the precondition of fiscal discipline. Debt crisis is not just a serious problem facing the EU countries, but also some developing African economies as Eritrea, Cape Verde, the Gambia, Congo, Ghana and Nigeria, while borrowing in itself is not dampening, if not properly managed could lead to serious dampening effect on the country as explained by the debt overhang hypothesis which implies that huge debt stocks could hamper growth by curtailing investment, thereby decreasing the nation`s capacity to build up its economy and increase its reliance on global debt.

The overall deficits posted increased steadily and significantly, over time as a result of the trend of government spending, particularly recurrent expenditure, the failure to expand the economy beyond oil and a high importation rate. The overall deficit which stood at ₦3.4 billion in 1983 increased steadily and remarkably through the period. It then increased more noticeably to ₦285.84 billion in 1999 and further to ₦810 billion by 2007, and then phenomenally to ₦1557.8 billion by 2015. Obviously, the consequence of persistent deficit financing is the escalating debt profile. The issue of external debt had not generated much public concern prior to 1980; the recently growing external debt stock stood at ₦2 trillion in 2015 from ₦430 billion in 2007 (Central Bank of Nigeria, 2016) and debt service payments of $354 million in 2016 has held the country back from investing on a broad volume of domestic investments, which ought to have extended development and growth (Bello and Obasaki, 2009).

Interestingly, larger debt profile in Nigeria has been accompanied by large government size. Total debt profile accounts for about 100% of government size in the early periods up until 2004 with about 41% and has since experienced a slight reduction to about 15% in subsequent periods. This could imply that government expenditure has been funded through borrowing prior to 2004 despite huge revenue influx from oil. Revenue variances, though was minimally unfavorable in the early 1980s, has since 1987 experienced steady growth from about ₦24.5 billion in 1989 to ₦1015.1 billion in 2002 and in recent times at about ₦6338.8 billion in 2014. Despite these excess inflows, total debt profile increased tremendously over the period, particularly from 1986 with ₦137.6 billion to ₦1194.5 billion in 1994 to ₦6260.6 billion in 2003 and recently at ₦9535.5billion in 2014. Coincidentally, periods associated with huge revenue variances also had high debt profile.

Budget implementation overtime has been characterised by huge variances over time. Though, revenue variance has been mostly favorable over the periods, with ₦7.5 billion in 1987 to ₦137 billion in 1992 to ₦1015 billion in 2002 and more recently, ₦6338.8 billion in 2014. While expenditure variance overtime has been characterised with unfavourable variances, with ₦5.1 billion in 1986, which increased steadily to ₦148.2 billion in 1996 and ₦1103.6 billion in 2003, with a slight reduction to ₦534.9 billion in 2015, averaging about 50% above budgeted values, which implies government overspending, an indication of improper fiscal management.

In the past three decades, Nigerians have had to deal with disappearing real incomes exacerbated by the high levels of inflation and unemployment at 18.5% and 14% respectively (NBS, 2016) and decay in social amenities. These disheartening performances of the public sector have been further aggravated by huge domestic debt profile, with ₦11.1 billion in 1980, to ₦116.2 billion in 1990 to ₦898.2 billion in 1999 to ₦4551.8 in 2009 and more recently ₦7994 billion in 2014; this has deterred the generation of prospects for a strong and continuous development and growth of the Nigerian economy, as resources are diverted away from the private sector of the economy into the less effective public sector.

The prolonged military regime and the centralised framework of the military ranking system has produced the financial supremacy benefitted by the central government over other sub-national government agencies and parastatals. This has fostered discontentment in the country; as a result, the fret over the growth and expansion of a functional and national fiscal condition for Nigeria is essential. More so, the federalised structure of governance is very costly, and thus, the need for a fiscally disciplined government is founded.

The major fiscal challenges in Nigeria includes dwindling foreign exchange earnings, declining reserves, the noticeable state of crude oil in fiscal revenue have made the fiscal structure highly unstable, as fiscal policy is highly pro-cyclical with expenditure bustling out of control on the hike of the price of oil (Abata, 2012), which is further worsened by the observed deficit situation and with serious implications for macroeconomic sustainability and stability. In recent times, the crash in oil price constitutes a threat to fiscal revenues, and this has been identified as a major challenge to the fiscal sector, given the structure of the economy which is highly dependent on oil (Central Bank of Nigeria, 2015).

Weak fiscal discipline in developing economies such as Nigeria also has stern implications for macroeconomic programmes. If the budget deficit is monetised, inflationary projections would be costly, causing a loss in capital outflows, investors' confidence, and depreciation of the rate of exchange. Conversely, a strict macroeconomic policy intended to offset fiscal indiscipline has the tendency of appreciating the exchange rate, crowding out of private investment, increasing the interest rate, increasing the

current account deficit, and negatively affecting the economic growth and investment of the economy (Mohanty, 2003). Fiscal discipline is an important factor of macroeconomic sustainability and fiscal stability, which plays a major duty in attaining public debt and fiscal sustainability.

Nigeria's possibility for reducing poverty, employment, price stability and growth has not been actualised. A major restraint is the late performance of macroeconomics, especially fiscal programmes, which has caused increasing inflation and reduction in the real level of incomes. National fiscal management conduct turned out to be a tedious assignment as the country has to contend with the unpredictability of expenditure and revenue. The extensive loss of fiscal discipline has been heightened by dismal systemisation of fiscal policy system amid the government tiers. In addition, there exists a poor revenue base emanating from the high rate of marginal tax with a limited tax base, leading to depressed tax compliance. Consequently, the vital macroeconomic breach has surfaced in Nigeria.

In view of the above, there exist the need to examine the extent of fiscal discipline in Nigeria and the determinants. This study, therefore, intended to provide the necessary insight, and thus guided by the following related questions:

i. What has been the trend and extent of fiscal discipline in Nigeria?
ii. What factors have influenced or determined fiscal discipline in Nigeria?

1.3 Objectives of the Study

The main purpose of the study was to examine the extent of the Nigerian government fiscal discipline and the factors motivating this behaviour. The precise objectives were:

i. To characterise fiscal discipline in Nigeria.
ii. To assess the extent of fiscal discipline between 1980 and 2015.
iii. To investigate the determinants of fiscal discipline

1.4 Justification for the Thesis

Research about government fiscal condition or health of government finances remains unsettled in terms of presenting a comprehensive measure(s) that can be applied across a variety of governments and levels of government (Hendrick, 2004).

In order to improve and maintain economic performance, sustain macroeconomic sustainability and stability, and lessen vulnerabilities, fiscal discipline is crucial, especially, if countries are to successfully fulfil their potentials and garner the advantages of globalisation. Specifically, this study will provide insight into how to build up a strong financial management capacity for government in the face of volatility and irregularities in government finances.

Fiscal discipline is very crucial to the development of all the nations of the world, stressing the need to evolve schemes aimed at managing countries' resources prudently. Undoubtedly, there have been several studies regarding this issue; however, there still exist some unanswered questions, especially with regards to a developing country characterised by natural resources enrichment and fiscal federalism.

Methodologically, the related existing studies have been predominated with methods such as weighted regression as used by Acosta and Coppedge (2001), Least Squares regression by Freitag and Vatter (2008), Structural Equation Models (SEM) by Elina (2010) and Generalised Methods of Moment by Neyapti (2013) and Hitaj and Onder (2013).

The study made use of the Autoregressive Distributed Lag (ARDL) to model this relationship.

Von-Hagen (1992; 1994), Von-Hagen and Harden (1995), Cakir and Neyapti (2007), Freitag and Vatter (2008), among others have examined the relationship that exists between fiscal discipline in a decentralised structure of government. Empirical findings remain inconclusive as to whether fiscal decentralisation plays a disciplinary role.

While studies relating to fiscal discipline in resource-rich economies are scanty, Pieschacón (2011) and Bleaney and Halland (2016) examined the relationship between fiscal discipline and resource-rich countries and also found divergent opinion as to the effect of natural resource wealth on fiscal discipline.

This study contributed to the current literature by combining different measure of fiscal discipline, as opposed to single measure as done in previous studies by Von-Hagen (1992; 1994), Von-Hagen and Harden (1995), Cakir and Neyapti (2007), Freitag and Vatter (2008), among others, as this enabled us to view the differing perspectives of fiscal discipline, with a better understanding of each of the identified measures.

In addition, specific empirical studies on such issues in Nigeria are yet to be discovered; though there have been recommendations for a fiscally discipline government in related studies such as Babalola (2015) in his study on economic development and fiscal policy in Nigeria, Agu (2015) on fiscal policy and economic growth in Nigeria and Abata, Kehinde and Bolarinwa (2012) on economic growth and fiscal/monetary policy in Nigeria, among others. This study, therefore, aims to offer evidence, empirically, on the extent of fiscal (in)-discipline in Nigeria and the associated determinants. By so doing, the study shall enrich the literature as well as provide guidance for policy and actions.

1.5 Scope of the Study

The coverage period for the study is from 1980 to 2015, and only the Federal government financial operations are considered. The choice of the period was also strongly informed by data accessibility as this has helped to capture the various fiscal structure under the different government regimes.

1.6 Organisation of the Thesis

The remaining part of the study was classified into five chapters. A thorough explanation fiscal operational activities in Nigeria was presented as background of the study in chapter two. Chapter three took care of the literature review which entails theoretical, methodological and empirical literature review. The theoretical and methodological framework of the study was examined in chapter four. Presentation and interpretation of results were documented in chapter five, whereas chapter six showcased the presentation of summary, conclusion, and recommendations, with a closure of highlighted shortcomings and indications for further research.

CHAPTER TWO

OVERVIEW OF FISCAL OPERATIONS IN NIGERIA

2.1 Introduction

This section reviewed relevant and related fiscal operations of the central government in Nigeria over the period under study. The section was organised into five sub-sections. The first gave a concise introduction of the fiscal operations in Nigeria, the second discussed government finances, and the third gave an overview of recent fiscal policy reforms in Nigeria. The fourth sub-section examined budgetary framework, processes, and operations while the final sub-section made an appraisal of the fiscal operations of the government and conclusion drawn thereafter.

Fiscal operations are activities taken by the government to fulfil the budgetary programmes, such as expenditure and revenue measures, in addition to the issue of public debt tools and public debt performance, it also incorporates the budget timing which starts from budget planning up until implementation and eventually monitoring and evaluation of the budget.

Fiscal policy in Nigeria has been largely driven by the boom and bust pattern of oil prices and revenue for most of the post-independence years. Prior to the oil boom of the early 1970s, fiscal policy was basically driven by taxes from the commodity boom of the late 1940s and 1950s. Thus, with over 70 per cent of the nation's revenue coming from oil since the 1970s, the patterns of government fiscal policy have been prone to oil-driven volatility. Consequently, both revenue and expenditure tend to move in line with the increases in oil prices with revenue and expenditure increasing astronomically in periods of high oil prices, but declining marginally during oil price decline. Baunsgaard (2003) noted the consequences of the boom-bust fiscal programmes to incorporate the transference of oil-instability to the remains of the country as well as interferences in the supplying of government resources.

2.2 Government Finances

Table 2.1 shows a five year average summary of government finances from 1980-2015. Total federal revenue (TFR) increased significantly over the periods from ₦12.01biilion during 1980-84 to ₦10400.06billion by 2010-2015. The observed increases in the TFR are clearly linked to receipts from oil, as shown in Figure 2.1. Receipts from oil which stood at ₦8.35 billion during 1980-84 increased steadily and significantly to ₦31.60billion between 1985-89 and ₦178.72billion during 1990-94. It increased further to ₦693.20billion, ₦2625.98, and ₦4973.82 during 1995-99, 2000-04 and 2005-09 period, respectively. It then peaked at ₦7626.97 during 2010-14. It is instructive to note that, receipts from oil accounted for at least 70% and more of the TFR in all the periods, despite the fact that diversification of the revenue base in the direction of the non-oil sector remains a persistent agenda. It is also instructive to note the distribution of the TFR between non-tax and tax sources, as shown in Figure 2.2. While the TFR (NTR and TR), in the early periods were significantly low, the proportion of TR and NTR was almost at par. Though, tax revenue dominated, during the earlier periods of 1980-84 and 1985-99. Thereafter, non-tax revenue became the major source of TFR, accounting for the larger proportion. The period 2000-04 stands out as non-tax revenue accounted for as much about 72% of the TFR. It then declined to 63% during the 2005-09 period to 54% by 2010-15. The figure, 2.2 gives a clear depiction of the position and distribution of TFR between TR and NTR.

The Total Expenditure (TE) of the government based on high oil revenue receipts which is owing to favorable fluctuation in the price of oil in the global market, also increased significantly over the periods. From ₦11.19 billion during 1980-84, the TE increased to ₦33.46 billion between 1985-89 and further to ₦152 .05 billion by 1990-94. By 1995-99, it more than triple to ₦580.6 billion and increasingly so to ₦1277.87 billion during 2000-04 and more than doubled to ₦2908.69 billion by 2005-09. It further increased to ₦4360.13 billion by 2010-14. The distribution of TE between recurrent and capital shows that is shown in Figure 2.3 indicated that recurrent expenditure dominated in all the periods except for the 1995-99 period, while capital dominated in the early periods. Also, Figure 2.3 shows a consistent and significant upwards movement in TE, RE and CE over the period under study. Indeed, from 2000-2015, recurrent expenditure averaged 73.3%

while capital expenditure averaged just 26.7%. Overall, recurrent and capital expenditures averaged 64.1% and 35.9%, respectively over all periods.

Because of the trend in TE, and particularly RE at the instance of increasing TFR and the failure to expand the economy beyond oil dependence and the high importation rate, the overall deficits posted increased steadily and significantly over time. The overall deficit which stood at ₦3.74 billion during 1980-84 increased steadily and remarkably through ₦12.71billion between 1985-89 to ₦41.94 billion and ₦99.04 billion by 1990-94 and 1995-99, respectively. It then increased more noticeably to ₦211.84 billion during 2000-04 and further to ₦436.28billiion by 2005-09, and then phenomenally to ₦1066.53 billion by 2010-14. Though, the overall reduction which is stated as a percentage of GDP exceeded 3% prior to the FRA, 2007; however, since the FRA came into being, the overall deficit as a percentage of GDP has always come within the 3% of GDP level stipulation.

Obviously, the consequence of persistent deficit financing is the escalating debt profile. Total debt stock increased from ₦31.45 billion during 1980-84, through ₦211.72 billion to ₦864.97 billion, ₦2139.33billion and ₦5116.35 billion during 1985-89, 1990-94, 1995-99 and 2000-04, respectively. It then decreased significantly by about 35% to ₦3343.39 billion during 2005-2009 at the instance of debt forgiveness by the Paris club. By 2010-15, the total debt profile had shot up again by as much as 140% to ₦8028.04 billion. The composition of the debt profile as seen in Figure 2.4, indicates that external debt was larger in share during 1985-89, 1990-94, 1995-99 and 2000-04 periods with an average share of about 72%.

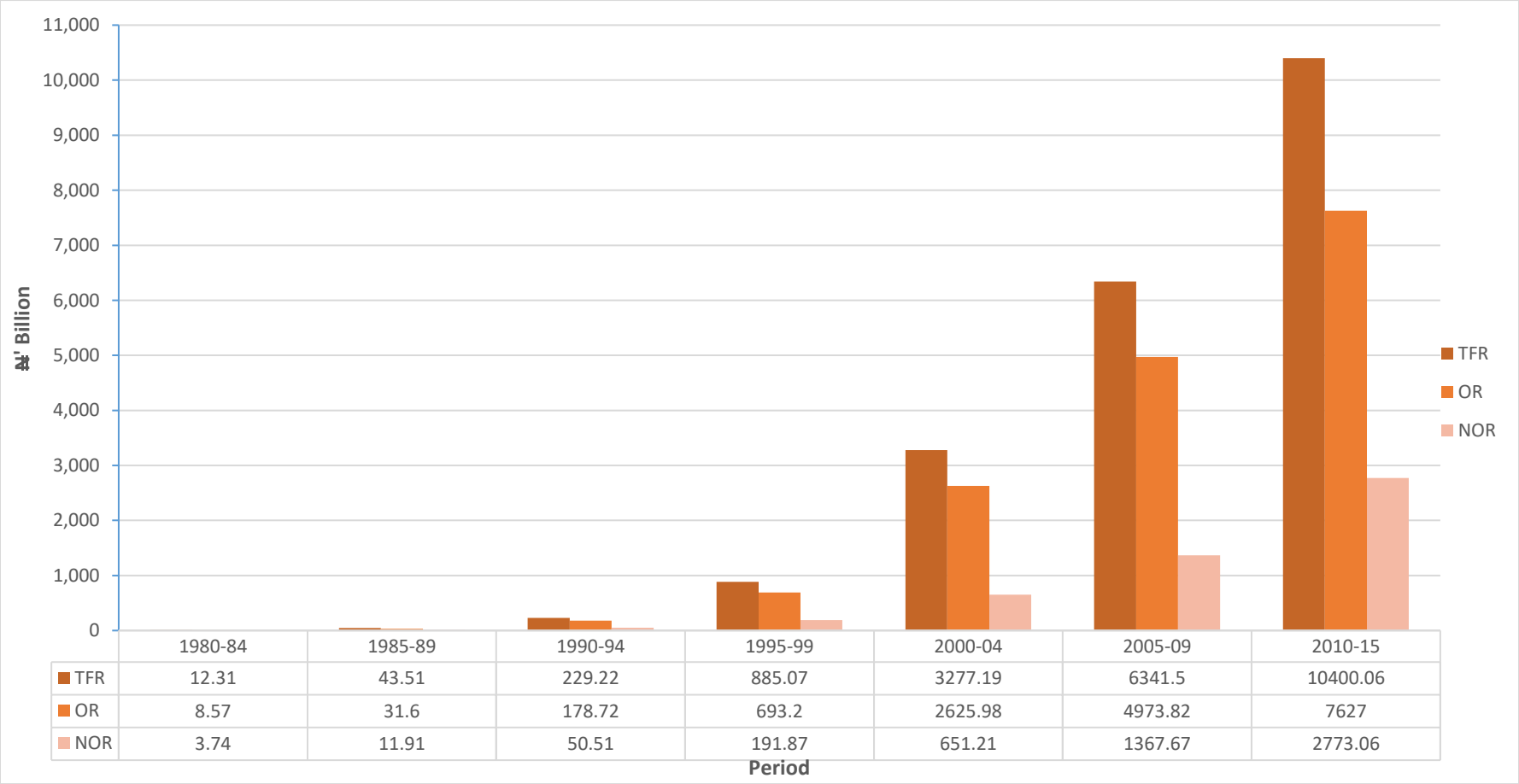
Table2.1: Summary of Federal Government Finances (₦' Billion) 1980-2015

Period	TFR	OR	NOR	TR	NTR	TE	RE	CE	CS/D	OS/D	DGDP	ED	DD	TD
1980-84	12.31	8.57	3.74	10.98	1.33	11.19	5.70	5.49	1.12	-3.74	-3.47	10.74	20.71	31.45
1985-89	43.51	31.60	11.91	29.25	14.26	33.46	20.99	12.46	10.05	-12.71	-4.90	163.04	48.68	211.72
1990-94	229.22	178.72	50.51	96.91	132.31	152.05	89.12	62.93	77.17	-41.94	-4.41	574.31	290.66	864.97
1995-99	885.07	693.20	191.87	288.44	596.63	580.30	274.48	305.81	304.81	-99.04	-2.06	1504.21	635.12	2139.33
2000-04	3277.19	2625.98	651.21	932.04	2345.15	1277.87	903.36	374.51	1975.10	-211.84	-2.35	3834.57	1281.78	5116.35
2005-09	6341.50	4973.82	1367.67	2344.44	3997.06	2908.69	2046.84	861.85	3286.04	-436.28	-1.32	538.78	2804.61	3343.39
2010-15	10400.06	7627.00	2773.06	4789.10	5610.96	4360.13	3438.91	921.22	5627.52	-1066.53	-1.08	1232.21	6795.83	8028.04

Source: CBN statistical bulletin 2016.

Key: *TFR- Total Federal Revenue; OR-Oil Revenue; NOR-Non Oil Revenue;* TR-Tax Revenue; NTR-Non-tax Revenue; *TE-Total Expenditure; RE-Recurrent Expenditure; CE-Capital Expenditure; CS/D-Current Surplus/Deficit; OS/D-Overall Surplus/Deficit; DGDP-Deficit % of GDP; ED-External Debt; DD-Domestic Debt; TD-Total Debt.*

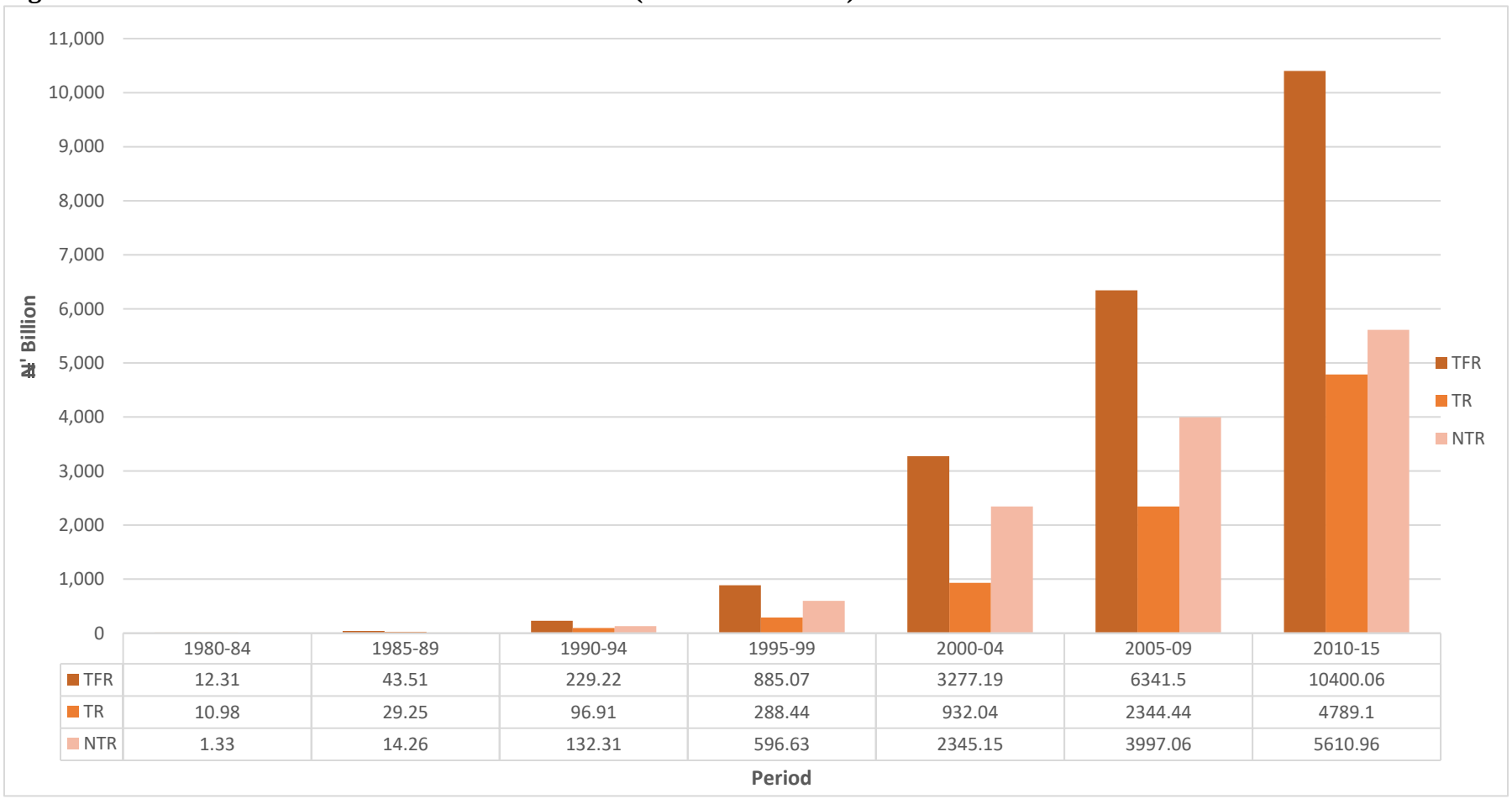
Figure 2.1 Federal Government Revenue Structure (Oil and Non-Oil)



	1980-84	1985-89	1990-94	1995-99	2000-04	2005-09	2010-15
TFR	12.31	43.51	229.22	885.07	3277.19	6341.5	10400.06
OR	8.57	31.6	178.72	693.2	2625.98	4973.82	7627
NOR	3.74	11.91	50.51	191.87	651.21	1367.67	2773.06

Source: CBN Statistical Bulletin (2016)

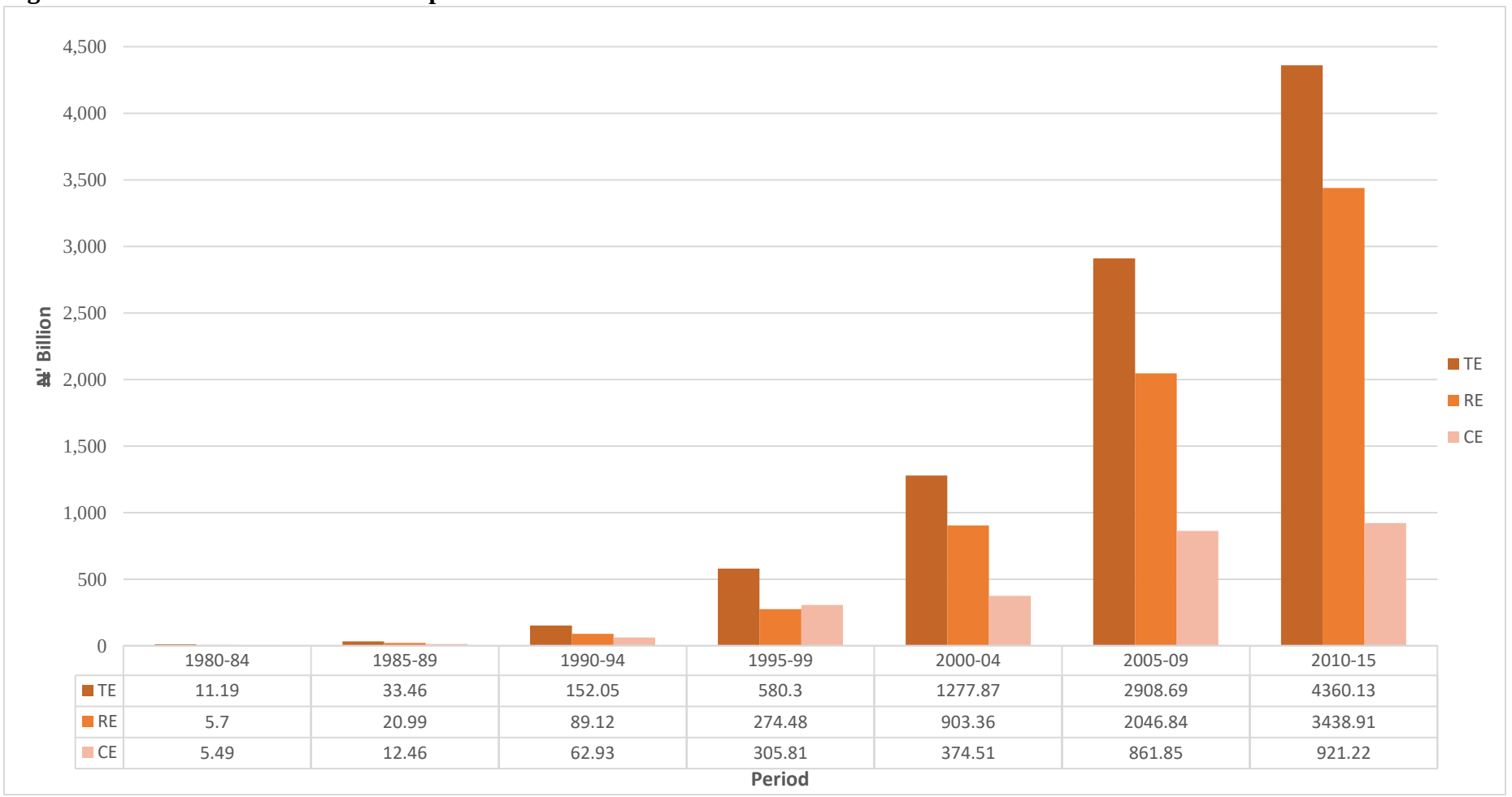
Figure 2.2 Federal Government Revenue Structure (Tax and Non-Tax)



	1980-84	1985-89	1990-94	1995-99	2000-04	2005-09	2010-15
TFR	12.31	43.51	229.22	885.07	3277.19	6341.5	10400.06
TR	10.98	29.25	96.91	288.44	932.04	2344.44	4789.1
NTR	1.33	14.26	132.31	596.63	2345.15	3997.06	5610.96

Source: CBN Statistical Bulletin (2016)

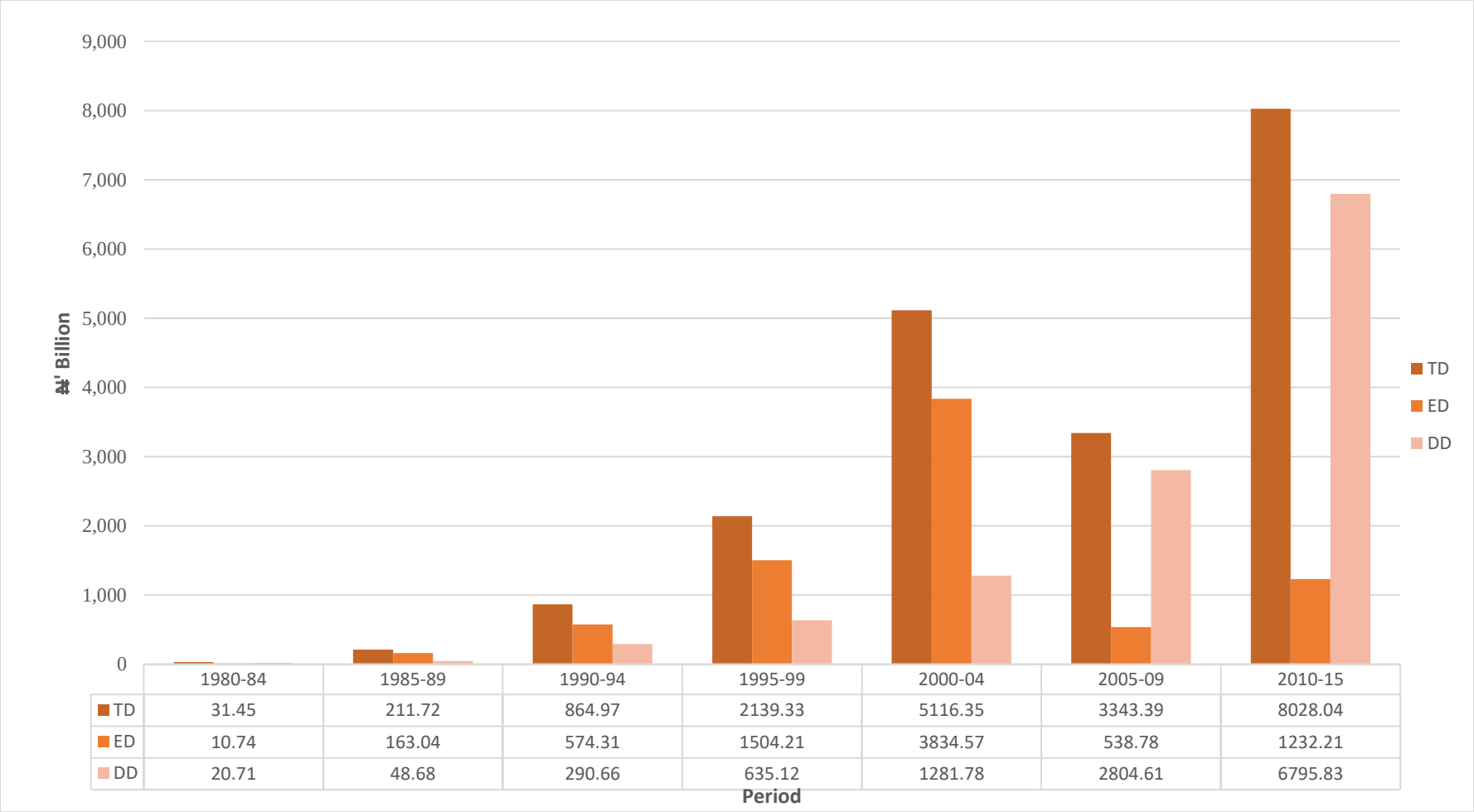
Figure 2.3 Federal Government Expenditure Pattern



	1980-84	1985-89	1990-94	1995-99	2000-04	2005-09	2010-15
TE	11.19	33.46	152.05	580.3	1277.87	2908.69	4360.13
RE	5.7	20.99	89.12	274.48	903.36	2046.84	3438.91
CE	5.49	12.46	62.93	305.81	374.51	861.85	921.22

Source: CBN Statistical Bulletin (2016)

Figure 2.4 Federal Government Debt Profile



	1980-84	1985-89	1990-94	1995-99	2000-04	2005-09	2010-15
TD	31.45	211.72	864.97	2139.33	5116.35	3343.39	8028.04
ED	10.74	163.04	574.31	1504.21	3834.57	538.78	1232.21
DD	20.71	48.68	290.66	635.12	1281.78	2804.61	6795.83

Source: CBN Statistical Bulletin (2016)

2.3 Institutional and Fiscal Policy Reforms

2.3.1 Fiscal Responsibility Act (FRA)

The Fiscal Responsibility Act was constituted in the year 2007 with the main goal of ensuring appropriate harmonisation and openness in the financial management of government activities. This was to ensure efficiency and effectiveness in the conduct of the country by assigning all the levels of government to a prescribed group of regulation. The Act holds as a structure for attaining a more believable fiscal policy position, improved investors' confidence in the economy, a sound macroeconomic situation, decrease in intense poverty, better economic growth, higher coordination between monetary and fiscal policy, improved conditions for a better and competent execution of budget, protect against unreasonable loaning and a move from sharing of income to age of income. The Act likewise caters for the Medium-Term Fiscal Framework (MTFF), Commodity Price-Based Fiscal Rule, Limits on Consolidated Debt and Borrowing, Fiscal Transparency, and Fiscal Management Council.

Functions of the Commission

The Commission shall:

i. Monitor and enforce the provisions of this Act and by so doing, promote the economic objectives contained in section 16 of the Constitution;
ii. Disseminate such standard practices including international good practice that will result in greater efficiency in the allocation and management of public expenditure, revenue collection, debt control and transparency in fiscal matters;
iii. Undertake fiscal and financial studies, analysis and diagnosis and disseminate the result to the general public;
iv. Make rules for carrying out its functions under the Act; and
v. Perform any other function consistent with the promotion of the objectives of this Act. The Commission shall be independent in the performance of its functions.

   The provisions of the Public Protection Act shall apply to the members of the Commission in the discharge of their functions under this Act.

By this Act, it is expected that the Public Sector would have a definite regulatory structure to act as a watchdog on the activities of the public office holders and as checks on financial

encroachment between/among tiers of government. This is expected to bring sanity and responsiveness into the public sector and among the various tiers of government in Nigeria.

The Fiscal Responsibility Act (2007) is a law to "redirect government at all levels to imbibe fiscal behaviour that will promote prudence and sound financial management in the system. The Act seeks to ensure that the Federal Government will never commit itself to spending money prudently, given the poor performance of the public sector, especially, poor public expenditure management, corruption, and considering that fiscal policies have been largely characterised by poor planning, massive waste and wrong priorities despite abundance of mineral resources in the country and blamed all on corruption and mismanagement. FRA is a fundamental action to attack fiscal inconsistency and indiscipline from the head to the root

The machinery for implementing the Act has its focal point as the prudent management of the country's resources anchored in accountability and transparency with the establishment of a Fiscal Responsibility Commission to ensure the promotion, implementation and enforcement of the Act. One good feature of the Act is that it also has a mechanism through which it can be adequately enforced because a major problem in the country is not making laws but enforcing them. Therefore, the problem of constitutional battle as to who is responsible for enforcement as may be witnessed in some aspects of financial corruption cases has been avoided.

Also, the Act requires the Board to submit an audited annual financial report to the National Assembly. This checks the Board's financial excesses and may put them on track of financial transparency. This Act builds up a regulatory framework for the fiscal affairs of public office holder with the Fiscal Responsibility Council (FRC) as the regulator.

The body will be more effective and efficient if they could check financial affairs of public office holders in the manner the CBN, the NDIC and the SEC do to banks and other financial institutions and firms whose securities are traded on the floor of the, since the Act did not give express powers the FRC to demand financial returns and to do onsite financial supervision on the financial affairs of the Federal, State and Local Governments and their agencies and corporations.

Therefore, for the Fiscal Responsibility Act to be effective, the reforms it introduces must also be adopted at the state level. The Act religiously set out rules with the core objective of committing all tiers of government to a well-defined and structured economic regime which would ensure economic growth and maintain economic stability. A key feature of the Act provides for a comprehensive budgetary planning process derived from the Medium Term Expenditure Framework (MTEF). This is a tool for linking policy, planning and budgeting over the medium-term – usually three years – at a government-wide level.

