# AN EMPIRICAL ANALYSIS OF THE EFFECTS OF FISCAL CENTRALISATION ON ECONOMIC GROWTH IN NIGERIA (1980 – 2008)

BY

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BEING A DISSERTATION SUBMITTED TO THE DEPARTMENT OF ECONOMICS, AHMADU BELLO UNIVERSITY ZARIA, AS PART OF THE REQUIREMENT FOR THE AWARD OF DOCTOR OF PHILOSOPHY (PHD) DEGREE IN ECONOMICS

JULY, 2011

DECLARATION

I hereby declare that this dissertation titled "**An Empirical Analysis of the Effects of Fiscal Centralization on Economic Growth in Nigeria**" now submitted for the Doctor of Philosophy Degree in Economics of the Ahmadu Bello University; Zaria is the result of my research and has not been previously presented to any university for award of a degree. All the sources and references used for this study are duly acknowledged. All errors and/ or omissions in this work are exclusively mine.

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CERTIFICATION

This is to certify that this dissertation titled "**An Empirical Analysis of the Effects of Fiscal Centralization on Economic Growth in Nigeria"** has been prepared in accordance with the regulations governing the preparation of dissertation for the award of Doctor of Philosophy (Ph.D) degree in the Department of Economics, Ahmadu Bello University, Zaria and is hereby approved for its contribution to scientific knowledge and literary presentation

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# DEDICATION

This Thesis is dedicated to my beloved wife, Mrs Abachi Naomi Demvihin and my dear children Ushahemba Freedom Abachi and Aondokator Emmanuel Abachi.

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## Abstract

Fiscal centralization in Nigeria has generated regional, vertical and horizontal contestations over resource control issues. These contestations have led to militancy and open rebellion that have resulted in oil production shut- in, rising costs of operations in the oil industry, risks and uncertainties for investments and a rise in the costs of maintaining security in Nigeria. The literature on fiscal centralization has been dominated by the measurements of the impact of fiscal centralization on economic growth and the results have been mixed. This study however, measures the economic cost of fiscal centralization and assesses its sustainability in the light of the consequences of the militancy and rebellion that have been associated with it. Impacts such as production shut-in, rise in operational costs and uncertainties as well as growth in cost of maintaining security have led to some economic effects that need to be measured and analyzed. The study develops a framework to measure the costs of fiscal centralization and a macro-econometrics model was built to analyze the impact and sustainability of fiscal centralization in Nigeria. The macro-econometric model comprises of five sectors, namely, aggregate demand, aggregate production, Nigeria's fiscal system, financial sector and external sector. The model was estimated using Two Stages Least Squares techniques and solved to derive baseline equilibrium values of the endogenous variables. The model was found to effectively track the key turning points of the endogenous variables and was then used to conduct simulation experiments under three scenarios. (a) The impact of the loss of oil revenue by oil related cost as a result of militancy; (b) the impact of excess expenditure on defence and internal security if invested in the agricultural sector; and (c) a one percent increase in gross fixed capita formation. Findings from the study revealed that the oil related cost, expenditure allocation cost and social/human cost of maintaining fiscal centralization in the country are very high and rising. From the macro-econometrics model, it was found that fiscal centralization impact negatively on aggregate demand by reducing private consumption expenditure, government consumption expenditure as well as investment by 9.5%, 6.2% and 1.5% respectively. Again, while money supply reduced by 5.4%, the outputs from agriculture and manufacturing sub-sectors declined, by 2.5% and 2.1% respectively. It is clear that while the oil related cost is reducing the oil revenue component of federally collected revenue, the deterioration in the real sector is reducing the non-oil revenue component. Based on these results and the forecast values of oil related cost and expenditure allocation cost, it was established that the present fiscal centralization is not sustainable. We therefore recommend a negotiated decentralization or economic and political actions that will reduce militancy and its associated economic costs.

# CHAPTER ONE

# GENERAL INTRODUCTION

## 1.1 Background to the study

Attempts by countries in the world to strengthen the relevance and efficiency of governments have led to the adoption of fiscal federalism. Until recently, fiscal federalism received little attention from economists, political analysts and policy makers. From 1980 however, it has not only become a vital focus of serious academic discourse but it is equally a topical issue in discussions for national development (Taiwo, 1999). Fiscal federalism, according to Anyanwu (1999) entails a series of legal and administrative relationships that exist among units of governments possessing varying degrees of real authority and jurisdiction autonomy. Fiscal federalism recognizes that modern governments are stratified and fiscal structures could be centralized or decentralized. The degree of centralization or decentralization depends on the individual decision making process by various arms of governments in the provision of both public and economic goods.

By fiscal centralization, it means a situation where fiscal powers are centered more at the central level of government in a federation. It is a state of affairs where the federal government in a country assumes more responsibility for most of the economic activities of the public sector, while the lower levels of governments have less responsibility for economic activities (Omola, 1999). Fiscal decentralization on the other hand means endowing lower levels of governments with financial resources- either own- resource revenue or transfers, sufficient to carry out their functions (Raffaele and Emmanuela, 2004).

The theoretical justification for either fiscal centralization or fiscal decentralization is clear in literature. The case for fiscal decentralization rests on the assumption of heterogeneity of regional preferences and the benefits of competition. When communities have heterogeneous tastes, the government closest to the citizens can deliver a bundle of services that reflects community preferences (Elliot and Thornton, 2007). Similarly, Tiebout model (1956) posits that, with capital and labour mobile, local governments are motivated by competition with other lower levels of governments to provide public goods efficiently. For fiscal centralization, it is believed to work better when externalities are present, particularly with reference to central provision of public goods, where average cost can be reduced with increasing output (Markus, 2004). Samekal (2001) however argues that, for the decreasing costs reason, fiscal centralization recommendation is not tenable

because the information costs for the local citizens, the control costs for the central level and lack of accommodativeness would rather increase the overall costs.

Relating fiscal centralization and decentralization to economic growth and development, the body of empirical studies supports both. In studying fiscal centralization and decentralization in China and Russia, Elliot and Thornton (2007) examined the evolution of fiscal systems in the two countries. Applying Ordinary Least Square method, 2 Stage Least Square and the Generalized Method of Moment (GMM), findings in the two countries were approximately the same. In china, during the period of fiscal centralization (1994-2004), economic growth of the nation was enhanced. Also in Russia, the study revealed that recentralization has been associated with expansion of state ownership of enterprises and productivity. In United States, Zou and Davoodi (1999) studied the 50 states covering 1948-1994. Using growth regressions based on annual data and applying Ordinary Least Square method, the result indicated that spending shares of states and local levels of government are irrelevant to growth. On the contrary, Akai and Sakata (2004), in their study of 50 states in United State, found that fiscal decentralization is conducive for providing a stable economic growth. In a cross-country study (40 countries), Oates (1995) found a significant and robust positive correlation between fiscal decentralization and per capita economic growth. In China, Lin (2000) found that fiscal decentralization in the country raised the over all growth rate by improving the efficiency of resource allocation. In India, Zhang (2001), in studying 29 provinces from 1987 to 1993, obtained a significant and robust negative impact of fiscal decentralization on provincial economic growth while the study of 16 states of India by Zhang (2001) found a positive relationship between fiscal decentralization and states' economic growth. Based on the above empirical findings therefore, the link between fiscal centralization and decentralization with economic growth depends on the nature of the economy, the policy instruments in place and the time of the study.

In Nigeria, the country has over the years, experienced both fiscal decentralization and fiscal centralization. From 1946 to 1951, there was strong central control of fiscal matters, 1952 to 1966 was the era of fiscal decentralization and from 1966 to date, fiscal variables are highly centralized at the federal level. Empirical studies of fiscal decentralization by Chete (1998) and Aigbokhan (1999) confirm that fiscal decentralization and fiscal centralization are contested issues theatrically and empirically. The Nigerian Economy Society (1999), the agitations for resource control and the 2006 Nigerian Political Reform Conference (NPRC) all show that fiscal centralization/decentralization is a truly

contested political economy issue in Nigeria. The inability to arrive at theoretical, empirical and political economy consensus suggest that fiscal centralization and fiscal decentralization deserve to attract intellectual discourse and more so, where the consequences may be significant for the continuing survival of a polity.

The basic questions to ask at this point are; (i) why did the country shift from a fiscally decentralized state to a fiscally centralized one? (ii) Is the present fiscal centralization the best option for the nation's economic growth and development? To examine the two basic questions, reference to Mbanefoh (1993) suggestion becomes vital. He suggested that a good fiscal arrangement should:

(i) be conducive for rational and equitable allocation of the country's resources among the tiers of government and groups.

(ii) minimize intergovernmental and inter-group tension and

(iii) promote national unity. In addition,

(iv) such fiscal arrangements should enhance accelerated growth of the economy.

Considering the political and economic situations before 1966, the above conditions were not satisfied. Politically, the era was characterized by struggle for power and ethnic rivalry. The disagreement among the regions over the sharing of revenue resulted to about four committees and commissions mandated to evolve acceptable rates and principles for revenue. The political, economic and social ills that period 'necessitated' the military take over in 1966. General Yakobu Gowon, the then Military Head of state immediately embarked on measures to centralize fiscal matters. The answer to question two however, needs an empirical investigation, hence the need for this study.

## 1.2 Problem Statement

The present fiscal structure in Nigeria consists of 36 states, the Federal capital Territory (FCT) and 774 local government areas and the fiscal matters are centralized. The fiscal centralization of the Nigerian state is established from the institutional framework for fiscal federalism in

Nigeria. The constitutional provisions on the assignment of responsibilities among the three tiers of government clearly show a deliberate concentration of powers in the central government. In the 1979 constitution for instance, there were 66 items on the Exclusive List of the Federal Government, many others on the Concurrent List (Parts I and II section 4 of the second schedule)[1] and 11 minor others reserved for the local governments (Fourth Schedule). In the 1999 Constitution however, all these were restructured and expanded to greatly favour the Federal Government. The intergovernmental fiscal relations in Nigeria also exhibit fiscal centralization in tax assignment and revenue sharing arrangements. Regarding tax assignment, the major revenue heads in the country, including custom duties, mining rents and royalties, petroleum profit tax and company income tax, all of which account for over 80 per cent of total national recurrent revenues, fall under the legislative and administrative jurisdiction of the federal government, while the less productive and less buoyant sources are devolved to the fiscal jurisdiction of states and local governments.