2.3.2 Medium Term Expenditure Framework (MTEF)

The Medium Term Expenditure Framework (MTEF) is a three-year period unified the wide-grounded structure of budget that has been chosen by the Nigerian Government in the year 2004. It relates to a top-bottom conceptualisation to the nation's wealth sharing and a down-top assessment of both medium-term and current costs of present programmes and economic strategies, which includes a yearly change to indicate changes in policies. MTEF is anticipated to help the government in attaining sound macroeconomic balance, stability of government funding, accountability and knowledgeable decision making, inexpensive spending by MDAs in the medium-run, the anticipation of the effect of policy and ordering the allocation of resource to vital sectors.

An MTEF takes account of the government's long and medium-term strategies and the resources available to meet objectives over the three-year time span. It also allocates resources to strategic priorities among and within sectors and it commences with the preparation of a macroeconomic framework and guidelines. It equally ensures that annual revenues and expenditures estimates are consistent with its provisions, which requires that rules on cost, cost control and evaluation of results of programmes financed are observed.

The MTEF will be updated annually to reflect policy and macroeconomic changes. The principal components of the MTEF are as follows: medium-term revenue framework; medium-term expenditure framework; fiscal strategy paper spelling out the fiscal strategy for the planning term; medium-term sector strategies with projects and programmes linked to long and medium-term plans, which will, in turn, feed into the annual budget and submission of a comprehensive Appropriation Bill ensuring all parameters are abided by.

The MTEF shall contain:

Macro-Economic Framework

This sets out the macro-economic projections, for the next three financial years, the underlying assumptions for those projections and an evaluation and analysis of the macroeconomic projections for the preceding three financial years;

Fiscal Strategy Paper:

i. The Federal Government's medium-term financial objectives,
ii. The policies of the Federal Government for the medium-term relating to taxation, recurrent (non-debt) expenditure debt expenditure, capital expenditure, borrowings and other liabilities, lending and investment,
iii. The strategic economic, social and developmental priorities of the Federal Government for the next three financial years,
iv. An explanation of how the financial objectives, strategic, economic, social and developmental priorities and fiscal measures are set out

Expenditure and revenue frameworks:

i. Estimates of aggregate revenues for the Federation for each financial years, based on the predetermined Commodity Reference Price adopted and tax revenue projection,
ii. Aggregate expenditure projection for the Federation for each financial year in the next three financial years,
iii. Aggregate tax expenditure floor for the Federation for each financial year in the next three financial years

MTEF is a step toward sustainable economic development for the nation. The Act has a strategy in place to curb excessive, unarticulated and uneconomical borrowing that most times ends in accumulated debts that drag the nation backwards. The Act touches crucial areas in the political and economic life that incite and nurture corrupt practices. Therefore, if well adapted, the Act is capable of abating corruption in the country.

2.3.3 Petroleum Industry Bill

The Petroleum Industry Bill (PIB) is yet to be finalised as it is still passing through series of law-making debates. If the Bill is successful, it is expected to make the oil and gas sector more open so as to harness more income for the government from the oil and gas. The Bill makes room for the establishment of other regulatory bodies to regulate the upstream and downstream activities. Nigerian National Petroleum Company (NNPC) is to be modified into a totally-capitalised, profitable, and accountable world-class National Oil Company (NOC), the NNPC Limited will be collectively owned by Nigerians and the Federal Government.

All active Joint Ventures (JVs) structures are to be transformed into Incorporated Joint Ventures (IJVs) licensed as liability firms in the country and are capable of making the required finances from the capital market or money market, in order to relieve the government from JV cash-call responsibility.

2.3.4 Public Procurement Act (PPA)

The PP Act was constituted in 2007 with the aim of ensuring professionalism, accountability, transparency and competitiveness, in procurement in public offices. To accomplish such task, the PPA caters for the formation of the Bureau of Public Procurement and National Council on Public Procurement to observe and supervise procurements in public agencies and parastatals in Nigeria by matching all current purchases of the government programmes, policies and practices via ordinances and establishment of rules.

2.3.5 Sovereign Wealth Fund

The Sovereign Wealth Fund was enacted in the year 2011 to give legal and legislative support to the sovereign wealth fund, in addition to getting rid of the state of the excess crude account. This fund is intended to give a secondary source of fund for improvement and growth by way of investing; secure the stableness of oil funds and render savings for the coming generation. To attain this, the Act allows for three funds, intergenerational fund, stabilisation fund and infrastructure fund.

2.4 Budgetary Framework, Processes, and Practices

2.4.1 Framework

The legal and institutional frameworks directing the course of the government in the process of the budget included the Fiscal Responsibility Act (FRA, 2007), the Constitution, extant administrative manual and civil service guidelines. The operational Constitution in Nigeria, which was the 1999 Constitution, as amended, stipulates that the President (the executive arm of the government) will lay before the collective congress of the National Assembly (House of Representatives and Senate) the budget for a given fiscal year. However, the time when this presentation is to be made has no time bound.

The FRA was enacted to promote the rule of openness in the planning and formulation of the yearly budget by ensuring that the budget sessions are made known to the people, financial obligation in publication of the financial records, reports and documentation of the different levels of government and limiting all forms of further budgetary disbursement, as well as enable due process conformity at all tiers of government. The focus was to boost judicious supervision and management of the country's financial assets with intent to guaranteeing long-term macroeconomic steadiness, among others. Specifically, sections 11 and 13 of the Act make provision for the preparation and laying before the National Assembly, the MTEF for the subsequent three years that will direct the formulation of the yearly budget. The regulation stipulated that the presentation and preparation should not be more than four (4) months prior to the commencement of the coming fiscal year. A fundamental stipulation of the FRA is the fiscal deficit in any one year should not exceed 3% of the GDP. But cumulatively, the fiscal deficit GDP ratio may be in excess of 3%.

2.4.2 Processes

The budget planning is a collective obligation of the Legislative and Executive arms of the Federal Government. The budget, which is legitimately implied to as the Appropriation Act, is presented by the Executive, appropriated by the Legislature and endorsed into an act by the President. A brief outline of the Nigerian budget procedure is described below:

Stage one: *Budget formulation / planning*

The budget office for the Finance Ministry enhances the financial plan in concurrence with the Federal Government's monetary programme. The Office of the Budget meets speedily in the monetary year with critical income creating associations, gatherings and offices (which incorporates the Federal Inland Revenue Service, Nigerian Customs Service, and the Nigerian National Petroleum Company) and in addition key parastatals in the country (including Central Bank of Nigeria, National Bureau of Statistics and National Planning Commission) to assess and determine the floats in income accomplishments and macroeconomic signs and the consequences of such advancements for the accompanying three financial periods. This talk goes before the formulation of the Medium-Term Revenue Framework (MTRF) in consistence to which the expected finance from various non-oil and oil constructs is chosen in the light of the medium-term. Arising from this finding with regards to income, the Medium-Term Expenditure Framework (MTEF) is made, clarifying the significant segment of spending (debt service, statutory transfers, Ministries, Departments and Agencies-MDAs' spending) notwithstanding the foreseen financial result. On the off chance that the financial result is a shortage, methods for subsidising the deficiency are to be painstakingly pondered.

Stage two: *Budget call circular and preparation of the executive budget proposal.*

As soon as the MDAs' spending ceilings, MTEF, and Fiscal Strategy Paper, is being certified by the budget office, Federal Executive Council, collaborating with the direction of the Finance Minister, discharges a "Call Circular". This Call Circular requests the MDAs to dole out their allocated use on capital spending ceilings through their present and new pursuits, task, projects, ventures and different plans. The MDAs are obliged to delicately evaluate their repetitive use conditions for staff overhead and expenses. The Office of the budget

appraises and merges the suggestions of the different MDAs and formulates the draft of the budget.

Stage three: *Presidential submissions to the National Assembly*

The budget draft is given by the Finance Minister to the President for consent and endorsement. The approved budget, in addition with other supplementary materials, are officially given by the President to the National Assembly for deliberation and incorporation, usually at a collective assembly of the House of Representatives and Senate.

Stage four: *Legislative approval and scrutiny*

The budget is analysed distinctly by the Senate and House of the National Assembly in agreement with the legislative procedures and practices. The Senate and House of the National Assembly synchronise their drafts of the budget and the advice of the different commissions are taken and gathered together with the supervision of the MDAs. The collated and synchronised budget is certified and passed distinctly by all units of the National Assembly. Afterwards, it is submitted as the Appropriation Bill for assent by the President. As soon as the Appropriation Bill is assented by the President, it is passed into law to be appropriated into an Act of the parliament. This investigation level appraises the different factors used in writing the budget. Their verdicts direct the overall deliberation in the session who could also regulate some standards in addition to the repayment of debt due to be made in the fiscal year.

Stage five: *Budget implementation*

The budget execution is managed by the different ministries, department, and agencies (MDAs) of the federal government. Capitalised projects finances are discharged to the applicable MDAs for spending on a quarterly basis in consonance with what was allotted to the MDAs in the approved spending plan (budget), with the support of the Committee for Cash Management, which guarantees the availability of fund to ensure efficient funding of the government budget.

Stage six: *Evaluation and monitoring of the federal budget*

The supervision of the implementation of the budget is the last stage of the process. The supervision is carried out by the Finance Ministry, the National Assembly, the National Planning Commission (NPC), the Presidential Monitoring Committee (PBMC), the National Economic Intelligence Agency (NEIA), the Accountant General of the Federation, and the Office of the Auditor General of the Federation. Genuine assessment of the capital projects are conducted by some institutions in different capabilities, prevalent amongst which are the National Assembly, Finance Ministry, and National Planning Commission, through its think-tank – the National Institute for Legislative Studies (NILS).

2.4.3. Practices

2.4.3.1 Budget Timeliness

A major issue in the budget practices over time is the budget timeliness. Table 2.2 reveals that, while the budgets for the next fiscal year are usually received by the National Assembly before the current fiscal year runs out, they are, however, not usually approved until the 3rd to 5th month in most cases of the current fiscal year, except for the fiscal years 2001 and 2007 in which the president had already signed the budget before the current fiscal year begins. There is also often a significant time lag between when the budget is finally signed into law and when the implementation commences.

A number of serious public financial management (PFM) problems in Nigeria can be traced back to a single, simple issue – late submission to and approval of the budget by the legislature. Limited legislative scrutiny of fiscal and budgetary policies undermines transparency and accountability in resource allocation and utilization which form the cornerstone of a good PFM system. Failure to provide the legislature with adequate time to scrutinize the budget reduces their ability to undertake critical analysis of fiscal policies and service delivery objectives. Late approval of the budget also prevents government entities from initiating procurement processes at the start of the financial year based on the approved budget, especially where special warrants or pro forma rules rather than systematic cash plans prepared by spending agencies are used to release funds.

Table 2.2: Budget Preparation and Enactment Timeliness since return to Democracy 2000-2019

Fiscal period	Date of Received Estimates by the NASS from President	Date amended Estimates were returned to the President	Date President signed the budget	Time lag between President's signature and presentation	Time frame between Jan 1. and take off date.
2000	Nov. 24th, 1999	April 14th, 2000	May 5th, 2000	Five Months	Four Months, 5 Days
2001	Nov. 9th, 2000	Dec. 21st, 2000	Dec. 21st, 2000	One Month, 12 Days	Nil
2002	Nov. 7th, 2001	March 28th, 2002	March 28th, 2002	Four Months, 21days	Two Months, 28 Days
2003	Nov. 20th, 2002	March 11th, 2003	April 10th, 2003	Four Months, 21days	Three Months, 10 Days
2004	Dec. 18th, 2003	April 20th, 2004	April 21st, 2004	Four Months, 3 Days	Three Months, 21 Days
2005	Oct. 12th, 2004	March 18th, 2005	April 12th, 2005	Six Months	Three Months, 12 Days
2006	Dec. 6th, 2005	Feb. 21st, 2006	April 22nd, 2006	Two Months, 16 Days	Three Months, 22 Days
2007	Oct. 6th, 2006	Dec. 22nd, 2006	Dec. 22nd, 2006	Two Months, 12 Days	Nil
2008	Nov. 8th, 2007	March 27th, 2008	April 14th, 2008	Five Months, 7 Days	Three Months, 14 Days
2009	Dec. 2nd, 2008	Feb. 3rd, 2009	March 10th, 2009	Three Months, 8 Days	Three Months, 10 Days
2010	Nov. 23rd, 2009	March 25th, 2010	April 22nd, 2010	Four Months, 29 Days	Three Months, 22 Days
2011	Dec 15th, 2010	May 25th, 2011	May 26th, 2011	Five Months, 11 Days	Four Months, 26 Days
2012	Dec, 13th, 2011	March, 15th, 2012	April, 13th, 2012	Four Months	Three Months, 13 Days
2013	Oct. 10th, 2012	Jan 30th, 2013	Feb 26th, 2013	Three Months, 18 Days	One Month, 26 Days
2014	Dec 19th, 2013	April 22nd, 2014	May 21st, 2014	Five Months, 3 Days	Four Months, 21 Days
2015	Dec 17th, 2014	May 6th, 2015	May 6th, 2015	Four Months, 19 Days	Four Months, 6 Days
2016	Dec. 22nd, 2015	March 23rd, 2016	May 6th, 2016	Four Months, 14 Days	Four Months, 6 Days
2017	Dec. 14th, 2016	May 11th, 2017	June 12th, 2017	Four Months, 27 Days	Five Months, 12 Days
2018	Nov. 7th, 2017	April 30th, 2018	May 16th, 2018	Five Months, 23 Days	Four Months, 16 Days
2019	Dec. 19th, 2018	April 30th, 2019	May 27th, 2019	Four Months, 11 Days	Four Months, 27 Days

Source: Ekeocha, (2012), Obadan (2014) and Approved Annual Budget (2015,2016, 2017 and 2018)

Late submission and adoption of the budget could have adverse knock-on effects for the rest of the PFM cycle. Poor procurement planning, for example, undermines efforts to establish credible cash planning practices that meet suppliers' bills in a timely fashion. Ongoing development projects being implemented by line ministries and agencies may be stalled or financed through the creation of future financial obligations. Poor cash planning methods can obscure in-year prioritization and create risks of default on debt service and other statutory expenditures. Delays in the release of cash against appropriations can encourage end-of-year spending splurges, at times complicating monetary policy management.

Late passage of the annual budget undermines efforts to build a good PFM system that would be achieved through continuous review and improvements to the existing practices. The risk of undermining important PFM reforms is higher in low-capacity countries where such reforms are still in their infancy. Budget credibility could be at stake if late approval of the budget compounds existing problems such as weaknesses in revenue forecasting and management of virements. Incentives to replace cash rationing with better cash flow planning tools may be undermined. If such problems persist, budget reforms such as MTEFs that encourage improved sectoral planning with greater integration of externally financed projects within the government's budgetary process may also be compromised.

Improving the timeliness of budget submission and approval requires both changes in the legal framework and a commitment to the principles that underpin these laws. Legislatures have the right to adequate time to discuss the government's budget proposal, make amendments where appropriate and approve the annual budget before the start of the new financial year. In addition, line ministries have the right to adequate time to plan the execution of their budgets for the year ahead. Where ministries of finance are not meeting such expectations, it is important that these key stakeholders demand improvements.

2.4.3.2 Budget Implementations

Budget implementation overtime has been characterised by huge variances between budgeted and actual values of expenditure and revenue. Tables 2.3a&b present the variance of expenditure (budgeted less actual) and variance of revenue (actual less budget) for the pre-democracy era and post-democracy era.

Table 2.3a shows that revenue variance has been mostly positive or favourable where the actual revenue exceeded the budgeted revenue except for the early '80s of periods of 1981, 1982, 1984 and 1986, as these periods were associated with decline in world oil price which started in 1981 and climaxed in 1986, arising from the then oil glut. The percentage of variances reveals favourable position with an average of 15% during the Buhari regime, 70% during the Babangida regime and 50% during the Abacha regime, as shown in Table 2.4.

However, the expenditure pattern does not reveal a mostly favourable outcome as the actual expenditure mostly exceeded the amount budgeted except for the early periods up until 1985 where budgeted expenditure exceeded actual expenditure (an indication of improper fiscal management). In addition, Table 2.4 shows that the percentage of expenditure variance indicated an unfavourable position during both Babangida and Abacha's regime with about 50% and 54% respectively, while Buhari's regime shows a favourable position of 28%.

Budget implementation in the post-democracy period as contained in Table 2.3b reveals that revenue variance was all-through positive or favourable except for 1999 as the actual revenue exceeded the budgeted revenue by significant margins. This is mainly attributed to the high and stable trend in the crude oil price at the global market which was significantly higher than the oil price benchmark used in budget preparation. However, instead of these encouraging savings on the part of the government, it rather fueled expenditures[1]. Consequently, actual expenditure exceeded the budgeted expenditure for most of the period. Regime wise, expenditure variances were most high for both Obasanjo and YarAdua regimes. Percentage of expenditure variance in Table 2.4 shows that during Obasanjo and YarAdua regimes averaged 32% and 16%, respectively. For the Jonathan regime,

[1] Indeed, the Constitutional provision for the sharing of the distributive pool account among the three tiers of the government makes no room for savings but outright sharing of all revenue excesses or windfalls.

expenditure variance averaged 2.8%. However, it is instructive to note that more money was realised in the Jonathan and YarAdua regimes than the Obasanjo regime. This is because, while revenue variances averaged 65% during the Obasanjo regime, it averaged 130% and 186% for YarAdua's and Jonathan's regimes, respectively

Table 2.3a: Budget Implementations 1980-1999 (Pre-Democracy Era)

Year	Budget estimates (expenditure)	Actual expenditure	Expenditure variance	variance on budgeted expenditure	Budget estimates (revenue)	Actual revenue	Revenue variance	variance on budgeted revenue	Heads of State
	₦ Billion	₦ Billion	₦ Billion	%	₦ Billion	₦ Billion	₦ Billion	%	
1980	15.45	14.96	0.49	3.17	15.57	15.23	-0.34	(2.82)	Shehu Shagari
1981	13.05	11.41	1.64	12.56	14.75	13.29	-1.46	(9.87)	Shehu Shagari
1982	13.95	11.92	2.01	14.43	11.63	11.43	-0.20	(1.69)	Shehu Shagari
1983	12.09	9.64	2.45	20.27	9.31	10.51	1.20	12.91	Shehu Shagari
1984	15.97	9.93	6.04	37.82	11.33	11.25	-0.08	(0.69)	Major-General Muhammadu Buhari
1985	17.75	13.04	4.71	26.55	11.24	15.05	3.81	33.93	Major-General Muhammadu Buhari & Gen Ibrahim Badamasi Babangida
1986	11.08	16.22	-5.14	(46.40)	15.60	12.60	-3.00	(19.26)	Gen Ibrahim Badamasi Babangida
1987	15.51	22.02	-6.51	(41.98)	17.86	25.38	7.52	42.09	Gen Ibrahim Badamasi Babangida
1988	24.30	27.75	-3.45	(14.21)	27.10	27.60	0.49	1.83	Gen Ibrahim Badamasi Babangida
1989	30.11	41.03	-10.92	(36.27)	29.41	53.87	24.46	83.15	Gen Ibrahim Badamasi Babangida
1990	39.76	60.27	-20.50	(51.56)	47.66	98.10	50.45	105.85	Gen Ibrahim Badamasi Babangida
1991	38.67	66.58	-27.92	(72.20)	68.73	100.99	32.26	46.94	Gen Ibrahim Badamasi Babangida
1992	52.04	92.80	-40.76	(78.33)	53.26	190.45	137.19	257.59	Gen Ibrahim Badamasi Babangida
1993	112.10	191.23	-79.13	(70.59)	126.07	192.77	66.70	52.91	Gen Ibrahim Badamasi Babangida & Ernest Shonekan
1994	110.20	160.89	-50.69	(46.00)	90.62	201.91	111.29	122.81	Gen Sani Abacha
1995	153.50	248.77	-95.27	(62.07)	350.67	459.99	109.32	31.17	Gen Sani Abacha
1996	189.00	337.22	-148.22	(78.42)	339.40	523.60	184.20	54.27	Gen Sani Abacha
1997	276.72	428.22	-151.49	(54.74)	404.00	582.81	178.81	44.26	Gen Sani Abacha
1998	367.92	487.11	-119.20	(32.40)	424.40	463.61	39.21	9.24	Gen Sani Abacha & Gen Abdulsalami Abubakar

Sources: (1) CBN Statistical Bulletin, 2016
(2) Different Editions of the Approved Annual Budget

Table 2.3b: Budget Implementations 1999-2014 (Post Democracy Era)

Year	Budget estimates (expenditure)	Federal actual expenditure	Expenditure variance	variance on budgeted expenditure	Budget estimates (revenue)	Federal actual revenue	Revenue variance	variance on budgeted revenue	Heads of State
	₦ Billion	₦ Billion	₦ Billion	%	₦ Billion	₦ Billion	₦ Billion	%	
1999	358.10	947.69	-589.59	(164.64)	985.20	949.19	-36.01	(3.66)	Gen Abdulsalami Abubakar and Chief Olusegun Obasanjo
2000	664.74	701.06	-36.32	(5.46)	1,260.00	1,906.16	646.16	51.28	Chief Olusegun Obasanjo
2001	1,752.78	1,018.03	734.75	41.92	1,589.45	2,231.60	642.15	40.40	Chief Olusegun Obasanjo
2002	1,018.16	1,018.16	0.00	0.00	716.75	1,731.84	1,015.09	141.62	Chief Olusegun Obasanjo
2003	122.56	1,226.20	-1103.64	(900.52)	1,023.24	2,575.10	1,551.86	151.66	Chief Olusegun Obasanjo
2004	1,302.23	1,426.20	-123.97	(9.52)	2,160.00	3,920.50	1,760.50	81.50	Chief Olusegun Obasanjo
2005	1,799.94	1,822.10	-22.16	(1.23)	3,619.00	5,547.50	1,928.50	53.29	Chief Olusegun Obasanjo
2006	1,842.59	1,938.00	-95.41	(5.18)	3,700.00	5,965.10	2,265.10	61.22	Chief Olusegun Obasanjo
2007	2,300.00	2,450.90	-150.90	(6.56)	4,300.00	5,727.50	1,427.50	33.20	Olusegun Obasanjo & Umaru Musa YarAdua
2008	2,647.00	3,240.82	-593.82	(22.43)	3,193.44	7,866.59	4,673.15	146.34	Umaru Musa YarAdua
2009	3,102.00	3,452.99	-350.99	(11.31)	2,265.00	4,844.59	2,579.59	113.89	Umaru Musa YarAdua
2010	4,427.18	4,194.58	232.61	5.25	3,180.00	7,303.67	4,123.67	129.68	Dr Goodluck Ebele Jonathan
2011	4,972.00	4,712.06	259.94	5.23	2,836.43	11,116.85	8,280.42	291.93	Dr Goodluck Ebele Jonathan
2012	4,877.21	4,605.39	271.82	5.57	3,644.00	10,654.75	7,010.75	192.39	Dr Goodluck Ebele Jonathan
2013	4,987.22	5,185.32	-198.10	(3.97)	3,890.00	9,759.79	5,869.79	150.89	Dr Goodluck Ebele Jonathan
2014	4,695.19	4,578.06	117.13	2.49	3,730.00	10,068.85	6,338.85	169.94	Dr Goodluck Ebele Jonathan
2015	4454.00	4988.86	-534.86	-12.01	3413.00	6912.50	3499.50	102.53	Dr Goodluck Ebele Jonathan and Major-General Muhammadu Buhari

Sources: (1) CBN Statistical Bulletin, 2016
(2) Different Editions of the Approved Annual Budget

Table 2.4 Variances and Percentage of Variance to Budgeted values from 1980-2014

Head of State	Period	Expenditure variance ₦'B	Variance on budgeted expenditure (%)	Revenue variance ₦'B	Variance on budgeted revenue (%)
Shehu Shagari	1980-1983	1.65	12.61	-0.20	-0.37
Major-General Muhammadu Buhari	1983-1985	4.40	28.21	1.64	15.38
Gen Ibrahim Badamasi Babangida	1985-1993	-24.29	-51.44	39.51	71.39
Ernest Shonekan	1993	-79.13	-70.59	66.70	52.91
Gen Sani Abacha	1994-1998	-112.97	-54.73	124.57	52.35
Gen Abdulsalami Abubakar	1998-1999	-354.40	-98.52	1.60	2.79
Chief Olusegun Obasanjo	1999-2007	-154.14	-116.80	1244.54	67.83
Umaru Musa YarAdua	2007-2009	-365.24	-13.43	2893.41	97.81
Dr Goodluck Ebele Jonathan	2010-2014	136.68	2.91	6324.70	186.97

Sources: Author's computation based on;
(1) CBN Statistical Bulletin, 2016
(2) Different Editions of the Approved Annual Budget

2.5 Appraisal and Conclusion

Given the foregoing overview of the government finances and budget framework, processes, and implementation, it is obvious that financial and fiscal indiscipline are manifested in over-dependence on oil revenue, non-tax sources of revenue, increasing deficit profile despite huge revenue generation and potentials, and the associated debt accumulation. The budget framework, processes, and practices are embellished with significant indiscipline. The budget framework, processes, and practices require urgent adjustments to minimise the opportunities for financial and fiscal indiscipline in government fiscal operations.

CHAPTER THREE

LITERATURE REVIEW

3.1 Introduction

This chapter appraises useful literature relating to this study. The review was organised into five main sub-sections. The first sub-section emphasised on the different concepts of fiscal discipline, the second sub-section centred on the theoretical review relating to fiscal discipline. A brief methodological review was documented in the third section and an empirical survey of related literature on fiscal discipline, its measures and determinants were examined in the fourth sub-section, with the final sub-sections giving an overview of the literature examined.

3.2 Concept of Fiscal Discipline

The concept of fiscal discipline in the literature of public sector finance has widely been used with no precise description and meaning by academia and professional organisations.

Academic usage of fiscal discipline has focused on three associated descriptions. The first is by Richard Musgrave, the public finance theoretician to denote primarily deficit financing of current operations, i.e., current expenditures of the government should be financed with only the current revenues and not borrow to make any ongoing expenditures. Deficits can impact present gains to residents and enable support of the politicians for officials but intensify the burdens of taxation on future taxpayers (Musgrave and Musgrave, 1989; Musgrave 1959). The implications are: (1) such financing of deficit can indicate absence or poor fiscal discipline; (2) fiscal discipline does not involve only officials elected but similarly taxpayers and voters, where they both devote more interest to present wants than the periods to come; and (3) it is up to certified financial executives (appointed or elected) to amend this wrong disposition so as to preserve suitable fiscal discipline.

The second use, by Mikesell John, supports Musgrave's assertion opposing deficit financing, "limiting spendings to accessible and usable fund," and expatiates on fiscal discipline as share of the control of budgetary procedures, "assuring that authorised budgets are effected, and protecting the legitimacy of government spendings" in amount and intent (Mikesell, 1999). Apparently, the 'discipline' herein is anticipated for

appointed and elected officials to support the determination of the public made known by their lawmaker, the legislators. In other words, fiscal discipline is effected if agencies of government carry out the bill appropriated by expending the amounts approved on legislatively planned purposes or goals

The third use expands the extent of fiscal discipline to law makers: The law makers should proceed to "fulfil its own targets on appropriation bills, budget and resolutions" (Axelrod, 1988).

Irene Rubin (2007) defines the breakdown of fiscal discipline in terms of political, process and institutional components of public budgeting at different levels of government. Political unwillingness causes delay and an inability to reach consensus. Process problems include hidden spending (black budgets and off-budget) and re-budgeting schemes. Institutional problems include an inability to meet resolution deadlines and inappropriate use of supplemental appropriations.
Rubin calls for periodic improvement of the budgetary procedures in order to reach and sustain fiscal discipline.

The interpretations of fiscal discipline require the involvement of multiple actors – civil servants, legislators, citizens, and elected officials. If any part of the actors goes amiss, fiscal supervisors should sustain their proficient ethics (and standards) to reinstate discipline. Also, fiscal discipline is relevant not only to the development of budget but to restrain expenditure on current spending within the funds currently accessible and to assure a prompt adoption of the budget to control the operation of the government in the next fiscal year; but likewise, to ensure implementation of budget, providing the condition for judiciously executing the budget by line managers as approved.

The interpretations above, emphasises mostly on the present (approaching) fiscal year, which is definitely not enough based on a more recent study. For effortless financial processes over the years, a multiple period perspective to budgeting is essential (Schick, 2001) and emphasis on the current period reduces over a lengthy period of preparation which is a key part of the management of finance. It is challenging if not unbearable to sustain a yearly fundamental balance between current expenditures and current revenues without performing a multiple period planning of the finances (Hou, 2002a). A multiple period perspective to budgeting is particularly indispensable to developing transitional

countries where balance often remains elusive as expenditures and not revenues often drive budget development (Boex *et al*., 2000). Relatedly, Rubin (2007) concluded that successful budget reform at the federal level in a country must account for more frequent readjustment, that is, a call for periodic improvement of the budgetary procedure so as to accommodate a changing context. Thus, a multiple period assessment necessitates the government to manage these two areas: (1) expenditure and revenue evaluation for the next years; and (2) assessing the future impacts of fiscal balances on key decisions of the management and the financial implications (Brigham, 1982).

In addition, thorough budgetary procedures and strategic budgets need a system planned to sustain the fiscal condition and sustainability in cases of economic slumps and unanticipated predicaments, which is not within the control of sub-national governments. Traditional economic insight posits that the role of stabilisation belongs to the central administration of governments (Musgrave, 1959; Oats, 1982). Hou (2002a) noted that such strategies include stabilising budgetary funds and general fund surpluses.

However, fiscal stability and health in government finances are incomplete without firm structures and procedures for effective management of debt. Debt is an essential component for the creation of infrastructure, allowing for sufficient resource flows and to attain equity inter-generationally. While present citizens enjoy the total gains from the debt while repaying just a portion of the total debt facility, they are likely to ask for more production and consequently, their political delegates might just follow the will of the voters. Thus, procedures that limit the maturity of debt, type and amount, are essential for fiscal stability and health in the long term, such that the fiscal processes in the years to come will not be short of funds from what can become an exceptional burden of debt service.

Therefore, defining the concept of fiscal discipline is broad. It encompasses a multi-year opinion on budgeting, structures to sustain the fiscal stability and health over the business and political cycles. These components entail three main levels of financing government activities: (a) medium to long-run preparing of expenditure and revenue appraisals, measuring the fiscal influence of foremost decisions of the management, and management of debt; (b) budget adoption and compilation, i.e. offsetting current expenditures and existing revenues, and approval of budget before the beginning of the

current fiscal year; (c) execution of budget and or fiscal activities – realising and sustaining the fundamental balance, using counter-cyclical tools that are in-built.

The crux of fiscal discipline rests on the central points governmental financial activities, which in itself differs from budget discipline as both terms have been misconstrued to imply the same thing, as the latter is part of the former. Budget discipline considers both rules and sanction which further entails balanced budget rules, deficit ceiling, accounting and reporting requirements, instruments of budget administrative control (Dafflon, 2012), while fiscal discipline encompasses budget discipline with planning, balancing and execution activities to sustain all government operations (Hou and Willoughby, 2010).

3.3 Theoretical Review

This sub-section examined theories explaining fiscal imbalances, especially in developing economies, theoretical perspectives on budget deficit and debt accumulation, as these two are the major indicators of fiscal (in) discipline identified in both theoretical and empirical literature.

3.3.1 Theoretical Approaches to Fiscal Policy

Fiscal policy is simply the act of using the amount of revenue collected and spent by the government to affect the overall economy. Government spendings are often based on different rationalisations. These include the following:

3.3.1.1 *Marginal Utility Approach*

This approach recommends the use of an economic method to discover the component of government budgeting and expenditure. Based on this approach, the government expends its scarce resources on alternative amenities, so that the marginal benefit is equal across all items spent on. In other words, expenditure should be so distributed such that the last monetary unit expended yields the same real value. The principle *of Maximum Social Advantage* by Dalton is the underlying rule of public finance which asserts that "*economic welfare is achieved when the resulting gains from the marginal utility on expenditure is equal to the marginal disutility enforced by taxation*". Thus, the government is expected to incur expenditure only to the extent that the marginal social advantage of expenses in all courses equates the marginal social disadvantage of various means of raising additional public income. According to Musgrave (1959), this is the point of optimal size of the budget and at this point, the marginal net benefit is zero.

3.3.1.2 *Public Goods Approach*

This theory states that government expenditure is determined by the demand for public goods. Public goods are commodities, services and goods that when produced, are being enjoyed by an extra consumer at no extra cost. The market mechanism is not available for their provision because they are characterised by one or both of non-excludability and non-rivalry. Rivalry is the incapability of many consumers to utilise the same good, while excludability is the capability of producers to detect and prevent un-compensating consumption of their products. Public goods, therefore, get under-produced because they are not excludable. The pricing mechanism tends to fail in the allocation of such goods because it is unable to influence consumers to disclose their demand for only non-excludable goods, neither can it influence producers to match-up that demand. Although absolute non-rivalry and non-excludable does not exist in the real world, economists believe that certain commodities approximate the idea thoroughly enough for the evaluation to be efficiently useful. Thus, public goods generally pertain to all commodities offered by the government and include an extensive array of goods and services.

The major limitations of this theory as outlined by Holcombe (1997) includes:

- There is no justification to assert that the public sectors can be more efficient in the production of public goods than in the private sector;
- Given the official economic meaning of a public good, government production cannot be classified as a public good because public sector output does not have the features of collectiveness in consumption as recognised by Samuelson; and
- The public goods theory does not clarify intensively the activities of the government or what the government should do, but can be implied as a device that the government uses for its own gain.

3.3.1.3 *Public Choice Approach*

This is a body of theories that recognise the significance of political process in enlightening public preferences. The contemporary writings in Public Choice started with Duncan Black (1948), whose work was later built upon by Buchanan James (1962, 1967), Gordon Tullock (1962), Kenneth Arrow (1963), and Anthony Downs (1957). The theory postulated that government expenditure is decided by self-interest rather than by public interest. Governments govern expenditure and revenues to maximise their possibilities for winning elections in democratic societies. Accordingly, budgeted expenditures are determined by a chain of distinct policy outcomes based on the appraisal of losses and gains of votes. The focal truth for government is the vote of the citizen's and not his welfare.

Thus, based on Downs (1957), the government will only deliver what the voters want and not particularly what is helpful or advantageous. In order to fulfil voters' demands, their aspirations for projects or services and promises made at election time, government spending has to increase, resulting in bigger government, bigger bureaucracies, larger budgets and additional challenges in finding funds to finance the budgeted spending as the public do not want to pay taxes. Also, special interest coalitions lobbying the government to transfer wealth to them tend to increase the size of government budgeted expenditure. People tend to lobby more for government spending that will benefit them with the concentrated interests winning at the expense of the diffuse general interest. One major criticism of the theory is that unlike the American Society, which it was primarily developed for, it is not suitable for non-democratic countries in which the capacity of opposition groups to lobby for their policy preferences is repressed.

3.3.1.4 *Wagner's law*

The theory of Increasing State Activities or increasing expansion of fiscal requirements was propounded by Adolph Wagner in 1876 from the study of the economic growth of Germany. The law expatiates that as an economy industrialises, the portion of public spending in national income increases 'extensively' and 'intensively'. Wagner noted that social advancement has given rise to increasing state action with a resulting surge in public spending. He anticipated a rise in the proportion of government expenditure to national income as per capita income increases. According to Mohammadi and Cak (2008), the reasons given by Wagner for the increases include: first, as the economy grows, the accompanying urbanisation and industrialisation will produce further requirements for government services in sectors that are beyond conventional legal system and national defence; second, as individual's real income expands, so also the need for elastic income welfare and cultural spending; third, government expenditure might also supplement the private sector financing for long-run investitures due to changes in technology and economic developments.

An alternative motive is the decentralisation of management and the rise in the expenses of local bodies. Critics have, however, argued that:

- The Wagner's law was not presented mathematically and this has led to the use of different mathematical specifications to test the law; and
- The hypothesis was not explicitly formulated and it was not clear if the share of government in national income or just an absolute level of government should be used as the growth of government.

3.3.1.5 *Displacement Effect Hypothesis / Inspection Effect*

The displacement effect hypothesis was propounded by Peacock and Wiseman (1961) on the core of their study on the 'Growth of Public Expenditure in the UK, 1891-1955' to validate Wagner's Law. According to the theory, the growth in public expenditure is determined by the growth in revenue. The hypothesis is built on the principle of tolerable taxation level, which states that maximum amount of tax revenue accruable to government is based on citizen's perception of what is the fair and equitable amount of tax. Ordinarily, the citizens are resistant to higher taxes, but in times of war, they become more tolerant of tax increases. As per Henry and OlekaIns (2000), beyond a time acquaintance to the modern regime of taxation, the most extreme endurable level of taxation is expanded as voters turn out to be logically comfortable with the new systems. The government can maintain the costs at a generally abnormal state but the times of crisis or emergency has elapsed. This is called "displacement effect". Displacement effect arises when the initial low expenditure level and tax level are supplanted by higher and new budgetary levels.

Apart from war and military expenditure, other factors like social upheavals, natural calamities – droughts and famines have also been attributed to the increase in public expenditure in the literature. These events tend to produce new emergency requests on social welfare scheme of the government; war pensions etc. This leads to an increased level of expenditure.