The rates and principles used for vertical and horizontal revenue sharing are usually from the recommendations of ad hoc committees or commissions formed at particular instances. The rates and principles were often amended by the use of Decrees and annual budget pronouncements by the governments in power. All the revenue sharing rates used, from Philipson Commission in 1946 through to the present, favour the federal government more than lower levels of governments. The principles for horizontal revenue sharing among the states too tend to favour some states more than others.

The present fiscal centralized system has therefore generated severe contestations in Nigeria. The key players in the agitations and conflicts, who also have varied interests, are;

i) The Federal Government, the 36 States of the Federation and the Federal Capital Territory (FCT) and the 774 Local Government Areas.

ii) The Federal Government, the oil producing states (Niger Delta region) and the non-oil producing states.

[1] The functions of the states are specified on the Concurrent Legislative list. They include, among others, the provision of public services whose consumption could be confined to the areas within their jurisdiction, secondary education, health, industry and agriculture.

iii) The Federal Government, oil producing states, communities in Niger Delta region and the Multinational oil companies.

The central issue of concern that generates the contestations is the quest for 'resource control'. Among the levels of governments, the disagreement is over the rates of revenue allocation, and among the states, the contentions are over the principles used in sharing the states allocations. For the third category, the agitation revolves around issues of oil rents, compensation and provision of infrastructure, claims to ownership of oil fields, environmental degradation and profit maximization. With oil being strategic as the anchor for Nigeria's fiscal system and as the main source of foreign exchange inflow, contestations that impact negatively on oil revenue will have systematic effect on the Nigerian economy.

Particularly from 1999, the contestations linked to fiscal centralization degenerated to militancy and rebellion. The militancy and rebellion have involved;

(a) Damage to oil facilities leading to production shut-in;

(b) Kidnapping and loss of lives that have increased uncertainties and risks for investment in Oil and Gas;

(c) Rising cost of operations; and

(d) Growing costs of maintaining security in the Niger Delta which may crowd-out spending on agriculture, education, health and economic infrastructure.

These developments suggest two propositions:

(a) The net economic cost of fiscal centralization is positive and increasing;

(b) Fiscal centralization is unsustainable.

The analysis of the propositions is necessary to provide credible information required for effective decisions to arrive at the right fiscal system to drive the development of the Nigerian economy.

## 1.3 Aims and Objectives of the Study

The major objective of the study is to generate credible information required for solving the contestation over fiscal centralization in Nigeria. The specific objectives are

(i) To analyze the costs of maintaining fiscal centralization in the Nigerian economy.

(ii) To analyze the sustainability of fiscal centralization in Nigeria.

## 1.4 Research Questions

The following research questions are derived from the two propositions of the study

(i) What is the cost of maintaining fiscal centralization in Nigeria?

(ii) Is fiscal centralization sustainable?

These two questions are the focus of this study.

## 1.5 The Thesis

Based on the objectives and the research questions of the study, the thesis of the study is that the cost of maintaining fiscal centralization in Nigeria is positive and increasing; therefore, fiscal centralization is not sustainable in Nigeria if nothing is done to reduce the cost.

## 1.6 Justification of the Study

The issues arising from the fiscal relations of the levels of governments in nations operating federal systems of governments are so critical to the individual nations in particular and the globe at large. This is because such fiscal relations determine the economic stability of the countries and the subsequent impact on their growth.

In Nigeria, the country's fiscal system has been the subject of much research[2]. Yet the fiscal problems appear to have worsened after 1999. The vertical and horizontal fiscal problems have resulted to high tension among the levels of governments and groups. They have also aggravated agitations and tension among the states and local governments. In addition, the militancy and open rebellion in the Niger Delta Region took a more dangerous dimension and became a threat to the peace and stability of the nation after 1999. Given the possibility that the effects may be systematic, it is important to measure and analyze the cost of fiscal centralization to provide the needed information for reforming the fiscal system.

The present study is expected to measure the cost of maintaining the present fiscal centralization in Nigeria and analyze the sustainability of the fiscal system. It is likely that the cost will be so enormous that maintaining fiscal centralization will be detrimental to economic growth of the country. The recommendations from the study shall present to policy makers the opportunity to choose the best options in solving the perennial problems caused by the present fiscal centralization in the country.

### 1.7 The Organization of the Study

The work is organized into six chapters. Chapter one is the introduction which contains the background to the study, problem statement, aims and objectives, and the justification of the study. Chapter two presents an overview of the evolution of fiscal system in Nigeria. The evolution is presented in two parts, the colonial period and the post- colonial period. Chapter three is the literature review, where the conceptual and measurement issues are clarified. Theories of fiscal systems, the political economy of oil and gas, and empirical literature are presented. While chapter four discusses the methodology, chapter five presents and discusses the results. Chapter six contains the summary, conclusion and recommendations.

2 See The Nigerian Economic Society's Annual Conference, (1999), Ogbogu, (1982), Mbanefoh, (1993), Chete (1998) Aigbokhan, (2006)

## CHAPTER TWO

## THE EVOLUTION OF NIGERIA'S FISCAL SYSTEM

The fact that Nigeria is a sovereign state is not in doubt[3], and the country is endowed with abundant resources. The country is rich in metallic, non-metallic and radioactive minerals as well as fossil fuels. These resources are naturally distributed in all parts of the country with petroleum oil and associated gas obtained from the Niger Delta Region[4]. The spatial distribution of natural resources in the country is found in almost all parts of the country, but the economic value of those resources and the extent of exploitation and national importance differ. Since there are diversity of interests among the major and minor tribes and the political zones in the country, the endowment of natural resources serves as a basis for contestation and conflict. That is particularly so given the nature of fiscal systems and regime shifts in the country.

Fiscal system in Nigeria evolved from the circumstances of anarchy, conflict and disorder. The circumstances before the creation of Nigeria in 1914 formed the basis of the present fiscal and resource control problems[5]. The amalgamations and subsequent regime shifts (from military to civilian) all indicated instances of conflicts and anarchy.

At this point, a clear conceptualization of fiscal system as applied in this study is important. Fiscal system stems from 'federalism' which Taiwo (1999) asserted that it is made up of three types-***political*** federalism, ***administrative*** federalism and ***fiscal*** federalism. Political federalism is concerned with the division of powers between tiers of government, where the tiers are each, within a sphere, coordinate and independent (Oates, 1972:16). Hence there would be an institutional framework or other legal provisions to protect the autonomy of the different tiers of governments. Administrative federalism on the other hand has to do with the delegation of functions to lower levels of governments, and fiscal federalism essentially concerns the allocation of government spending and resources to various tiers of governments in a country. The fiscal system therefore is the intergovernmental fiscal relations concerning the financial obligations among the units of governments in a federation. It

[3] See Garba (2004), Adesopo et al (2004), Taiwo (1999)

[4] Appendix 1 Table 2 shows details.

[5] Garba (2004) identified four problems inherent in the colonial system. These are the inter-regional fiscal inequality, the imposition of centralized administrative structure on the native populace, moral hazard problem and the ambiguity of citizenship and differential rights.

essentially focuses on the institutional framework and other legal provisions that distribute tax jurisdictions, revenue transfers and expenditure responsibilities among the tiers of governments. In that regard, in tracing the evolution of fiscal system in the country, references are often made to the Nigerian Constitutions, recommendations of ad hoc committees or commissions for revenue allocations and Decrees made by the military administrations.

The presentation is in two broad parts. (i) The Nigeria's Fiscal System in the Colonial era, 1914-1960 and (ii) Nigeria's Fiscal System in the Post-Colonial era 1960-2009. In discussing these parts, periods of fiscal centralization and decentralization are clearly distinguished with the main fragmented structures indicted. Also, the impact of fiscal centralization or decentralization on the main fiscal variables and some macro economic variables is analyzed[6]

## 2.1 Evolution of Nigeria's Fiscal System in the Colonial Period – 1914-1960

In tracing the evolution of the Nigeria's fiscal system in the colonial period, understanding the events of the pre-colonial era is important for obvious reasons. (i) it helps us to know the relationship among the people of Nigeria before the colonial period. (ii) We will appreciate that the inequality among the states and regions that exists in the country now pre-dates the formation of Nigeria in 1914. (iii) the agitations and need for resource allocations naturally flows from the structure that was in existence before the colonial period.

Two main versions explain the relationship among the people of Nigeria in the pre-colonial era. One is the Theory of Fundamental Diversity and the other is the Common Bond Theory. The first version asserts that the people of Nigeria in the pre-colonial time had little or nothing in common. They were different in languages, cultures, no common ideological orientations, and not common in religion as they worshipped many gods. In effect, as Ajaye, (2006:96) rightly observed, when they were brought together by the British at the dawn of the 20th century, they found themselves as 'strange bed mates'. The second theory negates the first one and insists that common bonds existed among the

[6] The fiscal variables are revenues and expenditures while the macroeconomic variables used here are GDP inflation and exchange rates

people in the pre-colonial period. It argues that differences in language and culture were more apparent than real, as most Nigerian languages and cultures originate from common parentage. The Common Bond theory therefore emphasized that the people of Nigeria had links among themselves in the earliest time possible.

It should be noted that the evidences available tend to be more in support of the latter theory than the former. As the first theory stressed, it is true that the people of Nigeria have different languages and are of different cultural backgrounds, but they had common bonds which can mitigate the effects of the first. Geographically, Nigeria is a country whose major geographical zones[7] complement each other in terms of human needs. For economic reasons, there were strong links as people in the different zones depended on each other for food and trade purposes. Rivers Niger and Benue with their tributaries and the overland routs formed the major trade routes at that time. The structures that existed that time were in kingdoms and empires[8] which clearly showed that some people or kingdoms were politically and economically stronger than others. Expansion and maintenance of kingdoms was by wars, so class structure already existed before 'Nigeria come into being' in 1914.

The amalgamation of 1914 did not bring any appreciable political and fiscal changes between the North and the South, as the two major parts continued to be governed as they had before, until 1946. In other words, between 1914 and 1946, the North and the South maintained their political structure and continued to be governed separately. Also, the governments of Northern Nigeria Protectorate and the Colony and Protectorate of Southern Nigeria had separate and different fiscal systems. Their financial years too started on different dates[9] hence, the systems of account kept were also different. That made the assimilation between the two parts difficult (Adediji, 1969). With amalgamation, the main sources of revenue were centralized. These were revenue from customs duties, railway receipts, posts and telegraph earnings, interest accruing from investments and loans. The regional sources were now low revenue yields. Under that arrangement, all revenue of the regional governments

[7] The zones are mangrove swamps and forest in the Southern part, semi-savannah in the Middle Belt and grass land or savannah in the North. People from different zones need crops from other zones for survival

[8] Examples are the Empire of Kanem Borno, Kingdom of Jukun the Hausa States in the northern section, the Kingdom of Benin and Old Oyo Kingdom in the southern part. In the East, there was an organized Oracle system.

[9] The North's financial year started from 1st April and the South from 1st January.

was deposited into a single general revenue fund, from where aggregate expenditures were met. That arrangement remained unchanged until 1926 and the revenue performance within this period is presented below.

Table2.1: Performance of revenue and Expenditure 1914-1926 (£' 000s)

| Year | Total Revenue | Total Expenditure | Surplus (+) or Deficit (-) |
|---|---|---|---|
| 1914 | 3,048 | 2,968 | 80 |
| 1915 | 2,703 | 2,802 | -99 |
| 1916 | 2,831 | 3,067 | -236 |
| 1917 | 3,450 | 3,105 | 345 |
| 1918 | 4,014 | 3,429 | 585 |
| 1919 | 4,911 | 4,353 | 558 |
| 1920 | 6,738 | 6,081 | 657 |
| 1921/2 | 4,869 | 6,553 | -1684 |
| 1922/3 | 5,562 | 5,467 | 95 |
| 1923/4 | 6,304 | 5,545 | 759 |
| 1924/5 | 6,990 | 5,814 | 1176 |
| 1925/6 | 8,269 | 6,583 | 1686 |

Source: Adedeji, 1969: 31

Figure 1.1 Revenue and Expenditure Performance (1914-1926)

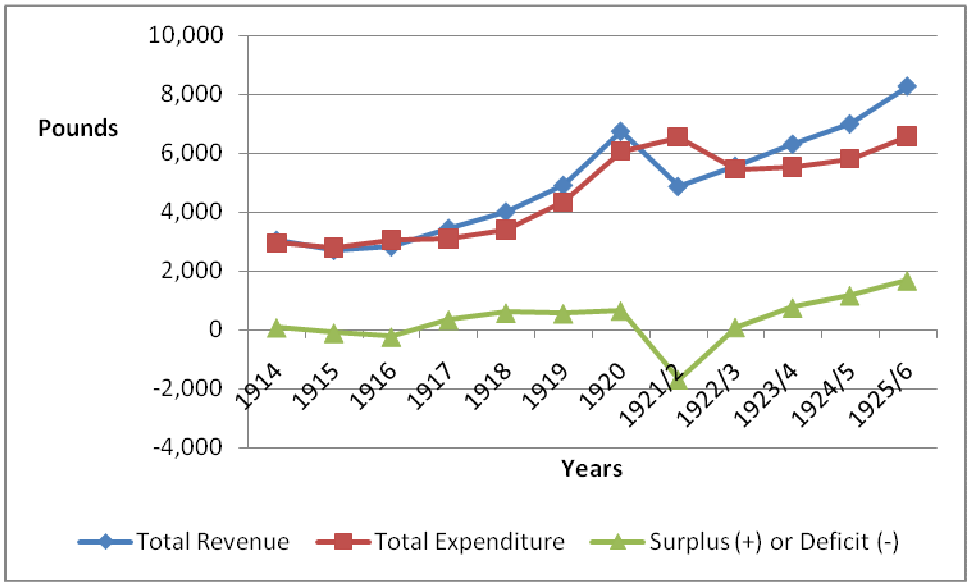



Table 2.1 and the accompanied Figure 1.1 show the budgetary position of the government in the first twelve years of amalgamation. There were budget deficits in 1915, 1916 and 1921/2, and the rest of the years within the period indicate surpluses. That did not however mean the country had no financial challenges, as that time, World War one began and international trade was disrupted.

The years from 1926-1945 witnessed central government's control over the federal finances. The federal government's control was so complete that there was no distinction between the revenue and the expenditure of the regions. The fiscal arrangement after amalgamation did not remain through out this period. Two events affected the Nigerian economy adversely. These were the Great Depressions of the 1930s and the war years from 1939-1945. Within these periods, normal economic activities were disrupted. Specifically, the period from 1929-1945 was referred to as a prolonged period of economic stagnation in Nigeria (Adedeji, 1969).

The construction of water works from 1925-1940 in different towns in the country is also presented in Table 2.2 to show the pattern of infrastructural provision in the period

Table 2. 2 Water works Constructed (1925-1940)

| **Year Built** | **Town** | **Source** | **Capacity '000 Grams Per Day** | **Treatment** | **Plant** |
|---|---|---|---|---|---|
| 1925 | Enugu | Spring | 700 | Aeration and | Gravity |

| | | | | | |
|---|---|---|---|---|---|
| | | | | Chlorination | |
| 1925 | Lokoja | Spring | 17 | Slow and Filter | Gravity |
| 1927 | Ijebu-Ode | Spring | 300 | Partial | Diesel |
| 1928 | Oyo | Impounded | 100 | Chlorination | Diesel |
| 1928 | Aba | Well | 173 | Nil | Steam |
| 1928 | Makurdi | River | 16 | Nil | Railway |
| 1928 | Onitsha | River | 210 | Aeration Pressure Filter | Steam |
| 1929 | Kano | Well | 686 | Aeration Pressure Filter | Electric |
| 1930 | Kaduna | River | 387 | Sedimentation Rapid | Electric |
| 1931 | Akure | Well | 7 | Nil | Diesel |
| 1934 | Ife | Impounded | 120 | Chlorination | Steam |
| 1934 | Benin | Borehole | 400 | Chlorination | Steam |
| 1936 | Iseyin | Spring | 120 | Partial | Diesel |
| 1936 | Calabar | Spring | 309 | Aeration and Chlorination | Gas |
| 1937 | Okene | Impounded | 64 | Nil | Gas |
| 1937 | Ilorin | Well | 22 | Pressure Filter and chlorination | Diesel |
| 1937 | Port Harcourt | Borehole | 319 | Nil | Electric |
| 1937 | Yola | Tube Well | 30 | Chlorination | Steam |
| 1939 | Jos | Impounded | 147 | Pressure Filter and chlorination | Gravity |
| 1939 | Ogbomosho | Impounded | 250 | Aeration and Chlorination | Diesel |
| 1939 | Zaria | Well | 357 | Aeration Pressure Filter | Electric |
| 1940 | Ilaro | Spring | 50 | Nil | Diesel |

***Source: African Journal of Historical Society.vol.1 No.2 p 53***

Table 2.2 indicates that from 1925-1928, water works were constructed in three settlements in the West, three in the East and one[10] in the North and the one from the North was the least in capacity. It can be inferred from Table 2.2 that the construction of water by the colonial administration was essentially in towns that had high economic importance or towns that were administrative seats. It is also clear that towns in the Southern country benefitted from water provision earlier than those in the North.

It is clear therefore that Nigeria was formed out of established kingdoms, empires and governments that had different political and economic strength. There were some areas or parts of the country that were so backward that development of such areas needed to be

[10] That time, Makurdi in the present Benue State, from Middle Belt was classified as being in the North.

complemented with resources from other parts. For instance, in 1907, the Crown Agent over-ruled the protest of the government in the south when it granted a loan of 1,230,000 Pound starring to the Northern government out of the surplus of the south. The money was for the construction of a 3' 6'' gauge railway from Karo to Kano. Again in 1910, over the protest of the South, the Colonial Office enforced its decision that the south grants the north a loan of 200,000 pounds starring (Garba, 2004). From the forgoing, it is clear that there was serious inequality among the regions and the inequality was skewed towards the North.

Differences also existed considering the agricultural export production and the per capita income of the three regions as illustrated in Table 2.3 below.

Table 2.3: Agricultural Export production and Per capita Income

| Item | North | West | East |
|---|---|---|---|
| Agricultural Export Production | | | |
| Value in million pounds | 9.75 | 11.4 | 7.3 |
| Value per capita in pounds | 0.72 | 2.8 | 1.4 |
| Value per sq. mile in pounds | 34.0 | 249.0 | 159.0 |
| Per Capita Income | | | |
| Value in pounds | 17.0 | 34.0 | 21.0 |

*Source: Mustapha, (2006)* .

As seen from table 2.3 above, the value of agricultural exports was highest in the Western Region, followed by the one from the North and then the East. The leading agricultural export crop was cocoa, obtained mainly from the West. Groundnut and cotton were from the North while palm kernels were from the East.

Figure 2.2 Agricultural Export Productions and per Capita Income

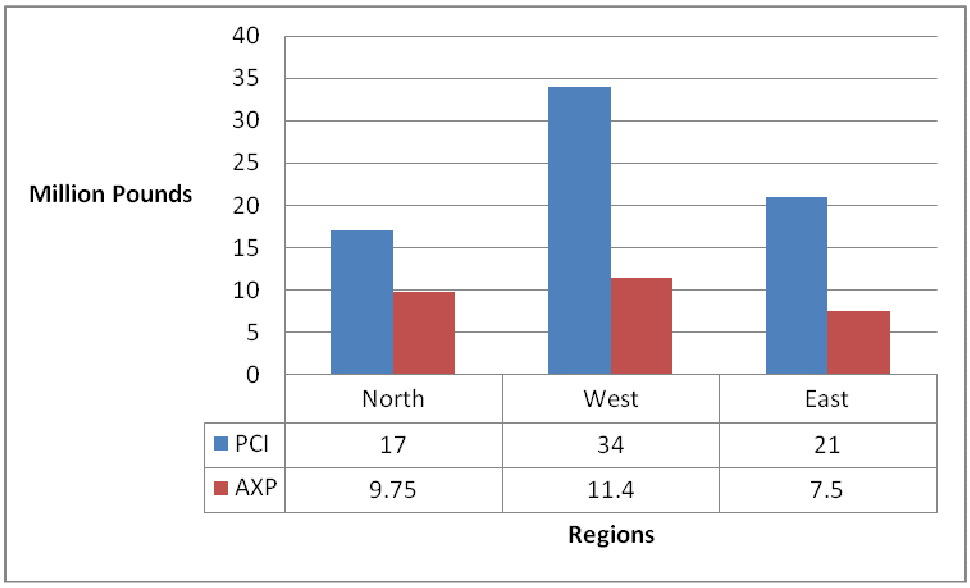



Table 2.3 and the accompanied Figure 2.2 suggest that per capita income was lowest in the North. That explains why there was, and there is still need to move resources among the regions and states in the country.