3.3.2 Models of Fiscal Imbalances

Fiscal policy is the usage of government spending and taxation to stimulate the economic condition of a nation. Fiscal policy performs a great part in steadying the state of the economy during business cycles. Basically, fiscal policy reactions using expenditure and taxation can respond in two ways during a business cycle: procyclical and counter-cyclical. Generally, the pattern of fiscal policy is mostly countercyclical.

3.3.2.1 *Countercyclical Fiscal Policy*

Countercyclical fiscal policies are strategies by the government using government spending and taxation to counteract recession or boom through fiscal methods. It operates contrary to the current recession or boom trend; therefore, aiming to stabilise the economy. When the government applies a tax-smoothing principle according to which

tax rates and government spending ought to remain constant over the business circle; this has different economic implications depending on the business circle.

Total government spending as a proportion of GDP is expected to reduce during economic boom because of automatic stabilisers (economic programmes and policies devised to counterbalance variations in the economic activities of a country without interference by the policy makers or government on a frequent basis) which prevent bubbles and the economy from over-heating. With steady tax rates and some level of progressivity, government incomes as a proportion of GDP ought to go up and along these lines accordingly, budget surpluses as a proportion of GDP should increase. However, this could lead to crowding out effect, where borrowing to fund deficit crowds out investment in the private sector because it causes the rate interest to increase.

3.3.2.2 *Pro-cyclical Fiscal Policy*

Pro-cyclical fiscal policy is when fiscal policy is aligned with the present condition of the current business cycle; augmenting them. For instance, in the time of boom, the government increases expenditure and doesn't increase taxes. Thus, boom advances. Such policies are threatening and bring unsteadiness in the economy. Total government spending as a proportion of GDP increases, tax rates reduces and government deficits expand during the period of economic boom while total government spending as a proportion of GDP shrinks, tax rates increase and government deficits decline at economic bad times.

The empirical literature likewise emphasises that though fiscal policy is countercyclical or acyclical in developed nations, it is for the most part pro-cyclical in less-developed or developing nations, with fiscal policy conceivably worsening the business cycle in these developing nations. This entreats the issue of why these developing nations seek after strategies that regularly make fiscal imbalances and macroeconomic instability.

Theoretical literature suggested two likely defences. The first rested upon the presence of incomplete markets and alteration or distortions in foreign capital markets. Caballero and Krishnamurthy (2004), Gavin and Perotti (1997), and Guerson (2003) claim that less-developed or developing countries experience credit restraints that inhibit them from borrowing in a period of economic downturns (bad times) or borrowing at very high and unbearable interest rates. Henceforth, these countries are 'mandated' to refund these debts

in economic downturns, which necessitates a contractionary fiscal policy, and thus, creating further imbalances which constraint discipline.

The second part of the literature lays emphasis on a political economy clarification. Tornell and Lane (1999) build a model in which rivalry for a *common pool* of resources among various units (departments, provinces, agencies, ministries) causes the so-called 'voracity effect', whereby spending could truly outperform a specific benefit i.e. political distortion that leads spending pressures. Given such political distortions, Talvi and Végh (2005) demonstrated how legislators would think of being optimal to oversee lesser essential surpluses or even shortfall in great circumstances by raising government expenditure and declining tax rates. While fiscal imbalances characteristics and political distortions can be found in any nation, a significant number of researchers have built up that these distortions are more predominant in resource-rich nations where asset rents are high and non-asset taxes are low. For instance, Lane and Tornell (1996) demonstrated that resource-rich nations are vulnerable to more exceptional rent-seeking behaviour than resource-poor nations since public politics is orientated to reserving the rents picked up by the normal resource enhancement. In their research, a benefit originating from upgrades regarding terms of trade will cause an acute increase in expenditure, a one-sided circulation of expenditure after some time, dissolute incomes and a breakdown in growth and development.

Another part of the literature on sub-optimal fiscal outcomes presumed that contractionary fiscal policies are possible indications of fundamental institutional challenges, such as the absence of implementation of property rights and refutation of contracts. As Acemoglu *et al.* (2003) presumed in economies with fundamental institutional challenges, politicians might be compelled to follow unmaintainable policies in order to appease several groups and remain in power.

3.3.3 Fiscal Theory of Price Level (FTPL)

Fiscal Theory of Price Level (FTPL) specifically identifies fiscal discipline as a critical factor in ensuring the stability of price level. The FTPL is the concept that fiscal policy action influences the price level: for stability in price level, the finances of the government must be stable and bearable: they must maintain a balanced budget throughout the period of the business cycle, implying there should be no structural deficit; though it is unorthodox theory, which conflicts with the normal concept of the price level

in monetary economics, where the price level is mainly or entirely ascertained by money supply.

The FTPL portrays fiscal policy decision to such an extent that the level of price is controlled by government debt obligation and fiscal policy alone, with no immediate reference for monetary policy or, best case scenario an unintended part.

3.3.4 The Common Pool Resource (CPR) Problem

The root of fiscal indiscipline is in the lack of proper governance over common pool resources of public finance (Kontopoulos and Perotti, 1999; von Hagen and Harden, 1995; Weingast *et al.*, 1981; Wyplosz and Kostrup, 2010; and Hallerberg *et al*., 2009). The common pool problem of public finance is the consequence of subsidising public policies focused at particular groups of people in the society from a general tax fund, which makes an externality; whereby, those enjoying the marginal benefit from an extra fund of public spending are not those bearing the marginal cost of funding it. If they did, they would have chosen the level of spending that equates the marginal benefit and cost of funding. But since they generally do not, those benefiting from a policy tend to ask for higher levels of spending, deficits, and debts, the fact that recipients of public spending to fail to fully internalize the costs that taxpayers must assume. As a result, democratically elected governments are led to postpone tax collection or to cut spending.

The “Common Pool Problem” is the characteristic of a democratically elected structure except the voters are flawlessly indistinguishable and think about their relatives precisely as they think about themselves. It is in any case, not a shock that the propensity of governments to keep running deficits and their deficit predisposition, is such an inescapable occurrence.

3.3.5 Theoretical Perspectives on Budget Deficit and Debt

3.3.5.1 *The Standard View*

The Standard View Model is based on the postulation that the exchange of debt or budget deficit for current taxation (tax cut) will lead to a growth in consumer aggregate demand. In other words, desired personal saving increases by less than the cut in tax, so that desired national saving falls. In a closed economy, the expected real interest rate will have to increase to bring back equality between the investment demand and desired national saving. Investment is being crowded out by the higher rate of real interest rate, which manifests in the long term as a lesser stock of productive capital. I.e. being fiscally indiscipline today could hurt future generation by decreasing the capital supply for tomorrow.

In an open economy, the budget deficit of a small country would have inconsequential impacts on the rate of real interest in international capital markets. Expected real interest rates increase for the domestic country as long as it is big enough to affect the world markets or if the enlarged national debt stimulates international lenders to request for higher expected returns on the domestic country's commitment. That is, there is a lower propensity for the budget deficit of a country to crowd out its investment domestically in the short term period and its stock of capital in the long term period, However, the deficit on the current account deficits will manifest in the long run as a reduced stock of national wealth and likewise increased claims by international resident.

3.3.5.2 *The Ricardian View*

The government may fund their expenditure by either taxing existing taxpayers, or by borrowing money. Otherwise, at least, they should reimburse the borrowing by expanding taxes beyond what they ought to have been in future. The decision is hence between "tax later" and "tax now". Assuming that the administration subsidises some additional expenditure from shortages i.e. tax later, David Ricardo (1817) sets that while taxpayers will have extra fund today, they will comprehend that they will need to pay a greater tax in the nearest future and consequently save the extra money so as to pay the future tax. The extra saving by consumers would exactly offset the extra spending by the government, so overall demand would remain unchanged.

Ricardian Equivalence proposes that any attempt by the government to stimulate demand using fiscal policy will be unproductive. He asserted that as budget deficits rise because

of an expansion in government expenditure, with a total present value of receipts fixed by the total present value of spending. Thus, a cut in today's taxes must be matched by an increase in future taxes, leaving real interest rates and thus private investment, and the current account balance, exchange rate and domestic production unchanged. Therefore, budget deficits do not crowd in nor crowd out macroeconomic variables i.e. no positive or negative relationship exists.

3.3.5.3 *The Neo-classical View*

The Neo-classical view propose an unfavourable relationship between macroeconomic variables and budget deficits or debt. They guarantee that budget deficits or financial obligation causes financing costs i.e. interest rate to rise, which discourages private ventures, issue of private securities, and private spending; expands the level of inflation, and causes a similar increase in the current account deficits and finally slows the growth of the economy through resources crowding out. The standard neoclassical model has three central segments. To begin with, the consumption of every person is resolved as the answer for an inter-temporal optimisation issue, where both loaning and borrowing are allowed at the market interest rate. Second, people have constrained life expectancies. Every consumer has a place with a specific group or age, and the life expectancies of successive ages overlap. Third, market clearing is by and large accepted in all periods.

3.3.5.4 *The Keynesian View*

The traditional Keynesian view differs from the standard neoclassical paradigm in two fundamental ways. First, it allows for the possibility that some economic resources are unemployed. Second, it presupposes the existence of a large number of myopic liquidity constrained individuals. This second assumption guaranteed that aggregate consumption is very sensitive to changes in disposable income. The Keynesian economists proposed a positive relationship between budget deficits and macroeconomic variables. They argue that usually budget deficits result in an increase in domestic production, increases aggregate demand, increases savings and private investment at any given level of interest rate. The Keynesian absorptive theory suggested that an increase in the budget deficits would induce domestic absorption and thus, import expansion, causing current account deficit. In the Mundell-Fleming framework, an increase in the budget deficit would induce an upward pressure on interest rate, causing capital inflows and an appreciation of the exchange rate that will increase the current account balance. The Keynesians provided a counter-argument to the crowd out effect, by making reference to the

expansionary effects of budget deficits. They argued that usually, budget deficits resulted in an increase in domestic production, which makes private investors more optimistic about the future course of the economy resulting in them investing more. This is known as the ‘’crowding in’’ effect.

3.3.6 Fiscal Discipline in a Decentralised Government Structure

There are two competing schools of thought on the nature of the relationship between federal structures and public debt and deficit. While the first school assumes that decentralized government structures have a dampening effect (reduced level of public debt), the second links federal structure to an expansive debt incurrence drive. Proponents of the more prominent *dampening hypothesis* argue in the tradition of the economic theory of federalism (cf. Tiebout, 1956; Kirchgassner and Pommerehne, 1996; Oates, 1999; Rodden and Wibbels, 2002; and Ehlert *et al*., 2007). In doing so, they assumed in very general terms that the decentralization of decision-making and financing competencies tends to lead to restraint in state intervention and consequently to a reduced level of public debt.

The views on the dampening effect of federal structures can be linked to the veto player theorem. This posits that the veto players constitutionally guaranteed by democracy, in the shape of autonomous institutions, act as obstacles to unrestrained majority rule by the central government (Tsebelis, 2002). Originally conceived as an explanation for differences in policy change, the veto player theorem can equally be applied to the development of state intervention in general. Here, it indicates the following: The more institutional veto positions oppose a central government and the parliamentary majority supporting it, the more probably will policy change be blocked or slowed down, and the more reserved will state intervention be (Schmidt, 2000). Federal state architecture, in particular, ranks among these veto players (Tsebelis, 2002).

Scharpf (1994) argued that federalism increases the number of actors eligible to negotiate and fosters heterogeneity of interests. The organizational duplications, long-winded decision-making processes, and considerations of individual interests which emerge from this tend to lead to expensive compromise solutions. In addition, it is argued that a decentralized policy-making structure leads to uncoordinated actions on the part of the political actors (Wibbels, 2000). The respective national and sub-national political decision-makers obey differing logics of action and are responsible to different

electorates. In this view, federal structures, for instance, generate incentives for sub-national political elites not to comply with a national economy drive but instead to pursue an expenditure policy of their own, which fuel debt incurrence.

3.4 Methodological Review

This sub-section examines the relevant method of analysis in the literature with respect to previous studies on fiscal discipline.

3.4.1 *Least Square Regression*

Freitag and Vatter (2008) examined the relationship between the degree of fiscal discipline and decentralisation in the Swiss cantons, using least squares regression in a pooled time-series cross-sectional designs, given the nature of the data under study. However, they encountered the problem of heteroskedasticity and it was adjusted for using the "panel corrected standard errors" method and also corrected for the problem of autocorrelation, using the Prais Winsten method (cf. Beck and Katz, 1995; Kittel, 1999; Kittel and Winner, 2005).

Bleaney and Halland (2016) examined the occurrence of difficulties in resource-rich countries as a result of lack of fiscal discipline. They deployed the Ordinary Least Squares and Robust regression which is a method that reduces the weighted sum of squares of residuals, with observations weighted between one and zero based on Cook's distance statistic, which determines the effect on the fitted values of deleting a particular observation.

3.4.2 *Generalised Method of Moment*

Neyapti (2013) examined fiscal decentralization, fiscal rules and fiscal discipline in an unbalanced panel with a total of 137 observations using dynamic panel data estimation with GMM instruments. This was because of the presence of the lagged dependent variable which renders the use of fixed or random effects inappropriate due to the violation of the assumption of exogenous covariates. Second, pooled OLS estimation is inconsistent if there are individual effects.

Hitaj and Onder (2013) specified an unbalanced panel data in their study on Fiscal Discipline in WAEMU. However, they couldn't use the OLS fixed-effects estimation, because it would result in biased estimates and thus, the use of GMM Instrumental variable estimation method, where the first-differenced lagged dependent variable is

instrumented with further lagged levels as it's able to accommodate a dynamic specification for time-invariant country characteristics

3.4.3 *Weighted Regression*

Acosta and Coppedge (2001) modeled spending and deficits separately, using weighted regression in order to standardise the variability of fiscal balances and spending in a study on political determinant of fiscal discipline in Latin America, because of the inherent methodological challenges in the use of pooled cross-country time series data, such as panel heteroskedasticity in the data. The error terms might be contemporaneously correlated and serial auto-correlation within countries.

3.4.4 *Structural Equation Models*

Elina (2010) examined the relationship between fiscal discipline, fiscal governance and transparency, using a Structural Equation Models (SEM) technique in order to have an enhanced understanding of the influence of each separate domain on fiscal discipline. He employed the Partial Least Squares (PLS) SEM technique to manage the problem of variables omission. The (PLS) technique is most suitable for causal modelling when sample scope is relatively low and models are intricate as the PLS-Path Modelling is argued to strive for maximal linear predictive relationships instead of causal methods, thus favouring a prediction-relevance oriented discovery procedure to the statistical testing of causal hypotheses as it is a more flexible approach to multi-block analysis.

3.4.5 *Dynamic Stochastic General Equilibrium Model*

Pieschacón (2011) examined the importance of fiscal discipline for oil-exporting nations. He analysed the impact of shocks in oil price on macroeconomic activities in an oil-exporting small open economy using a Dynamic Stochastic General Equilibrium model. The model was able to successfully describe the responses of consumption, output, and the relative price of non-tradable goods for each country. He further conducted variance decomposition analysis and welfare analysis.

Table 3.1 Summarised Methodological Review

Authors	Techniques	Variables	Issues of concern
Freitag and Vatter (2008)	Least Square Regression	Public debt, degree of decentralization	Corrected for autocorelation using the Prais Winsten method
Bleaney and Halland (2016)	Least Square Regression	Fiscal balance, total revenue/GDP, total expenditure/GDP, political stability	Robust regression technique is used to minimise the weighted sum of squares of residuals
Neyapti (2013)	Generalised Method of Moment	Fiscal decentralisation, fiscal rules, government expenditure, debt, balanced budget	Panel estimation, the existence of the lagged dependent variable which makes the use of random or fixed effects unsuitable
Hitaj and Onder (2013)	Generalised Method of Moment	Debt, budget deficit, fiscal rules	Panel estimation, the existence of the lagged dependent variable which makes the use of random or fixed effects unsuitable
Acosta and Coppedge (2001)	Weighted Regression	Budget deficits, government expenditures, political institutions, the extent of the party of the president	To standardise the variability of fiscal and spending balances
Elina (2010)	Structural Equation Models	Budget balance, fiscal institutions, fiscal rules, budget deficit	Partial Least Squares (PLS) SEM is used to deal with omitted variables, and small sample size
Pieschacón (2011)	Dynamic Stochastic General Equilibrium	Fiscal policy, consumption, price of nontradable	The model explains the reactions of output, consumption, and the relative price of non-tradable commodities. Variance decomposition analysis and welfare analysis.

3.5 Empirical Review

This subsection reviewed the relevant empirical literature with respect to fiscal discipline, identifying their measure of fiscal discipline, and factors identified to influence fiscal discipline. The section further reviewed some other related studies.

3.5.1 Fiscal Discipline and Budget Processes

Von Hagen (1992) provided empirical facts from twelve nations in the European Union, showing a critical negative connection between the general government shortfalls and debt obligations with respect to GDP and centralisation of the budget procedure.

Von Hagen and Harden (1995) extended the analysis of Von Hagen (1992) and validated the hypothesis that smaller deficits and debts are usually associated with centralisation of the budget process. They demonstrated that a decentralised system is associated with fiscal indiscipline and measured fiscal performance using general government deficit, government expenditures, government debt, and thus in-disciplined as the excessive deficit and excessive debt. The authors further noted that a healthy position of the finance minister, prime minister, a parliamentary procedure with tough limits on modifications, a universal vote on the total budget size before the parliament discussion, a reasonable amount of budget transparency, and implementation procedure with restricted litheness for the spending ministers are critical for a discipline budget procedure.

Von-Hagen and Harden (1995) exhibited a simple model describing how rules of procedure in the budget process can be used to suppress fiscal illusion and the ensuing spending bias, i.e. how the budget process is used as a commitment tool for fiscal discipline. They recommend that the suitable selection of a budget process for that rationale rests on the political environment and on the leading cause of uncertainty in the process of budgeting.

Alesina and Perotti (1996) examined the problems of fiscal discipline and budget process by analysing whether budget procedures matter for the determination of balanced budget and its composition and the certain institutional reforms necessary for such balance budget. They, however, suggested transparency and reinforcing of the role of the branch executive, treasury minister vis-à-vis the legislature in order to achieve centralisation. The authors hypothesised that balance budget laws should apply to sub-national

government and not necessarily national government. They concluded that budget procedures should not create obstacles to a fiscally responsible government, and also measured fiscal discipline as a balanced budget and in-disciplined as debt/GNP, deficit and they identified transparency as a critical factor in achieving this.

Hou and Willoughby (2010) considered a multi-year budgeting orientation as well as the requirements of a government to uphold stability and fiscal health across business cycles. They sought to create measures of fiscal discipline that is applicable across different levels of government and for both developed and developing nations. The authors` work was based on the assumption that firm fiscal discipline advances the capacity for financial management for the government, and thus, thorough and reliable governance, while the measure of fiscal discipline was founded on traditional use of the terms like financial condition but widened to include the essential aspects of financial management such as timely adoption of budgets, the conduct of fiscal notes, preparation of tax expenditure budgets, budget balancing strategies and the use of countercyclical devices call for such accommodations.

3.5.2 Fiscal Discipline in Resource-Rich Economies

Pieschacón (2011) examined the importance of fiscal discipline for oil-exporting countries which are Norway and Mexico. He analysed how shocks in the price of oil affected macroeconomic performance in an oil-exporting small open economy. The author further demonstrated that fiscal policy was the main transmission channel through which the extent of exposure to oil shocks and also was able to regulate the extent of the pass-through. Fiscal discipline seems, by all accounts, a critical instrument to manipulate the influence of the price of oil shocks. The welfare assessment demonstrates that fiscal programmes and approaches that protect the nation from exogenous oil price shocks have all the earmarks of being welfare advancing over those that are pro-cyclical.

Bleaney and Halland (2016) investigated, regardless of whether resource-rich nations experience, the ill-effects or absence of fiscal discipline. They found out that exporters of fuel have a fundamentally improved higher revenues and expenditures and general government fiscal balance, which are similarly separated between additional capital expenditure and additional consumption expenditure and their spending responded with

slack to the price of oil changes. However, in any case, there are no noteworthy distinctions among metals exporters, ore exporters and resource-poor nations, or amid old and new resource exporters, in total revenue and expenditure. The finding does not back the idea that natural resource wealth stimulates fiscal indiscipline. Fiscal indiscipline is measured using the fiscal balance, total revenue and total expenditure as a proportion of GDP and identified political stability, hard-peg exchange rate regime as an important factor in maintaining fiscal discipline.

3.5.3 Fiscal discipline in a decentralised structure

Cakir and Neyapti (2007) examined how fiscal decentralisation promotes fiscal discipline. They model the performance of a government that experiences the challenge of reallocating a common revenue pool equitably and efficiently. They explicitly contemplated that such rule takes into account both divergence of local incomes from their expected and sub-national tax collection efforts, by relatively examining alternate fiscal process led by the local and central governments. The model advises that, given the anticipated redistributive method, fiscal decentralisation plays a disciplinary role, where fiscal discipline is proxied by the size of redistribution and aggregate tax collection efforts.

Freitag and Vatter (2008) examined the association among the level of fiscal discipline and decentralisation in the Swiss cantons over the time of 1984 to 2000. They demonstrate that in times of growing and performing economic activities, the design of the structure of states does not affect debt obligation. Regardless, the level of decentralisation affects debt obligation in economic trouble periods. In times of poor economic performance, officially decentralised cantons apply a more conservative budget process, procedure and policy or strategy than centralised Swiss member states. Fiscal discipline is measured by the annual change of per capita government debt in the cantons.

Asatryan *et al.* (2015) examined fiscal inefficiencies/indiscipline associated with the soft budget constraint problem of sub-national government. They tested the proposition that weak local-level budget incentives and excessive borrowing can be overcome when the financial consequences of expenditure choices are adopted in a domain, and that the latter can be achieved by assigning (a sufficient degree of) revenue autonomy to subnational governments, and find evidence supportive of the idea that higher revenue

decentralisation is linked with better sub-national government budget balances (fiscal discipline).

Neyapti (2013) examined fiscal discipline, fiscal rules, and fiscal decentralisation, and detected that fiscal rules (FR) and fiscal decentralisation (FD) are institutional devices that are applied at different extents in rising number of countries. The study examined empirically the impact of FR on the efficacy of FD in attaining fiscal discipline. Result provides that expenditure rules and balanced budget help FD to attain this objective, while the rule of debt rule has a straight effect on discipline.

3.5.4 Determinants of Fiscal Discipline

Acosta and Coppedge (2001) examined the political determinant of fiscal discipline in Latin America by investigating the effect of political backing on two main pointers of fiscal accomplishment: government expenditures and budget deficits. The analysis presumed that political institutions are critical for fiscal performance. As the government usually accumulates deficits in election years, institutions created to curtail deficit spending are actually very effective. Also, expenditure can be partially described by the intense collaboration of other political institutions: its degree of discipline, the size of the party of the president, the president's loyalty to party, the ideological position of the president and the levels of ideological polarisation.

3.5.5 Other relevant literature

Gale and Orszag (2003) assessed the connection between economic performance and long-term fiscal discipline with two important results. To begin with, any decrease in budget surpluses (or increments in budget deficits) bring down national saving, and subsequently, a reduction in future national earnings, independent of their result on interest rate. Second, a surge in anticipated future deficits builds the long-run period interest rate. This evidence implies that the costs of enlarged deficits are significant over the long run, and need to be likened prudently to the probable benefits of the spending and tax policy programmes that result in greater long-term deficits.

Elina (2010) examined the association between transparency, fiscal governance, and fiscal discipline and ascertained that macro-economics is principally significant in deciding fiscal effects, which politics can play a significant role but fiscal institutions also

help to guarantee budget balance, where the separation of powers in the process of budget, strength of fiscal rules, and reduction of fiscal illusion appears to play a huge part. The evidence implies that the more disciplined budgetary process and adoption of stricter rules can be tougher when nations face deficit challenges.

Hitaj and Onder (2013) in their examination on Fiscal Discipline in WAEMU: Rules, Institutions, and Markets, check the likelihood for market discipline and the viability of the regional surveillance structure in the West African Economic and Monetary Union (WAEMU). The authors' infered that the responsiveness of sovereign bond rates to governments' fiscal behaviour in the regional money or financial market stays constrained. More so, the research examined the adequacy of fiscal standards and institutions in a domain where financial markets are grossly inadequate concerning using a noteworthy disciplining effect on government. They proxied fiscal in-discipline using debt and budget deficit.

Table 3.2: Summarised Empirical Review

Title	Scope of the study	Authors	Empirical findings
Fiscal discipline and Budget processes	12 EU countries, 1980-1990	Von Hagen (1992)	• There is an adverse relationship among budget procedure, centralisation and the general deficits and debts in proportion to GDP. Nevertheless, it is significant.
	12 EU countries 1980-1990	Von Hagen and Harden (1995)	• The centralisation of the budget procedure is connected with a fraction of the budget deficits and debts (fiscal discipline)
	OECD countries, 1980- 1993	Alesina and Perotti (1996)	• Balance budget laws should apply to all levels of government • Budget procedures should not create obstacles to fiscally responsible government • Measured fiscal discipline as a balanced budget and in-disciplined as debt/GNP, deficit • Transparency as a critical factor in achieving this

Fiscal discipline in resource-rich economies	Mexico and Norway, 1980-2006	Pieschacón (2011)	• Fiscal policy is the main channel that affects the rate of exposure of the economy to oil shocks. • Fiscal discipline is crucial so as to control the effect of oil price shocks
	Argentina, Ecuador, Mongolia, Libya, Congo, Lebanon, Ghana, Nigeria, Paraguay, Bolivia, Tanzania, 1996-2012	Bleaney and Halland (2016)	• Exporters of fuel experience a significantly improved fiscal balance, higher revenues and expenditures • There is no significant differentiation between metal and ores exporters and resource-poor nations. • Natural resource wealth does not promote fiscal indiscipline
Fiscal discipline in a decentralised structure	Turkey, 1990-2005	Cakir and Neyapti (2007)	• Fiscal decentralisation plays a disciplinary role. • Fiscal discipline is proxied by aggregate tax collection effort and the size of redistribution.
	Swiss cantons 1984-2000	Freitag and Vatter (2008)	• Periods of prosperous economic development does not influence debt. • The extent of decentralisation has an impact on debt in economic bad periods
	Caribbean countries, 1985-1998	Asatryan, Feld and Geys (2015)	• Higher revenue decentralisation is linked with improved sub-national government budget balances (fiscal discipline).
	8 transition economies, 10 developed and 7 less developed. 1990-2009	Neyapti (2013)	• Expenditure rules and balanced budget help Fiscal decentralisation to attain this fiscal discipline, • Rule of debt has a straightforward disciplinary impact.
Determinants of fiscal discipline	Latin America, 1979-1998	Acosta and Coppedge (2001)	• Political institutions matter for fiscal discipline

3.6 Overview of the Literature

Having examined the diverse literature on the subject of fiscal discipline, it is obvious that the concept of fiscal discipline is broad and cannot be limited to budget deficit nor debt accumulation as mostly used in the existing literature. Existing studies conducted by Hou (2002) identified diverse measures. Hou (2002) stated that lack of comprehensive data and appropriate measure are hindrances to the use of other measures in most related literature. This study examined fiscal discipline beyond budget deficit and debt accumulation, specifically, a disaggregated view of actual and budgeted expenditure and revenue, by examining fiscal discipline, using variance between actual and budgeted expenditure and revenue because expenditure is relatively more politically volatile than revenue. Though, Hou (2002) mentioned timely adoption of the budget as a measure, but this has not really been subjected to empirical testing as evidence in the reviewed literature.

Theories explaining fiscal discipline have revealed the importance of fiscal discipline for macroeconomic stability in the economy and specific theoretical perspective to fiscal discipline measures such as budget deficit and debt reveals that fiscal in-discipline is not necessarily welfare declining as given by the Ricardian view and Keynesian view. However, the main drawback of the theories identified here was that those in the study of the effects of the deficit and public debt mainly ignored: (a) whether exogenous policy are anticipated or not, (b) the source of the deficits (reduced tax revenues or higher government expenditure), (c) the time to manage poor funding (except neoclassical differentiating between temporary deficit and permanent deficits), (d) the structure of government expenditure and tax revenue (e) the means of financing the deficit (monetary financing or debt issue).

Theoretical models explaining the source of fiscal indiscipline or fiscal imbalance in an economy have highlighted that resources constraint, incomplete markets and distortions in international capital markets, pro-cyclical policies, voracity effect, and common pool resources problem amongst others are the leading cause of fiscal indiscipline in most developing economies. While the fiscal behaviour of the government could also have contributed to this in-disciplinary act as the government tends to expend resources based on different motives ranging from: equalising marginal utility across all government

expenditure, provision of public goods, to economise or grow the state of the country, for their selfish desires as against the public needs.

While the bulk of literature on the decentralised system and fiscal discipline examined fiscal discipline at the sub-national stage, specific studies in a decentralised system that examines the issue of fiscal discipline at the national level are rare, most especially in a developing African economy.

Studies relating sub-national government and fiscal discipline have recognised that sub-national government revenue autonomy may mitigate fiscal indiscipline and indebtedness because it implies greater flexibility in budgetary terms (IMF, 2009; Baskaran and Feld 2010; Eyraud and Lusinyan, 2011). And thus, the more the sub-national government (spending units), the better the fiscal discipline, implying that decentralisation improves fiscal discipline.

The empirical review have shown that specific studies on the determinant of fiscal discipline are rare, though most related literature identified some determinants indirectly, mostly identified determinant are political stability, electioneering period, number of spending units, fiscal rules, political regime, foreign reserve, natural disaster, trade openness, and unemployment. This study ensured that all relevant important variables are captured, especially those related to a resource-rich developing economy.

CHAPTER FOUR

THEORETICAL FRAMEWORK AND METHODOLOGY

4.1 Introduction

This chapter reviewed the theoretical framework and methodological approach adopted. The methodological approach includes the model specification, description, and measurement of variables, estimation techniques, and data sources consecutively.

4.2 Theoretical Framework

The theoretical framework employed is the Common Pool Resource (CPR) which is generally recognised as common pool problem. The CPR expresses that financing of a specific type of government expenditure is often shared among different interest groups. Therefore, each interest group has an incentive to free-ride on each other's contributions. This creates a bias towards overspending.

Following Treisman (2008), local authorities see the central budget or spending plan as a common pool from which diverse groups (neighbourhood government in Triesman model) draw large transfers for their own districts. The central government is assumed to care only for being in power and not for the policy per se. It is thus pre-committed to implement whichever policy promised. This ensures that the central government can credibly commit to a predetermined expenditure level. Treisman assumes that local governments can persuade the central government to satisfy their demands.

Local government in Treisman's model can be substituted by spending units such as ministries, departments, agencies and sub-national government (MDASs) responsible for the budget execution.

Basic assumptions of the model:

i. The central government is driven by self-interest
ii. A finite number of spending units (MDA's)
iii. Only the central government taxes the citizens
iv. Identical spending units (MDA's)

Given that a country is divided into n = 1, 2, …, N MDAs, each collecting an income y and paying a lump-sum tax T. Central government (CG) transfers to MDA's are represented as r_n and are expended to fund each MDA's public spending g_n. In the case of the central transfers, they are funded with taxes gathered from the public. That is, taxes are brought together by the Central Government and redistributed as transfers to MDAs.

Budgeting consists of choosing the expenditure level or degree of spending (i.e. supply of public services) for each MDAS given the budget constraint. Consider a budget process where each MDAS chooses the expenditure level given the choice of the others and the central government budget.

Each MDA thus optimizes a payoff function:

$$V_n = h(g_n) + y - T. \tag{4.1}$$

Where;

$h' > 0, h'' < 0,\ h(0) = 0, \lim_{g \to 0} h'(g) = \infty$

subject to the CG budget constraint

$$\sum n\, g_n = \sum n\, r_n = TN \tag{4.2}$$

Equilibrium spending by each MDA is then determined by the first order condition:

$$h_g(g_n *) = \frac{1}{N} \qquad (\textit{Marginal cost of spending}) \tag{4.3}$$

The perceived price for a rise in the expenditure level by an MDA is $\frac{1}{N}$.

Since the MDAs are indistinguishable and identical, they all select the same level of spending and expenditure. if each MDA had to bear the full cost of its spending and finance it with a lump sum tax, there would be no reallocation of funds and each MDA would then be maximizing (4.1) subject to the MDA budget constraint;

$$g_n = T \tag{4.4}$$

The equilibrium condition is given by the first order condition:

$h_g(g_n) = 1$ *(Marginal cost of spending)* (4.5)

which is more efficient than (4.3), because spending in (4.3) is higher than in (4.5), given $N > 1$.

In the underlying situation, excessive spending in MDA emerges from the perceived marginal or extra cost of expenditure lesser than the rise in spending.

Each MDA pays just $\frac{1}{N}$ of a dollar expended, though in the second occurrence each MDA endured the total cost of its spending by repaying the genuine price of a rise in the spending level. The marginal cost of the expenditure was lesser in (4.3) than in (4.5)

The Common Pool Resource problem emanated from the inability to coordinate the actions of the decision makers, since the decision makers in the process, do not consider the total (full) cost of their spending.

The central government can likewise subject to the common pool problem by means of unpredictable receipts, like foreign aids, grants, and oil revenue as the spending units do not bear any piece of the expenditure. A sensible answer for a CPR problem is disguising this externality. This demands for satisfactory rules, institutions, or both and decreasing the vertical fiscal gap (the proportion of central exchanges to total revenues in the locality), which suggests that local expenditure is, as a rule, completely funded by local revenues. This will make the deviation of private (local) and social (national) true costs vanish (Pisauro, 2001).

4.3 Methodology

4.3.1 Model Specification

In an attempt to investigate the determining factors of the identified measures of fiscal discipline, the theoretical specification shows that there is a link between spending units and fiscal discipline.

$$\mathrm{FD} = f(\mathrm{SPDU}, \mathrm{X}) \tag{4.6}$$

Where FD is fiscal discipline, SPD U is spending unit which are ministries, departments, agencies and sub-national government and X is the set of control variables as identified in the literature.

Hou and Willoughby (2010) identified a diverse measure of fiscal discipline, which includes variance between actual and budgeted expenditure and revenue, budget adoption time. Acosta and Coppedge (2001), Freitag and Vatter (2008), Hitaj and Onder (2013), among others, have measured fiscal discipline using debt sustainability level. Ardagna (2004); and Branch and Adderley (2009) further expressed it as primary balance as a proportion of GDP. Thus, for the purpose of this study, fiscal discipline was measured using four different measures, which were variance between actual and budget expenditure, the variance between actual and budget revenue, debt sustainability and primary balance as a share of GDP.

Equation (4.7) shows that fiscal discipline is the dependent variable while spending units and other control variables are the independent variables.

$$\mathrm{FD_t} = \beta_0 + \beta_1 \mathrm{SPDU_t} + \gamma^i \mathrm{X}_t^i + \varepsilon_t \tag{4.7}$$

$\gamma^i \mathrm{X}_t^i$= Vector of control variables

$$\gamma^i \mathrm{X}_t^i = \gamma_1 \mathrm{X}_1 + \gamma_2 \mathrm{X}_2 + \cdots + \gamma_k \mathrm{X}_{k,} \tag{4.8}$$

ε_t = Error term

From the literature reviewed, both empirical and theoretical, a number of control variables have been identified to be significant namely, election period, capital inflow

(aid, grants, fdi), trade openness, reserves, political regime. Neyapti (2013), El-Shagi (2010) identified that fiscal discipline is auto-regressive in nature, implying that discipline or in-discipline in immediate past period affected the current period disciplinary behaviour, as a result, the estimation involves the lagged values of fiscal discipline.

Thus, the empirical model for estimation;

$$\mathbf{FD_t = \beta_0 + \beta_1 FD_{t-1} + \beta_2 SPDU_t + \beta_3 EP_t + \beta_4 CI_t + \beta_5 GS_t + \beta_6 TO_t + \beta_7 RES_t + \beta_8 PR_t + \beta_9 TR_t + \varepsilon_t} \quad \textbf{(4.9)}$$

Where FD (fiscal discipline) takes the value of the four different measures identified, against the explanatory variables, hence this study estimated four different models of fiscal discipline to ensure robustness as follows:

$$\mathbf{PRYBAL_t = \beta_0 + \beta_1 PRYBAL_{t-1} + \beta_2 SPDU_t + \beta_3 EP_t + \beta_4 CI_t + \beta_5 GS_t + \beta_6 TO_t + \beta_7 RES_t + \beta_8 PR_t + \beta_9 TR_t + \varepsilon_t} \quad \textbf{Model 1 /4.10}$$

$$\mathbf{DEBTSUS_t = \alpha_0 + \alpha_1 DEBTSUS_{t-1} + \alpha_2 SPDU_t + \alpha_3 EP_t + \alpha_4 CI_t + \alpha_5 GS_t + \alpha_6 TO_t + \alpha_7 RES_t + \alpha_8 PR_t + \alpha_9 TR_t + \varepsilon_t} \quad \textbf{Model 2 /4.11}$$

$$\mathbf{EXPDVAR_t = \lambda_0 + \lambda_1 EXPDVAR_{t-1} + \lambda_2 SPD\ U_t + \lambda_3 EP_t + \lambda_4 CI_t + \lambda_5 GS_t + \lambda_6 TO_t + \lambda_7 RES_t + \lambda_8 PR_t + \lambda_9 TR_t + \varepsilon_t} \quad \textbf{Model 3 /4.12}$$

$$\mathbf{REVVAR_t = \theta_0 + \theta_1 REVVAR_{t-1} + \theta_2 SPD\ U_t + \theta_3 EP_t + \theta_4 CI_t + \theta_5 GS_t + \theta_6 TO_t + \theta_7 RES_t + \theta_8 PR_t + \theta_9 TR_t + \varepsilon_t} \quad \textbf{Model 4 /4.13}$$

Where:

PRYBAL is Primary balance

DEBTSUS is Debt sustainability

EXPDVAR is expenditure variance

REVVAR is Revenue variance

SPDU is spending unit

EP is election period

CI is capital inflow

GS is government size

TO is trade openness

RES is total reserves

PR is political regime

TR is transparency

4.3.2 Description of Variables

4.3.2.1 Main Indicators

Primary balance as a share of GDP is described as government net borrowing (deficit) or net lending (surplus), excluding interest payments on consolidated government liabilities. This approach is vital as it distinguishes the net discretionary expenditure of government. It portrays the end result of government's activities for the period, independent of the costs related to previous deficits. Ardagna (2004) and Branch and Adderley (2009) among others identify fiscal discipline using this or a variant of this measure.

Other measures are:

The variance between actual and budget expenditure: One of the goals of suitable budgeting is to specify a base against which actual financial results can be likened. Variances can be either favourable (better than expected) or unfavourable (worse than expected).

The variance between actual and budget revenue: The revenue variance for a period is the distinction between actual and budgeted government revenue. A favourable

revenue variance arises when actual revenues exceed budgeted revenues, while the opposite is true for an unfavourable variance.

This measure was adopted as it allows a clear picture of where and how the indiscipline originates from, either revenue or expenditure as literature emphasises that it's the expenditure part of the budget that is usually subjected to political manipulations and revenue is not usually within the confine of government officials to manipulate. However, the case of oil-exporting economies might differ, as increase in oil price beyond the benchmark leaves the excess revenue to the confine of the politicians/government officials. Thus, the fact that there exists a balanced budget does not in itself imply a disciplined government.

Debt sustainability: Measuring the sustainability of government debt. Debt to GDP ratio was adopted for this study. When government debt to GDP ratio rises, it raises the burden of the debt service leading to an increased probability of default. This was considered as the best significant measure for evaluating the debt level because it signifies the level of solvency of the government (Blanchard, 1990).

4.3.2.2 Determinants

Spending Units being generally proxy by the degree of decentralisation (SPDU): measuring the degree of decentralisation is difficult as the term itself is vast and connotes different meaning based on the form of decentralisation. This study focused on political decentralisation which aspires to give nationals or their voted representatives more control in decision-making affairs of the politicians and government and also encourages democratisation by giving residents, or their representatives, more control in the formulation and implementation of policies. Von Hagen and Harden (1995) and Freitag and Vatter (2008) measured the degree of decentralisation using the number of spending unit such as provinces and cantons.

Election Period (EP): The ideal is that amid election period, government authorities have less intention to oblige with fiscal discipline and they stay away from government taxes that are probably going to harm their electorate while extending government expenditure in help of possible voters (Ames, 1987; Altman, 2001). Heads of states likewise had no incentive to maintain fiscal discipline, particularly if after the electoral exercise, the poor fiscal performance may be another person's difficulties (IADB report 1997:120).

Therefore, deficits have a tendency to grow before election, compelling costly alterations in the next period.

Political Regime (PR): Nigeria has witnessed two major forms of political regimes since independence: military or autocratic and civilian or democratic. Conventional wisdom suggests that democracy improves fiscal discipline while a dictatorial type is usually less disciplined (Persson and Tabellini, 2001).

Capital Inflow (grants, aid, fdi) (CI): Despite the fact that aid and grants have been found to have a sound, positive effect on development, there are worries about other conceivable impacts. Among them is the stress over its impact on the fiscal discipline of the beneficiary nation. Puonti (2010) show theoretically that the traditional forms of aid, which are managed outside the government budget, distort incentives to maintain fiscal discipline, whereas supporting directly government budgets strengthens the budget process and so results in greater fiscal discipline.

Trade Openness (TO): Openness to trade is a measure of economic policies that either invite or restrict trade amid nations. It is computed as the proportion of the country's total trade, the sum of exports plus imports, to the country's gross domestic product. Some researchers claim that openness instils fiscal discipline, while others contend that it relaxes budgetary constraints. Empirical evidence has demonstrated that improved trade openness may encourage higher government spending (Rodrik, 1998).

Transparency (TR): This can be characterised as openness towards people in general everywhere about government capacities, frameworks, fiscal policy intentions, structure, public sector records, and estimates. Alesina and Perotti (1996), Kopits and Craig (1998), and Alt *et al.* (2006) researched on explanatory factors for government officials executing more straightforward budget procedures and methods; they found that straightforwardness enhances fiscal discipline through debt reduction.

Reserve (RES): These are assets held by a monetary authority or central bank, mostly in diverse reserve currencies. Indisciplined fiscal behaviour manifests itself first in falling reserves or increasing debt (Frenkel, Goldstein and Masson, 1991).

Government Size (GS): Growth in government size has empirically discovered to have negative effects on macroeconomic performance, which includes fiscal performance;

however, the negative impacts are more prominent in non-democratic frameworks than in democratically based frameworks. Estimating government size can take diverse structures; in any case, the less disadvantageous and most common indicator to gauge the size of government size public expenditure is a proportion of GDP. Public expenditure is not as predictable and not very prone to error of measurement than public revenue (Labonte, 2010).

Table 4.1: Description / Measurement of Variables

Variable	Description	Source
Measures of Fiscal Discipline		
Primary Balance (PRYBAL)	The overall budget deficit or surplus as a proportion of GDP	CBNSB
Debt sustainability (DEBTSUS)	Total of foreign and domestic debt as a fraction of GDP	CBNSB
Expenditure variance (EXPDVAR)	Difference between budgeted and actual expenditure as a proportion of GDP	CBNSB, AAB
Revenue variance (REVVAR)	Difference between budgeted and actual revenue as a proportion of GDP	CBNSB, AAB
Determinants		
Capital inflow (CI)	Total of grants, aid, and FDI as a proportion of GDP	WDI
Election period (EP)	Dummy variable where election period carries 1 and non-election period carries 0	Persson and Tabellini (2001)
Govt size (GS)	Total of Gross national expenditure as a proportion of GDP	WDI
Political regime (PR)	Dummy variable where democratic regime carries 1 and non-election period carries 0	IADB report 1997
Trade openness (TO)	The sum of exports plus imports to GDP	WDI
Reserve (RES)	Total reserves including gold as a fraction of GDP	WDI
Transparency (TR)	Transparency Index	QoG Institute
Spending unit(SPDU)	Total number of ministries	Common pool theory

WDI-World Development Indicators (2016)

QoG-Quality of Governance (2016)

CBNSB- CBN Statistical Bulletin (Various Editions)

AAB- Approved Annual Budgets (Various Editions)

4.3.3 Estimation Technique and Procedure

The Study started with an examination of the statistical nature of the series by conducting descriptive statistics of the variables and then followed by the time-series properties to determine their order of integration. To obtain robust results, the Dickey-Fuller Test with GLS Detrending (DFGLS) and Ng-Perron tests were chosen. The analysis employs the Multivariate Analysis of Variance (MANOVA) to examine the variation in fiscal discipline among different regime of government. Furthermore, the Autoregressive Distributed Lag model (ARDL) was employed to investigate the determinants of fiscal discipline. The ARDL model was chosen because of the unit root properties of the series, and also empirical and theoretical literature revealed that the lagged values of the dependent and independent variable could explain the model(s). The analysis further uses the Bounds cointegration test as proposed by Pesaran, Shin, & Smith (2001) to examine the existence of a long-term association among the variables. In this approach (ARDL), the long run and short run (error correction analysis) parameters of the model is estimated concurrently while the diagnostics test is carried out to ensure a well-specified model(s).

4.3.3.1 Multivariate Analysis of Variance (MANOVA)

Analysis of variance (ANOVA) is a collection of statistical models and their associated estimation procedures (such as the "variation" among and between groups) used to analyse the differences among group means in a sample. ANOVA was developed by statistician and evolutionary biologist Ronald Fisher. The ANOVA is based on the law of total variance, where the observed variance in a particular variable is partitioned into components attributable to different sources of variation. In its simplest form, ANOVA provides a statistical test of whether two or more population means are equal, and therefore generalizes the *t*-test beyond two means.

The conventional ANOVA tests can assess only one dependent variable at a time in a model. The model only considers one dependent variable. The problem is that these models can’t identify patterns in multiple dependent variables. Hence, the use of Multivariate Analysis of Variance.

Multivariate ANOVA (MANOVA) extends the capabilities of analysis of variance (ANOVA) by assessing multiple dependent variables simultaneously. It is a procedure for comparing multivariate sample means. As a multivariate procedure, it is used when

there are two or more dependent variables, it uses the covariance between outcome variables in testing the statistical significance of the mean differences.

Hypotheses of MANOVA

The null hypothesis for a MANOVA is that there is no significant difference among the groups. The alternative hypothesis assumes that there is at least one significant difference among the groups.

Assumptions:

i. **Independent Random Sampling:** MANOVA assumes that the observations are (1.1)independent of one another, there is not any pattern for the selection of the sample, and that the sample is completely random.
ii. **Level and Measurement of the Variables:** MANOVA assumes that the independent variables are categorical and the dependent variables are continuous or scale variables.
iii. **Absence of multicollinearity:** The dependent variables cannot be too correlated to each other.
iv. **Normality:** Multivariate normality is present in the data.
v. **Homogeneity of Variance:** Variance between groups is equal.

Analysis of variance:

$$Y_1 = X_1 + X_2 + X_3 + \cdots \ldots \ldots + X_n \qquad 4.14$$

(Metric) (non-metric)

Multivariate Analysis of variance:

$$Y_1 + Y_2 + Y_3 + \cdots + Y_n = X_1 + X_2 + X_3 + \cdots + X_n \qquad 4.15$$

(Metric) (non-metric)

In One-way MANOVA, we have m random vectors $X_1, \ldots, X_m$ (representing groups or treatments). Each X_j is a $k \times 1$ column vector of form

$$\begin{bmatrix} x_{j1} \\ \cdots \\ x_{jk} \end{bmatrix} \qquad 4.16$$

where each x_{jp} is a random variable.

For each random vector X_j we collect a sample $\{X_{1j}, \ldots \ldots, X_{nj}j\}$ of size n_j. We also define

$n = \sum_{j=1}^{m} n_j$. Each sample X_{ij} is a $k \times 1$ vector of form

$$\begin{bmatrix} x_{ij1} \\ \cdots \\ x_{ijk} \end{bmatrix} \qquad 4.17$$

where each X_{ijp} is a data element (not a random variable), where index i refers to the **subject** in the experiment ($1 \leq i \leq n_j$), index j refers to the group ($1 \leq j \leq m$) and index p refers to the position (i.e. dependent variable) within the random vector ($1 \leq p \leq k$).

Our objective is to test the null hypothesis H_0: $\mu_1 = \mu_2 = \cdots = \mu_m$ where the μ_j are vectors

$$\begin{bmatrix} x_{j1} \\ \cdots \\ x_{jk} \end{bmatrix} \qquad 4.18$$

and so the null hypothesis is equivalent to H_0: $\mu_{1p} = \mu_{2p} = \cdots = \mu_{mp}$ for all p such that $1 \leq p \leq k$. The alternative hypothesis is therefore H_1: $\mu_r \neq \mu_j$ for some r, j such that $1 \leq r, j \leq m$, or equivalently, $\mu_{rp} \neq \mu_{jp}$ for some r, j, p such that $1 \leq r, j \leq m$ and $1 \leq p \leq k$.

Now we define the various means as in the univariate case, except that now these means become $k \times 1$ vectors. The total (or grand) mean vector is the column vector

$$\bar{X}_T = \begin{bmatrix} \bar{x}_1 \\ \cdots \\ \bar{x}_k \end{bmatrix} \qquad 4.19$$

Where

$$\bar{x}_p = \frac{1}{n} \sum_{j=1}^{m} \sum_{t=1}^{nj} x_{ijp} \qquad 4.20$$

The sample group mean vector for group *j* is a column vector

$$\bar{X}_j = \begin{bmatrix} \bar{x}_{j1} \\ \dots \\ \bar{x}_{jk} \end{bmatrix} \quad 4.21$$

Where

$$\bar{x}_{jp} = \frac{1}{n_j} \sum_{t=1}^{nj} x_{ijp} \quad 4.22$$

4.3.3.3 Independent Sample *T*-test

The t-test is used to compare the values of the means from two samples and test whether it is likely that the samples are from populations having different mean values.

Given that A and B represent the two groups to compare.

Let m_A and m_B represent the means of groups A and B, respectively.

Let n_A and n_B represent the sizes of group A and B, respectively.

The t test statistic value to test whether the means are different can be calculated as follow

$$t = \frac{m_A - m_B}{\sqrt{\frac{S^2}{n_A} + \frac{S^2}{n_B}}} \quad 4.23$$

S^2 is an estimator of the common variance of the two samples. It can be calculated as follow: $S^2 = \frac{\sum(x - m_A)^2 + \sum(x - m_B)^2}{n_A + n_B - 2}$ 4.24

Once t-test statistic value is determined, the t-test table is read for the critical value of t distribution corresponding to the significance level alpha of choice (5%). The degrees of freedom (df) used in this test are:

$$df = n_A + n_B - 2 \quad 4.25$$

If the absolute value of the t-test statistics (|t|) is greater than the critical value, then the difference is significant. Otherwise it isn't. The level of significance or (p-value) corresponds to the risk indicated by the t-test table for the calculated |t| value.

4.3.3.3 Unit Root Test for Stationarity

Pre-testing for unit roots is mostly the initial step in a typical time series modelling. Unit root tests are being used to ascertain whether a variable is stationary or not. A time series variable also referred to as a stochastic process can be described as stationary if the process has a constant variance and mean and also covariance that is not dependent on time. However, if a time series has a time-varying variance or a time-varying mean or both, it is said to be non-stationary.

For this study, the Dickey-Fuller Generalised Least Square (DFGLS) test and Ng-Perron test is being utilised. This development arises from the prevalence of substantial co-movements among most economic time series data, which has been argued in the literature as undermining the policy implications that could be inferred from such modelling constructs (Engel and Granger, 1987)

Dickey-Fuller Generalised Least Square (DFGLS)

DFGLS was developed by Elliott, Rothenberg, and Stock (ERS) in 1992 as an improvement on the Augmented Dickey-Fuller test (ADF).

Given a simple time series model $y_t = d_t + u_t$ 4.26

with $u_t = \rho u_{t-1} + e_t$ 4.27

where d_t is the deterministic part and u_t is the stochastic part of y_t.

At the point when the genuine value of ρ is near 1, estimation of the model, i.e. d_t will pose proficiency issues in light of the fact that the $y_t$will be near nonstationary.

In such structure, examining for the stationarity highlights of the given time series will likewise be liable to general statistical issues. To conquer such issues ERS recommended to locally difference the time series.

Given another scenario where closeness to 1 for the autoregressive parameter is modelled as

$\rho = 1 - \frac{c}{T}$ 4.28

Where T, is the number of observations.

Now consider filtering the series using

$1 - \frac{\bar{c}}{T}L$ 4.29

with *L* being a standard lag operator, i.e.

$\bar{y}_t = y_t - (\bar{c}/T)y_{t-1}$. 4.30

Working with $\bar{y}_t$ would result in power gain, as ERS show, when testing the stationarity features of y_t using the augmented Dickey-Fuller test. This is a point optimal test for which $\bar{c}$ is set in such a way that the test would have a 50 percent power when the alternative is characterised by

ρ = 1- c/T 4.31

for c = $\bar{c}$.

Depending on the specification of d_t, $\bar{c}$ will take different values.

4.3.3.4 Autoregressive Distributed Lag Model (ARDL)

The study adopted the ARDL model. At the point when some of the variables are stationary, some might be I(1) or even partially integrated, and there is also the possibility of cointegration among some of the I(1) variables. In other to analyse the data suitably and obtain both long-run and short-run relationships, the ARDL technique is most appropriate. In its very simple form, an ARDL regression model is specified as below:

$$y_t = \beta_0 + \beta_1 y_{t-1} + \cdots \ldots \ldots \ldots + \beta_p y_{t-p} + \alpha_0 x_t + \alpha_1 x_{t-1} + \alpha_2 x_{t-2} + \cdots \ldots \ldots . + \alpha_q x_{t-q} + \varepsilon_t \quad 4.32$$

Where ε_t is random disturbance or error term

The ARDL / Bounds Testing technique of Pesaran and Shin (1999) and Pesaran *et al.* (2001) has a number of qualities that scholars perceived as superior over the traditional cointegration analysis. For example:

- It can be employed with a combination of I(0) and I(1) data.
- It entails simply a single-equation system, making it straightforward to interpret and implement.
- Differing variables can be allocated diverse lag-lengths as they enter the model.

4.3.3.5 Bounds Test

$$\Delta y_t = \beta_0 + \Sigma \beta_i \Delta y_{t-i} + \Sigma \gamma_j \Delta x_{1t-j} + \Sigma \delta_k \Delta x_{2t-k} + \theta_0 y_{t-1} + \theta_1 x_{1t-1} + \theta_2 x_{2t-1} + \varepsilon_t \quad 4.33$$

What is required is to perform an "F-test" of the hypothesis, H_0: $\theta_0 = \theta_1 = \theta_2 = 0$; against the alternative that H_0 is not true.

As in conventional cointegration testing, we are testing for the absence of a long-run equilibrium association between the variables. This absence coincides with zero coefficients for y_{t-1}, $x_{1t-1}$and x_{2t-1}in equation (4.33). A rejection of H_0 suggests that there exists a long-run relationship.

Decision criteria for this test can take three modes. If the computed value of the F-statistic is greater than the upper bound *I(1)* critical value bounds, then there exists cointegration implying there is a long-run relationship. If the computed value of the F-statistic falls below the lower bound *I(0)* theoretical critical value, then there exists no cointegration, therefore, no long-run relationship exists and an inconclusive test if the computed value of the F-statistic falls in-between the lower bound I(0) and the upper bound I(1).

Assuming that the bounds test leads to the conclusion of cointegration, we can expressively analyse the long-run equilibrium relationship between the variables using equation 4.34:

$$yt = \alpha_0 + \alpha_1 x_{1t} + \alpha_2 x_{2t} + v_t \quad 4.34$$

4.3.3.6 Error Correction Modelling (ECM)

Conventional ECM for cointegrated data in its basic form looks like:

$$\Delta yt = \beta_0 + \Sigma \beta_i \Delta y_{t-i} + \Sigma \gamma_j \Delta x_{1t-j} + \Sigma \delta_k \Delta x_{2t-k} + \varphi z_{t-1} + \varepsilon_t \quad 4.35$$

Here, z, the "error-correction term", is the Ordinary Least Square residuals series from the long-run "cointegrating regression", equation 4.34.

The series of summation in (conventional ECM) are from 1 to p, 0 to q_1, and 0 to q_2 respectively.

where z_{t-1} = (y_{t-1} - a_0 $-$ $a_1 x_{1t-1}$ $-$ $a_2 x_{2t-1}$), where the a's are the OLS estimates of the α's. (4.34).

Unrestricted ECM, or an Unconstrained ECM

Recall equation 4.33

$$\Delta y_t = \beta_0 + \Sigma \beta_i \Delta y_{t-i} + \Sigma \gamma_j \Delta x_{1t-j} + \Sigma \delta_k \Delta x_{2t-k} + \theta_0 y_{t-1} + \theta_1 x_{1t-1} + \theta_2 x_{2t-1} + \varepsilon_t$$

This is mostly like a conventional ECM. The difference is that we have substituted the error-correction term, z_{t-1} with the terms y_{t-1}, x_{1t-1}, and x_{2t-1}. From (4.34), it can be seen that the lagged residuals series would be z_{t-1} = (y_{t-1} - a_0 $-$ $a_1 x_{1t-1}$ $-$ $a_2 x_{2t-1}$), where the a's are the OLS estimates of the α's. So, what we're doing in equation (4.33) is incorporating the same lagged levels as we do in the traditional ECM, but we're not limiting their coefficients (unrestricted coefficients).

This is why equation (4.33) was termed an "unrestricted ECM", or an "unconstrained ECM". Pesaran *et al*. (2001) call this a "conditional ECM".

The long-term effects can be obtained from the unrestricted ECM. Examining equation (4.33), and seeing that at long-run equilibrium, Δy_t = 0, Δx_{1t} = Δx_{2t} = 0,

The long-run coefficients for x_1 and x_2 are $-(\theta_1/\theta_0)$ and $-(\theta_2/\theta_0)$ respectively.

4.4. Data Sources

The data required for this study included time series data over the period 1980 – 2015. The major sources of data used in this study were World Development Indicators (WDI), Central Bank of Nigeria Statistical Bulletins of various issues. Quality of Governance basic data set (2016), various issues of the Approved Annual Budgets.

CHAPTER FIVE

EMPIRICAL RESULTS AND ANALYSIS

5.1 Introduction

This chapter presented the estimated outcomes of the models built in the last chapter. It started with the preliminary assessments of the model. The descriptive statistics of the variables are highlighted, the mean differencing analysis using MANOVA and Independent *t*-test estimates are presented and the outcomes of the unit root tests are also highlighted here. That is, the Ng-Perron Modified Unit Root and Dickey-Fuller-GLS (DFGLS) Unit Root Tests. Likewise, the study utilised ARDL, which explores the long-run and short-run elements of the models. Lastly, a set of robustness analyses of the inferences are carried out in order to validate the benchmark specification with a view to imbuing confidence in the policy applicability of the findings and inferences drawn.

5.2 Preliminary Analysis

The pre-estimation test considered all necessary pre-test to time series estimation such as descriptive statistics, graphical analysis, and unit-root test.

5.2.1 Descriptive Statistics of the Variables

This sub-section examined the statistical nature of the variables used in the study. Thus, the univariate statistics of the variables, which include the mean, skewness, median, Kurtosis, Jarque-Bera, among others are presented herein. Table 5.1 shows the descriptive statistics for all the variables over the period under study. The mean in the table represents the average values of each variable over the considered time period. On average, all the variables considered in the study except primary balance and expenditure variance have positive average values.

Most of the variables in the model except for capital inflow and election period have standard normal distribution as the skewness was not far from zero with variables exhibiting both positive and negative skewness. A variable with negative skewness is said to be below the mean, while a variable with positive skewness is usually above the mean. Primary balance, government size, political regime, trade openness, spending unit and transparency exhibit negative skewness while other variables have positive skewness.

Furthermore, the result shows the kurtosis which described the relative peakedness or flatness of a distribution likened with the normal distribution are relatively normal. Positive kurtosis denotes a relatively peaked distribution. Negative kurtosis implies a relatively flat distribution, all the variables under study have positive kurtosis, i.e a relatively peaked distribution. Variables with values of kurtosis less than three are called platykurtic (fat or short-tailed), those larger than three are called leptokurtic (slim or long-tailed), while variables with a value of three are mesokurtic. None of the variables is mesokurtic (with exact value of 3), only expenditure variance, election period, government size and capital inflow each has a long-tailed variation, i.e. they are leptokurtic in nature since their kurtosis value are greater than three, while the remaining variables in the model(s) are short-tailed, i.e. they are platykurtic.

Similarly, the Jarque Bera (JB) statistic uses the evidence from kurtosis and skewness to test for normality; it shows evidence of normality for the variables under the sample period. In summary, the descriptive statistics revealed that the data sets are normally distributed except for capital inflow, political regime and election period.[2]

[2] It is imperative to note that all the variables used for the purpose of this analysis are measured as a fraction of GDP except transparency (index) and spending unit (absolute number of ministries), which is evident in their mean, median and standard deviation properties.

Table 5.1: Summary statistics of the variables

	Mean	Median	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Probability	No of Obs
Primary Balance (PRYBAL)	-0.04	-0.04	0.04	-0.48	2.07	2.61	0.27	35
Debt Sustainability (DEBTSUS)	0.42	0.34	0.29	0.54	2.30	2.39	0.30	35
Expenditure variance (EXPDVAR)	-0.02	-0.01	0.06	0.16	4.29	2.57	0.28	35
Revenue variance (REVVAR)	0.08	0.07	0.07	0.17	2.69	0.30	0.86	35
Capital inflow (CI)	0.03	0.01	0.05	3.32	14.06	242.62	0.00	35
Election period (EP)	0.17	0.00	0.38	1.74	4.04	19.31	0.00	35
Govt size (GS)	0.91	0.91	0.08	-0.60	3.73	2.88	0.24	35
Political regime (PR)	0.66	1.00	0.48	-0.66	1.44	6.11	0.05	35
Trade openness (TO)	0.51	0.53	0.17	-0.23	2.07	1.55	0.46	35
Reserve (RES)	0.13	0.10	0.08	0.72	2.18	3.99	0.14	35
Transparency (TR)	38.46	42.00	8.38	-0.46	1.74	3.57	0.17	35
Spending unit (SPDU)	27.37	27.00	5.04	-0.71	2.96	2.91	0.23	35

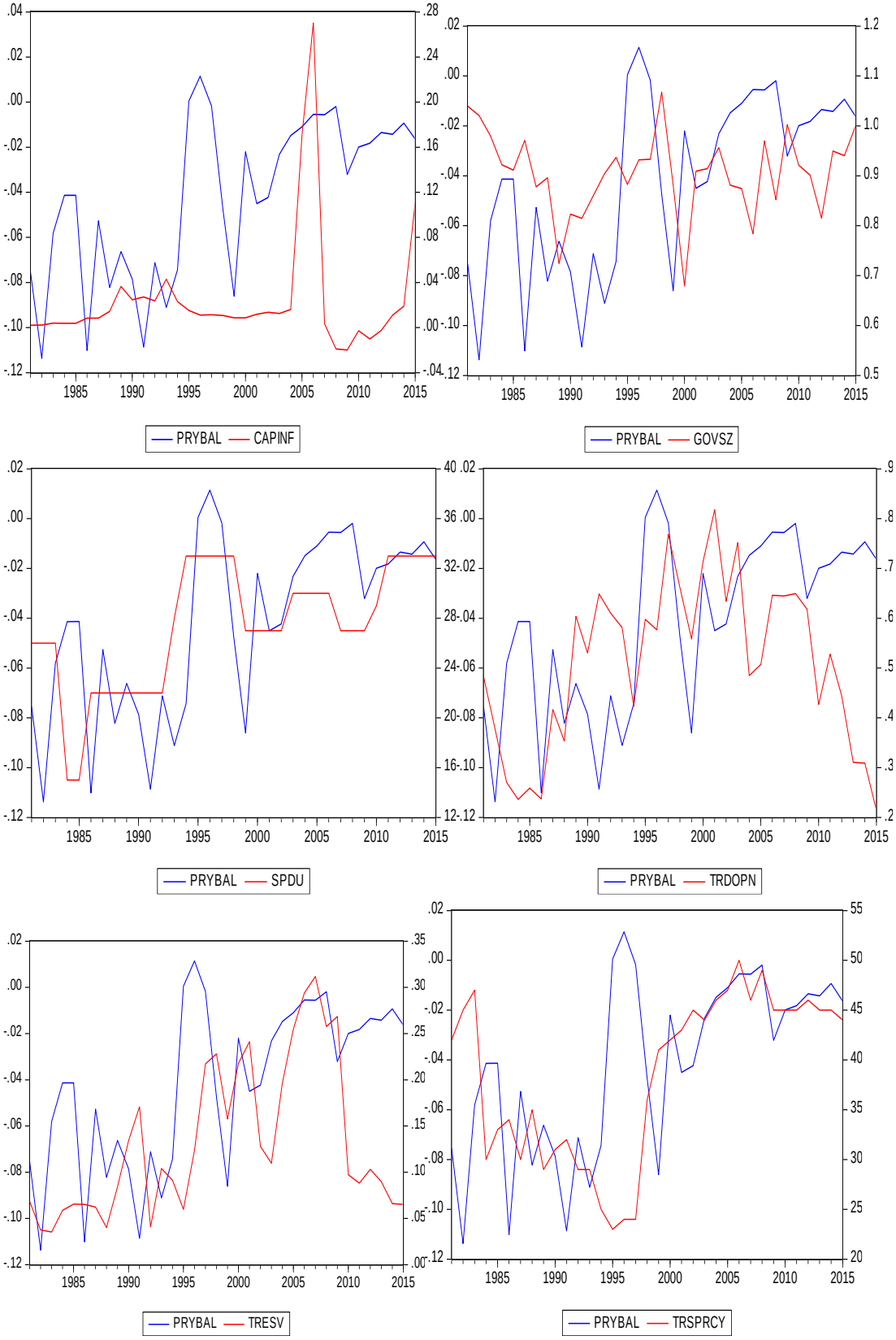
Source: Author's Calculations, (2017)

5.2.2 Graphical Analysis of Model Variables

The behaviour of the variables was further analysed using graphical illustrations. Figure 5.1 illustrates the dynamics of the variables considered, which was in four different sections (for each of the models)[3]. The behaviour of the various specification of the model(s) revealed that most of the variables under study did not follow a stable pattern. However, spending unit appeared to follow a similar pattern with primary balance and expenditure variance (fiscal in-discipline) and moved in the opposite direction with revenue variance (fiscal discipline).

[3] The explanatory variables using dummies are excluded for the graphical analysis

Figure 5.1 Model 1: Primary Balance as Measure of Fiscal Discipline against the Explanatory Variables



It is interesting to note from figure 5.1 that spending unit and primary balance co-moves, they move in the same pattern, and exhibited similar trends, such that, as spending unit increases, so does the primary balance. However, there is no affirmation that primary balance and government size did not exhibit a similar trend. The figure shows that the mostly move in opposite directions, such that as primary balance increases, government size declines, except for some periods in the 2000s, where both variable moves in a similar direction.

The behavioural pattern of primary balance and the explanatory variables as shown in Figure 5.1 revealed that there was stable and cognisance relationship between primary balance and capital inflow, while capital inflow was relatively low and stable throughout the period except for the period around 2005, where capital inflow had a spike, which was mostly due to the influx of bilateral funds.

Also, for most of the period, total reserves and primary balance moves in similar trend or pattern, since the late 80's till about 2009, as primary balance increases, so do total reserve as well.

There was an observed co-movement of transparency and primary balance, starting from the early 2000s till 2015, which could imply that primary balance increases with increasing transparency.

Figure 5.2 Model 2: Debt Sustainability as measure of Fiscal Discipline against the explanatory variables

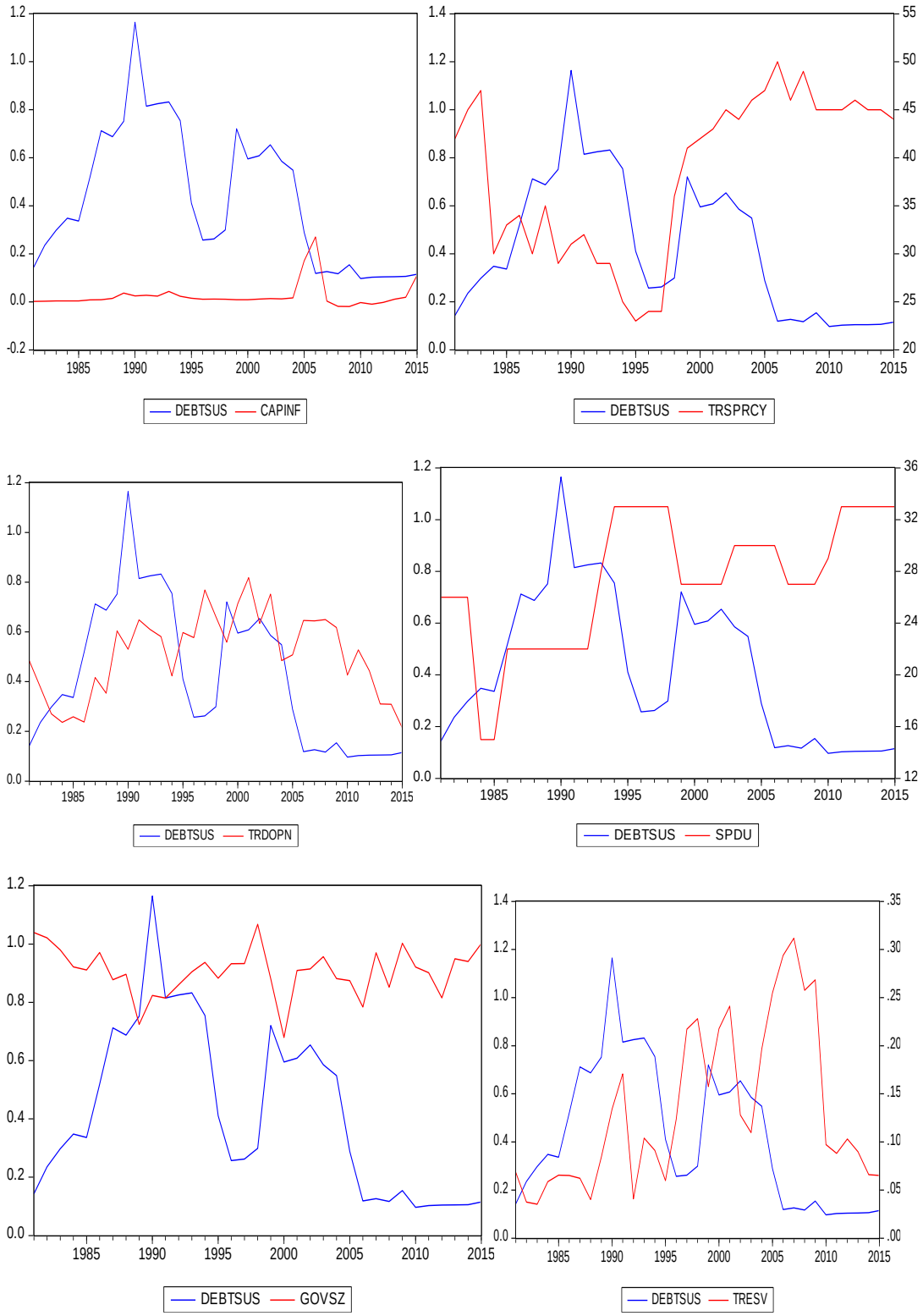


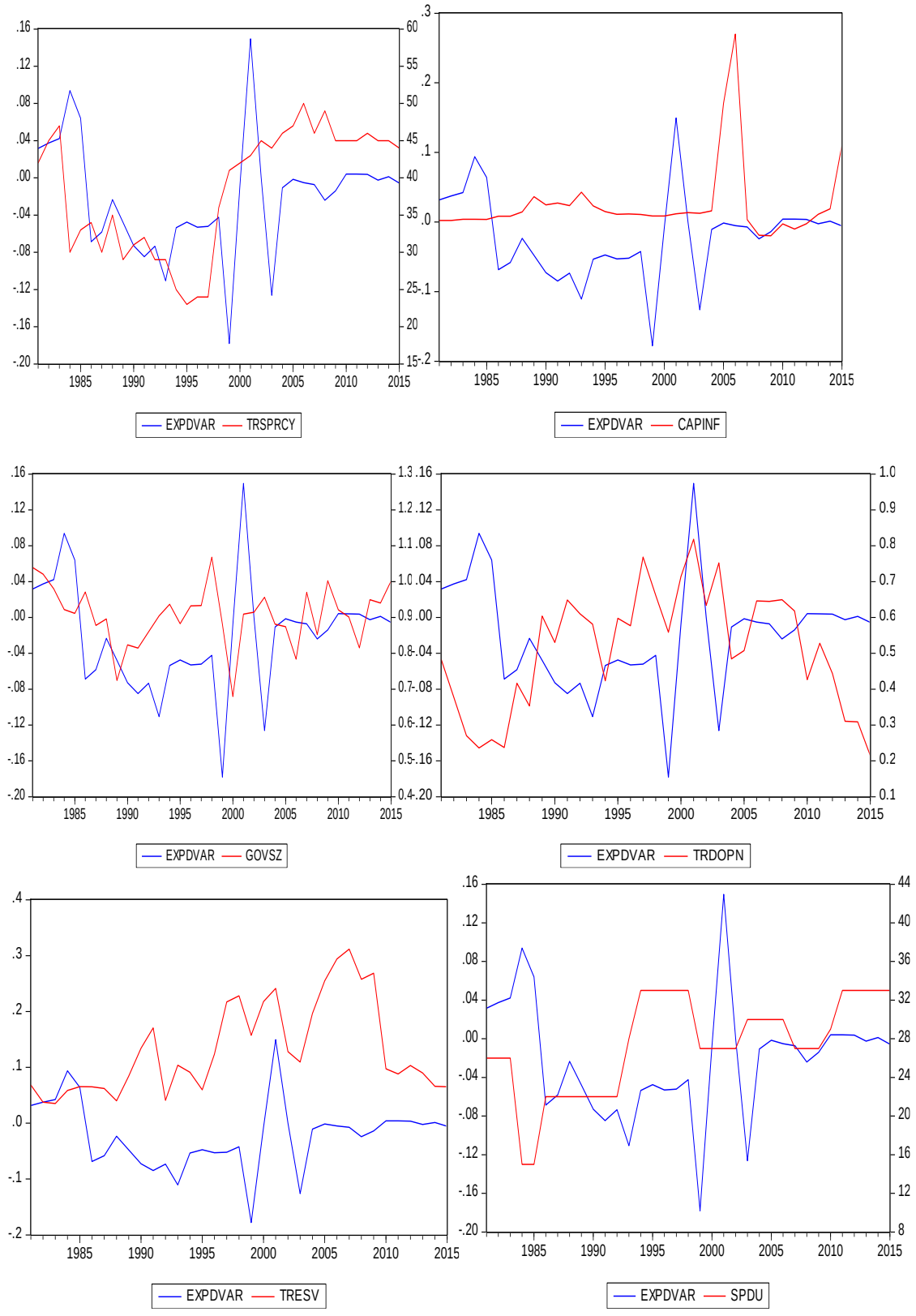
Figure 5.2 shows the pattern of relationship between debt sustainability and its explanatory variables. The pattern of relationship between debt sustainability and the variables didn't give a clear picture of the relationship between these variables.