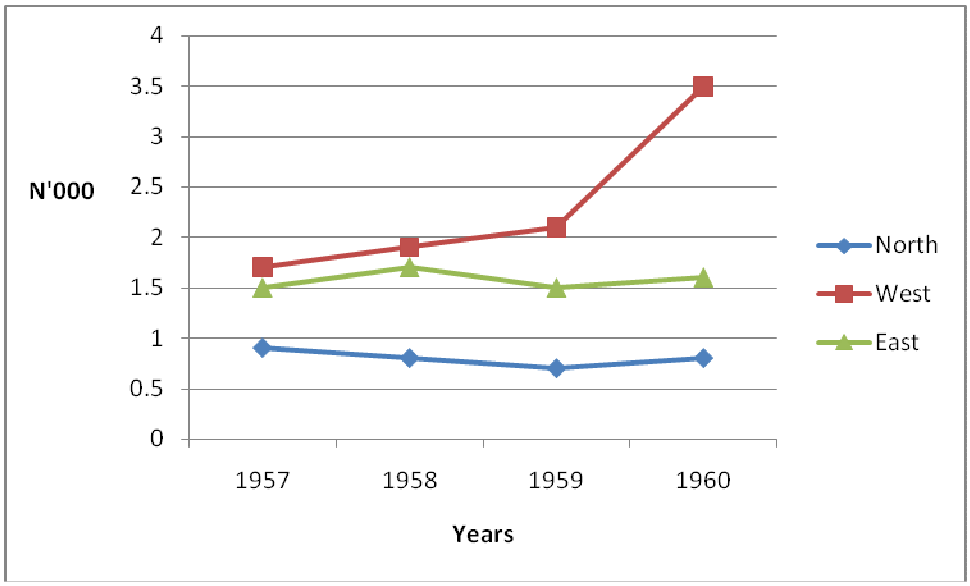
The differences in economic activities were reflected in the per capita expenditure of each region. Table 2.4 shows the trend of per capital expenditure from 1957-1960.

Table 2.4: Per capital expenditure by region in Nigeria, 1957-1960 (Thousand Naira)

| Year | North | West | East |
|---|---|---|---|
| 1957 | 0.9 | 1.7 | 1.5 |
| 1958 | 0.8 | 1.9 | 1.7 |
| 1959 | 0.7 | 2.1 | 1.5 |
| 1960 | 0.8 | 3.5 | 1.6 |

Source: Mustapha (2006:10)

Figure 2.3: Per Capita Expenditure by Regions in Nigeria




The North had the least per capita expenditure, out of the three regions. The West had the highest in all the years considered, followed by the Eastern Region. This is further seen as illustrated in figure 2.3 above. The forgoing is to demonstrate that inequalities existed among the regions, hence, the agitations for resources to be reallocated from the regions that had 'surpluses' to those that appeared to be deficient in resources.

The pattern of differences in resources among the regions was also followed by the way facilities were provided by the colonial administration. In this regard, we consider avalaibility of schools and the provisions of water before independence. Table 2.5 shows the secondary school output from the North and South in seleted years from 1912-1957.

Table 2.5: Secondary school output from the North and South, 1912-1957

| | **Northern Nigeria** | | **Southern Nigeria** | |
|---|---|---|---|---|
| Year | No. of schools | No of pupils | No of schools | No of Pupils |
| 1912 | 0 | 0 | 10 | 67 |
| 1926 | 0 | 0 | 18 | 518 |
| 1937 | 1 | 65 | 26 | 4,285 |
| 1947 | 3 | 251 | 43 | 9,657 |
| 1957 | 18 | 3,643 | 176 | 28,208 |

*Source: Mustapha (2006)*

From 1912 to 1926, there were no secondary schools in the North and therefore, no secondary school graduates. In the southern part, the situation was different. While there were 10 schools and 67 numbers of pupils in 1912, the number of schools increased to 18 with 518 pupils in 1926. By the time schools in the North rose to 18 in 1957, schools in the South increased to 176. When the number of pupils was 3,643 in the schools in the North in 1957, the Southern part had 28,208 pupils. That clearly shows the wide gap that existed, which still persists in the educational development of the two parts of the country.

So far we have demonstrated that; (i) Nigeria was formed on the structure that had geographical, political, social and economic differences. (ii) Inequalities existed among the regions and such inequalities still persists. (iii) Because of (i) and (ii), and given that resources are scarce, agitations and conflicts would persist.

The fiscal system in the country is rooted to the Richard's Constitution in 1946 which granted autonomy to the regional governments. Though autonomy was granted to the regions but the task of sharing resources among them was a deep source of controversy and acrimony just as is the case today. The report of the Political Bureau, 1987, correctly summarized the contentious situations. It is noted in the report that;

*Revenue allocation has been one of the most contentious and controversial issues in the nation's political life. So contentious that none of the formulae evolved at various times by a Commission or by Decree under different regimes since 1946 has gained general acceptability among the components units of the country. Indeed, this issue, like a recurring decimal, has painfully remained the first problem that nearly every incoming regime has to grapple with since independence… (Report of the Political Bureau, 1987:169)*

Due to disagreements and contentions, from 1946 to 1958, four different commissions were setup to evolve acceptable revenue sharing formulae for the country. These were Sir Sydney Philipson Commission (1946), Hicks-Philipson Commission (1951), Chick Commission (1953) and Raisman Commission (1958). Following Philipson Commission's recommendations, financial responsibilities were devolved to the regional governments. Generally, the principles recommended by the commission were derivation, even progress and population. However, deviation principle was given priority in the sharing of revenue among the three regions. The regions' financial base consisted of declared revenues that were locally collected by the regions from sources such as direct taxes, mining rents, receipts from licences etc, and non-declared

revenues that were collected by the central government from four main sources- export duties, company ax, and import and excise duties (William, 1999). The proceeds of the non-declared revenues were shared among the regions as block grants through derivation principle after making room for central government's expenditure. On the whole, Philipson's recommendations resulted to an average of 75 percent revenue allocated to the central government while the regions had an average of 25 percent of total revenue allocated to them. The next two commissions retained derivation principle as the major principle used in distributing revenues among the regions. Where as Hicks-Philipson's commission, emphasized the principles of need and national interest, Chick commission emphasized fiscal autonomy in addition to derivation principle.

It should be emphasized that with the recommendations of these commissions and the adoption of federal constitution in 1954, the tax powers of the regional governments remained the same but the revenue allocation system changed and in fact, became the major source of contention among the regions. The revenue allocation changed in favour of the regions such that the regions had not just fiscal autonomy, but also had financial predominance over the federal government (William, 1999).

## 2.2 Evolution of Nigeria's Fiscal System in the Post-Colonial Period-1960-2009.

The discussion of the evolution of fiscal system in the post- colonial period is considered in two separate periods, the period of fiscal decentralization (1960-1966) and the era of fiscal centralization (1966-2009).

### 2.2.1 The 1960-1966: Period of Fiscal decentralization

The first republic emerged from the fiscal structures of the colonial era[11]. The political events within this period shaped the Nigerian fiscal system. The country got her independence in 1960 and became a republic in 1963. The fiscal matters recommended by Raisman Commission in 1958 were in operation. The commission recommended, among other things that; i) Regions should have authority over produce

[11] Three regions were in place; (North, South and West), 23 Provinces and 83 divisions. The sub-national governments were recognized and financial responsibilities were devolved to the regions. Royalties from minerals fully belonged to the regions of origin.

sales tax and sales tax on motor vehicle fuel. ii) Establishment of Distributable Pools Account (DPA) for the purpose of sharing federally collected revenues. It became clear that the practice of returning mining rents and royalties to the regions was to be discontinued. Such revenues was now to be shared through DPA, with the regions of origin getting 50%, federal government 20% and all other regions, 30%. Oil was newly discovered from the Eastern Region and revenue from it as at 1958/59 was estimated to be 65,000 pounds, but the prospects were great. Consequently, the Raisman commission reduced the use of derivation as principle for sharing DPA. The preferred principles then were national unity and fiscal independence. These fiscal operations were fully in place within the period of 1960-1966. Structurally, Southern Cameroun was withdrawn and Mid- West Region created.

In 1964, in accordance with section 164 of the new Republican Constitution of 1963, the Federal Government appointed Mr. Binns as a Fiscal Commissioner, mandated to review the appropriateness of the existing fiscal system. There were no fundamental changes from the existing structures.

Before the advent of the military in 1966, the following fiscal arrangements were in place in the country (Ola, 2001).

(i) Regions were assigned revenue from export and excise duties while Federal Government received the share attributable to Lagos Area.

(ii) Marketing boards were regionalized and the regions retained operational surpluses.

(iii) Regions had the powers to fix producer prices and impose sales tax on produce of market boards.

(iv) Regions were assigned full retention of mining rents and loyalties with a federal tax of 30% payable to the distributable pool account (DPA). This was later changed to 35% in 1957.

(v) Regions were allowed to administer and retain income tax on incomes not above 700 pounds per annum.