Except for total reserve, which exhibited a slight pattern of similar direction, as total reserves increases, beginning from 1980, so also does the debt sustainability increases, till the early 2000s after which, they moved in opposite directions.

Debt sustainability and government size clearly move in the opposite direction throughout the period under study. While capital inflow was relatively stable over time, except for the year 2005, debt sustainability fluctuated across periods.

Trade openness and debt sustainability moved in a similar direction for some of the period's under-study as openness increase, so also does the debt profile rises. So also is spending unit, while it exhibited a similar trend in some period, they clearly moved in the opposite direction in some other periods.

Figure 5.3 Model 3: Expenditure Variance as measure of Fiscal Discipline against the Explanatory Variables



The pattern of movement for expenditure variance and some of its explanatory variables gives an exciting outcome as seen in Figure 5.3. Most of the variable moves show a clear relationship with each other.

Clearly, as spending unit increases, so does expenditure variance for some of the period under studies, specifically, 1985 till the early 1990s and from early 2000s till 2015, while it moves indirectly in other periods. The pattern of movement for transparency and expenditure variance from Figure 5.3 shows that from the period of 1980 till 1995, both variables move in a similar direction, with an exception in 1985. After which, from the late 1990s, the variables move in the same direction as well till 2015.

Capital inflow and expenditure variance exhibit the same directional movement as observed in Figure 5.3. While capital inflow was relative stable overtime, expenditure variance was also stable for some of the periods, which are 1985, 1992, 1999, 2005 period.

From the above figure, government size and expenditure variance exhibited slight fluctuations over the period. With same directional movement in some periods and opposite movements in other periods, but they had a similar range of volatility over the period under study.

Figure 5.4 Model 4: Revenue Variance as measure of Fiscal Discipline against the Explanatory Variables

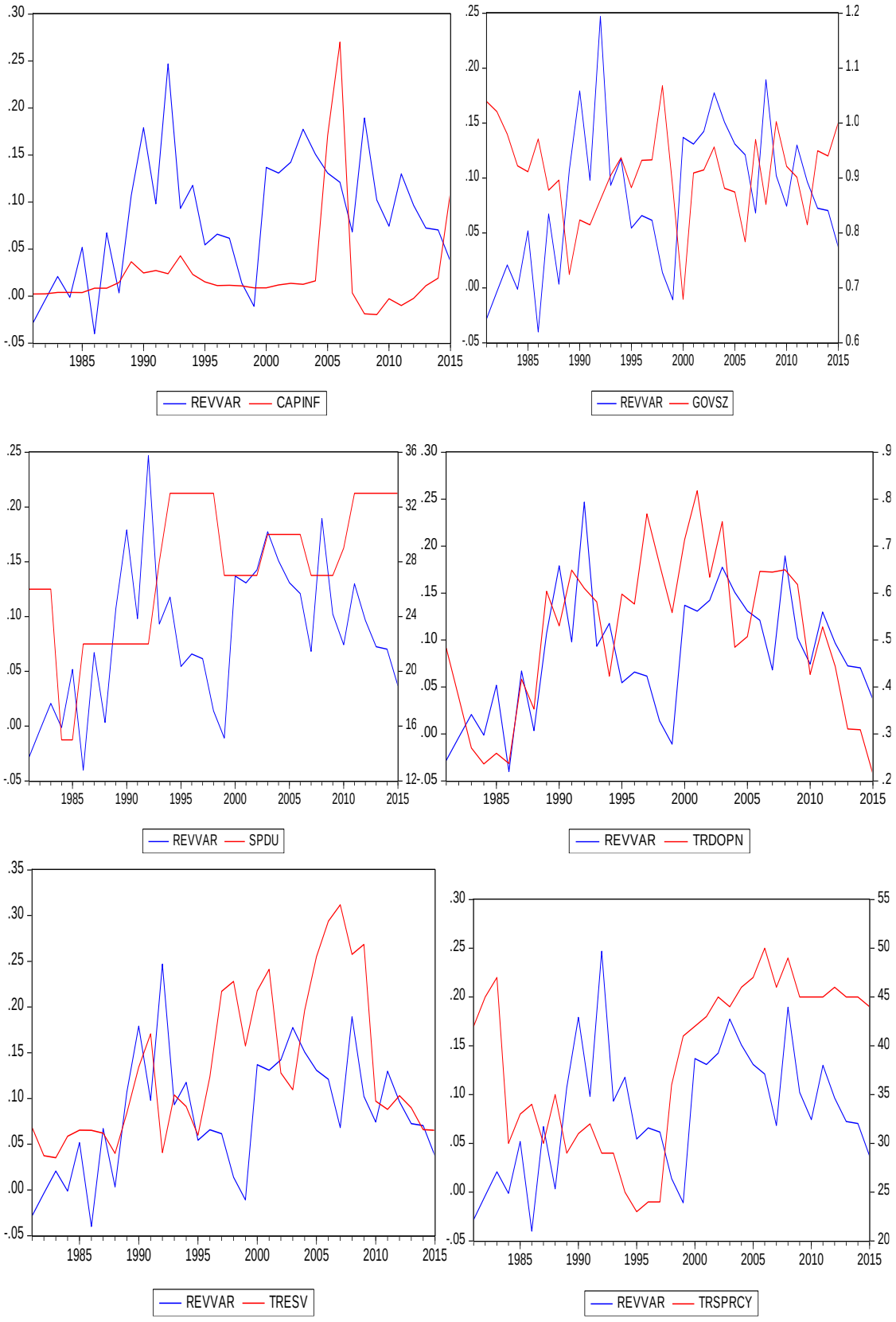


Figure 5.4 gives a depiction of the relationship between revenue variance and its explanatory variable. The figure shows that for most of the period, spending unit and revenue variance exhibited in-direct relationship, with the exception of some period; 1988, 1994, 2000-2007, where they moved in the same direction.

Revenue variance and reserve exhibited positive relationship, implying that as revenue variances increases, so does total reserves, which could further mean that the higher the revenue variance, the more the total reserves for most of the period under study. Government size and revenue variance show clearly that these two variables move in opposite directions, such that as government size increases, revenue variance declines, except for 2000-2005, where both variables move in the same direction.

Transparency and revenue variance also moved in the opposite direction in the early period beginning from 1980 to about early 2000, after which, they began to exhibit positive relationship, such that, improved transparency was related to improved revenue variances.

Figure 5.4 also shows the relationship between trade openness and revenue variance. The figure shows that these two variables are directly related for most of the period under study, except for the period from 1995-2005, where they exhibited an in-direct relationship.

5.2.3 Time Series Properties of the Model Variables

Time series properties of the variables used in estimations were inspected so as to acquire dependable and steady outcomes. Thus, this analysis was conducted using the Ng-Perron tests and Dickey-Fuller Generalised Least Square (DFGLS). This development arose from the prevalence of substantial co-movements among most economic time series data, which has been argued in the literature as undermining the policy implications that could be inferred from such modelling constructs (Engel and Granger, 1987). Most empirical work extensively applies the Augmented Dickey-Fuller (ADF) and additionally Phillip Perron (PP) test(s) to test the Order of Integration on the variable(s). However, due to their poor power properties, both tests are not reliable for small sample data set. These tests (ADF and PP) seem to over-reject the null hypothesis when it's true and accept it when it is false. While the newly proposed test such as the Dickey-Fuller Generalized Least Square (DF-GLS) de-trend test developed by Elliot et al (1996) and Ng-Perron test seems to solve this arising problem (Rahila, et al. 2010).

Outcomes of these tests are presented in Table 5.2 and 5.3. The null hypothesis of the two tests (DFGLS and Ng-Perron) is that the series has a unit root. Table 5.2 reveals that the integration properties of the variables used in this study, as seen, the unit root properties of the variables hovers between *I*(0) and *I*(1). The null hypothesis that primary balance, capital inflow, revenue variance, spending unit and government size have unit root are rejected, as thus, we accept that they are integrated of order zero (I(0)). While we fail to reject the null hypothesis of unit root with other variables in the model.

In Table 5.3, the null hypothesis that primary balance, government size, and revenue variance have unit root are rejected, as thus, we accept that they are integrated of order zero (I(0)), while we fail to reject the null hypothesis of existence unit root with other variables in the model. The outcome of both tests (DFGLS and Ng-Perron) however justifies our choice of the ARDL framework as our variables of interest exhibit both I(0) and I(1) (see Pesaran and Shin, 1999; and Nusair, 2016).

Table 5.2: Dickey-Fuller Test with GLS Detrending (DFGLS) Unit Root Test Results

Variable	AT LEVEL		AT 1ST DIFFERENCE		
	Constant	**Constant and linear trend**	**Constant**	**Constant and linear trend**	**Order of integration**
Debt sustainability (DEBTSUS)	-1.4800	-2.0314	-5.4178*	-5.8320*	I(1)
Primary balance (PRYBAL)	-2.6526*	-4.2685*	-6.0783	-7.2494	I(0)
Capital inflow (CI)	-4.1190*	-4.2737*	-5.6103	-5.5377	I(0)
Trade openness (TO)	-1.9904**	-1.9824	-7.0326*	-8.0489*	I(1)
Reserve (RES)	-2.0013**	-2.1625	-5.7089*	-5.9186*	I(1)
Transparency (TR)	-1.5082	-2.0080	-6.3331*	-6.5867*	I(1)
Govt size (GS)	-3.5076*	-4.3292*	-8.7790	-8.9421	I(0)
Revenue variance (REVVAR)	-1.6287***	-3.7926*	-10.4141	-10.7627	I(0)
Expenditure variance (EXPDVAR)	-1.8891***	-2.0872	-8.7918*	-8.8860*	I(1)
Spending unit (SPDU)	-1.9867**	-3.1575***	-5.0089	-5.0352	I(0)
Asymptotic critical values*:					
1%	-2.6347	-3.7700	-2.6369	-3.7700	
5%	-1.9510	-3.1900	-1.9513	-3.1900	
10%	-1.6109	-2.8900	-1.6107	-2.8900	

Source: Author's Calculations, (2017)

Note: The Null Hypothesis is the presence of unit root. *,**,***, significant at 1%, 5%, and 10% respectively. The lag length selected based on Schwarz information criterion (SIC). The Elliott-Rothenberg-Stock DF-GLS test statistics are reported.

Table 5.3: Ng-Perron Unit Root Test Result

Variable	AT LEVEL				AT 1ST DIFFERENCE				
	Constant	**Constant, Linear Trend**	**Constant**	**Constant, Linear Trend**	**Constant**	**Constant, Linear Trend**	**Constant**	**Constant, Linear Trend**	**Order of integration**
	MZa	**MZa**	**MZt**	**MZt**	**MZa**	**MZa**	**MZt**	**MZt**	
Debt sustainability (DEBTSUS)	-3.875	-5.145	-1.359	-1.584	-16.394*	-16.461***	-2.862*	-2.863***	I(1)
Primary balance (PRYBAL)	-9.806**	-15.595***	-2.163**	-2.784***	-16.146	-15.198	-2.840	-2.750	I(0)
Capital inflow (CI)	-31.811*	-31.964*	-3.903*	-3.961*	-38.885	-36.871	-4.351	-4.251	I(0)
Trade openness (TO)	-7.405***	-7.565	-1.769***	-1.756	-15.646*	-14.380***	-2.791*	-2.668***	I(1)
Reserve (RES)	-6.481***	-8.114	-1.785***	-1.888	-16.439*	-16.348***	-2.866*	-2.859***	I(1)
Transparency (TR)	-4.145	-5.586	-1.421	-1.671	-16.192*	-15.986***	-2.837*	-2.825***	I(1)
Govt size (GS)	-12.984	-15.124	-2.538	-2.680	-13.592	-13.444	-2.588	-2.586	I(0)
Revenue variance (REVVAR)	-4.140	-14.203***	-1.438	-2.578	-11.504**	-15.175***	-2.381**	-2.661***	I(1)
Expenditure variance (EXPDVAR)	-4.852	-5.636	-1.557	-1.671	-78.322*	-79.604*	-6.258*	-6.309*	I(1)
Spending unit (SPDU)	-9.139**	-17.741**	-2.063**	-2.977**	-16.257	-16.279	-2.851	-2.852	I(0)
Asymptotic critical values*:									
1%	-13.8	-23.8	-2.58	-3.42	-13.8	-23.8	-2.58	-3.42	
5%	-8.1	-17.3	-1.98	-2.91	-8.1	-17.3	-1.98	-2.91	
10%	-5.7	-14.2	-1.62	-2.62	-5.7	-14.2	-1.62	-2.62	

Source: Author's Calculations, (2017)

Note: The Null Hypothesis is the presence of unit root. *,**,***, significant at 1%, 5%, and 10% respectively. The lag length selected based on Schwarz information criterion (SIC). The Elliott-Rothenberg-Stock DF-GLS test statistics are reported

5.3 ESTIMATIONS

In determining the extent of the degree of indiscipline or discipline over time, the study employed the use of MANOVA to assess the difference in the sample mean of fiscal in-discipline over regime types in Nigeria. After which, it uses the independent t-test to examine the significance difference in fiscal discipline measures across the two main types of regime the country has had, i.e. the democratic and military regime

5.3.1 Multi-Variate Analysis of Variance (MANOVA)

Table 5.4 shows the overall and group (regime) mean and standard deviations across fiscal discipline measures. From the table, expenditure variance (EXPDVAR) appears to deteriorate over time, gradually from Shagari era till Yar'adua's regime as seen in the mean values.

Revenue variance which measures fiscal discipline clearly shows a significant improvement over period, beginning from Sheu Shagari's regime till Goodluck's regime. The mean of primary balance which measures indiscipline, clearly depicted that fiscal discipline deteriorated over time since 1980 till 2014, with a steady increase in the primary balance over the period under study

The mean of debt sustainability, however, didn't reveal consistent indiscipline over time (from 1980 till 2015), it shows that Goodluck's regime has the least debt profile, followed by Yar'adua, followed by Shagari, followed by Buhari, followed by Abacha, followed by Obasanjo and then Babangida regime has the highest debt profile.

Table 5.5 is the multivariate test analysis, which gives the significance value of the F-values. For these measures, all the test statistics are significant with p=0.00, based on this, we can conclude that fiscal indiscipline differs across regime.

Specifically, the overall *F* test (overall four dependent variables) was looked into. The study made use of a statistics called Wilks' lambda (λ), and the *F* value associated with it. Lambda is a measure of the percent of the variance in the dependent variables that is *not explained* by differences in the level of the independent variable (regime). Lambda varies between 1 and 0, and we want it to be near zero (e.g, no variance that is not explained by the Regime). In this case, Regime, Wilks' lambda is .009 and has an associated *F* of 9.954, which is significant at p <001.

The observed partial eta squared associated with the main effect of regime was 0.689 and the power to detect the main effect was 1.000.

Thus, a one-way MANOVA revealed a significant multivariate) = 9.958, p< 001, partial eta squared = .689. Power to detect the effect is 1, Thus hypothesis 1 was confirmed.

Checking out the Box's *M* test in Table 5.6, it was found that the test was significant (which means that there are significant differences across regime in the covariance matrices). Low power might be a problem, but it was not observed in the study.

Conclusively, measuring fiscal discipline with expenditure variance and primary balance showed that fiscal discipline has deteriorated over time, gradually from 1980 until 2015.

Table 5.4 Descriptive Statistics of Fiscal in-discipline as per Regime

	Regime	Mean	Std. Deviation	N
EXPDVAR	SS	2.0333	0.4055	3
	GMB	5.375	0.94045	2
	IBB	-24.2912	25.64076	8
	ABC	-112.974	41.70508	5
	OBJ	-154.138	492.5345	9
	YAR	-472.405	171.7067	2
	GOOD	136.68	196.9253	5
	Total	-70.3235	290.8146	34
REVVAR	SS	-0.1533	1.33061	3
	GMB	1.865	2.75065	2
	IBB	39.5088	46.34105	8
	ABC	124.566	59.56712	5
	OBJ	1244.539	734.5804	9
	YAR	3626.37	1480.37	2
	GOOD	6324.696	1528.658	5
	Total	1500.566	2333.336	34
PRYBAL	SS	-4.4533	1.45139	3
	GMB	-2.85	0.2687	2
	IBB	-25.5	20.19213	8
	ABC	-35.122	66.363	5
	OBJ	-185.189	74.22059	9
	YAR	-428.695	539.2608	2
	GOOD	-1045.75	138.6744	5
	Total	-239.751	374.716	34
DEBTSUS	SS	0.2267	0.08083	3
	GMB	0.345	0.00707	2
	IBB	0.7875	0.1818	8
	ABC	0.396	0.2072	5
	OBJ	0.4733	0.22984	9
	YAR	0.135	0.02121	2
	GOOD	0.102	0.00447	5
	Total	0.4321	0.28787	34

Source: Author's Calculations, (2017)

SS=Shagari (1981-1983), GMB=Buhari (1984-1985), IBB=Babangida (1986-1993), ABC=Abacha (1994-1998), OBJ =Obasanjo (1999-2007), YAR = Yar'adua (2008-2009), GOOD = Goodluck (2010-2014)

Table 5.5 Multivariate Tests for Regime

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[d]
REGIME	Pillai's Trace	1.774	3.588	24.000	108.000	0.000	0.444	86.111	1.000
	Wilks' Lambda	0.009	9.954	24.000	84.936	0.000	0.689	187.961	1.000
	Hotelling's Trace	35.745	33.511	24.000	90.000	0.000	0.899	804.253	1.000
	Roy's Largest Root	34.109	153.491[c]	6.000	27.000	0.000	0.972	920.946	1.000
a. Design: Intercept + REGIME									
b. Exact statistic									
c. The statistic is an upper bound on F that yields a lower bound on the significance level.									
d. Computed using alpha = .05									

Source: Author's Calculations, (2017)

Table 5.6 Box's Test of Equality of Covariance Matrices

Box's M	221.516
F	4.556
df1	30.000
df2	812.945
Sig.	0.000

Tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups.

5.3.2 Independent Sample *T*-Test

The Independent Samples *t* test compares the means of two independent groups in order to determine whether there is statistical evidence that the associated population means are significantly different. The study examined if there exist any significant difference between the democratic and military regime as it relates to each of the measures of fiscal discipline identified.

An independent sample *t*-test was performed to compare the mean values between the regimes. As can be seen in Table 5.7, the democratic regime (M=2635, N=19, SD=2625) generated more excess revenue than Military (M=62.8, N=15, SD=65), which is statistically significant at $p<0.05$, implying that there is statistical difference as observed in Table 5.8 between revenue variance between democratic and military regime and invariably, the democratic regime is more discipline as they were able to generate more revenue, it should also be noted that international oil price was highest during the democratic regime and could be a reason for such record.

To compare the fiscal in-discipline (primary balance) between democratic and military regimes. Table 5.7 shows that democratic regime (M=-408.7, N=19, SD=433.4) experienced more in-discipline than military (M=-25.6, N=15, SD=39.6), which is statistically significant at $p<0.05$, implying that there is statistical difference as seen in Table 5.8 in primary balance between democratic and military regime. The military regime performed exceedingly better than the democratic regime

Debt sustainability shows that the debt profile and the country's ability to meet its debt obligation was better during the democratic regime (M=0.3011, N=19, SD=0.2325) than the military regime (M=0.5980, N=15, SD=0.2702) which is statistically significant at $p<0.05$.

Likewise, for expenditure variance, it showed that the democratic regime (M=-86.4, N=19, SD=389.9) had higher in-discipline than the Military (M=-49.8, N=15, SD=55.2), which is not statistically significant at $p>0.05$, implying that there is no statistical difference in expenditure variance between democratic and military regime.

In conclusion, 2 measure (expenditure variance and primary balance) clearly indicated that the democratic regime was more in-discipline, while revenue variance and debt sustainability indicates that the democratic regime was more fiscally disciplined.

Table 5.7 Group Statistics for Independent Sample *T*-Test

	Regime	N	Mean	Std. Deviation	Std. Error Mean
REVVAR	Democratic	19	2635.6111	2625.97063	602.43898
	Military	15	62.8420	65.50581	16.91353
PRYBAL	Democratic	19	-408.7484	433.43896	99.43772
	Military	15	-25.6873	39.60407	10.22573
DEBTSUS	Democratic	19	.3011	.23252	.05334
	Military	15	.5980	.27024	.06978
EXPDVAR	Democratic	19	-86.4500	389.93615	89.45749
	Military	15	-49.8967	55.29728	14.27770

Source: Author's Calculations, (2017)

Table 5.8 Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
REVVAR	Equal variances assumed	33.075	.000	3.781	32	.001	2572.769	680.414	1186.811	3958.727
	Equal variances not assumed			4.269	18.028	.000	2572.769	602.677	1306.736	3838.802
PRYBAL	Equal variances assumed	47.729	.000	-3.401	32	.002	-383.061	112.645	-612.511	-153.611
	Equal variances not assumed			-3.832	18.380	.001	-383.061	99.962	-592.763	-173.360
DEBTSUS	Equal variances assumed	.641	.429	-3.443	32	.002	-.297	.0863	-.473	-.121
	Equal variances not assumed			-3.381	27.769	.002	-.297	.0878	-.477	-.117
EXPDVAR	Equal variances assumed	9.062	.005	-.359	32	.722	-36.553	101.799	-243.910	170.804
	Equal variances not assumed			-.404	18.913	.691	-36.553	90.590	-226.219	153.112

Source: Author's Calculations, (2017)

5.3.3 Autoregressive Distributed Lag Approach

The outcome of pre-estimation test further inform the appropriate estimation technique to be used and the ARDL approach to both the long-run and short-run is considered because of its advantages over others in the presence of I(0) and I(1) series.

The study began with the estimation of the ARDL having established that none of the variables is integrated of order 2. The first step in estimating the ARDL model is establishing the long-run relationship between the variables. This is done by testing the null hypothesis of no-cointegration against the alternative of cointegration using the F-test proposed by Pesaran et al. (2001). The optimal number of lags on each first-differenced variable is selected by SIC assuming a maximum of 3 lags[4].

5.3.3.1 Co-integration

The ARDL technique for Co-integration is superior to other usual and regular co-integration techniques such as that of Engle and Granger (1987) and Gregory and Hansen (1996). One of the purposes for favouring the ARDL is that it is appropriate and suitable regardless of whether the underlying regressors are only I(0), I(1), or mutually co-integrated, it is also simpler to apply as it only involves inferential and estimation procedure used in the similar least square regression. The statistic underlying this process is the F-statistics, which is employed to examine the significance of the lagged levels of the variables under consideration in a conditional Unrestricted Equilibrium Error Correction Model (UECM) (Pesaran, Shin, and Smith, 2001). Since the outcome of the unit root tests affirmed that some variables are stationary at levels and others at first difference i.e. the variables are a mixture of both I(1) and I(0), and therefore, the bounds co-integration test was applied to investigate the existence of the long-run relationship.

Table 5.9 shows the bounds co-integration test result for the models under investigation. Decision criteria for this test can take three modes. If the computed value of the F-statistic is greater than the upper bound *I(1)* critical value bounds, then there exists cointegration implying there is a long-run relationship. If the computed value of the F-statistic falls below the lower bound *I(0)* theoretical critical value, then there exists no cointegration,

[4] SIC is most preferred as it gives the heaviest penalties for loss of degrees of freedom.

therefore, no long-run relationship exists and an inconclusive test if the computed value of the F-statistic falls between the lower bound I(0) and the upper bound I(1).

Three of the models (primary balance, expenditure variance and revenue variance) under study exhibited an evidence of long-run relationship as their respective F-statistics is greater than the critical value upper bound at 1% significance level, while debt sustainability gives an inconclusive evidence of long-run relation as the F-statistics lies in between the upper and lower critical value at 5% significance level.

Table 5.9: Bounds Cointegration Test Results for the Models

	Model 1		**Model 2**		**Model 3**		**Model 4**	
	Primary balance		**Debt sustainability**		**Expenditure variance**		**Revenue variance**	
	(PRYBAL)		**(DEBTSUS)**		**(EXPDVAR)**		**(REVVAR)**	
F-statistic	29.367		2.669		14.590		54.974	
Critical value Bounds								
Significance	I0 Bound	I1 Bound	I0 Bound	I1 Bound	I0 Bound	I1 Bound	I0 Bound	I1 Bound
10%	2.26	3.34	2.26	3.34	2.26	3.34	2.26	3.34
5%	2.55	3.68	2.55	3.68	2.55	3.68	2.55	3.68
1%	3.15	4.43	3.15	4.43	3.15	4.43	3.15	4.43

Source: Author's Calculations, (2017)

Note: Based on the Schwarz information criterion (SIC).

5.3.3.2 Estimated Long Run Co-Integrating Regression

Given the bounds test results, which imply evidence of a long-run relationship in the models for fiscal discipline, it is necessary to test the cointegrating coefficients to explore the long-run relationship between them. The ARDL Cointegrating and Long Run Form is applied for this estimation. Table 5.10 reports the regression estimates result for each of the models under study

Model 1

Fiscal discipline when measured as budget deficit confirms the Common Pool Resource (CPR) problem as Table 5.5 reveals that a unit change in spending units will cause 0.02 unit increase in fiscal in-discipline. Electioneering period and trade openness has an adverse significant impact on fiscal in-discipline meaning that election periods are associated with reduced in-discipline (deficit) as 1 unit change in election periods reduce the in-discipline by 0.1 unit and a unit change in trade openness reduces in-discipline by 0.06. While government size and political regime appear to worsen fiscal discipline, implying that a unit rise in government size raises in-discipline by 0.24 units and democratic regimes of government worsen the disciplinary behaviour of the government.

The outcome did not suggest that in-discipline grows during election period. This is consonance with the Inter-American Development Bank (IADB) report 1997, which suggests in-discipline is mostly associated with pre-election periods, forcing costly adjustments in the following year of election.

It can be inferred from the result that increasing number of ministries, democratic structure of governance and large government size overtime in Nigeria has contributed to fiscal indiscipline, while the years associated with a reduced number of ministries and government size significantly shows better fiscal discipline.

Model 2

Amongst the models estimated, model 2 shows the weakest relationship between the variables under investigation, where, the long-run relationship only exist at 10% significance level and as such most of the variables under investigation exhibit a no to a weak relationship.

When fiscal discipline is measured, using debt sustainability, this model does not validate CPR. It only affirms that electioneering periods are associated with debt accumulation (indiscipline).

Model 3

Expenditure variance as a proxy for fiscal indiscipline also affirms the CPR problem, as a unit change in spending units increase the expenditure variance by 0.004 unit, causing more in-discipline. Government size and transparency also exhibits a similar outcome, as a unit change in government sizes increases expenditure variance by 0.23 unit.

The influx of aids, grants (capital inflow) reduces in-discipline, as a unit change in capital inflow reduces expenditure variance by 0.43 unit. It can be inferred that such inflows are managed within the confine of government budget and or managed by originating body or organization as we have in most recipient countries, which thus reinforces the budget process, and thus, ensues greater fiscal discipline. On the contrary, government spends more money to ensure a transparent system.

Model 4

When fiscal discipline is represented as revenue variance, CPR problem also surfaces, as a unit change in spending units reduces fiscal discipline by 0.03 unit. Reserve and government size exhibited a significant negative relationship as a unit change in both variables reduces discipline by 0.89 and 0.53 unit respectively. It can be inferred that excess revenue is diverted towards reserves as a unit increase in reserves reduces revenue variances by 0.89 unit. Trade openness appears to improve fiscal discipline, as a unit change in trade openness increases the fiscal discipline by 0.79 units

Table 5.10: Estimated Long-Run Coefficient

	Model 1		Model 2		Model 3		Model 4	
	Primary balance		Debt sustainability		Expenditure variance		Revenue variance	
	(PRYBAL)		(DEBTSUS)		(EXPDVAR)		(REVVAR)	
Variables	Coefficient	t-statistics	Coefficient	t-statistics	Coefficient	t-statistics	Coefficient	t-statistics
Election period (EP)	-0.1082*	-4.4440	0.9262***	1.6823	-0.0114	-0.4756	-0.0255	-0.9910
Govt size (GS)	0.2355*	4.8463	-2.8154***	-1.7195	0.2212*	3.6127	-0.5276*	-3.8083
Political regime (PR)	0.0975*	3.9409	-0.4217	-1.2658	0.0078	0.6661	-0.0122	-0.5728
Spending unit (SPDU)	0.0204*	4.7700	-0.0346	-1.2631	0.0043*	2.8639	-0.0265*	-5.9449
Trade openness (TO)	-0.0696***	-2.1796	0.3039	0.3376	-0.0573	-1.6547	0.7924*	7.5370
Reserve (RES)	0.0878	1.6468	-0.7533	-0.5031	0.0204	0.2578	-0.8952*	-5.5484
Transparency (TR)	0.0055*	4.9890	-0.0013	-0.0800	0.0064*	7.8640	0.0010	0.7318
Capital inflow (CI)	-0.0644	-0.9033	-1.0201	-0.4335	-0.4227*	-3.9249	0.1240	0.8800

Source: Author's Calculations, (2017)

Note: *,**,***, significant at 1%, 5%, and 10% respectively. The total numbers of observation for each of the variables were 35.

5.3.3.3 Short-run Dynamics

Given the long-run position of the models under review, it's imperative to investigate the short-run coefficients of the models as well. The short-run dynamics is analysed using the unrestricted error correction mechanism. Firstly, the estimated significant short-run coefficients are reported. Secondly, the error correction term (ECT) that gives the speed of adjustment whereby the short-run dynamics converge to the long-run equilibrium position in the models is also reported.

Table 5.6 exhibits the short-run estimates of the models under investigation and reports only the significant values, only model 2 does not exhibit features of autoregressive as its lagged value does not significantly affect the model.

Neyapti (2013) and El-Shagi (2010) identified fiscal discipline to be autoregressive; our models reveal that indiscipline (primary balance, expenditure variance) in previous periods appears to worsen the current value of fiscal discipline. Electioneering periods are not only associated with vanishing excess revenue but also increasing debt accumulation, decreasing deficit and expenditure variance. Government size up to one lag does not exhibit uniform behaviour as larger government sizes appear to worsen indiscipline in models 2 and 3, while it improves fiscal discipline in the other two models (1 and 4).

Spending unit seems to have a significant effect on the models under study, it further confirms the CPR problem in the short-run, as increasing number of ministries worsen the state of fiscal discipline in the models. But the lag of spending units gives a contrary result by improving fiscal discipline. The lag of trade openness gives an interesting result by significantly deteriorating fiscal discipline across all the models under study. Capital inflow and transparency seem to have a conflicting impact on fiscal discipline in the models under study.

Table 5.11: Estimates of the Short-Run Regression Result

Variable	Model 1		Model 2		Model 3		Model 4	
	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic
D(Expenditure Var(-1))					0.6681*	7.6214		
D(Primary Bal(-2))	0.1868***	2.1281						
D(Revenue var(-1))							-1.0627*	-11.1908
D(Revenue var (-2))							-0.6600*	-10.5233
D(Election period)	-0.0243*	-3.955	0.2952*	3.201	-0.0512*	-3.1989	-0.0454*	-3.8421
D(Govt size)	-0.1972*	-5.2803			0.3171*	3.4042	0.1877*	4.2821
D(Govt size (-1))	-0.2067*	-6.7917	0.5766***	1.7534			0.1970*	5.1158
D(Political regime)	0.0333*	4.537						
D(Political regime (-1))	-0.0208**	-2.6309						
D(Spending unit)	0.0134*	8.1356			0.0047**	2.1093	-0.0166*	-6.2921
D(Spending unit (-1))	-0.0031*	-3.8992			-0.0042**	-2.4606	0.0059*	4.2261
D(Trade openness)					0.2283*	3.8924	0.2516*	7.5865
D(Trade openness (-1))	0.1397*	5.0591	0.5775***	1.6058	0.1209**	2.2708	-0.1642**	-2.7904
D(Reserve)								
D(Transparency)	-0.0020**	-3.5023						
D(Transparency (-1))	-0.0045*	-9.5482			-0.0063*	-5.1458	-0.0019**	-2.7659
D(Capital inflow)	-0.2615*	-5.5792	1.2610***	1.8379	-0.3535*	-3.3392	0.3785*	5.9985
D(Capital inflow (-1))	-0.2649*	-7.1359			0.4598*	4.7712		
Coint Eq(-1)	-0.8869*	-5.316	-0.4228**	-2.0806	-0.9438*	-13.1345	-0.815*	-6.183

Source: Author's Calculations, (2017)

Note: *,**,***, significant at 1%, 5%, and 10% respectively.

The Error Correction Term (ECT) demonstrates how rapidly variables converge to their equilibrium position i.e. the long-run state. The ECT ought to have a statistically significant coefficient with a negative sign. As indicated by Bannerjee et al. (1998), the profoundly significant ECT further demonstrates the presence of a stable long-run relationship. Table 5.11 hints that the expected negative signs of ECT are very significant for each one of the models. The coefficient of -0.88, -0.42, -0.94 and -0.82, implies that deviation from the long-run position is corrected by 88%, 42%, 94% and 82% respectively by the following year.

5.4 Post-Estimation

The penalties of model misspecification in regression analysis can be stern in terms of the unfavourable effects on the sampling properties for both tests and estimators. There are also serious consequences for predictions and for other deductions that may be drawn from the fitted model; hence, the models are subject to the diagnostics test.

5.4.1 Diagnostics Test

5.4.1.1 Ramsey Reset Test

This study also examined the diagnostic statistics of the estimated ARDL model(s). As for the stability test of our model(s), the Ramsey test is a conventional test for specifying the regression models that are linear. More precisely, it examines whether non-linear groupings of the fitted values assist in describing the response variable. The idea of the test is that if non-linear arrangements of the explanatory variables have any power in describing the response variable, the model is mis-specified in the sense that the data generating procedure might be better approximated by a polynomial or another non-linear functional form. Ramsey test is examining if the coefficients of these added variables are zero; they should be zero to guarantee stability in the models. That is, we do not want to reject the null hypothesis. Rejection is an indication of misspecification of the model, either in terms of omitted regressors or perhaps functional form. It reports the F-statistics and T-statistics. The analysed models are stable (stationary) if the probability values of the F-statistics and T-statistics are larger than the significance level, i.e we accept the null hypotheses of no mis-specification. If the models are not stable, and thus mis-specified, they tend to have subjective error terms and coefficients and tend to have subjective parameter estimates. Table 5.12 reveals that there is no evidence of misspecification in our models.

5.4.1.2 Breusch-Godfrey Serial Correlation LM

Breusch-Godfrey serial correlation is employed to evaluate the cogency of some of the modelling hypothesis fundamental in utilising models that are regression-like to experiential data series. Specifically, it examines the existence of serial correlation that is not yet incorporated in a projected structure of modelling and if it exists, would imply that wrong deduction would be derived from additional analyses, or that sub-optimal analysis of model parameters are attained if it is not considered. The regression models to which the test can be used comprise of situations where lagged values of the dependent variables are employed as independent variables in the model's description for later observations. The autocorrelation LM test is carried to show lack of auto-correlation of residual as seen in Table 5.12

5.4.1.3 Autoregressive Conditional Heteroskedasticity (ARCH)

The presence of heteroskedasticity is a key matter in the usage of regression estimates, including the estimation of variance, as it can undermine the significance of statistical tests that presume that the modelling errors are uniform and uncorrelated. Therefore, their variances do not fluctuate with the effects being modelled. For example, while the ordinary least squares estimator is still unbiased in the presence of heteroskedasticity, it is however ineffective since the true covariance and variance are underestimated.

The autoregressive conditional heteroskedasticity (ARCH) model is a Lagrange multiplier (LM) test of statistical model for time series analysis which explains the innovation or variance of the present error term as a proportion of the actual sizes of the previous periods' error terms; regularly the variance is linked to the squares of the previous innovations. The ARCH model is suitable when the error variance in a time series follows an autoregressive (AR) model, and thus our choice of ARCH. It tests the null hypothesis of lack of autoregressive conditional heteroskedasticity. Table 5.12 shows that we accept the null hypothesis of no heteroskedasticity given the p-values

5.4.1.4 Histogram- Normality

Normality tests are employed to ascertain if a data set is rightly-modelled by a normal distribution and to calculate how possible it is for a random variable in the data set to be normally distributed. The assumption of normality means implies that the data set should roughly fit a bell curve shape prior to estimating certain statistical regressions or test. Table 5.12 depicts that we accept the null hypothesis of the normal distribution, as it is not significant.

Table 5.12: Results of Diagnostics Tests

Tests	Model 1	Model 2	Model 3	Model 4
	F-statistic	F-statistic	F-statistic	F-statistic
Ramsey RESET	0.5034 (0.5097)	0.0333 (0.8585)	0.8963 (0.3912)	0.2263 (0.6543)
Breusch-Godfrey Serial Correlation LM	1.5225 (0.3224)	2.4722 (0.1342)	2.2451 (0.1618)	4.0539 (0.1402)
ARCH	0.0002 (0.9892)	0.2224 (0.6407)	0.7122 (0.4054)	1.8621 (0.1748)
Histogram (Prob)	0.9195	0.8409	0.7242	0.6880

Source: Author's Calculations, (2017)

Furthermore, the correlogram q-statistics for each of the models shows that none of the q-statistics is significant which implies that there is no evidence of autocorrelation.

5.5 Synthesis of the Empirical Results and Research Objectives

This section shows the fusion of the empirical results in line with the study objectives. Interestingly, each of the research objectives does not operate in isolation, hence, the results from former objectives are used in analyzing the relevance of the latter objective.

Objective I: Assess the Extent of Fiscal Discipline between 1980 to 2015

This objective is achieved by examining the mean differences in the measures of fiscal discipline across the 2 major regime types using the independent t-test and also across head of states overtime using the multivariate analysis of variance. The result clearly revealed that; starting from the Sheu Shagari regime until Goodluck's regime, expenditure variance and primary balance were better in the early periods, which mostly corresponds with the military regime, implying that fiscal in-discipline worsens over-time, and there was more fiscal discipline during the military regime than the democratic regime.

On the contrary, revenue variance and debt sustainability appears to have remarkably improve overtime, implying that the latter periods are more fiscally discipline and thus the democratic regime did better with these 2 measure.

Objective II: Investigate the Determinants of Fiscal Discipline

This objective was achieved by investigating the determinants if fiscal discipline using the ARDL approach. The result shows that there exists a long-run path, where spending units exert an appreciable influence on fiscal discipline as proposed by the CPR theory. Spending units appear to have a uniform impact in the short run and long run across the models, with spending units deteriorating the fiscal position and aggravating the common pool problem. Also, government size which gives a conflicting effect on fiscal discipline in the short-term deteriorates fiscal position in the long-run and capital in-flows (aids, grants) appears to worsen fiscal discipline both in the short and long run.

CHAPTER SIX

SUMMARY OF FINDINGS, CONCLUSION AND POLICY IMPLICATIONS

6.1 Introduction

This chapter highlights the major findings of the research work, the reliable conclusion and policy implications of the results from the empirical models. Furthermore, the chapter equally articulates the limitations of the research work as well as offer specific suggestions for future research.

6.2 Summary

Fiscal discipline, which generally describes the ability of government to maintain smooth and long-term financial operation as it relates to all vital measures of fiscal performance, which includes but not limited to total revenue, financial and fiscal balance, public debt, in addition to total spending, is a prevailing problem not just in developing economies but also, developed countries.

The EU debt crisis and debt situation in most African economies make the issue of fiscal discipline very critical to the well-being of any economy. Specifically, in Nigeria, the growing government debt, unmanageable budget deficit, alarming unfavourable expenditure variance, declining revenue variance and unnecessary delay in the budget process has made the issue of fiscal discipline in Nigeria a critical issue. The study was further motivated by the incessant and indiscipline spending pattern as experienced in government generally and specifically its parastatals over time in Nigeria.

Researches on government fiscal condition or health of government remain unsettled, especially in terms of presenting a comprehensive measure that can be applied across a variety of governments and levels of government (Hendrick, 2004). A plethora of studies have considered the issue of fiscal discipline, particularly with reference to the exchange rate, budget process, decentralisation, and the determinants of fiscal discipline, but have mainly focused on a single measure of fiscal discipline with less emphasis on specific countries. The use of techniques such as ordinary least square, generalised methods of moment, Structural Equation Model and Dynamic Stochastic General Equilibrium has dominated the existing literature.

Against this background, this study has focused specifically on Nigeria and pursued two related objectives of assessing the extent of fiscal discipline and investigated the determinants of fiscal discipline, anchored on the Common Pool Resource (CPR) theory.

Besides being the first direct study on fiscal discipline in Nigeria, the study also noticeably has deviated from previous and other studies by considering four different or alternative measures of fiscal discipline, namely primary balance, debt sustainability, expenditure variance and revenue variance. The study also uniquely explored the Auto-Regressive Distributed Lag (ARDL) estimation technique. The study covered the period of 1980 to 2015.

This study adopts the ARDL model because of the unit root properties of the series estimated. Also, the empirical and theoretical literature reveals that the lagged values of independent and dependent variables could explain the model(s). The analysis further uses the Bounds cointegration test as recommended by Pesaran, Shin, and Smith (2001) to examine the presence of a long-run relationship among the variables. In this approach (ARDL), the long run and short run (error correction analysis) parameters of the model is estimated concurrently while the diagnostics test is carried out to ensure a well-specified model(s).

The findings indicate that, there has been a persistent and increasing pattern of fiscal in-discipline in Nigeria over the period under-study, as it relates to the identified measures. Particularly, military regime exhibits more discipline than democratic regime as it relates to expenditure variance and primary balance, while the democratic regime exhibits more discipline as it relates to debt sustainability and revenue variance.

The models exhibit a long-run path, where spending units exert an appreciable influence on fiscal discipline as proposed by the CPR theory. Spending units appear to have a uniform impact in the short run and long run across the models, with spending units deteriorating the fiscal position and aggravating the common pool problem. Also, government size which gives a conflicting effect on fiscal discipline in the short-term deteriorates fiscal position in the long-run and capital in-flows (aids, grants) appears to worsen fiscal discipline both in the short and long run. Transparency also worsens the fiscal stance of the government; moreso, the military regime appears to be more disciplined than the democratic regime in the model.

In a resource-rich economy like Nigeria, empirical evidence herein reveals fiscal indiscipline which is in contrary with Bleaney and Halland (2016), where it was demonstrated that resource-rich nations do not suffer from the absence of fiscal discipline. Von Hagen (1992) and Von Hagen and Harden (1995) revealed that centralisation of the budget process is related with smaller debt and deficits (fiscal discipline), this contradicts the result obtained in our analysis. Despite the centralised budgetary process in Nigeria, fiscal indiscipline persists. Also, the inherent decentralisation of the Nigeria system has not helped to promote fiscal discipline as evident in Cakir and Neyapti (2007) and Neyapti (2013).

Measuring fiscal discipline with expenditure variance, revenue variance and primary balance provide a similar outcome in the long run, but primary balance and expenditure variance exhibit cognate result in the short-term period. Though explanatory variables appear to be sensitive to the measure of fiscal discipline adopted, especially in the short-term period, they converge to a uniform position in the long term period.

The benefits of fiscal discipline to the country and parties concerned cannot be over-emphasised. The study thus provides detailed insight into this phenomenon, by comparing the budgeting performance of different regime which reveals smaller variances during the military regime as opposed to the civilian government and also reveals that indiscipline stems more from deficit, expenditure and revenue variance, while debt accumulation fails to cause fiscal indiscipline.

6.3. Conclusion

The study concludes that fiscal operations in Nigeria have largely and somehow consistently been characterised by fiscal indiscipline over time. The root causes of the observed indiscipline include delay in budget processes and an extended period for budget implementation, expansive debt incurrence (especially domestic debt), increasing deficit profile despite huge revenue generation, increasing unfavourable expenditure variance, huge government size and increasing number of government parastatals. There is, therefore, the need to ensure fiscal discipline in the country.

6.4 Policy Implications and Recommendations from the Study

The findings of this examination have important policy lessons. The policy implications of these results are straightforward. These include the following:

Firstly, there is a critical need to sufficiently and effectively get ready for the fiscal years ahead, keeping in mind the end goal to make a transformation of general ideas into particular, action-oriented objectives and goals. By following the budgetary guidelines, the desire is that the identified objectives and targets can be satisfied likewise. Exact forecasting and planning have more possibilities to eradicate indiscipline in government conduct as it gives the benchmarks against which to judge achievement or failure in achieving objectives and encourages auspicious corrective measures.

A viable budget plan can be utilised to accomplish particular objectives of economic policy. It was for some time perceived that a decent government budget could affect whatever is left of the economy. As the size of government action is balanced out, the levels of expenditure and tax collection supposedly had substantial direct impacts on the aggregate demand for commodities and services in the country. This raised the likelihood that by changing these levels, the government could utilise its fiscal approach to accomplish full employment and decrease economic variances. This stabilisation function has been utilised by numerous nations, with differing degrees of success, to grow the economy out of recession and to control inflationary weights.

Secondly, an increasing number of ministries are however detrimental to fiscal discipline in the nation and therefore should be checked. More ministries create more unfounded government spending which has a less desirable impact on economic activity, which can be mainly classified as resource displacement, i.e when the government uses labour or capital at the detriment of the private sector.

The second macroeconomic issue associated with a large number of ministries is the financing cost; when government taxes, it not only takes money from the productive sector, but it also raises revenue by means of a tax system that generally reduces incentives to work, save, and invest. And if it finances spending with debt, it siphons money out of the private credit market.

While empirical literature is inconclusive with regards to the effect of government size on growth and development, most contemporary research, including Gwartney,

Holcombe and Lawson (1998), Arthur Grimes (2003) and Daniel Mitchell have demonstrated that large government size is actually detrimental for economic growth.

This study revealed that government size is a critical factor influencing fiscal discipline in Nigeria, a reduction in government size, however, could improve fiscal discipline in the country as resources are diverted to more productive avenues. In addition, it means smaller taxes, which invariably improve citizen's disposable income, and thus, a better standard of living. Ali Elsaffar (2014) noted that smaller units of government do a better job of providing important amenities and services in an efficient manner.

In order to improve the ability to pay debt in Nigeria, there is an urgent need to cut debt (particularly domestic) around election periods as debt ratios appear to be higher during these periods. Though IMF reports that high levels of government debt won't hurt the economy in the medium and short-term, it, however, has a serious detrimental long-term effect on growth.

The results obtained reveal that openness to trade is a necessary factor in promoting fiscal discipline in the long-term period as the gain from trade openness might not be enjoyed in the short-term period. Trade protection is desirable to enable domestic firms to grow, but if extended for a longer period might have a detrimental effect on growth and development in the economy. Investment and trade incorporation intensifies the size of the domestic market as well as enhance prospective value chains which grow innovation and productivity by subjecting firms to global expertise, competition, and technology. Openness to trade fosters credible regulations and policies that influence the local business climate, such as competitive product, steady macroeconomic states, and factor markets. It also enhances the control or decision-making outline for competitiveness which includes effective administration of government affairs, on time decision-making and unbiased property rights enforcement and contracts, thus promoting fiscal discipline. Hence policies that facilitate trade between countries should be greatly encouraged.

6.5 Study Limitations

The study began with the intent of examining five different measures of discipline, budget adoption time could however not be examined due to unavailability of complete data for the period under study. As budget adoption time has been identified as a critical measure of fiscal discipline in existing literature (Hou, 2002a).

In addition, the determinants examined in the study can be mainly categorised as an economic and political determinant, though previous studies highlight the importance of institutional determinants, this study could not examine the institutional determinants of fiscal discipline due to lack of uniformity and completeness in data sources and data inconsistency and incoherence.

6.6 Agenda for Future Research

It is expected that future research will extend the findings of this study to consider other measures, such as budget adoption time and include other determinants such as crime and terrorism. Another grey area of further research relates to establishing a conclusion on the role of institutions as a key determinant of fiscal discipline.

REFERENCES

Abata, M., Kehinde, J. and Bolarinwa, S. (2012). Fiscal/monetary policy and economic growth in Nigeria: A theoretical exploration. *International Journal of Academic Research in Economics and Management Sciences*, Vol. 1 (5): 2226-3624.

Acemoglu, D., Johnson, S., Robinson, J. and Thaicharoen, Y. (2003). Institutional causes, macroeconomic symptoms: Volatility, crises, and growth. *Journal of Monetary Economics,* 50 (1): 49–123.

Acosta, M. and Coppedge, M. (2001). Political determinants of fiscal discipline in Latin America, 1979-1998. Paper presented at the XIII International Congress of the LASA, September, in Washington, 5–8 September.

Adolph, W. (1876). Foundation of political economy, 1892-1894. Vol.II. 3rd edition, Lehr- und Handbuch der politische Okonomie Publishers.

Ames, B. (1987). Political survival: Politicians and public policy in Latin America. Berkeley University of California printing press.

Anyanwu, J. C. (1993). Monetary economics: Theory, policy and institutions. Onitsha: Hybrid Publishers.

Alesina, A. and Perotti, R. (1996). Fiscal discipline and the budget process. *American Economic Review,* Vol. 86 (2): 401-407.

Alfredo, S. (2004). Debt and economic growth in developing and industrial countries. Working Papers, University of London, Department of Economics.

Allan, G. and Bruce, H. (1996). Residual-based tests for co-integration in models with regime shifts. *Journal of Econometrics*, 70 (1): 99-126.

Alt, J. E. and David, L. D. (2006). Fiscal transparency, political parties, and debt in OECD countries. *European Economic Review,* Vol. 50, pp. 1403-1439.

Altman, D. (2001). The politics of coalition formation and survival under multiparty presidential regimes. Ph.D. dissertation, University of Notre Dame, Notre Dame, Indiana.

Agu, S. U. (2015). Fiscal policy and economic growth in Nigeria: Emphasis on various components of public accountability. Sage Publications, pg 1-12.

Ardagna, S. (2004). Fiscal stabilizations: When do they work and why. *European Economic Review*, 48(5):1047-1074.

Ardagna, S., Caselli, F., and Lane, T. (2007). Fiscal discipline and the cost of public debt service: Some estimates for OECD countries. *The BE Journal of Macroeconomics*, 7(1): 245-274.

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

Arowolo, D. (2011). Fiscal federalism in Nigeria: Theory and dimensions. *Afro Asian Journal of Social Sciences,* Vol. 2 (2.2): 1-22.

Asatryan, Z., Feld, L. P., and Geys, B. (2015). Partial fiscal decentralization and sub-national government fiscal discipline: empirical evidence from OECD countries. *Public Choice*, 163(3-4): 307-320.

Arthur, G. (2003). Economic growth and the size and structure of government: Implications for New Zealand. Working Papers 03/10, Motu Economic and Public Policy Research.

Axelrod, D. (1988). Budgeting for modern government. New York: St. Martin's Press, Inc.

Babalola, A. I. (2015). Fiscal policy and economic development in Nigeria. *IISTE* Vol. 6, No 7:1-11

Baunsgaard, (2003). Fiscal policy in Nigeria: Any role for rules? IMF Working Paper No. 03/155.

Barro, R. J. and Sala-I-Martin, X. (1989). A cross-country study of growth, saving and government. NBER working paper, No. 2855.

Barro, R. J. (1991). Economic growth in a cross-section of countries. *Quarterly Journal of Economics,* 18(1): 769-783.

Beck, N. and Katz, J. (1995). What to do (and not to do) with time-series cross-section data. *American Political Science Review* 89(3): 634–647.

Bello, B. G. and Obasaki, P. J. (2009). A framework for resolving African's debt crisis CBN. *Economy and Financial Review,* Vol. 33 (3): 1-25.

Bleaney, M. and Halland, H. (2016). Do resource-rich countries suffer from a lack of fiscal discipline? World Bank Policy Research Working Paper, (7552).

Boex, L. F. J., Martinez-Vazquez, J. and McNab, R. M. (2000). Multi-year budgeting: A review of international practices. *Journal of Public Budgeting and Finance*, 20(2): 91-112.

Branch, S. G. and Adderley, S. S. (2009). Fiscal discipline in the achievement of fiscal and debt sustainability in the Bahamas. *Journal of Business, Finance and Economics in Emerging Economies*, 4(2): 456-476.

Brigham, E. F. (1982). Financial management: Theory and practice. Third edition, New York: CBS College Publishing

Buchanan, J. M. and Gordon, T. (1962). The calculus of consent: Logical foundations of constitutional democracy. URT Press.

Buchanan, J. M. (1967). Public finance in democratic process: Fiscal institutions and individual choice. UNC Press.

Buchanan, J. M. and Richard, A. M. (1999). Public finance and public choice: Two contrasting visions of the State. MIT Press.

Cakir, N. and Neyapti, B. (2007). Does fiscal decentralization promote fiscal discipline. Working Papers, Department of Economics, Bilkent University.

Caballero, R. J. and Krishnamurthy, A. (2004). Fiscal policy and financial depth. NBER Working Papers No. 10532.

Canzoneri, M. B., Cumby, R. E. and Diba, B. T. (2001). Fiscal discipline and exchange rate systems. *The Economic Journal,* Vol. 111(474): 667- 690.

Central Bank of Nigeria (CBN). (2016). Statement of accounts and annual reports.

Central Bank of Nigeria (CBN). (2016). Statistical Bulletin. December.

Dafflon, B. (2012). Voluntary amalgamation of Local Governments: The Swiss debate in the European context. International Center for Public Policy. Working Paper Series, at AYSPS, GSU paper1204.

David, R. (1817). Principles of political economy and taxation. Piero Sraffa (Ed.) Works and Correspondence of David Ricardo, Volume I, Cambridge University Press.

Debrun, X., David, H. and Mann, S. K. (2005). Enhancing fiscal discipline: Is there a role for fiscal agencies. (Unpublished). International Monetary Fund, working paper.

De Simone, E. (2010). The concept of budget transparency: Between democracy and fiscal illusion. Public choice political economy, the positive foundations of public finance theory. Pavia University, 24-25 September 2009.

Anthony, D. (1957). An economic theory of democracy. New York. Publisher.

Diebold, F. X. (2016). Econometrics. Department of Economics, University of Pennsylvania Publishers.

Duncan, B. (1948). On the rationale of group decision-making. *Journal of Political Economy*, 56: 23–34.

Duttagupta, R. and Tolosa, G. (2007). Fiscal discipline and exchange rate arrangements: Evidence from the Caribbean. *Emerging Markets Finance and Trade,* Vol. 43 (6): 87-112.

Ehlert, N., Hennl, A. and Kaiser, A. (2007). Federalism, decentralization, and performance: A macro-quantitative analysis of the performance effects of the territorial organization of politics in industrialised democracies. Politische Vierteljahresschrift, 48(1): 243-268.

Ekeocha, C. P. (2012). An analysis of the Federal budgeting process in Nigeria: Implications for Institutional Reforms for achieving timeliness. *Developing Country Studies*, Vol. 2 (6): 64-77.

Elliott, G., Rothenberg, T. J. and Stock, J. H. (1996). Efficient tests for an auto-regressive unit root. *Econometrica,* 64 (4): 813-836.

El-Shagi, M. (2010). The role of rating agencies in financial crises: event studies from the Asian flu. *Cambridge Journal of Economics,* 34(4): 671-685.

Elina, (2010). Fiscal discipline, transparency, and fiscal governance: A structural equation model approach. Department of Economic Studies, S. Vinci and CRISEI, Parthenope University, Naples, working paper.

Engen, E. M. and Skinner, J. (1992). Fiscal policy and economic growth. NBER Working Paper, No. 4223.

Engle, R. F. and Granger, C. W. J. (1987). Co-integration and error-correction: Representation, estimation and testing. *Econometrica*, Vol. 55 (2): 251-276.

Erik, W. (2000). Federalism and the politics of macro economic policy and performance. *American Journal of Political Science*, Vol. 44 (3): 687-702.

Eyraud, L. and Lusinyan, L. (2011). Decentralizing spending more than revenue. Does it hurt fiscal performance. IMF Working Paper No. 11/226.

Fata´s, A. and Mihov, I. (2003). The case for restricting fiscal policy discretion. *Quarterly Journal of Economics,* 118: 1419–47.

Fata´s, A. and Mihov, I. (2005). Fiscal discipline, volatility, and growth. INSEAD and CEPR annual publication, pg. 245-270.

Fata´s, A. and Mihov, I. (2006). The macroeconomic effects of fiscal rules in the US states. *Journal of Public Economics,* 90(1): 101–117.

Fatás, A. and Mihov, I. (2012). Fiscal policy as a stabilization tool. *Journal of Public Economics,* 69(1):123–37.

Feld, L. P. and Baskaran, T. (2010). Federalism, budget deficits and public debt: On the reform of Germany's fiscal constitution. *Review of Law and Economics*, 6(3): 365-393.

Federal Ministry of Finance, Abuja. (2004). Understanding the proposed fiscal responsibility law. Printing press Abuja.

Frenkel, J., Goldstein, M. and Mason, P. (1991). Characteristics of a successful exchange rate system. Washington: IMF.

Freitag, M. and Vatter, A. (2008). Decentralization and fiscal discipline in sub-national governments: Evidence from the Swiss Federal System. Publius. *The Journal of Federalism*, 38(2): 272-294.

Fritz, W. and Scharpf, (1994). Community and autonomy: Multi-level policy-making in the European Union. *Journal of European Public Policy*, Vol. 1, Issue 2: 219-242.

Gale, W. G. and OrsKzag, P. R. (2003). The economic effects of long-term fiscal discipline. Urban Institute press.

Gavin, T, M. and Perotti, R. (1997). Fiscal policy in Latin America, NBER Macroeconomics Annual, edited by Ben Bernanke and Julio Rotemberg. Cambridge, MA: MIT Press.

Guerson, A. (2003). On the optimality of procyclical fiscal policy when governments are not credible. Ph.D. dissertation, George Washington University.

Gramlich, E. M. (1987). Subnational fiscal policy in J. M. Quigley (ed). *Perspectives on Local Public Finance and Public Policy*, Vol. 3: 3-27.

Hallerberg, M., Strauch, R. R. and Hagen, J. (2009). Fiscal governance in Europe. Cambridge University Press.

Hansen, L. P. (1982). Large sample properties of Generalised Method of Moments Estimators. *Econometrica* 50:1029-1054.

Hendrick, R. (2004). Assessing and measuring the fiscal health of local governments: Focus on Chicago suburban municipalities. *Urban Affairs Review*, 40 (1): 78 –114.

Henry, O. and Olekalns, N. (2000). The Displacement Hypothesis and Government Spending in the United Kingdom: some new Long-Run Evidence. Department of Economics - Working Papers Series 750, The University of Melbourne.

Hitaj, M. E. and Onder, Y. K. (2013). Fiscal discipline in WAEMU: rules, institutions, and markets. International Monetary Fund. No. 13-216.

Holcombe, R. G. (1997). A Theory of the theory of public goods. *Review of Austrian Economics,* 10(1): 1-22.

Hou, Y. and Willoughby, K. (2010). Fiscal discipline in sub-national governments: A capacity measure of financial management in American governments. (unpublished report).

Hou, Y. (2002a). Sub-national counter-cyclical fiscal policy: Testing the effects of budget stabilization funds and general fund surpluses. Ph.D. dissertation, the Maxwell School, Syracuse University.

Hou, Y. (2002b). Measuring the capacity and performance of State and Local Government financial management—Clues and Cues from the GPP in P. W. Ingraham (ed) Final Report of the Government Performance Project, Syracuse: The Maxwell School of Syracuse University.

Hurwitz, L. (1973). Contemporary approaches to political stability. *Comparative Politics* 5(1): 449-463.

International Monetary Fund, (2009). Macro Policy Lessons for a Sound Design of Fiscal Decentralization. Washington: IMF.

International Monetary Fund (IMF), (2016). Annual Report (Data and Statistics) www.imf.org/external/country/index.htm .

Jame, G., Randall, H. and Robert, L. (1998). The scope of government and the wealth of nations. *Cato Journal*, 18 (2): 163-190.

Kenneth, A. (1963). Uncertainty and welfare economics. *The American Economic Review*, Vol. 53 (5): 941-973

Kittel, B. (1999). Sense and Sensitivity in Pooled Analysis of Political Data. *European Journal of Political Research,* 35(2): 225–253

Kittel, B. and Winner, H. (2005). How reliable is Pooled Analysis in political economy? The globalization–welfare State Nexus revisited. *European Journal of Political Research* 44(1): 269–293.

Kirchgässner, G. and Pommerehne, W. W. (1996). Tax harmonization and tax competition in the European Union: Lessons from Switzerland. *Journal of Public Economics,* 60: 351–371.

Koester, Reinhard, B., Kormendi and Roger, C. (1989). Taxation, aggregate activity, and economic growth: Cross-country evidence on some supply-side hypothesis. *Economic Inquiry,* 27: 367-86.

Kopits, G. and Jon, C. (1998). Transparency in government operations. IMF Occasional Paper 158.

Kontopoulos, Y., and R. Perotti (1999). Fiscal institutions and fiscal performance, in government fragmentation and fiscal policy outcomes: Evidence from OECD countries, ed. by J. Poterba, and J. von Hagen. University of Chicago Press.

Kormendi, R. C. and Meguire, P. G.,(1985). Macroeconomic Determinants of Growth: Cross-country evidence. *Journal of Monetary Economics,* 16(1): 141-63.

Kumar, M. S. and Ter-Minassian, T. (2007). Promoting fiscal discipline. IMF publication, October.

Labonte, M. (2010). The size and role of government: Economic issues. CRS Report for Congress. RL 32162.

Lane, P. R. and Tornell, A. (1996). Power, growth, and the voracity effect. *Journal of Economic Growth,* 1(2): 213–241.

Levine, R. and Renelt, D. (1992). A Sensitivity Analysis of cross-country growth regressions. *American Economic Review,* 82(9): 42-96.

McConnell, C. and Brue, S. (1999). Economics. Burr Ridge, Ill.: McGraw-Hill.

Mikesell, J. (1999). Fiscal administration, New York: Harcourt Brace College Publishers.

Mundell, R. A. (1963). Capital mobility and stabilization policy under fixed and flexible exchange rate. *Canadian Journal of Economic and Political Science*, 29 (4): 475–485.

Musgrave, R. A. (1959). The theory of public finance: a study in public economy. McGraw-Hill, New York.

Musgrave, R. A. and Musgrave, P. B. (1989). Public finance in theory and practice. McGraw-Hill, New York.

Mohanty, M. S. (2003). Fiscal policy, public debt and monetary policy in EMEs: An overview, BIS paper No 67.

Mohammadi, H. and Ricardo Cak, M. (2008). Wagner's hypothesis. New evidence from Turkey using the bounds testing approach. *Journal of Economic Studies, 35*(1): 94–100.

Newey, W. K. and West, K. D. (1987). A simple positive semi-definite heteroskedasticity and autocorrelation consistent covariance matrix. *Econometrica* 55(1): 703-708.

Neyapti, B. (2013). Fiscal decentralization, fiscal rules and fiscal discipline. *Economics Letters, Elsevier,* vol. 121(3): 528-532.

Nwankwo, A. (2011). Federal government plans N794billion local debt to finance 2012 deficit, The Nation News Paper of 17th Dec. 2011.

Oats, W. (1982). Fiscal Federalism. New York: Harcourt Brace Jovanovich.

Olajide, B. and Adekoya, F. (2012). Economic Healing: Revisiting 2012 Fiscal Policy. (Online–www.nigerianbestforum.com–retrieved on 13th Jan. 2013.

Olivier Jean Blanchard, (1990). Suggestions for a New Set of Fiscal Indicators. OECD Economics Department Working Papers 79, OECD Publishing.

Okwo, I. M. (2010). An overview of public debt and its management strategies in Nigeria (1980-2007). *ESUT Journal of Accountancy*, 1: 237-248.

Peacock, A. T. and Wiseman, J. (1961). The growth of public expenditure in the United Kingdom, Princeton: Princeton University Press.

Persson, T. and Tabellini, G. (2001). Political institutions and policy outcomes: What are the stylised facts? CEPR Discussion Papers 2872, C.E.P.R. Discussion Papers.

Petkov, V. S. (2014). Advantages and disadvantages of fiscal discipline in Bulgaria in times of crisis. *Contemporary Economics*, 8(1): 1-29.

Pesaran, M. H. and Shin, Y. (1999). Generalised impulse response analysis in linear multivariate models. *Economics Letters*, Vol. 58: 17-29.

Pesaran, M. H., Shin, Y. and Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics*, 16 (3): 289-326.

Pisauro, G. (2001). Intergovernmental relations and fiscal discipline: between commons and soft budget constraint. IMF Working Paper WP/01/65.

Pieschacón, A. (2011). The Value of *Fiscal Discipline* in Oil-Exporting Countries. Journal of Monetary Economics, Vol. 59 (3): 250-268.

Phillips, P. C. B. and Perron, P. (1988). Testing for unit roots in Time Series Regression. *Biometrika*, 75: 335-346.

Puonti, P. (2010). Interplay of aid and fiscal policy: Does budget support induce greater fiscal discipline. Aalto University, school of business, department of economics thesis. Thesis number: 12399.

Rahila, M., Rehmat, U. A. and Zakir, H. (2010). Investment, savings, interest rate and bank credit to private sector nexus in Pakistan. *International Journal of Marketing Studies*, Volume 2 (1): 140-146.

Rodrik, D. (1998). Why do more open economies have bigger governments. *Journal of Political Economy*, CVI, 997-1032.

Rodden, J. and Erik, W. (2002). Beyond the fiction of federalism: Macroeconomic management in multitiered systems. *World Politics*, 54 (4): 494-531.

Rubin, I. (2007). The great unraveling: Federal budgeting, 1998-2006. Public Administration Review July/August 67(4): 605-794.

Salah, N. (2016). The effects of oil price shocks on the economies of the Gulf Co-operation Council countries: Nonlinear analysis. *Energy Policy*, 91: 256-267.

Seerattan, D. (2000). Foreign exchange rate regimes and fiscal discipline in the Caribbean. *Social and Economic Studies*, Vol. 49, No. 2/3: 109-137.

Schick, A. (1966). The road to PPB: The stages of budget reform. *Public Administration Review*, 26(4): 243-258.

Schick, A. (2001). Does budgeting have a future. Paper presented at the 22nd annual meeting of senior budget officials, PUMA/SBO (2001) 4, Paris: Organization of Economic Cooperation and Development.

Schmidt, M. G. (2000). The socio-political laggard states and theories of comparative state research . In The Restrained Welfare State. Social Policy Enrichments, ed. Herbert Obinger, 22-36. Frankfurt am Main / New York: Campus.

Talvi, E. and Vegh, C. A. (2005). Tax base variability and procyclicality of fiscal policy. *Journal of Development Economics*, 78(4): 156-190.

Tanzi, V. (1995). Fiscal federalism and decentralization: A review of some efficiency and macroeconomic aspects. Annual World Bank Conference on Development Economics, The World Bank, pp. 317-322.

Tanzi, V. (1996). Fiscal federalism and decentralization: A review of some efficiency and macroeconomic aspects. Annual World Bank Conference on Development Economics, The World Bank, pp. 295-316.

Tiebout, C. M. (1956). A pure theory of local expenditure. *Journal of Political Economy*, 64 (5): 416–424.

The Nigerian Fiscal Responsibility Act 2007.

Tornell, A. and Lane, P. (1999). The voracity effect. *American Economic Review*, 89(7): 22-46.

Tornell, A. and Velasco, A. (1995). Fixed or flexible exchange rates: Which provides more fiscal discipline. Working Paper no. 5108, National Bureau of Economic Research, Cambridge, MA.

Treisman, D. (2008). The architecture of government: Rethinking political decentralization. Cambridge studies in comparative politics. Cambridge University Press.

Tsebelis, G. (2002). Veto players. How political institutions work. New York Press.

Von, H. J. and Harden, I. (1995). Budget Processes and Commitment to Fiscal Discipline. *European Economic Review*, vol. 39(6): 771-779.

Von, H. J. (1992). Budgeting Procedures and Fiscal Performance in the European Communities. *Economic Papers*, 96 (1): 1-45.

Von, H. J. (2005). Political economy of fiscal institutions, governance and the efficiency of economic systems. GESY Discussion Paper No. 149.

William, O. (1999). An essay on fiscal federalism. *Journal of Economic Literature*, 37 (3): 1120-1149.

Weingast, B. R., Shepsle, K. A. and Johnsen C. (1981). The political economy of benefits and costs: A neoclassical approach to distributive politics. *Journal of Political Economy*, 89(41): 642–664.

Weingast, B. R. (1995). The economic role of political institutions: Market preserving federalism and economic development. *Journal of Law Economic Organisations*, 11: 1-31.

Weingast, B. R. (1997). The political foundations of democracy and the rule of the law. *American Political Science Review*, 91: 245-263.

White, H. (1984). Asymptotic Theory for Econometricians. 1st ed. Orlando, FL: Academic Press.

Wyplosz, C. and Kostrup, S. (2010). A common pool theory of supranational deficit ceilings. *European Economic Review*, 54 (2): 269–278.