That era is regarded as the period of **fiscal decentralization** in Nigeria (Mbanefoh, 1993; Ola, 2001, Uche, 2004, Adeposo 2004). The implication of the fiscal arrangement was an increase in the regional revenue with a near absence of dependence on the federal government. Regional revenue increased from 17.7% of total government revenue in 1945/49 to 41.6% in 1966/67 financial year and a decrease in the share of

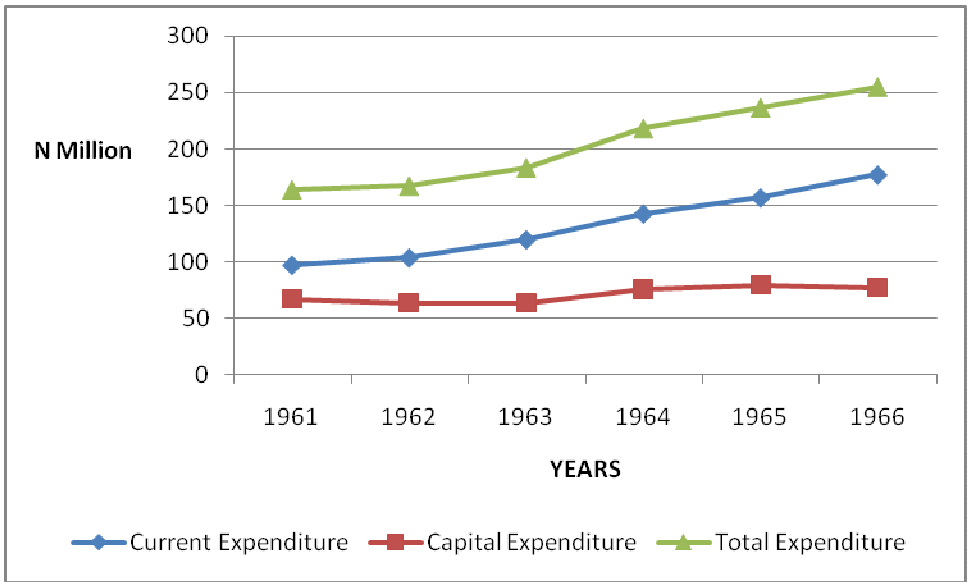
federal government from 82.3% to 58.4% in the same period. It meant that the regions had resources to effect positive developmental changes in their respective regions within the period. At this juncture, what then were the expenditure patterns and the performance of some macroeconomic variables in the period? The structure of the expenditure of the central government from 1960-1966 is shown in Table 2.6 together with the accompanied Figure 2.4

Table 2.6: Total Expenditure of the Federal Government (1961-1966) N Million

| **Year** | **Current Expenditure** | **Capital Expenditure** | **Total Expenditure** |
|---|---|---|---|
| 1961 | 96.9 | 67.1 | 164.0 |
| 1962 | 103.4 | 63.9 | 167.3 |
| 1963 | 119.6 | 63.9 | 183.5 |
| 1964 | 142.6 | 75.7 | 218.3 |
| 1965 | 156.9 | 79.6 | 236.5 |
| 1966 | 177.3 | 77.8 | 255.1 |

Lambo (1987)

Figure 2.4: The Expenditure of Federal Government (1961-1966)



The bulk of the expenditures were of the current type. The current expenditure increased steadily in the period. It indicates that the central government was at that time involved more in administrative issues. Also, since regions were financially buoyant, most capital projects were carried out at the regional levels.

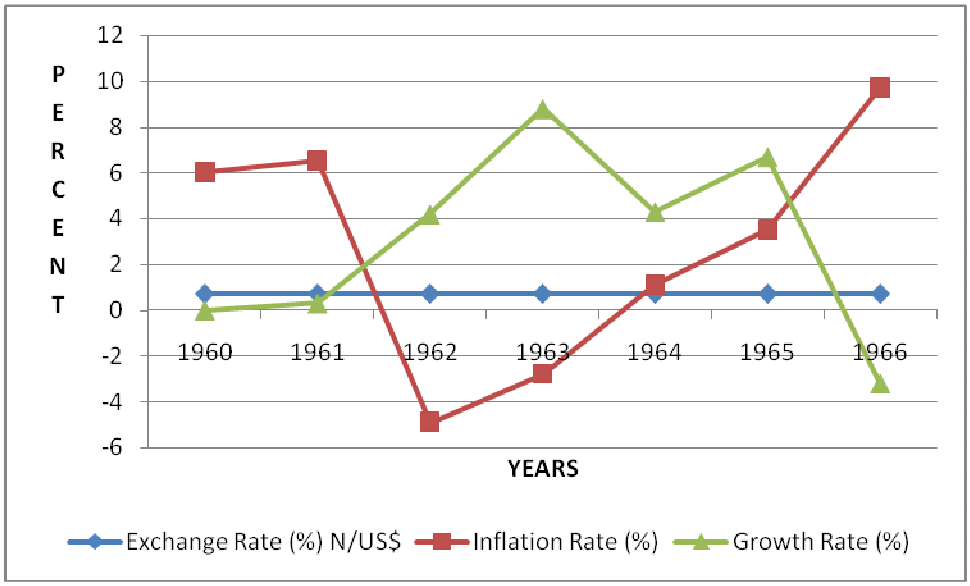
The behaviors of some macroeconomic variables are examined as presented in Table 2.7 and illustrated in Figure 2.5.

Table 2.7: Performance of Selected Economic Indicators

| Years | Exchange Rate (%) N/US$ | Inflation Rate (%) | Growth Rate (%) |
|---|---|---|---|
| 1960 | 0.7143 | 6.0 | - |
| 1961 | 0.7143 | 6.5 | 0.3 |
| 1962 | 0.7143 | -4.9 | 4.2 |
| 1963 | 0.7143 | -2.8 | 8.8 |
| 1964 | 0.7143 | 1.1 | 4.3 |
| 1965 | 0.7143 | 3.5 | 6.7 |
| 1966 | 0.7143 | 9.7 | -3.2 |

Source: Lambo (1987), Iyoha (2008)

Figure 2.5: Economic Indicators



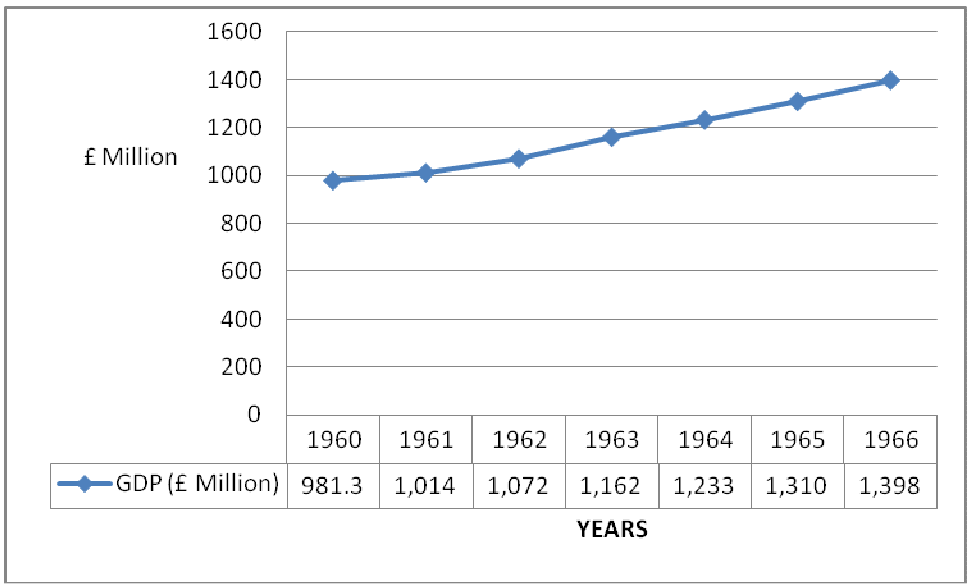

The trends of the variables are shown in figure 2.5. Exchange rate was fixed at $1: No.7143 and was constant in the period. Inflation rate increased marginally from 6% in 1960 to 6.5% in 1961 but reduced drastically to negative from 1962-1963. There after it increased steadily and stood at 9.7% in 1966. The growth rate increased from 0.3% in 1961 to 4.2% in 1962 and to 8.8% in 1963. The rate decreased and in 1966, it was negative. High inflation with negative growth indicated that the economy was not healthy. In fact, the circumstances also warranted that. The year 1966 was the country's civil war and such experiences are common in periods of war.

Table 2. 8: Gross Domestic Product at factor cost (1960-1966)

| Year | GDP (£ Million) | Percentage Change |
|---|---|---|
| 1960 | 981.3 | 4.6 |

| | | |
|---|---|---|
| 1961 | 1,014.0 | 3.4 |
| 1962 | 1,072.3 | 5.7 |
| 1963 | 1,162.1 | 8.4 |
| 1964 | 1,233.6 | 6.1 |
| 1965 | 1,310.9 | 6.3 |
| 1966 | 1,398.2 | 6.7 |

Figure 2.6: Trend of GDP (1960-1966)



### 2.2.2 The 1966-2009: Period of Fiscal Centralization and Fiscal Fragmentation in Nigeria

The theoretical literature on fiscal federalism provides guidelines on how expenditure responsibilities can be shared among the levels of governments in a country. By following the guidelines[12], the shared responsibilities can indicate that the country's fiscal matters are centralized or decentralized.

In Nigeria, it is argued that the emergence of institutions such as National Council on Establishment, National Security Council, National Economic Council etc and other consultative bodies like the National Universities Commission and the Manpower Board have accelerated the pace of fiscal centralization (Olowu, 1995). More importantly, evidence from institutional framework regarding fiscal responsibilities, tax jurisdiction and intergovernmental fiscal relations among the levels of governments clearly indicates the level of centralization of fiscal powers in Nigerian.

The constitutional provision regarding the assignment of responsibilities among the three tiers of governments clearly show a deliberate concentration of powers to the centre. The 1979 and 1999 Constitutions shared responsibilities among the tiers of government in Nigeria. From the 1999 Constitution in particular, fiscal responsibilities are deliberately centered to the central government. Table 2.9 shows the allocation of some of these responsibilities to the federal, states and the local governments.

Table 2.9 Allocation of some Fiscal responsibilities in Nigeria in the 1999 Constitution

| ***Level of Government*** | ***Responsibilities*** |
|---|---|
| Federal only | Defence |
| | Foreign Affairs |
| | International trade (including export marketing) |
| | Currency, banking, borrowing, exchange control |
| | Use of water resources |
| | Shipping, federal trunk roads |

[12] These are summarized and presented in Appendix 1, table 3.

| | |
|---|---|
| | Elections<br>Aviation, railways, postal services<br>Police and other security services<br>Regulation of labour, interstate commerce, telecommunication, immigration<br>Mines and minerals, nuclear energy, citizenship and<br>naturalization rights, Social Security, Insurance, national statistical system (census, births, deaths etc)<br>Guidelines and basis for minimum education<br>Business Registration<br>Price control |
| Federal-State (shared) | Health, social welfare<br>Education (post primary/ technology)<br>Culture, Antiquities, Monuments, archives Statistics, Stamp duties, Commerce, industry, Electricity (generation, transmission and distribution)<br>Research surveys. |
| State Only | Residual power, i.e. any subject not assigned to federal or local government level by the constitution. |
| Local Government | Economic planning and development, Health services Land use, control and regulation of advertisements, pets, small businesses market, public conveniences, Social welfare, sewage and refuse disposal, registration of births, deaths, marriage, etc .Primary, adult and vocational education, development of agriculture and natural resources. |

*Source: The 1999 Constitution of the Federal republic of Nigeria.*

The responsibilities are distributed among the tiers of governments as shown above. There are those that are restricted to the federal government only, some to the state government only and others only for the local governments. There are however those shared between the federal and the state. Such responsibilities include areas such as health, social welfare, education, culture, commerce, industry research survey etc. The assignment of responsibilities to a particular level of government is based on the extent of geographic range of externalities and economies of scale of such functions. Some responsibilities whose incidence of benefits is nationwide can be more efficiently undertaken by the federal government than lower levels of governments. As indicated in the table, functions whose benefit regions cover the entire country, which are the exclusive reserve of the federal government are; national defence, banking, currency, coinage and legal tender, citizenship, nuclear energy etc. Responsibilities, whose benefits are more local than national, but have spillover effects beyond regional boundaries are placed in the

concurrent list. Examples include industrial, commercial and agricultural development, post primary education and secondary health care. On the other hand, functions which are purely local in nature, in the sense that the benefits accrue to a limited geographical area within the federation are assigned to the local government as evidenced from the table.