APPENDICES

APPENDIX A: Result for Model 1 (Primary Balance)

Appendix A1: Estimates of model 1 (Primary balance) results

Table A1:1: ARDL result

Dependent Variable: PRYBAL				
Technique: ARDL				
Adjusted sample:1984 2015				
Observations included: 32 after adjustments				
Method of selecting model: Schwarz criterion (SIC)				
Dynamic regressor(2 lags, automatic): CAPINF ELECPRD GOVSZ				
POLREG SPDU TRDOPN TRESV TRSPRCY				
Fixed regressors: C @TREND				
Number of models evaluated: 19683				
Model selected: ARDL(3, 2, 1, 2, 2, 2, 2, 0, 2)				
Variables	Coefficiient	Std. Error	t-Statistics	Prob.*
PRYBAL(-1)	-0.061275	0.096538	-0.634723	0.549
PRYBAL(-2)	0.361128	0.085494	4.224034	0.0055
PRYBAL(-3)	-0.186763	0.087762	-2.128068	0.0774
CAPINF	-0.261475	0.046866	-5.579241	0.0014
CAPINF(-1)	-0.060551	0.051523	-1.175209	0.2844
CAPINF(-2)	0.264919	0.037125	7.135946	0.0004
ELECPRD	-0.024296	0.006143	-3.95508	0.0075
ELECPRD(-1)	-0.071705	0.008821	-8.128932	0.0002
GOVSZ	-0.197179	0.037342	-5.280311	0.0019
GOVSZ(-1)	0.199279	0.03471	5.741215	0.0012
GOVSZ(-2)	0.206723	0.030438	6.791712	0.0005
POLREG	0.033256	0.00733	4.537093	0.0039
POLREG(-1)	0.032401	0.006229	5.201371	0.002
POLREG(-2)	0.020769	0.007894	2.630923	0.039
SPDU	0.013385	0.001645	8.135563	0.0002
SPDU(-1)	0.001671	0.000845	1.978715	0.0952
SPDU(-2)	0.003004	0.00077	3.899203	0.008
TRDOPN	0.016869	0.019035	0.886207	0.4096
TRDOPN(-1)	0.06103	0.018639	3.274253	0.0169
TRDOPN(-2)	-0.139658	0.027605	-5.059104	0.0023
TRESV	0.077862	0.052628	1.479462	0.1895
TRSPRCY	-0.001976	0.000564	-3.50228	0.0128
TRSPRCY(-1)	0.00234	0.00069	3.389952	0.0147
TRSPRCY(-2)	0.004511	0.000472	9.548159	0.0001

C	-0.741748	0.070859	-10.46802	0
@TREND	-0.009322	0.001267	-7.357737	0.0003
R-square	0.995284	Variance of Mean dependent		-0.038614
R-square Adjusted	0.975635	Variance S.D dependent		0.034147
S.E. of regression	0.00533	Akaike info criterion		-7.679854
Residual of sum squared	0.00017	Schwarz criterion		-6.488944
Log likelihood	148.8777	Hannan-Quinn criterion		-7.285101
F-statistic	50.65326	Durbin-Watson statistics		2.293782
Probability(F-statistic)	0.000041			

Table A1:2: ARDL Bounds test for Model 1

ARDL Bounds Test				
Sampling period: 1984 2015				
Observations included: 32				
Null Hypotheses: No long-run relationships exist				
Test Statistic	Value	k		
F-statistic	29.36651	8		
Critical Value Bounds				
Significance	I0 Bound	I1 Bound		
10%	2.26	3.34		
5%	2.55	3.68		
2.50%	2.82	4.02		
1%	3.15	4.43		
Test Equation:				
Dependent Variables: D(PRYBAL)				
Method Used: Least Squares				
Sampling period: 1984 2015				
Observations included: 32				
Variables	Coefficiient	Std. Error	t-Statistics	Prob.
D(PRYBAL(-1))	-0.226848	0.144494	-1.569954	0.1675
D(PRYBAL(-2))	0.159838	0.125609	1.272497	0.2503
D(CAPINF)	-0.231447	0.049337	-4.691113	0.0034
D(CAPINF(-1))	-0.270404	0.045051	-6.002197	0.001
D(ELECPRD)	-0.029601	0.011205	-2.641765	0.0384
D(GOVSZ)	-0.186054	0.042503	-4.37744	0.0047
D(GOVSZ(-1))	-0.217713	0.034162	-6.372998	0.0007
D(POLREG)	0.0279	0.007634	3.654569	0.0106
D(POLREG(-1))	-0.018245	0.010103	-1.805947	0.121
D(SPDU)	0.011772	0.00165	7.136462	0.0004
D(SPDU(-1))	-0.0024	0.000792	-3.029913	0.0231
D(TRDOPN)	0.031791	0.020123	1.579837	0.1652
D(TRDOPN(-1))	0.104544	0.029957	3.489761	0.013
D(TRSPRCY)	-0.001733	0.000646	-2.681256	0.0365
D(TRSPRCY(-1))	-0.004372	0.000613	-7.137446	0.0004
C	-0.692636	0.076189	-9.091006	0.0001
@TREND	-0.008426	0.001362	-6.185169	0.0008

CAPINF(-1)	0.03512	0.063115	0.556454	0.598
ELECPRD(-1)	-0.095116	0.017538	-5.423585	0.0016
GOVSZ(-1)	0.205284	0.066267	3.097845	0.0212
POLREG(-1)	0.077236	0.014416	5.357615	0.0017
SPDU(-1)	0.016158	0.001934	8.353695	0.0002
TRDOPN(-1)	-0.015593	0.033774	-0.4617	0.6606
TRESV(-1)	-0.018938	0.06083	-0.311335	0.7661
TRSPRCY(-1)	0.004561	0.000682	6.691276	0.0005
PRYBAL(-1)	-0.740357	0.18949	-3.907101	0.0079
R-square	0.991916	Variance of Mean dependent		0.001302
R-square Adjusted	0.958231	Variance S.D dependent		0.030225
S.E. of regression	0.006177	Akaike info criterion		-7.384871
Residual of sum squared	0.000229	Schwarz criterion		-6.193961
Log likelihood	144.1579	Hannan-Quinn criterion		-6.990118
F-statistic	29.44685	Durbin-Watson statistics		2.344763
Probability(F-statistic)	0.000201			

Table A1:3: ARDL Cointegration and Long Run Form results

ARDL Cointegration And Long Run Form				
Dependent Variables: PRYBAL				
Model selected: ARDL(3, 2, 1, 2, 2, 2, 2, 0, 2)				
Sampling period: 1981 2015				
Observations included: 32				
Cointegrating Form				
Variables	Coefficient	Std. Error	t-Statistic	Prob.
D(PRYBAL(-1))	-0.174365	0.117058	-1.489556	0.1869
D(PRYBAL(-2))	0.186763	0.087762	2.128068	0.0774
D(CAPINF)	-0.261475	0.046866	-5.579241	0.0014
D(CAPINF(-1))	-0.264919	0.037125	-7.135946	0.0004
D(ELECPRD)	-0.024296	0.006143	-3.95508	0.0075
D(GOVSZ)	-0.197179	0.037342	-5.280311	0.0019
D(GOVSZ(-1))	-0.206723	0.030438	-6.791712	0.0005
D(POLREG)	0.033256	0.00733	4.537093	0.0039
D(POLREG(-1))	-0.020769	0.007894	-2.630923	0.039
D(SPDU)	0.013385	0.001645	8.135563	0.0002
D(SPDU(-1))	-0.003004	0.00077	-3.899203	0.008
D(TRDOPN)	0.016869	0.019035	0.886207	0.4096
D(TRDOPN(-1))	0.139658	0.027605	5.059104	0.0023
D(TRESV)	0.077862	0.052628	1.479462	0.1895
D(TRSPRCY)	-0.001976	0.000564	-3.50228	0.0128
D(TRSPRCY(-1))	-0.004511	0.000472	-9.548159	0.0001
D(@TREND())	-0.009322	0.001267	-7.357737	0.0003
CointEq(-1)	-0.88691	0.166837	-5.316032	0.0018
Cointeq = PRYBAL - (-0.0644*CAPINF -0.1082*ELECPRD + 0.2355*GOVSZ + 0.0974*POLREG + 0.0204*SPDU -0.0696*TRDOPN + 0.0878*TRESV + 0.0055*TRSPRCY -0.8363 -0.0105*@TREND)				

Long Run Coefficients				
Variables	Coefficient	Std. Error	t-Statistic	Prob.
CAPINF	-0.064388	0.071282	-0.903291	0.4012
ELECPRD	-0.108242	0.024357	-4.443983	0.0044
GOVSZ	0.23545	0.048583	4.846309	0.0029
POLREG	0.097447	0.024727	3.940865	0.0076
SPDU	0.020363	0.004269	4.770034	0.0031
TRDOPN	-0.069634	0.031948	-2.179625	0.0721
TRESV	0.08779	0.05331	1.646775	0.1507
TRSPRCY	0.005498	0.001102	4.989037	0.0025
C	-0.836329	0.113128	-7.392745	0.0003
@TREND	-0.010511	0.002655	-3.959127	0.0075

Appendix A2: Estimates of diagnostics results for Model 1 (Primary Balance)

Figure A2:1: Normality test result

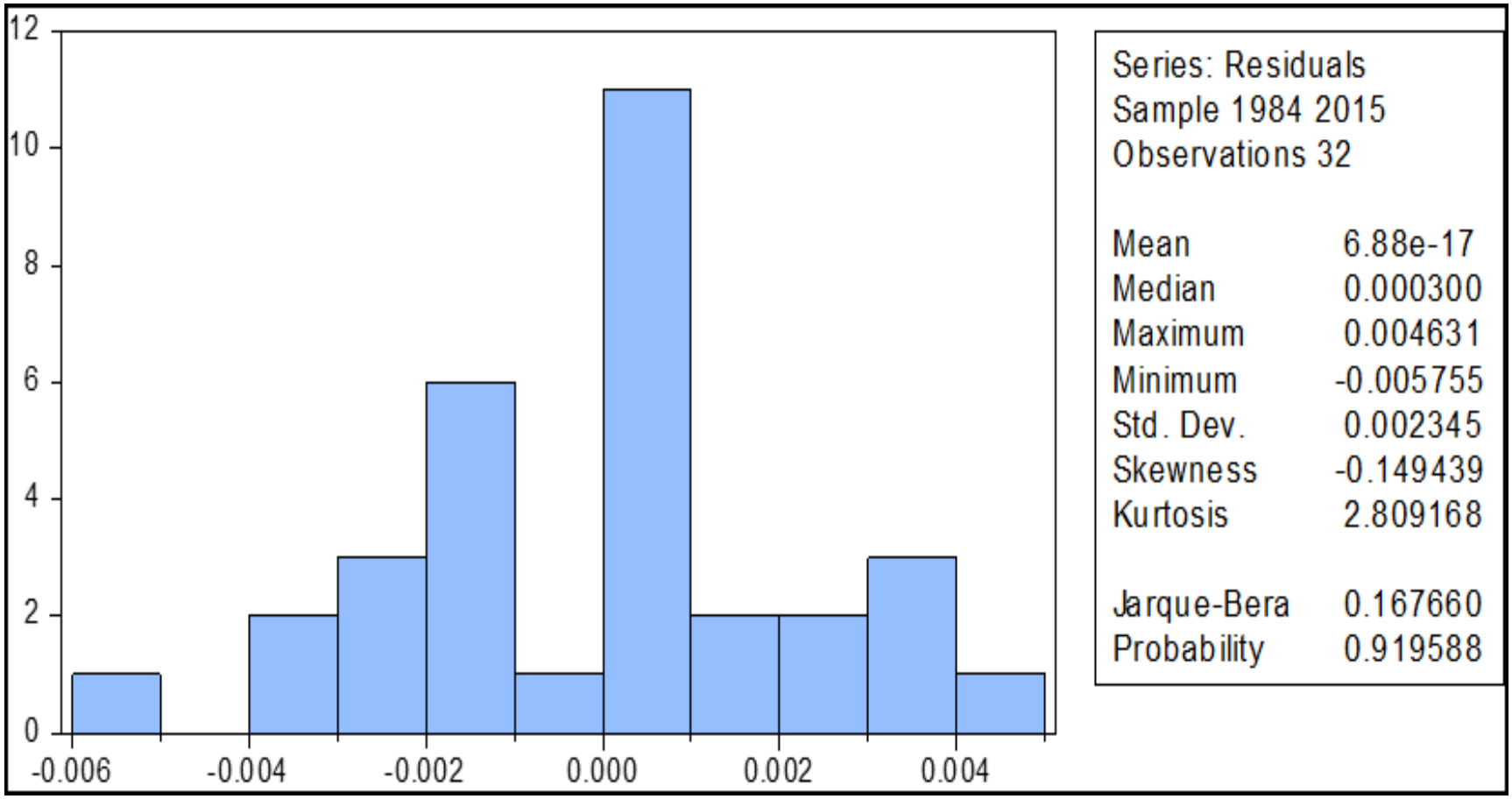


Table A2:1: Breusch-Godfrey Serial Correlation LM Test result

Breusch-Godfrey Serial Correlation LM Test:				
F-statistic	1.522516	Prob. F(2,4)		0.3224
Obs*R-square	13.83117	Prob. Chi-Square(2)		0.001
Test Equation:				
Dependent Variables: RESID				
Technique: ARDL				
Sampling period: 1984 2015				
Observations included: 32				
Presample missing value lagged residuals set to zero.				
Variables	Coefficient	Std. Error	t-Statistic	Prob.
PRYBAL(-1)	-0.023511	0.093417	-0.251682	0.8137
PRYBAL(-2)	-0.019291	0.081015	-0.238113	0.8235
PRYBAL(-3)	0.002369	0.08644	0.02741	0.9794
CAPINF	0.004642	0.043728	0.106165	0.9206
CAPINF(-1)	-0.012227	0.051802	-0.236034	0.825
CAPINF(-2)	0.005142	0.034646	0.148405	0.8892
ELECPRD	0.00053	0.006466	0.081937	0.9386
ELECPRD(-1)	-0.002513	0.00827	-0.303869	0.7764
GOVSZ	-0.003214	0.034934	-0.09201	0.9311
GOVSZ(-1)	0.006595	0.032272	0.204367	0.848
GOVSZ(-2)	-0.000791	0.028197	-0.028041	0.979
POLREG	-0.001255	0.007105	-0.176602	0.8684
POLREG(-1)	-0.002156	0.005888	-0.366241	0.7327
POLREG(-2)	0.001139	0.007323	0.155599	0.8839
SPDU	-3.63E-05	0.00152	-0.023849	0.9821
SPDU(-1)	7.04E-05	0.000835	0.084296	0.9369
SPDU(-2)	-3.42E-05	0.000716	-0.047714	0.9642
TRDOPN	-0.004644	0.017811	-0.260739	0.8072
TRDOPN(-1)	0.00325	0.017307	0.187801	0.8602
TRDOPN(-2)	-0.003434	0.026323	-0.130473	0.9025
TRESV	0.020285	0.050621	0.400721	0.7091
TRSPRCY	-0.0001	0.000529	-0.189383	0.859
TRSPRCY(-1)	6.62E-05	0.000649	0.101906	0.9237
TRSPRCY(-2)	2.78E-05	0.000447	0.062247	0.9534
C	-0.00524	0.066528	-0.078765	0.941
@TREND	0.000167	0.001174	0.142528	0.8936
RESID(-1)	-0.386103	0.506848	-0.761773	0.4886
RESID(-2)	-0.788456	0.484023	-1.628963	0.1787

R-square	0.432224	Variance of Mean dependent	6.88E-17
R-square Adjusted	-3.400264	Variance S.D dependent	0.002345
S.E. of regression	0.004919	Akaike info criterion	-8.120882
Residual of sum squared	9.68E-05	Schwarz criterion	-6.838363
Log likelihood	157.9341	Hannan-Quinn criterion	-7.695764
F-statistic	0.112779	Durbin-Watson statistics	2.396435
Probability(F-statistic)	0.999895		

Table A2:2: ARCH Heteroskedasticity test result

Heteroskedasticity Test: ARCH				
F-statistic	0.000186	Prob. F(1,29)		0.9892
Obs*R-square	0.000199	Prob. Chi-Square(1)		0.9888
Test Equation:				
Dependent Variables: RESID^2				
Technique: Least Squares				
Adjusted sample:1985 2015				
Observations included: 31 after adjustments				
Variables	Coefficient	Std. Error	t-Statistic	Prob.
C	5.37E-06	1.67E-06	3.215322	0.0032
RESID^2(-1)	0.00253	0.185571	0.013635	0.9892
R-square	0.000006	Variance of Mean dependent		5.38E-06
R-square Adjusted	-0.034476	Variance S.D dependent		7.39E-06
S.E. of regression	7.52E-06	Akaike info criterion		-20.69588
Residual of sum squared	1.64E-09	Schwarz criterion		-20.60336
Log likelihood	322.7861	Hannan-Quinn criterion		-20.66572
F-statistic	0.000186	Durbin-Watson statistics		1.995794
Probability(F-statistic)	0.989215			

Table A2:3: Ramsey RESET Test for stability result

Ramsey RESET Test				
Equation: UNTITLED				
Specification: PRYBAL PRYBAL(-1) PRYBAL(-2) PRYBAL(-3) CAPINF CAPINF(-1) CAPINF(-2) ELECPRD ELECPRD(-1) GOVSZ GOVSZ(-1) GOVSZ(-2) POLREG POLREG(-1) POLREG(-2) SPDU SPDU(-1) SPDU(-2) TRDOPN TRDOPN(-1) TRDOPN(-2) TRESV TRSPRCY TRSPRCY(-1) TRSPRCY(-2) C @TREND				
Omitted Variables: Squares of fitted values				
	Value	df	Probability	
t-statistic	0.709493	5	0.5097	
F-statistic	0.50338	(1, 5)	0.5097	
F-test summary:				
	Sum of Sq.	df	Mean Squares	
Test SSR	1.56E-05	1	1.56E-05	
Restricted SSR	0.00017	6	2.84E-05	
Unrestricted SSR	0.000155	5	3.10E-05	
Unrestricted Test Equation:				
Dependent Variables: PRYBAL				
Technique: ARDL				
Sampling period: 1984 2015				
Observations included: 32				
Maximum dependent lags: 3 (Automatic selection)				
Method of selecting model: Schwarz criterion (SIC)				
Dynamic regressor(2 lags, automatic):				
Fixed regressors: C @TREND				
Variables	Coefficient	Std. Error	t-Statistic	Prob.*
PRYBAL(-1)	-0.204262	0.225337	-0.906474	0.4062
PRYBAL(-2)	0.54114	0.268966	2.01193	0.1004
PRYBAL(-3)	-0.244079	0.122161	-1.998011	0.1022
CAPINF	-0.321764	0.098057	-3.281381	0.0219
CAPINF(-1)	-0.118271	0.097534	-1.21262	0.2794
CAPINF(-2)	0.326341	0.094853	3.440474	0.0184
ELECPRD	-0.02873	0.008956	-3.207987	0.0238
ELECPRD(-1)	-0.091802	0.029786	-3.082089	0.0274
GOVSZ	-0.241779	0.073973	-3.268498	0.0222
GOVSZ(-1)	0.236072	0.063267	3.731369	0.0136
GOVSZ(-2)	0.271614	0.096826	2.805175	0.0378
POLREG	0.037964	0.01013	3.747763	0.0133

POLREG(-1)	0.038219	0.010467	3.651461	0.0147
POLREG(-2)	0.029383	0.014675	2.002289	0.1016
SPDU	0.016951	0.005312	3.191187	0.0242
SPDU(-1)	0.002598	0.001575	1.648799	0.1601
SPDU(-2)	0.004201	0.001869	2.247493	0.0745
TRDOPN	0.034052	0.03133	1.086879	0.3267
TRDOPN(-1)	0.090717	0.046147	1.965814	0.1065
TRDOPN(-2)	-0.193631	0.08135	-2.380223	0.0631
TRESV	0.096765	0.06107	1.58449	0.1739
TRSPRCY	-0.002525	0.000973	-2.59494	0.0485
TRSPRCY(-1)	0.003165	0.001368	2.313868	0.0686
TRSPRCY(-2)	0.006215	0.002451	2.535811	0.0522
C	-0.986219	0.352425	-2.798381	0.0381
@TREND	-0.012092	0.004121	-2.933824	0.0325
FITTED^2	3.177212	4.478146	0.709493	0.5097
R-square	0.995716	Variance of Mean dependent		-0.038614
R-square Adjusted	0.973437	Variance S.D dependent		0.034147
S.E. of regression	0.005565	Akaike info criterion		-7.713279
Residual of sum squared	0.000155	Schwarz criterion		-6.476564
Log likelihood	150.4125	Hannan-Quinn criterion		-7.303343
F-statistic	44.6931	Durbin-Watson statistics		2.224771
Probability(F-statistic)	0.000244			

APPENDIX B: Result for Model 2 (Debt sustainability)

Appendix B1: Estimates of model 2 (Debt sustainability) results

Table B1:1: ARDL result

Dependent Variables: DEBTSUS				
Technique: ARDL				
Adjusted sample:1983 2015				
Observations included: 33 after adjustments				
Method of selecting model: Schwarz criterion (SIC)				
Dynamic regressor(2 lags, automatic): CAPINF ELECPRD GOVSZ POLREG SPDU TRDOPN TRESV TRSPRCY				
Fixed regressors: C @TREND				
Number of models evalulated: 13122				
Model selected: ARDL(2, 1, 1, 2, 1, 0, 2, 0, 2)				
Variables	Coefficient	Std. Error	t-Statistic	Prob.*
DEBTSUS(-1)	0.784751	0.185648	4.22709	0.0012
DEBTSUS(-2)	-0.207586	0.209483	-0.990944	0.3413
CAPINF	1.260974	0.686087	1.83792	0.0909
CAPINF(-1)	-1.692308	0.700525	-2.41577	0.0326
ELECPRD	0.295231	0.092239	3.20071	0.0076
ELECPRD(-1)	0.096404	0.094362	1.021634	0.3271
GOVSZ	0.007939	0.470073	0.016889	0.9868
GOVSZ(-1)	-0.621835	0.477011	-1.303607	0.2168
GOVSZ(-2)	-0.576559	0.328824	-1.753397	0.105
POLREG	0.14825	0.094848	1.563028	0.144
POLREG(-1)	-0.326557	0.088963	-3.670718	0.0032
SPDU	-0.014626	0.009462	-1.545708	0.1481
TRDOPN	-0.095845	0.318384	-0.301037	0.7685
TRDOPN(-1)	0.801824	0.326173	2.458282	0.0301
TRDOPN(-2)	-0.577496	0.359626	-1.605825	0.1343
TRESV	-0.318501	0.70451	-0.452088	0.6593
TRSPRCY	-0.011153	0.008706	-1.281083	0.2244
TRSPRCY(-1)	0.0186	0.008028	2.317029	0.039
TRSPRCY(-2)	-0.007996	0.005853	-1.366176	0.1969
C	1.686495	0.7908	2.132646	0.0543
@TREND	0.001	0.00623	0.16056	0.8751

R-square	0.951016	Variance of Mean dependent	0.436993
R-square Adjusted	0.869377	Variance S.D dependent	0.291844
S.E. of regression	0.105478	Akaike info criterion	-1.399507
Residual of sum squared	0.133507	Schwarz criterion	-0.447184
Log likelihood	44.09186	Hannan-Quinn criterion	-1.079079
F-statistic	11.649	Durbin-Watson statistics	2.403288
Probability(F-statistic)	0.000047		

Table B1:2 ARDL Bounds test for Model 2

ARDL Bounds Test				
Sampling period: 1983 2015				
Observations included: 33				
Null Hypotheses: No long-run relationships exist				
Test Statistic	Value	k		
F-statistic	2.669226	8		
Critical Value Bounds				
Significance	I0 Bound	I1 Bound		
10%	2.26	3.34		
5%	2.55	3.68		
2.50%	2.82	4.02		
1%	3.15	4.43		
Test Equation:				
Dependent Variables: D(DEBTSUS)				
Technique: Least Squares				
Sampling period: 1983 2015				
Observations included: 33				
Variables	Coefficient	Std. Error	t-Statistic	Prob.
D(DEBTSUS(-1))	0.255862	0.194424	1.315998	0.2128
D(CAPINF)	1.145102	0.642425	1.782468	0.1
D(ELECPRD)	0.267417	0.117121	2.283252	0.0414
D(GOVSZ)	-0.14351	0.449344	-0.319375	0.7549
D(GOVSZ(-1))	0.529512	0.349578	1.514719	0.1557
D(POLREG)	0.189864	0.101286	1.874537	0.0854
D(TRDOPN)	-0.161681	0.281179	-0.575013	0.5759
D(TRDOPN(-1))	0.662501	0.374749	1.767853	0.1025
D(TRSPRCY)	-0.017551	0.008383	-2.093688	0.0582
D(TRSPRCY(-1))	0.006951	0.005867	1.184871	0.259
C	1.465891	0.820623	1.786315	0.0993
@TREND	-0.002297	0.005046	-0.455234	0.6571
CAPINF(-1)	-0.463695	0.768454	-0.603412	0.5575
ELECPRD(-1)	0.31923	0.170574	1.871505	0.0858
GOVSZ(-1)	-1.040296	0.858164	-1.212235	0.2488
POLREG(-1)	-0.134943	0.113149	-1.192609	0.2561

SPDU(-1)	-0.010567	0.008986	-1.175879	0.2624
TRDOPN(-1)	0.143139	0.456723	0.313405	0.7594
TRESV(-1)	-0.125971	0.70852	-0.177795	0.8619
TRSPRCY(-1)	-0.000518	0.007371	-0.070242	0.9452
DEBTSUS(-1)	-0.46281	0.195734	-2.36449	0.0358
R-square	0.829558	Variance of Mean dependent		-0.003662
R-square Adjusted	0.545488	Variance S.D dependent		0.160733
S.E. of regression	0.108362	Akaike info criterion		-1.345546
Residual of sum squared	0.140909	Schwarz criterion		-0.393223
Log likelihood	43.20152	Hannan-Quinn criterion		-1.025119
F-statistic	2.92026	Durbin-Watson statistics		2.118465
Probability(F-statistic)	0.030323			

Table B1:3: ARDL Cointegration and Long Run Form results

ARDL Cointegration and Long Run Form				
Dependent Variables: DEBTSUS				
Model selected: ARDL(2, 1, 1, 2, 1, 0, 2, 0, 2)				
Sampling period: 1981 2015				
Observations included: 33				
Cointegrating Form				
Variables	Coefficient	Std. Error	t-Statistic	Prob.
D(DEBTSUS(-1))	0.207586	0.209483	0.990944	0.3413
D(CAPINF)	1.260974	0.686087	1.83792	0.0909
D(ELECPRD)	0.295231	0.092239	3.20071	0.0076
D(GOVSZ)	0.007939	0.470073	0.016889	0.9868
D(GOVSZ(-1))	0.576559	0.328824	1.753397	0.105
D(POLREG)	0.14825	0.094848	1.563028	0.144
D(SPDU)	-0.014626	0.009462	-1.545708	0.1481
D(TRDOPN)	-0.095845	0.318384	-0.301037	0.7685
D(TRDOPN(-1))	0.577496	0.359626	1.605825	0.1343
D(TRESV)	-0.318501	0.70451	-0.452088	0.6593
D(TRSPRCY)	-0.011153	0.008706	-1.281083	0.2244
D(TRSPRCY(-1))	0.007996	0.005853	1.366176	0.1969
D(@TREND())	0.001	0.00623	0.16056	0.8751
CointEq(-1)	-0.422835	0.203225	-2.080628	0.0596
Cointeq = DEBTSUS - (-1.0201*CAPINF + 0.9262*ELECPRD -2.8154 *GOVSZ -0.4217*POLREG -0.0346*SPDU + 0.3039*TRDOPN -0.7533 *TRESV -0.0013*TRSPRCY + 3.9885 + 0.0024*@TREND)				
Long Run Coefficients				
Variables	Coefficient	Std. Error	t-Statistic	Prob.
CAPINF	-1.020101	2.353077	-0.433518	0.6723
ELECPRD	0.92621	0.550564	1.682291	0.1183
GOVSZ	-2.815411	1.637307	-1.719538	0.1112
POLREG	-0.421693	0.333138	-1.265821	0.2296
SPDU	-0.034591	0.027387	-1.26306	0.2306
TRDOPN	0.303861	0.900104	0.337585	0.7415
TRESV	-0.75325	1.497355	-0.503054	0.624
TRSPRCY	-0.001297	0.016226	-0.079928	0.9376
C	3.988541	1.711615	2.330279	0.0381
@TREND	0.002366	0.015232	0.155312	0.8792

Appendix B2: Estimates of diagnostics results for Model 2 (Debt sustainability)

Figure B2:1: Normality test result

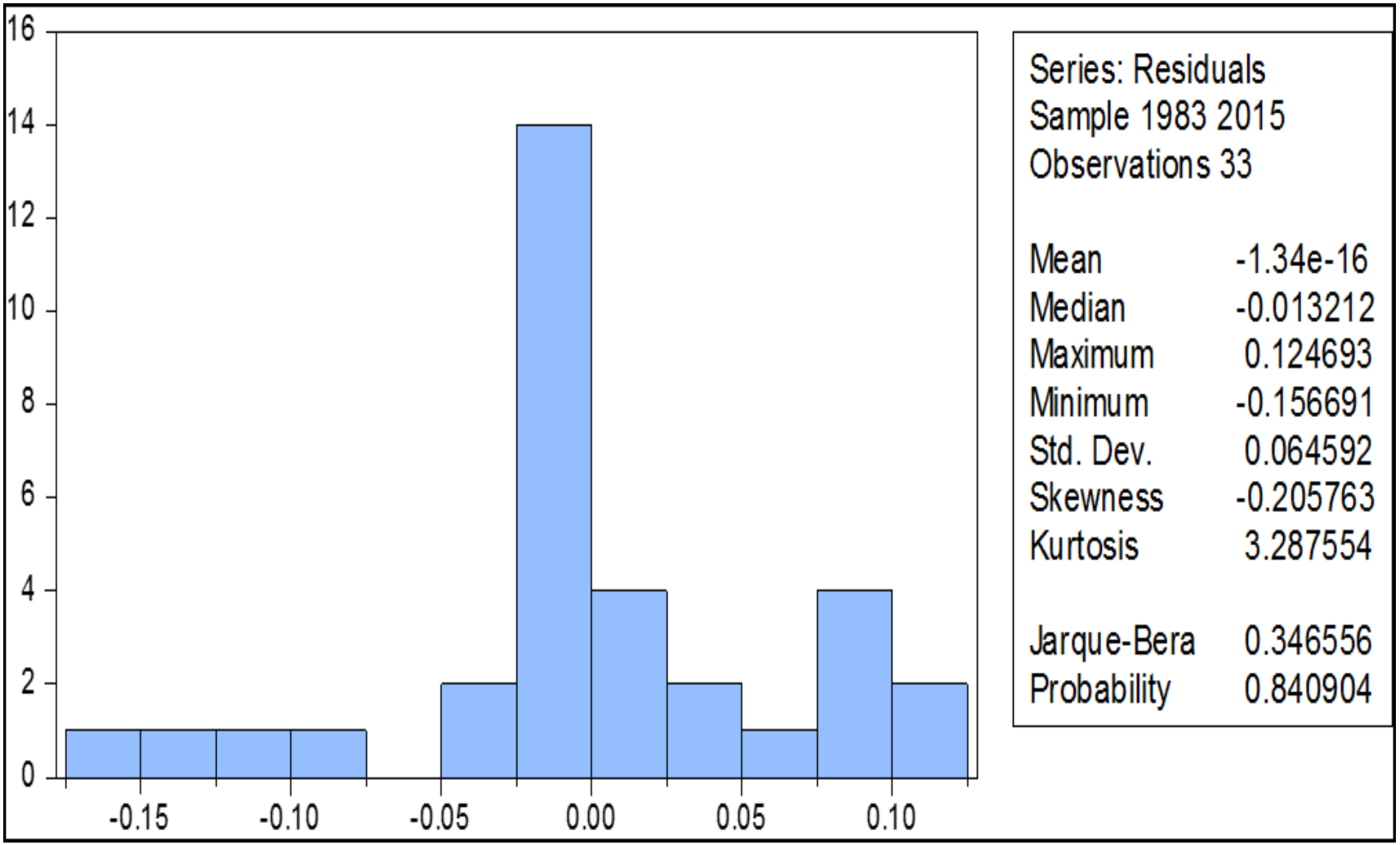


Table B2:1: Breusch-Godfrey Serial Correlation LM Test result

Breusch-Godfrey Serial Correlation LM Test:				
F-statistic	2.472241	Prob. F(2,10)		0.1342
Obs*R-square	10.91827	Prob. Chi-Square(2)		0.0043
Test Equation:				
Dependent Variables: RESID				
Technique: ARDL				
Date: 11/21/17 Time: 10:51				
Sampling period: 1983 2015				
Observations included: 33				
Presample missing value lagged residuals set to zero.				
Variables	Coefficient	Std. Error	t-Statistic	Prob.
DEBTSUS(-1)	0.194358	0.25887	0.750795	0.4701
DEBTSUS(-2)	0.031497	0.221034	0.142499	0.8895
CAPINF	0.197229	0.680331	0.289902	0.7778
CAPINF(-1)	0.326646	0.784665	0.416287	0.686
ELECPRD	-0.046504	0.11644	-0.399379	0.698
ELECPRD(-1)	0.022421	0.086834	0.258204	0.8015
GOVSZ	0.261816	0.501839	0.521713	0.6132
GOVSZ(-1)	0.304434	0.450438	0.675862	0.5145
GOVSZ(-2)	0.121978	0.31461	0.387713	0.7064
POLREG	0.000963	0.085889	0.011208	0.9913
POLREG(-1)	-0.086737	0.088849	-0.976233	0.352
SPDU	-0.001424	0.008518	-0.167229	0.8705
TRDOPN	0.183177	0.306247	0.598136	0.5631
TRDOPN(-1)	-0.028796	0.295535	-0.097437	0.9243
TRDOPN(-2)	-0.047185	0.377802	-0.124895	0.9031
TRESV	-0.361777	0.74993	-0.482414	0.6399
TRSPRCY	0.003056	0.007932	0.385254	0.7081
TRSPRCY(-1)	0.007222	0.008078	0.894007	0.3923
TRSPRCY(-2)	-0.002074	0.005433	-0.381651	0.7107
C	-0.99021	0.840286	-1.178421	0.2659
@TREND	0.001935	0.005985	0.323285	0.7531
RESID(-1)	-0.616954	0.485285	-1.271322	0.2324
RESID(-2)	-0.909729	0.544004	-1.672285	0.1254

R-square	0.330857	Variance of Mean dependent	-1.34E-16
R-square Adjusted	-1.141259	Variance S.D dependent	0.064592
S.E. of regression	0.094517	Akaike info criterion	-1.680051
Residual of sum squared	0.089335	Schwarz criterion	-0.637031
Log likelihood	50.72085	Hannan-Quinn criterion	-1.329107
F-statistic	0.224749	Durbin-Watson statistics	2.000736
Probability(F-statistic)	0.998314		

Table B2:2: ARCH Heteroskedasticity test result

Heteroskedasticity Test: ARCH				
F-statistic	0.222357	Prob. F(1,30)		0.6407
Obs*R-square	0.235436	Prob. Chi-Square(1)		0.6275
Test Equation:				
Dependent Variables: RESID^2				
Technique: Least Squares				
Adjusted sample:1984 2015				
Observations included: 32 after adjustments				
Variables	Coefficient	Std. Error	t-Statistic	Prob.
C	0.004517	0.001357	3.328571	0.0023
RESID^2(-1)	-0.085895	0.182156	-0.471548	0.6407
R-square	0.007357	Variance of Mean dependent		0.004158
R-square Adjusted	-0.025731	Variance S.D dependent		0.006279
S.E. of regression	0.006359	Akaike info criterion		-7.217367
Residual of sum squared	0.001213	Schwarz criterion		-7.125758
Log likelihood	117.4779	Hannan-Quinn criterion		-7.187001
F-statistic	0.222357	Durbin-Watson statistics		1.996919
Probability(F-statistic)	0.640661			

Table B2:3: Ramsey RESET Test for stability result

Ramsey RESET Test				
Equation: UNTITLED				
Specification: DEBTSUS DEBTSUS(-1) DEBTSUS(-2) CAPINF CAPINF(-1)				
ELECPRD ELECPRD(-1) GOVSZ GOVSZ(-2) POLREG				
POLREG(-1) SPDU TRDOPN TRDOPN(-2) TRESV				
TRSPRCY TRSPRCY(-1) TRSPRCY(-2) C @TREND				
Omitted Variables: Squares of fitted values				
	Value	df	Probability	
t-statistic	0.182499	11	0.8585	
F-statistic	0.033306	(1, 11)	0.8585	
F-test summary:				
	Sum of Sq.	Df	Mean Squares	
Test SSR	0.000403	1	0.000403	
Restricted SSR	0.133507	12	0.011126	
Unrestricted SSR	0.133104	11	0.0121	
Unrestricted Test Equation:				
Dependent Variables: DEBTSUS				
Technique: ARDL				
Sampling period: 1983 2015				
Observations included: 33				
Method of selecting model: Akaike info criterion (AIC)				
Dynamic regressor(2 lags, automatic):				
Fixed regressors: C @TREND				
Variables	Coefficient	Std. Error	t-Statistic	Prob.*
DEBTSUS(-1)	0.709054	0.457739	1.549037	0.1496
DEBTSUS(-2)	-0.164105	0.323251	-0.50767	0.6217
CAPINF	1.106453	1.108534	0.998123	0.3397
CAPINF(-1)	-1.535949	1.125957	-1.364128	0.1998
ELECPRD	0.264168	0.195509	1.351183	0.2038
ELECPRD(-1)	0.088965	0.106516	0.835223	0.4214
GOVSZ	0.018828	0.493851	0.038125	0.9703
GOVSZ(-1)	-0.539911	0.670062	-0.805763	0.4375
GOVSZ(-2)	-0.487084	0.598304	-0.814109	0.4329
POLREG	0.120575	0.181055	0.665958	0.5192
POLREG(-1)	-0.29378	0.202149	-1.453282	0.1741
SPDU	-0.013566	0.011453	-1.184486	0.2612

TRDOPN	-0.074196	0.352594	-0.210428	0.8372
TRDOPN(-1)	0.723865	0.546068	1.325595	0.2118
TRDOPN(-2)	-0.516768	0.501386	-1.030678	0.3248
TRESV	-0.304832	0.738533	-0.412753	0.6877
TRSPRCY	-0.009148	0.014251	-0.641916	0.5341
TRSPRCY(-1)	0.017136	0.011595	1.477908	0.1675
TRSPRCY(-2)	-0.007667	0.006364	-1.2048	0.2536
C	1.453323	1.520712	0.955686	0.3598
@TREND	0.000844	0.006553	0.128828	0.8998
FITTED^2	0.087076	0.477132	0.182499	0.8585
R-square	0.951164	Variance of Mean dependent		0.436993
R-square Adjusted	0.857932	Variance S.D dependent		0.291844
S.E. of regression	0.110002	Akaike info criterion		-1.341924
Residual of sum squared	0.133104	Schwarz criterion		-0.344252
Log likelihood	44.14174	Hannan-Quinn criterion		-1.006238
F-statistic	10.20214	Durbin-Watson statistics		2.377225
Probability(F-statistic)	0.000165			

APPENDIX C: Result for Model 3 (Expenditure variance)

Appendix C1: Estimates of model 3 (Expenditure variance) results

Table C1:1: ARDL result

Dependent Variables: EXPDVAR				
Technique: ARDL				
Adjusted sample:1983 2015				
Observations included: 33 after adjustments				
Method of selecting model: Schwarz criterion (SIC)				
Dynamic regressor(2 lags, automatic): CAPINF ELECPRD GOVSZ				
POLREG SPDU TRDOPN TRESV TRSPRCY				
Fixed regressors: C @TREND				
Number of models evalulated: 13122				
Model selected: ARDL(2, 2, 2, 0, 0, 2, 2, 0, 2)				
Variables	Coefficient	Std. Error	t-Statistic	Prob.*
EXPDVAR(-1)	0.234237	0.087343	2.681809	0.0213
EXPDVAR(-2)	-0.668064	0.087657	-7.621357	0
CAPINF	-0.353458	0.105828	-3.33992	0.0066
CAPINF(-1)	0.207333	0.128171	1.617636	0.134
CAPINF(-2)	-0.459823	0.096374	-4.771261	0.0006
ELECPRD	-0.051251	0.016021	-3.198928	0.0085
ELECPRD(-1)	0.053771	0.019322	2.782841	0.0178
ELECPRD(-2)	-0.01882	0.014253	-1.320485	0.2135
GOVSZ	0.317175	0.09317	3.404248	0.0059
POLREG	0.011127	0.016558	0.672017	0.5154
SPDU	0.004657	0.002208	2.109266	0.0587
SPDU(-1)	-0.002748	0.002339	-1.174861	0.2649
SPDU(-2)	0.0042	0.001707	2.460633	0.0316
TRDOPN	0.228268	0.058644	3.892409	0.0025
TRDOPN(-1)	-0.189441	0.063062	-3.004029	0.012
TRDOPN(-2)	-0.120932	0.053257	-2.270738	0.0443
TRESV	0.02919	0.112725	0.25895	0.8005
TRSPRCY	0.001172	0.001487	0.788527	0.447
TRSPRCY(-1)	0.001704	0.001756	0.970236	0.3528
TRSPRCY(-2)	0.006319	0.001228	5.145795	0.0003
C	-0.689116	0.091184	-7.557453	0
@TREND	-0.00531	0.001106	-4.801982	0.0006

R-square	0.964513	Variance of Mean dependent	-0.02446
R-square Adjusted	0.896766	Variance S.D dependent	0.061129
S.E. of regression	0.019641	Akaike info criterion	-4.7877
Residual of sum squared	0.004243	Schwarz criterion	-3.79003
Log likelihood	100.9971	Hannan-Quinn criterion	-4.45202
F-statistic	14.23693	Durbin-Watson statistics	2.863313
Probability(F-statistic)	0.000032		