The intergovernmental fiscal relations in the country show the centralization of fiscal powers. The two main issues are (i) tax assignment or tax jurisdiction and (ii) revenue sharing arrangements.

*Theoretically,* tax assignment has three main attributes, namely: Power to legislate and set rates, the power of administration, and the right to revenue collected. Tax Assignment is basically about the level of government that should tax what and how, thereby providing various levels of government with revenue they can control under fiscal arrangement. By this, the tax jurisdiction of each level is defined, and efficiency is always the basis. Efficiency requires that the taxing powers be vested in that level of government most likely to administer the taxes at the least cost.

There is no ideal assignment of taxes between central and lower levels of government. However, a set of 'tax-assignment rules' has been developed in the traditional fiscal federalism theory. These principles relate to the respective responsibilities of central and lower tiers of government in macroeconomic *stabilization,* income *redistribution* and resource *allocation* (Boadway et al., 2000). Again, in developing countries, the administrative capabilities of local governments in tax design (i.e., deciding on revenue bases and setting rates) must be taken into consideration (Bird, 1990). Moreover, in large and diverse countries the issue of tax harmonization between jurisdictions is important when assigning taxing powers.

The stabilization objective of the fiscal system which calls for central control over the tax instruments may substantially influence central budget deficits or inflation. Thus, taxes on international transactions (customs duties) and a considerable share of income and general sales taxes (such as VAT) should be assigned to central government. The distributive function of government is an argument for centralized corporate income and wealth taxes. If there are wide disparities in income and wealth across provinces, as there are in many developing countries, then local taxing powers may exacerbate these differences. However, since the central government can borrow money to make up for shortfalls, it can

live with the more unstable revenue sources. Local governments, by contrast, require relatively stable sources of revenue. Following Musgrave (1983 and 2000), these assignment rules yield the following six general principles of tax assignment in a federation:

i) Taxes suitable for economic stabilizations should be levied by the central government; lower- level taxes should be cyclically stable;

ii) Progressive re-distributional taxes should be assigned to central government;

iii) Personal taxes with progressive rates should be levied by the jurisdictions most capable of implementing a tax on a global base;

iv) Lower level governments should tax revenue bases with low mobility between jurisdictions;

v) Tax bases distributed highly unequally between jurisdictions should be centralised; and

vi) Benefit taxes and user charges may be appropriately used at all levels.

These six principles produce the specific assignment of categories of tax instruments that are presented in Appendix 1 Table 4

The operation of tax jurisdictions in Nigeria is summarily presented in Table 2.10 below.

Table 2.10 : Nigeria's Major Taxes Jurisdiction

| Serial Number | Types of Tax | Jurisdiction Law | Administration and Collection | Right to Revenue |
|---|---|---|---|---|
| 1 | Import duties | Federal | Federal | Federation Account |
| 2 | Excise duties | Federal | Federal | Federation Account |
| 3 | Export duties* | Federal | Federal | Federation Account |
| 4 | Mining rents and royalties | Federal | Federal | Federation Account |
| 5 | Petroleum profit tax | Federal | Federal | Federation Account |
| 6 | Companies Income tax | Federal | Federal | Federation Account |
| 7 | Capital Gains tax | Federal | Federal/States | States |
| 8 | Personal income tax (other than those in 9 below) | Federal | States | States |
| 9 | Personal income tax of Armed Forces, External Affairs officers, residents of FCT and Nigerian police force | Federal | Federal | Federal |
| 10 | Licences fees on television and wireless radio | Federal | Local | Local |
| 11 | Stamp duties | Federal | Federal/States | States |
| 12 | Capital Transfer Tax (CTT) | Federal | States | States |
| 13 | Value Added Tax (VAT) | Federal | Federal/States | Federal/States/Local |
| 14 | Pools betting and other betting taxes | States | States | States |
| 15 | Motor Vehicle and Drivers' licenses | States | States | States |
| 16 | Entertainment tax | States | States | States |
| 17 | Land Registration and survey fee | States | States | States/Local |
| 18 | Property taxes and rating | States | Local | Local |
| 19 | Market and trading licence and fees | States | Local | Local |

*Source:* Adesopo et al. (2004), *No longer imposed

From Table 2.10 above, the major revenue heads in the country, including custom duties, mining rents and royalties, petroleum profit tax and company income tax, all of which account for about 80 per cent of total national recurrent revenues, fall under the legislative and administrative jurisdiction of the federal government while the less productive and less buoyant sources are devolved to the fiscal jurisdiction of state and local governments. This has always been a major source of conflict, tension and agitations from some states and groups for resource control.

Value Added Tax (VAT) and Education Tax are worth mentioning in the discussion of Tax assignment or tax jurisdiction. VAT was introduced in Nigeria in January 1, 1994 to replace Sales Tax, following the recommendation of a study group set up by Federal Government on the reform of indirect taxation in Nigeria. The tax covers various categories of goods and services with a single rate of 5 per cent. It is collectable

to the Federal Government only and shared among the three tiers of governments. Education Tax is the second which is 2 per cent of companies' annual profits payable into Education Tax Fund (ETF) for monitoring and disbursement for the benefit of the three tiers of government. The tax is managed by a board of trustees (ETD 1993, sec 4) as constituted by the Federal Government. The disbursement is as follows: Higher Education (50%), Primary Education (40%), and Secondary Education (10%). The share of higher education is again shared among the universities, polytechnics and colleges of education in the ratio 2:1:1 {ETD 1993, sec 5 (2) & (3)

It is clear from the forgoing that, the tax jurisdictions assigned to the federal government in Nigeria places the central government in a financial position that makes the lower levels of governments to depend almost entirely on the central government for financial allocations.

Revenue sharing arrangement in Nigeria is both vertical and horizontal. The revenue is shared vertically among the three tiers of government, and horizontally among the states and local governments on the basis of a number of factors or principles. The major problem in revenue sharing is how to evolve an acceptable formula, comprising the sharing rates and sharing principles. The controversy over revenue allocation dates back to the origins of Nigeria. One of the reasons for the amalgamation of Northern and Southern Nigeria in 1914 was to enable the colonial government reduce its subsidy on the Colony of Northern Nigeria by using up the surpluses from Southern Nigeria. Where as the financial resources of the South was known to be increasing rapidly that of the North was persistently decreasing. The budgets in the North were always in deficits, usually financed with surpluses from the South (Uche, 2004)[13]. So Nigeria was built on such diverse financial bases of the two major parts of the nation.

The Richard's Constitution recognized the three regions that already existed in Nigeria since 1939; North, East and West. Each of the regions had legislative councils dominated by British officials[14]. The central issue at that time was how to share revenue between the federal government, regional governments and the native authorities. Consequently, Sir Sydney Philipson, the then Financial Secretary of the Northern Colony was appointed to investigate and recommend how administrative and financial powers could be shared among the various tiers of governments. From his report, he was of the opinion that the devolution of powers from the center to the regions was desirable. The commission

[13] That position is in contestation as Adamu (2010) contended that the wealth from the Northern part of the country was used to develop the South in the Colonial era. Details of the arguments and the data are presented in section 2.4.

[14] The North had in addition, House of Chiefs.

recommended the gradual evolution to a revenue sharing system mainly based on the derivation principle. Since then, the derivation principle has become one of the most controversial issues of revenue allocation in Nigeria.

After Philipson Commission, ad hoc committees/commissions were used at one time or the other to advise the government while at some other times amendments were made by use of Decrees and Budget speeches/ Pronouncements. The summary of such revenue commissions are presented in Table 2.11 below.

Table 2.11; Summary of the Evolution of Revenue Allocation Formulae in Nigeria

| **Year and Political System** | **Fiscal Commissions** | **Recommendations** | **Accepted Principles** | |
|---|---|---|---|---|
| | | | **Horizontal** | **Vertical** |
| 1946/48<br>Unitary system | Sydney Philipson | | a. Derivation<br>b. Even progress | |
| 1952/53 Quasi-federal system | Prof.J.R.Hicks and Sydney Philipson | | a. Derivation<br>b. Need<br>c. National interest | |
| 1954/58 Federal System<br>(3 regions) | Sir Louis Chick | | a. Derivation<br>b. Fiscal independence | |
| 1959/60 Federal system<br>(4 regions) | Sir Raisman | | a. Derivation<br>b. National unity<br>c. Fiscal independence | North 40%<br>West 31%<br>East 24%<br>S/Cameron 5% |
| 1964/67 Federal system<br>(4 Regions including Cameron and Mid-West | Mr. H Binns | a. Regional financial comparability<br>b. Continuity of service<br>c. Minimum responsibilities | a. Derivation<br>b. Fiscal independence<br>c. National interest | North 42%<br>West 20%<br>Mid West 8%<br>East 30% |
| 1968 Federal system | Chief O. Dina | a. Minimum national standard of basic needs<br>b. Population<br>c. Tax effort<br>d. Financial prudence<br>e. Fiscal adequacy<br>f. Balanced development<br>g. Independent revenue<br>h. Derivation<br>i. National interest | a. Equality of states 50%<br>b. Population 50% | |

| | | | | |
|---|---|---|---|---|
| 1975/76 | Federal Military Govt. (FMG) | | a. Equality of states<br>b. Population<br>c. Derivation | |
| 1977 | Prof. A.O Aboyade | **a**. Equality of access to dev. Opportunities 25%<br>**b**. National minimum standard for national integration 22%<br>**c**. Absorptive capacity 20%<br>**d**. Indep. Revenue & min. tax effort 18%<br>**e**. Fiscal efficiency 15% | a. Equality of success to dev. opport. 25%<br>b. National min. std. for national integr. 22%<br>c. Absorptive cap. 20%<br>d. Ind revenue & min tax efforts 18%<br>e. Fiscal efficiency15% | Federal 60%<br>States JA/C 30%<br>Local Gvts 10%<br>Spec grnt a/c Nil |
| 1979 | Dr.Pius Okigbo | | Declared null by the Supreme Court | |
| 1981 | Federal Govt. Revenue Act of 1981/82 | | a. Minimum responsibility<br>b. Equality of states<br>c. Population<br>d. Social development<br>e. Internal Rev. efforts<br>f. Derivation<br>g. ecology | Federal 53%<br>States 35%<br>Local Govt. 10%<br>Special fund 2% |
| 1988/89 | Gen. T.Y. Danjuma | ***Vertical***<br>Fed Govt. 47%<br>State Govts 30%<br>Local Govts 15%<br>Special Funds 8%<br>***Special Funds;***<br>FCT 1%<br>Stabilization 0.5%<br>Savings 2%<br>Derivation 2%<br>OMPADEC 1.5%<br>Dev. of non-oil 0.5%<br>Gen. Ecology 0.5%<br>***Horizontal Allocation***<br>Equality of states 40%<br>Population 30%<br>Social dev. factor 10%<br>Landmass & terrain --<br>Internal rev. effort 20% | Equality of states 40%<br>Population 30%<br>Social dev. factor 10%<br>Landmass & terrain -<br>Int. rev effort 20% | Fed. Govt. 50%<br>State Govt. 30%<br>Loc. Govt. 15%<br>Special Fund 5%<br>***Special Funds***<br>*FCT 1%*<br>Stabili. 0.5%<br>Saving -<br>Derivation 1%<br>OMPADEC 1.5%<br>Dev. of non-oil –<br>Gen. Ecology 1% |
| 1999 | F.M.G | | | Fed.govt. 48.5%<br>State. govt 24%<br>Local govt 20%<br>FCT 1% |

| | | | | |
|---|---|---|---|---|
| | | | | Gen. Ecology 2%<br>Stabili. 0.5%<br>Derivation 1%<br>OMPADEC 3% |

Source: Tamunopriye (1999: 45),

Table 2.11 shows the various commissions and the accepted principles used at different times in the country. It is clear that derivation principle was given priority in revenue sharing arrangement among the regions right from the year 1946/48 through ADP. At that time, the less endowed regions tended to be more innovative in their bid to improve their finances (Uche, 2004). Since resources were distributed in each of the regions, each of the regions tried to take advantage of its own endowments and peculiar circumstances in their efforts to improve their revenue generation.

All these changed with the discovery of oil and gas in 1958 and its subsequent production. With the advent of oil, the emphasis on derivation principle was reduced and other principles given priority for horizontal revenue sharing. Consequently, the flexibility of regions adapting to their unique circumstances for generating more revenue was greatly affected. Hence, there was a fundamental shift of focus from revenue generation in the regions to revenue allocation.

In Nigeria, the military took over power in 1966 and the Eastern Region, which was in charge of the Nigerian oil reserve, governed by Lieutenant Colonel Ojukwu was threatening succession because of revenue issues. In response to the perceived threat, the Federal Military Government created 12 states out of the four regions.[15] The change in the fiscal structure necessitated the revision of revenue sharing arrangements in the country. Consequently, a fiscal commission, headed by Chief Dina was formed in 1968. The commission was charged to: (i) examine and suggest changes to the existing structure of revenue sharing including DPA and (ii) suggest new sources of revenue for both federal and state governments.

[15] The twelve states were North-Western, North-Central, Kano, North-Eastern, Benue-Plateau, Kwara, Lagos, Western, Mid-Western, East-Central, South-Eastern and Rivers states. The Eastern Region had three states. Deliberately, Rivers and South Eastern states (from main oil producing area), which also belong to the minority tribes were created. The East-Central state, dominated by the Ibos became an impoverished land locked state. It is said that the day the twelve states were created was the day Ojukwu proclaimed the entire Eastern Region as an independent Republic of Biafra ( Uche, 2004).

Among the recommendations made, the commission suggested that the DPA be renamed States Joint Account (SJA) and Special Grant Account (SGA) be established. The report of the commission, for the first time, also introduced onshore/offshore dichotomy[16] in the sharing of oil revenue. The commission's recommendations generally favoured the Federal Government and were vehemently rejected by most states. However, most of the recommendations were implemented by promulgating Decree No 9 of 1971.

The fiscal system in Nigeria, particularly in the fragmentation of states and local governments is anchored on economic, political, institutional, social and cultural developments. Table 2.12 shows the period different heads of states ruled in Nigeria, the main fiscal arrangements (states and local governments) and the major institutional, political and economic events within the periods. The structure indicates three distinctive types of governments with different institutional changes. These are the era of the colonial state (1946-1959), the civilian rules, (1960-1966, 1979-1983 and 1999 – date) and the period of the military regimes (1966-1979; 1983-1999). The civilian governments maintained the fiscal structure created by the military as evidenced in the first republic, second republic and the present civilian dispensation. The governments are however, marked by struggles for power, ethnic rivalry and political killings. The military regimes are rules of the gun and through decrees and the constitutional provisions are usually set aside. Creation of states and counter coups characterized military regimes in Nigeria as seen in Table 2.12.

Table 2.12: The Structure of the Evolution of Nigeria's Fiscal System (1946-2008)

| Year/period | Type of Govt./ Head(s) of State | Main Fiscal Structure/ Arrangements | Main Institutional changes, Political and Economic Events |
|---|---|---|---|

[16] Revenue from offshore operations should be shared as follows: Federal Government, 60%, SJA, 30% and SGA 10%. Royalties from onshore operations was to be assigned as follows: Federal Government, 15%, State of derivation, 10%, SJA 70% and SGA, 5%.

| | | | |
|---|---|---|---|
| 1946-1959 | Colonial State.<br>**Sir Arthur Richards** | ● Restructuring of Nigeria into 3 Regions. i) Northern. ii) Western. iii) Eastern<br>● 23 Provinces<br>● 83 Divisions<br>● Recognition of sub-national regional governments as financial responsibilities devolved to the regions. | ● Adoption of Federal Constitution (Lyttleton Constitution) |
| 1960-1966 | Civilian(First Republic)<br>**T. Balewa** | ● Withdrawal of Southern Cameroon<br>● Creation of Mid-West Region | ● Nigeria gained independence<br>● She became a republic<br>● Struggle for power and ethnic rivalry<br>● Fall of first republic<br>● Nigeria returned to a unitary system via Unification Decree 34 of May 1966 |
| 1966-1975 | Military<br>Y. Gawon | ● Creation of 12 states<br>● 96 Divisions | ● State(Creation and Transitional Provisional) Decree 14, 1967<br>● Oil boom |
| 1976-1979 | Military<br>**M. Mohammed**<br>**O. Obasejo** | ● Creation of 19 States<br>● Local Government Reform<br>● 300 Local Governments | ● Decree no.13,1970: Revenue Allocation<br>● Decree no.9, 1971: Revenue Allocation<br>● Decree no.51, 1972: Income Tax Reform<br>● Decree no.6,1975: Revenue Allocation<br>● Oil boom<br>● Transition to second republic |
| 1979-1983 | Civilian<br>**S. Shagari** | ● 19 States<br>● 300 Local Governments | ● Civilian rule begins<br>● Oil glut<br>● Increased external debt crisis<br>● litigation over revenue allocation<br>● persistent inter-governmental conflicts<br>● Economic recession |
| 1983-1999 | Military<br>**M. Buhari**<br>**I. Babangida**<br>**S. Abacha**<br>**Abubakar** | ● States increased from 19 in 1976 to 21 in 1987 and to 30 and a Federal capital in 1991.In 1996, 6 additional states were created, totaling 36.<br>● Local governments increased to 448 in 1987, 598 in 1991 and to 774 in 1996. | ● Oil glut continued<br>● Introduction of Structural Adjustment Programme (SAP)<br>● Coups and counter coups<br>● Prolonged and aborted third republic<br>● State(creation and transitional provisional)Decrees 37,1991,and 36, 1996. |
| 1999-Date | Civilian<br>**O. Obasenjo**<br>**U. Yaradua** | ● 36 States and FCT<br>● 774 Local Governments | ● Civil rule begins<br>● Oil Boom<br>● Agitations for and salary increases<br>● Continuation of SAP-privatization and commercialization<br>● Intense political killings<br>● Frequent and violent resource- based conflicts.<br>* Serious global financial crisis. |

Source: Compiled by the author

The colonial state was governed by the colonial powers and the main fiscal arrangements were the regions, provinces and divisions. Nigeria was divided into three regions- the Northern, Western and Eastern regions.

During the reign of General Yakubu Gawon, three policy instruments were developed. (i) The dismantling of the old regions and their replacement with 12 new states in 1967. (ii) The nationalization of political system by dismantling of the feudal power in the North, the

incorporation of the Yoruba into the main stream through the co-operation of Awolowo and the defeat of the Igbo-led Biafran succession and (iii) The informal introduction of states instead of ethnic quotas as the basis for representation in the cabinet and other government institutions. From 12 states in 1967, the states increased to 19 in 1976, to 21 in 1987, to 30 and the Federal Capital Territory (FCT) in 1991. In 1996, six additional states were created, bringing the total to 36.

The local government administration also took different forms in Nigeria. Its evolution can be explained within the context of regionalism. The posting of Frederick Lugard and Donald Cameron, in the early colonial period (1906-1935) was instrumental in the institutionalization of the doctrine of local self-government in the country. However, the philosophy and practice of indirect rule differed in various parts of the country as a result of the different prevailing political systems. That also dictated the pace and direction of reforms in local government in the late colonial period (1940-1960) (Gboyega 2003). For instance in the 1950s, while the Eastern and Western Regions embarked on reforms aimed at increasing the number of elected councilors the Northern Region retained the prevailing system in which the Emir was the Native Authority. With independence in 1960, and within the framework of the existing three-region federal structure, there was no significant change in the system of local government in the country. Rather, local government councils were subject to abuse because dominant political parties in each region used the native courts and local police to intimidate and oppress members of the opposition parties. Although the military, which took over power in 1966, changed the structure of the federation by creating 12 states, local government reforms remained under the control of states.