Table C1:2: ARDL Bounds test for Model 3

ARDL Bounds Test				
Sampling period: 1983 2015				
Observations included: 33				
Null Hypotheses: No long-run relationships exist				
Test Statistic	Value	k		
F-statistic	14.58976	8		
Critical Value Bounds				
Significance	I0 Bound	I1 Bound		
10%	2.26	3.34		
5%	2.55	3.68		
2.50%	2.82	4.02		
1%	3.15	4.43		
Test Equation:				
Dependent Variables: D(EXPDVAR)				
Technique: Least Squares				
Sampling period: 1983 2015				
Observations included: 33				
Variables	Coefficient	Std. Error	t-Statistic	Prob.
D(EXPDVAR(-1))	0.474684	0.119723	3.964858	0.0022
D(CAPINF)	-0.372157	0.141161	-2.636396	0.0231
D(CAPINF(-1))	0.437655	0.136036	3.2172	0.0082
D(ELECPRD)	-0.025549	0.025828	-0.989217	0.3438
D(ELECPRD(-1))	-0.005053	0.02288	-0.220857	0.8292
D(SPDU)	0.008112	0.002964	2.737183	0.0193
D(SPDU(-1))	-0.004559	0.002332	-1.955514	0.0764
D(TRDOPN)	0.119616	0.058039	2.060943	0.0638
D(TRDOPN(-1))	0.225362	0.094831	2.376449	0.0367
D(TRSPRCY)	-0.000472	0.001928	-0.24467	0.8112
D(TRSPRCY(-1))	-0.005984	0.001761	-3.398869	0.0059
C	-0.402018	0.151419	-2.655004	0.0224
@TREND	-0.00678	0.001604	-4.227108	0.0014
CAPINF(-1)	-0.74108	0.204376	-3.626063	0.004
ELECPRD(-1)	0.015781	0.051357	0.307275	0.7644
GOVSZ(-1)	-0.021896	0.149245	-0.146713	0.886
POLREG(-1)	0.030501	0.023048	1.323343	0.2126

SPDU(-1)	0.010997	0.002908	3.78112	0.003
TRDOPN(-1)	-0.205584	0.087115	-2.359921	0.0378
TRESV(-1)	0.269621	0.185423	1.454088	0.1739
TRSPRCY(-1)	0.007406	0.001986	3.728609	0.0033
EXPDVAR(-1)	-1.223293	0.145753	-8.392921	0
R-square	0.949141	Variance of Mean dependent		-0.00131
R-square Adjusted	0.852047	Variance S.D dependent		0.069272
S.E. of regression	0.026645	Akaike info criterion		-4.1777
Residual of sum squared	0.00781	Schwarz criterion		-3.18003
Log likelihood	90.93203	Hannan-Quinn criterion		-3.84201
F-statistic	9.775456	Durbin-Watson statistics		2.357367
Probability(F-statistic)	0.000203			

Table C1:3: ARDL Cointegration and Long Run Form results

ARDL Cointegration and Long Run Form				
Dependent Variables: EXPDVAR				
Model selected: ARDL(2, 2, 2, 0, 0, 2, 2, 0, 2)				
Sampling period: 1981 2015				
Observations included: 33				
Cointegrating Form				
Variables	Coefficient	Std. Error	t-Statistic	Prob.
D(EXPDVAR(-1))	0.668064	0.087657	7.621357	0
D(CAPINF)	-0.353458	0.105828	-3.33992	0.0066
D(CAPINF(-1))	0.459823	0.096374	4.771261	0.0006
D(ELECPRD)	-0.051251	0.016021	-3.198928	0.0085
D(ELECPRD(-1))	0.01882	0.014253	1.320485	0.2135
D(GOVSZ)	0.317175	0.09317	3.404248	0.0059
D(POLREG)	0.011127	0.016558	0.672017	0.5154
D(SPDU)	0.004657	0.002208	2.109266	0.0587
D(SPDU(-1))	-0.0042	0.001707	-2.460633	0.0316
D(TRDOPN)	0.228268	0.058644	3.892409	0.0025
D(TRDOPN(-1))	0.120932	0.053257	2.270738	0.0443
D(TRESV)	0.02919	0.112725	0.25895	0.8005
D(TRSPRCY)	0.001172	0.001487	0.788527	0.447
D(TRSPRCY(-1))	-0.006319	0.001228	-5.145795	0.0003
D(@TREND())	-0.00531	0.001106	-4.801982	0.0006
CointEq(-1)	-0.94327	0.109165	-13.134486	0
Cointeq = EXPDVAR - (-0.4226*CAPINF -0.0114*ELECPRD + 0.2212				
*GOVSZ + 0.0078*POLREG + 0.0043*SPDU -0.0573*TRDOPN + 0.0204				
*TRESV + 0.0064*TRSPRCY -0.4806 -0.0037*@TREND)				

Long Run Coefficients				
Variables	Coefficient	Std. Error	t-Statistic	Prob.
CAPINF	-0.422609	0.107674	-3.924881	0.0024
ELECPRD	-0.011369	0.023902	-0.475637	0.6436
GOVSZ	0.221209	0.06123	3.612742	0.0041
POLREG	0.007761	0.01165	0.666124	0.5191
SPDU	0.00426	0.001488	2.86387	0.0154
TRDOPN	-0.057263	0.034607	-1.654672	0.1262
TRESV	0.020358	0.078959	0.257832	0.8013
TRSPRCY	0.006413	0.000816	7.864015	0
C	-0.480613	0.057282	-8.390328	0
@TREND	-0.003703	0.000804	-4.605096	0.0008

Appendix C2: Estimates of diagnostics results for model 3 (expenditure variance)

Figure C2:1: Normality test result

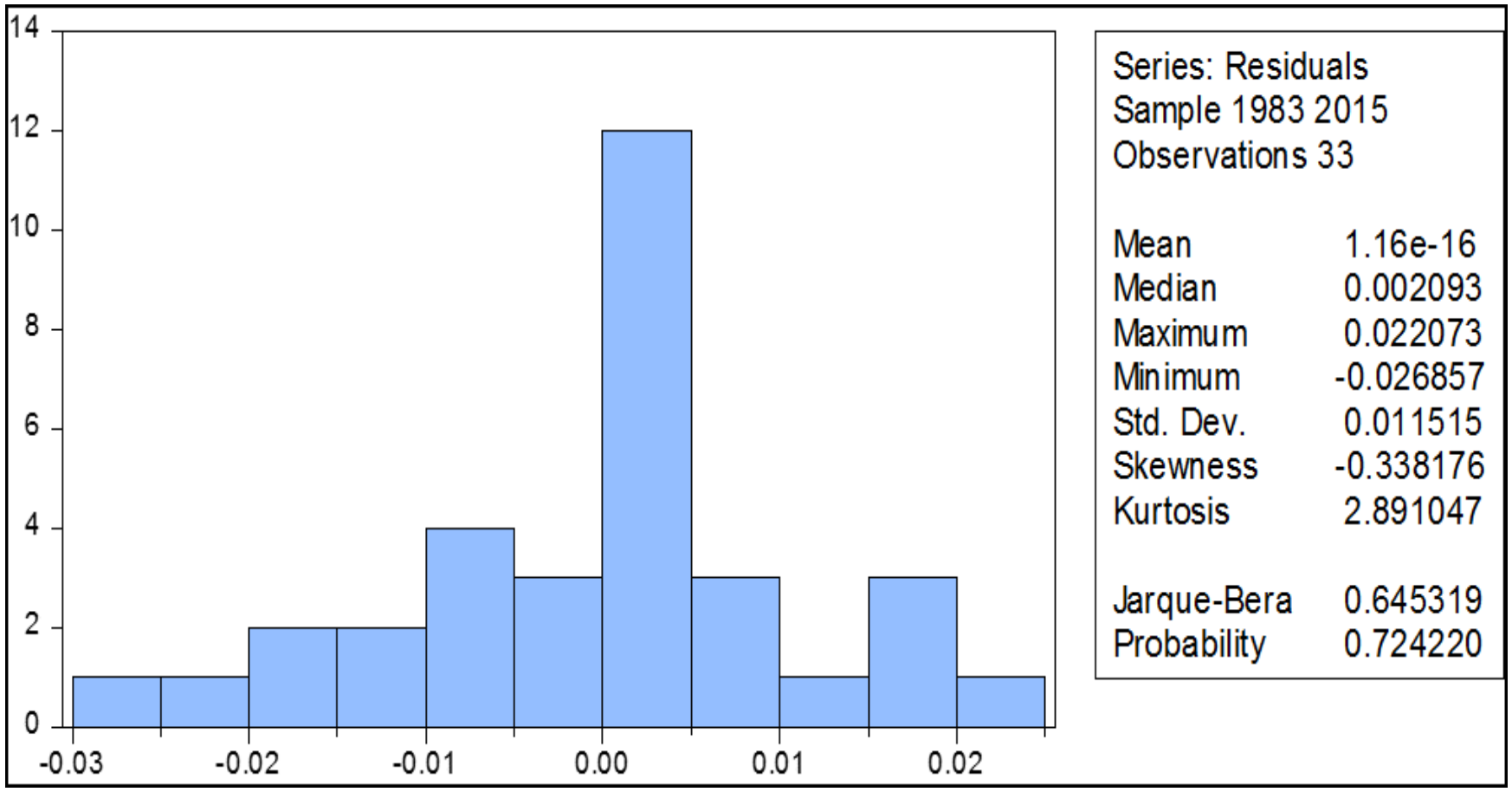


Table C2:1: Breusch-Godfrey Serial Correlation LM Test result

Breusch-Godfrey Serial Correlation LM Test:				
F-statistic	2.245138	Prob. F(2,9)		0.1618
Obs*R-square	10.98414	Prob. Chi-Square(2)		0.0041
Test Equation:				
Dependent Variables: RESID				
Technique: ARDL				
Sampling period: 1983 2015				
Observations included: 33				
Presample missing value lagged residuals set to zero.				
Variables	Coefficient	Std. Error	t-Statistic	Prob.
EXPDVAR(-1)	0.035089	0.083374	0.420866	0.6837
EXPDVAR(-2)	0.00464	0.09187	0.050501	0.9608
CAPINF	0.058495	0.121397	0.481847	0.6414
CAPINF(-1)	0.036415	0.117304	0.310432	0.7633
CAPINF(-2)	-0.006266	0.093903	-0.066732	0.9483
ELECPRD	0.001529	0.014556	0.105021	0.9187
ELECPRD(-1)	0.01973	0.020044	0.984305	0.3507
ELECPRD(-2)	0.008357	0.015641	0.534281	0.6061
GOVSZ	0.058338	0.088546	0.658842	0.5265
POLREG	-0.014128	0.021837	-0.646962	0.5338
SPDU	-0.000812	0.00203	-0.400043	0.6985
SPDU(-1)	-0.000164	0.002173	-0.075288	0.9416
SPDU(-2)	-7.73E-05	0.001615	-0.047849	0.9629
TRDOPN	0.058508	0.062086	0.94236	0.3706
TRDOPN(-1)	-0.009885	0.063915	-0.15466	0.8805
TRDOPN(-2)	-0.013228	0.051474	-0.256995	0.803
TRESV	-0.115688	0.14174	-0.816201	0.4355
TRSPRCY	0.00183	0.001723	1.062087	0.3159
TRSPRCY(-1)	-0.000176	0.001798	-0.098023	0.9241
TRSPRCY(-2)	-0.001115	0.001487	-0.750006	0.4724
C	-0.053598	0.09017	-0.594414	0.5669
@TREND	0.000532	0.001043	0.510479	0.622
RESID(-1)	-0.911421	0.449038	-2.029718	0.073
RESID(-2)	-0.659498	0.657191	-1.00351	0.3418

R-square	0.332853	Variance of Mean dependent	1.16E-16
R-square Adjusted	-1.372079	Variance S.D dependent	0.011515
S.E. of regression	0.017735	Akaike info criterion	-5.07124
Residual of sum squared	0.002831	Schwarz criterion	-3.98287
Log likelihood	107.6754	Hannan-Quinn criterion	-4.70503
F-statistic	0.195229	Durbin-Watson statistics	2.154491
Probability(F-statistic)	0.999263		

Table C2:2: ARCH Heteroskedasticity test result

Heteroskedasticity Test: ARCH				
F-statistic	0.712217	Prob. F(1,30)		0.4054
Obs*R-square	0.74208	Prob. Chi-Square(1)		0.389
Test Equation:				
Dependent Variables: RESID^2				
Technique: Least Squares				
Adjusted sample:1984 2015				
Observations included: 32 after adjustments				
Variables	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000112	4.00E-05	2.805823	0.0087
RESID^2(-1)	0.152071	0.180193	0.843929	0.4054
R-square	0.02319	Variance of Mean dependent		0.000132
R-square Adjusted	-0.00937	Variance S.D dependent		0.000181
S.E. of regression	0.000182	Akaike info criterion		-14.3247
Residual of sum squared	9.94E-07	Schwarz criterion		-14.2331
Log likelihood	231.1953	Hannan-Quinn criterion		-14.2943
F-statistic	0.712217	Durbin-Watson statistics		2.008047
Probability(F-statistic)	0.405388			

Table C2:3: Ramsey RESET Test for stability result

Ramsey RESET Test				
Equation: UNTITLED				
Specification: EXPDVAR EXPDVAR(-1) EXPDVAR(-2) CAPINF CAPINF(-1)				
CAPINF(-2) ELECPRD ELECPRD(-1) ELECPRD(-2) GOVSZ POLREG				
SPDU SPDU(-1) SPDU(-2) TRDOPN TRDOPN(-1) TRDOPN(-2)				
TRESV TRSPRCY TRSPRCY(-1) TRSPRCY(-2) C @TREND				
Omitted Variables: Squares of fitted values				
	Value	df	Probability	
t-statistic	0.896303	10	0.3912	
F-statistic	0.803359	(1, 10)	0.3912	
F-test summary:				
	Sum of Sq.	df	Mean Squares	
Test SSR	0.000316	1	0.000316	
Restricted SSR	0.004243	11	0.000386	
Unrestricted SSR	0.003928	10	0.000393	
Unrestricted Test Equation:				
Dependent Variables: EXPDVAR				
Technique: ARDL				
Sampling period: 1983 2015				
Observations included: 33				
Maximum dependent lags: 2 (Automatic selection)				
Method of selecting model: Schwarz criterion (SIC)				
Dynamic regressor(2 lags, automatic):				
Fixed regressors: C @TREND				
Variables	Coefficient	Std. Error	t-Statistic	Prob.*
EXPDVAR(-1)	0.222648	0.089078	2.49947	0.0315
EXPDVAR(-2)	-0.669075	0.088458	-7.563737	0
CAPINF	-0.399313	0.11841	-3.372301	0.0071
CAPINF(-1)	0.241421	0.134808	1.790857	0.1036
CAPINF(-2)	-0.456787	0.097306	-4.694352	0.0008
ELECPRD	-0.063479	0.021154	-3.000862	0.0133
ELECPRD(-1)	0.046283	0.021212	2.181915	0.0541
ELECPRD(-2)	-0.024157	0.015566	-1.551961	0.1517
GOVSZ	0.295194	0.097161	3.038205	0.0125
POLREG	0.008678	0.01693	0.512563	0.6194
SPDU	0.006252	0.002851	2.192674	0.0531
SPDU(-1)	-0.003396	0.002468	-1.375732	0.1989

SPDU(-2)	0.004513	0.001757	2.568174	0.028
TRDOPN	0.215132	0.060963	3.528878	0.0055
TRDOPN(-1)	-0.191119	0.063661	-3.00212	0.0133
TRDOPN(-2)	-0.114773	0.054177	-2.118498	0.0602
TRESV	0.047061	0.115481	0.407519	0.6922
TRSPRCY	0.001029	0.001508	0.682184	0.5106
TRSPRCY(-1)	0.001913	0.001788	1.06995	0.3098
TRSPRCY(-2)	0.007024	0.001468	4.785508	0.0007
C	-0.718764	0.097775	-7.351213	0
@TREND	-0.005871	0.001279	-4.588975	0.001
FITTED^2	0.897415	1.001241	0.896303	0.3912
R-square	0.967152	Variance of Mean dependent		-0.02446
R-square Adjusted	0.894887	Variance S.D dependent		0.061129
S.E. of regression	0.019819	Akaike info criterion		-4.80437
Residual of sum squared	0.003928	Schwarz criterion		-3.76135
Log likelihood	102.2721	Hannan-Quinn criterion		-4.45343
F-statistic	13.38338	Durbin-Watson statistics		2.940195
Probability(F-statistic)	0.000087			

APPENDIX D: Result for Model 4 (Revenue variance)

Appendix D1: Estimates of model 1 (Revenue variance) results

Table D1:1: ARDL result

Dependent Variables: REVVAR				
Technique: ARDL				
Adjusted sample:1984 2015				
Observations included: 32 after adjustments				
Method of selecting model: Schwarz criterion (SIC)				
Dynamic regressor(2 lags, automatic): CAPINF ELECPRD GOVSZ POLREG SPDU TRDOPN TRESV TRSPRCY				
Fixed regressors: C @TREND				
Number of models evalulated: 19683				
Model selected: ARDL(3, 1, 2, 2, 1, 2, 2, 1, 2)				
Variables	Coefficient	Std. Error	t-Statistic	Prob.*
REVVAR(-1)	-0.877739	0.091699	-9.571988	0.0001
REVVAR(-2)	0.40266	0.070158	5.739304	0.0012
REVVAR(-3)	0.660029	0.062721	10.52323	0
CAPINF	0.378541	0.063106	5.99852	0.001
CAPINF(-1)	-0.277482	0.097515	-2.845515	0.0294
ELECPRD	-0.045463	0.011833	-3.842105	0.0085
ELECPRD(-1)	0.035164	0.009282	3.788302	0.0091
ELECPRD(-2)	-0.010518	0.009098	-1.15599	0.2916
GOVSZ	0.187672	0.043827	4.282131	0.0052
GOVSZ(-1)	-0.420767	0.061649	-6.825204	0.0005
GOVSZ(-2)	-0.196919	0.038493	-5.115749	0.0022
POLREG	0.007914	0.012828	0.616964	0.5599
POLREG(-1)	-0.017851	0.01025	-1.741552	0.1322
SPDU	-0.016597	0.002638	-6.292085	0.0008
SPDU(-1)	0.00088	0.001336	0.65885	0.5344
SPDU(-2)	-0.005873	0.00139	-4.226138	0.0055
TRDOPN	0.251621	0.033167	7.586448	0.0003
TRDOPN(-1)	0.229983	0.039228	5.862745	0.0011
TRDOPN(-2)	0.164226	0.058854	2.790413	0.0316
TRESV	0.001362	0.059284	0.022966	0.9824
TRESV(-1)	-0.730954	0.079635	-9.178855	0.0001
TRSPRCY	0.000965	0.000946	1.020044	0.3471
TRSPRCY(-1)	-0.002051	0.001167	-1.757547	0.1293
TRSPRCY(-2)	0.001892	0.000684	2.765921	0.0326
C	0.638506	0.09017	7.081143	0.0004
@TREND	0.008368	0.00189	4.428128	0.0044
R-square	0.996361	Variance of Mean dependent		0.091836

R-square Adjusted	0.981198	Variance S.D dependent	0.063124
S.E. of regression	0.008656	Akaike info criterion	-6.71018
Residual of sum squared	0.00045	Schwarz criterion	-5.519269
Log likelihood	133.3629	Hannan-Quinn criterion	-6.315427
F-statistic	65.70942	Durbin-Watson statistics	3.298844
Probability(F-statistic)	0.000019		

Table D1:2: ARDL Bounds test for Model 4

ARDL Bounds Test				
Sampling period: 1984 2015				
Observations included: 32				
Null Hypotheses: No long-run relationships exist				
Test Statistic	Value	K		
F-statistic	54.97357	8		
Critical Value Bounds				
Significance	I0 Bound	I1 Bound		
10%	2.26	3.34		
5%	2.55	3.68		
2.50%	2.82	4.02		
1%	3.15	4.43		
Test Equation:				
Dependent Variables: D(REVVAR)				
Technique: Least Squares				
Sampling period: 1984 2015				
Observations included: 32				
Variables	Coefficient	Std. Error	t-Statistic	Prob.
D(REVVAR(-1))	-1.062689	0.094961	-11.19076	0
D(REVVAR(-2))	-0.660029	0.062721	-10.52323	0
D(CAPINF)	0.378541	0.063106	5.99852	0.001
D(ELECPRD)	-0.045463	0.011833	-3.842105	0.0085
D(ELECPRD(-1))	0.010518	0.009098	1.15599	0.2916
D(GOVSZ)	0.187672	0.043827	4.282131	0.0052
D(GOVSZ(-1))	0.196919	0.038493	5.115749	0.0022
D(POLREG)	0.007914	0.012828	0.616964	0.5599
D(SPDU)	-0.016597	0.002638	-6.292085	0.0008
D(SPDU(-1))	0.005873	0.00139	4.226138	0.0055
D(TRDOPN)	0.251621	0.033167	7.586448	0.0003
D(TRDOPN(-1))	-0.164226	0.058854	-2.790413	0.0316
D(TRESV)	0.001362	0.059284	0.022966	0.9824
D(TRSPRCY)	0.000965	0.000946	1.020044	0.3471
D(TRSPRCY(-1))	-0.001892	0.000684	-2.765921	0.0326
C	0.638506	0.09017	7.081143	0.0004
@TREND	0.008368	0.00189	4.428128	0.0044

CAPINF(-1)	0.101059	0.125566	0.804831	0.4516
ELECPRD(-1)	-0.020816	0.020523	-1.014311	0.3496
GOVSZ(-1)	-0.430014	0.081362	-5.285193	0.0019
POLREG(-1)	-0.009937	0.016956	-0.586059	0.5792
SPDU(-1)	-0.021589	0.00296	-7.294416	0.0003
TRDOPN(-1)	0.645829	0.064704	9.981296	0.0001
TRESV(-1)	-0.729592	0.091013	-8.016349	0.0002
TRSPRCY(-1)	0.000806	0.00102	0.790679	0.4592
REVVAR(-1)	-0.81505	0.131821	-6.183013	0.0008
R-square	0.997184	Variance of Mean dependent		0.000501
R-square Adjusted	0.985449	Variance S.D dependent		0.071755
S.E. of regression	0.008656	Akaike info criterion		-6.71018
Residual of sum squared	0.00045	Schwarz criterion		-5.519269
Log likelihood	133.3629	Hannan-Quinn criterion		-6.315427
F-statistic	84.97726	Durbin-Watson statistics		3.298844
Probability(F-statistic)	0.000009			

Table D1:3: ARDL Cointegration and Long Run Form results

ARDL Cointegration and Long Run Form				
Dependent Variables: REVVAR				
Model selected: ARDL(3, 1, 2, 2, 1, 2, 2, 1, 2)				
Sampling period: 1981 2015				
Observations included: 32				
Cointegrating Form				
Variables	Coefficient	Std. Error	t-Statistic	Prob.
D(REVVAR(-1))	-1.062689	0.094961	-11.190756	0
D(REVVAR(-2))	-0.660029	0.062721	-10.523233	0
D(CAPINF)	0.378541	0.063106	5.99852	0.001
D(ELECPRD)	-0.045463	0.011833	-3.842105	0.0085
D(ELECPRD(-1))	0.010518	0.009098	1.15599	0.2916
D(GOVSZ)	0.187672	0.043827	4.282131	0.0052
D(GOVSZ(-1))	0.196919	0.038493	5.115749	0.0022
D(POLREG)	0.007914	0.012828	0.616964	0.5599
D(SPDU)	-0.016597	0.002638	-6.292085	0.0008
D(SPDU(-1))	0.005873	0.00139	4.226138	0.0055
D(TRDOPN)	0.251621	0.033167	7.586448	0.0003
D(TRDOPN(-1))	-0.164226	0.058854	-2.790413	0.0316
D(TRESV)	0.001362	0.059284	0.022966	0.9824
D(TRSPRCY)	0.000965	0.000946	1.020044	0.3471
D(TRSPRCY(-1))	-0.001892	0.000684	-2.765921	0.0326
D(@TREND())	0.008368	0.00189	4.428128	0.0044
CointEq(-1)	-0.81505	0.131821	-6.183013	0.0008
Cointeq = REVVAR - (0.1240*CAPINF -0.0255*ELECPRD -0.5276*GOVSZ				
-0.0122*POLREG -0.0265*SPDU + 0.7924*TRDOPN -0.8952*TRESV +				
0.0010*TRSPRCY + 0.7834 + 0.0103*@TREND)				

Long Run Coefficients				
Variables	Coefficient	Std. Error	t-Statistic	Prob.
CAPINF	0.123992	0.140895	0.880027	0.4127
ELECPRD	-0.02554	0.025773	-0.990951	0.36
GOVSZ	-0.527592	0.138538	-3.808295	0.0089
POLREG	-0.012192	0.021284	-0.572814	0.5876
SPDU	-0.026488	0.004456	-5.944939	0.001
TRDOPN	0.79238	0.105132	7.536981	0.0003
TRESV	-0.895151	0.161334	-5.548448	0.0014
TRSPRCY	0.000989	0.001352	0.731765	0.4919
C	0.783395	0.148017	5.292608	0.0018
@TREND	0.010266	0.00221	4.645921	0.0035

Appendix D2: Estimates of diagnostics results for Model 4 (Revenue variance)

Figure D2:1: Normality test result

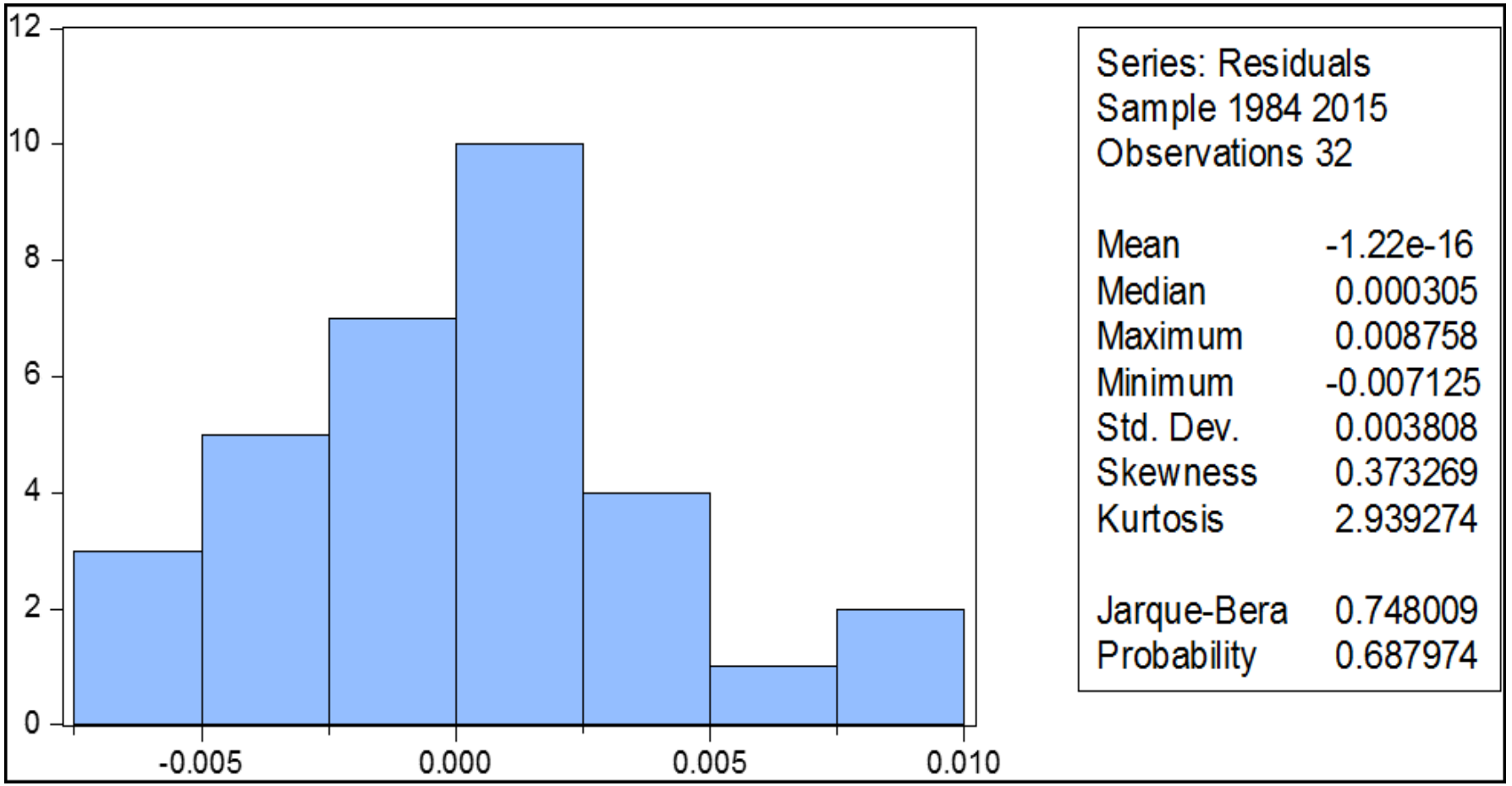


Table D2:1: Breusch-Godfrey Serial Correlation LM Test result

Breusch-Godfrey Serial Correlation LM Test: (4 LAGS)				
F-statistic	2.300464	Prob. F(4,2)		0.3252
Obs*R-square	26.28666	Prob. Chi-Square(4)		0
Test Equation:				
Dependent Variables: RESID				
Technique: ARDL				
Sampling period: 1984 2015				
Observations included: 32				
Presample missing value lagged residuals set to zero.				
Variables	Coefficient	Std. Error	t-Statistic	Prob.
REVVAR(-1)	-0.032207	0.079957	-0.402802	0.7261
REVVAR(-2)	-0.000197	0.053015	-0.003711	0.9974
REVVAR(-3)	0.031005	0.057498	0.539232	0.6437
CAPINF	-0.031302	0.078184	-0.400359	0.7276
CAPINF(-1)	0.065288	0.101333	0.644292	0.5854
ELECPRD	-0.01121	0.013284	-0.843846	0.4876
ELECPRD(-1)	-0.004289	0.00821	-0.52245	0.6535
ELECPRD(-2)	0.000878	0.006803	0.129006	0.9092
GOVSZ	0.015619	0.032859	0.47532	0.6814
GOVSZ(-1)	0.016678	0.046776	0.35655	0.7555
GOVSZ(-2)	-0.000669	0.029569	-0.022631	0.984
POLREG	-0.00475	0.010985	-0.432379	0.7076
POLREG(-1)	-0.000756	0.009884	-0.076497	0.946
SPDU	-0.000431	0.002156	-0.200003	0.86
SPDU(-1)	-6.69E-05	0.001048	-0.063834	0.9549
SPDU(-2)	-0.000213	0.001133	-0.187586	0.8685
TRDOPN	0.002483	0.025481	0.09743	0.9313
TRDOPN(-1)	0.015626	0.033321	0.468952	0.6853
TRDOPN(-2)	0.02013	0.051403	0.391614	0.7331
TRESV	0.009714	0.048255	0.20131	0.8591
TRESV(-1)	-0.071585	0.084984	-0.842334	0.4883
TRSPRCY	0.000524	0.000866	0.604588	0.6069
TRSPRCY(-1)	0.000293	0.000922	0.318275	0.7804
TRSPRCY(-2)	-0.00026	0.000548	-0.474519	0.6819
C	-0.037961	0.069398	-0.547014	0.6392
@TREND	9.97E-05	0.001497	0.066596	0.953
RESID(-1)	-1.674612	0.644028	-2.600215	0.1215
RESID(-2)	-2.007865	1.310597	-1.532023	0.2652

RESID(-3)	-0.979401	1.669803	-0.586537	0.6169
RESID(-4)	-0.560345	1.204384	-0.465254	0.6875
R-square	0.821458	Variance of Mean dependent		-1.22E-16
R-square Adjusted	-1.767398	Variance S.D dependent		0.003808
S.E. of regression	0.006335	Akaike info criterion		-8.183112
Residual of sum squared	8.03E-05	Schwarz criterion		-6.808985
Log likelihood	160.9298	Hannan-Quinn criterion		-7.727628
F-statistic	0.317305	Durbin-Watson statistics		2.442027
Probability(F-statistic)	0.942258			

Table D2:2: ARCH Heteroskedasticity test result

Heteroskedasticity Test: ARCH				
F-statistic	1.862056	Prob. F(2,27)		0.1748
Obs*R-square	3.636342	Prob. Chi-Square(2)		0.1623
Test Equation:				
Dependent Variables: RESID^2				
Technique: Least Squares				
Adjusted sample:1986 2015				
Observations included: 30 after adjustments				
Variables	Coefficient	Std. Error	t-Statistic	Prob.
C	1.10E-05	4.87E-06	2.250917	0.0327
RESID^2(-1)	0.369447	0.191703	1.927187	0.0645
RESID^2(-2)	-0.105391	0.19119	-0.551238	0.586
R-square	0.121211	Variance of Mean dependent		1.49E-05
R-square Adjusted	0.056116	Variance S.D dependent		2.02E-05
S.E. of regression	1.97E-05	Akaike info criterion		-18.74103
Residual of sum squared	1.04E-08	Schwarz criterion		-18.60091
Log likelihood	284.1154	Hannan-Quinn criterion		-18.6962
F-statistic	1.862056	Durbin-Watson statistics		1.976639
Probability(F-statistic)	0.174759			

Table D2:3: Ramsey RESET Test for stability result

Ramsey RESET Test				
Equation: UNTITLED				
Specification: REVVAR REVVAR(-1) REVVAR(-2) REVVAR(-3) CAPINF CAPINF(-1) ELECPRD ELECPRD(-1) ELECPRD(-2) GOVSZ GOVSZ(-1) GOVSZ(-2) POLREG POLREG(-1) SPDU SPDU(-1) SPDU(-2) TRDOPN TRDOPN(-1) TRDOPN(-2) TRESV TRESV(-1) TRSPRCY TRSPRCY(-1) TRSPRCY(-2) C @TREND				
Omitted Variables: Squares of fitted values				
	Value	df	Probability	
t-statistic	0.475708	5	0.6543	
F-statistic	0.226298	(1, 5)	0.6543	
F-test summary:				
	Sum of Sq.	df	Mean Squares	
Test SSR	1.95E-05	1	1.95E-05	
Restricted SSR	0.00045	6	7.49E-05	
Unrestricted SSR	0.00043	5	8.60E-05	
Unrestricted Test Equation:				
Dependent Variables: REVVAR				
Technique: ARDL				
Sampling period: 1984 2015				
Observations included: 32				
Maximum dependent lags: 3 (Automatic selection)				
Method of selecting model: Schwarz criterion (SIC)				
Dynamic regressor(2 lags, automatic):				
Fixed regressors: C @TREND				
Variables	Coefficient	Std. Error	t-Statistic	Prob.*
REVVAR(-1)	-0.975959	0.228657	-4.268224	0.008
REVVAR(-2)	0.458683	0.139715	3.282987	0.0219
REVVAR(-3)	0.772976	0.246756	3.132546	0.0259
CAPINF	0.42071	0.111489	3.773563	0.013
CAPINF(-1)	-0.338328	0.165158	-2.04851	0.0958
ELECPRD	-0.050265	0.016206	-3.101649	0.0268
ELECPRD(-1)	0.041225	0.016163	2.550624	0.0512
ELECPRD(-2)	-0.012245	0.010403	-1.17707	0.2921
GOVSZ	0.229935	0.100488	2.288187	0.0708
GOVSZ(-1)	-0.471034	0.124615	-3.779912	0.0129
GOVSZ(-2)	-0.224891	0.071823	-3.131162	0.0259

POLREG	0.011434	0.01561	0.732499	0.4967
POLREG(-1)	-0.020376	0.012198	-1.670446	0.1557
SPDU	-0.018383	0.004699	-3.912073	0.0113
SPDU(-1)	0.000553	0.001588	0.348222	0.7419
SPDU(-2)	-0.00592	0.001492	-3.967162	0.0107
TRDOPN	0.281244	0.0717	3.922536	0.0112
TRDOPN(-1)	0.256613	0.070003	3.66575	0.0145
TRDOPN(-2)	0.162334	0.063185	2.569181	0.0501
TRESV	-0.020776	0.078743	-0.263847	0.8024
TRESV(-1)	-0.790512	0.151509	-5.217577	0.0034
TRSPRCY	0.001301	0.001236	1.05306	0.3405
TRSPRCY(-1)	-0.001729	0.001421	-1.21658	0.2781
TRSPRCY(-2)	0.00154	0.001041	1.480145	0.1989
C	0.694937	0.152991	4.542342	0.0062
@TREND	0.008728	0.002162	4.037674	0.0099
FITTED^2	-0.512778	1.077925	-0.475708	0.6543
R-square	0.996518	Variance of Mean dependent		0.091836
R-square Adjusted	0.978414	Variance S.D dependent		0.063124
S.E. of regression	0.009274	Akaike info criterion		-6.691945
Residual of sum squared	0.00043	Schwarz criterion		-5.45523
Log likelihood	134.0711	Hannan-Quinn criterion		-6.282009
F-statistic	55.04348	Durbin-Watson statistics		3.253521
Probability(F-statistic)	0.000146			