Local government officials were representatives of the states and not of the people and they were expected to implement the policies of state governments in the locality. This practice generated resentment among the people as local government officials were seen as external agents. The perceived excesses of local government officials led to riots in Western Nigeria as peasant farmers took up arms against the state between 1968 and 1969. The native authority system experienced slower and less dramatic changes in the Northern region where indirect rule was most successful due to the presence of centralized pre-colonial political systems. The Emirs (politico-religious rulers) retained their influence in local administration due to the strength of prevailing political traditions and religion. However, although the powers and authority of the Emirs upon which the native administration rested were widely accepted in much of the predominantly

Muslim states of the far North, there was fierce resistance to the extension of indirect rule and the authority of the Emirs in the Middle Belt region whose population has substantial numbers of Christians and Muslims. For instance, in 1960 and 1964, the Tiv nation revolted against the unrepresentative native administration forced on them by the Northern Peoples Congress (NPC) government.

The 1976 Local Government Reform was the first comprehensive and uniform decentralization programme in the country. The military government created 301 local government areas (LGAs) and local government was recognized as the third tier of government with statutory administrative, political and fiscal functions and powers. These powers and functions were subsequently entrenched in the 1979 Constitution where the 301 local government areas were listed alongside the 19 states of the federation. The reform policy provided for directly elected local councils and guaranteed direct funding of local governments from the Federation Account as determined by the National Assembly. The third tier of government was also to serve as the bedrock of the country's federal democracy. For instance, each local council elected a delegate to the national Constituent Assembly established to deliberate on the 1979 Constitution.

The cumulative effect of these changes in the context of competitive communalism in the country was that it raised intense clamour for local governments in most parts of the country. While the military government resisted these demands for new local councils, the civilian governments elected in 1979 succumbed to them given the imperative of securing votes from different communal groups. Consequently, during the Second Republic (1979-1983) many state governments embarked upon creation of new local government areas. The result was that by the time the military intervened again on December 31, 1983 and ruled consistently to the year 1999, the number of local government areas had risen from 301 to 744. The multiplication of local government areas came at the heavy cost of politicization and deinstitutionalization. For instance, several state governments arbitrarily suspended elected councils and replaced them with appointed 'sole administrators'. The fiscal autonomy of the local governments was also compromised because several state governments withheld local council funds. Worse still, political interests overshadowed the criteria of population, viability and administrative efficiency in the creation of the councils.

It was against this background that the Buhari/Idiagbon military regime which seized power on December 31, 1983, abolished the 402 local government areas the politicians had created and reverted to the 301 local governments in 1984. However, the Babangida regime, which

took over power through a coup in 1985, succumbed to widespread pressure to create new local governments and States as it faced a legitimacy crisis. It created new LGAs in 1987 and 1991. Realizing the political dividends that his predecessor had derived from the creation of States and local governments, General Sani Abacha, who took over in November 1993, also created new states and local governments in 1996, as his unpopular and illegitimate regime was desperate for legitimacy. As in the Babangida period, the criteria for creation of local governments were unclear. It is hardly surprising, therefore, that the exercise resulted to controversies and partially triggered communal conflicts in different parts of the country, with violent outcomes in Zango-Kataf (Kaduna State), Ife-Modakeke (Osun State), Aguleri-Umuleri (Anambra State), Tafawa-Balewa (Bauchi State), Wukari (Taraba State) and Warri (Delta State).

Violence occurred in these cases because the military regimes were not sensitive to the dynamics of inter-group relations in the localities. For instance, when assigning names to the new local governments and specifying their headquarters, the regime was often blind to historic grievances and perceptions of inequalities and domination. Aggrieved groups often complained that infrastructure and income-generating opportunities were concentrated in towns belonging to dominant groups who usually appropriated the local councils (which in most cases bore the name of their communal group). Such appropriation caused alienation among marginal groups and triggered demands for new local government areas. However, to some aggrieved groups, the new LGAs created by the military governments did not result in the long-expected autonomy but merely consolidated the status quo. Such groups therefore perceived the controversial new local councils as being designed to perpetuate their marginalization. It is in such cases that violent conflicts accompanied the creation of local councils. However, where local inter-group dynamics were taken into consideration and new councils provided some autonomy to hitherto marginalized groups while not threatening the interest of dominant groups, violent conflicts were avoided.

### 2.3 Contestation

Contestation in Nigeria, especially on fiscal matters dates back to the pre-colonial period. In the colonial era, the disagreement was between the regions and the central government and among the regions themselves, over issues of revenue sharing, central government's expenditure in the regions, and fiscal responsibilities. The extent and the dimension of the contestation have continued to be intensified and

worsened as the economic and political events continued to impact on the country. In addition, as the country fragments more, the scope of players in the conflicts also continues to increase. For instance, before the advent of oil, the contestations were mainly between:

(i) Central Government versus regions

(ii) Regions versus regions.

Presently however, the scope has gone beyond that, it is now;

(iii) Federal Government versus States, Local Governments

(iv) Federal Government versus oil producing states, non-oil producing states

(v) Federal government versus oil companies, oil producing states, non-oil producing states.

(vi) Federal Government versus oil companies, oil producing states, communities in Niger delta.

(vii) Oil producing states versus oil companies, communities in Niger delta.

(viii) Communities in Niger Delta versus Communities in Niger delta ect.

In sharing the revenue among the regions, there were disagreements over the derivation principle as it was alleged to have favoured some regions more than others. For instance, its application on motor spirit, excise and export duties was in favor of the West, but its application on mining rents and royalties favored the North more for tin and columbite. That generated tension among the regions. Whereas the North faulted its application and called for its review, the West felt the use of the principle be made to continue further. The East on the other hand, called for its abolition.

The position of this study, particularly this chapter is that the North is at a 'disadvantage' in Nigeria right from the beginning. In other words, other regions were wealthier than the North and the inequality in the country is basically skewed towards the North. Scholars like Mustapha (2004), Garba (2004), Festus and Aregbeyen (1999), Uche (2004) and Iyayi (2008) hold similar views. Commenting on the dispute among the regions over oil revenue, Uche (2004:18) said that: 'oil was not the first natural resource to be exploited in Nigeria. Prior to its

discovery, tin and bauxite were being exploited in the Northern Region solely for the benefit of the North. The West could not be bothered because it was the wealthiest of the three regions, thanks to the cocoa boom'. To that end, some people believe that the wealth from the south were and is being used to develop the north.

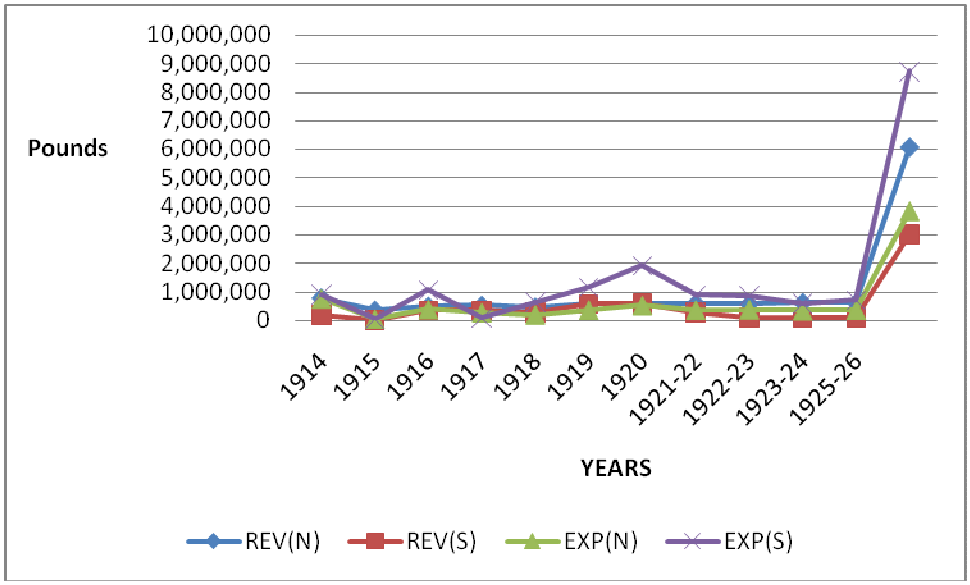
Interestingly, the northern elites completely oppose that view or position. Fika (2010) believes that since 1914, other regions in the country are being developed with the wealth from the North. Basing his argument on the actual provincial revenue contributions to central fund and government expenditures on provincial services from 1914-1948/49 he argued that the North contributed more to the central fund but the central government's expenditures on services in North was less than those in other regions. Table 2.13 below shows the actual revenue contributed to the central government by the North and South and the expenditure on services in the regions.

Table 2.13 Contributions to the Central Government and Expenditures in the Regions

| Year | REV(N) | REV(S) | TOTAL.R | EXP(N) | EXP(S) | TOTAL.EXP |
|---|---|---|---|---|---|---|
| 1914 | 770,979 | 200,778 | 971,757 | 737,439 | 888,651 | 1,262,090 |
| 1915 | 345,622 | 14,483 | 360,105 | 27,720 | 33,824 | 61,544 |
| 1916 | 483,041 | 358,737 | 841,778 | 371,441 | 1,048,998 | 1,420,439 |
| 1917 | 510,754 | 357,778 | 868,532 | 257,705 | 72,793 | 330,498 |
| 1918 | 450,897 | 290,979 | 741,876 | 184,621 | 631,515 | 816,136 |
| 1919 | 555,040 | 575,890 | 1,130,930 | 350,276 | 1,154,307 | 1,504,583 |
| 1920 | 579,210 | 588,955 | 1,168,165 | 509,515 | 1,900,973 | 2,410,488 |
| 1921-22 | 586,155 | 288,600 | 874,755 | 351,581 | 865,939 | 1,217,520 |
| 1922-23 | 563,580 | 101,500 | 665,080 | 360,659 | 856,566 | 1,217,225 |
| 1923-24 | 610,620 | 115,326 | 725,946 | 328,170 | 589,595 | 917,765 |
| 1925-26 | 603,300 | 115,170 | 718,470 | 351,096 | 693,625 | 1,044,721 |
| TOTAL | 6,059,198 | 3,008,196 | 9,067,394 | 3,830,223 | 8,736,786 | 12,567,009 |

The correspondent Figure 2.7 is also shown below

Figure 2.7: Revenue and Expenditure from North and South (1914-1926/26)

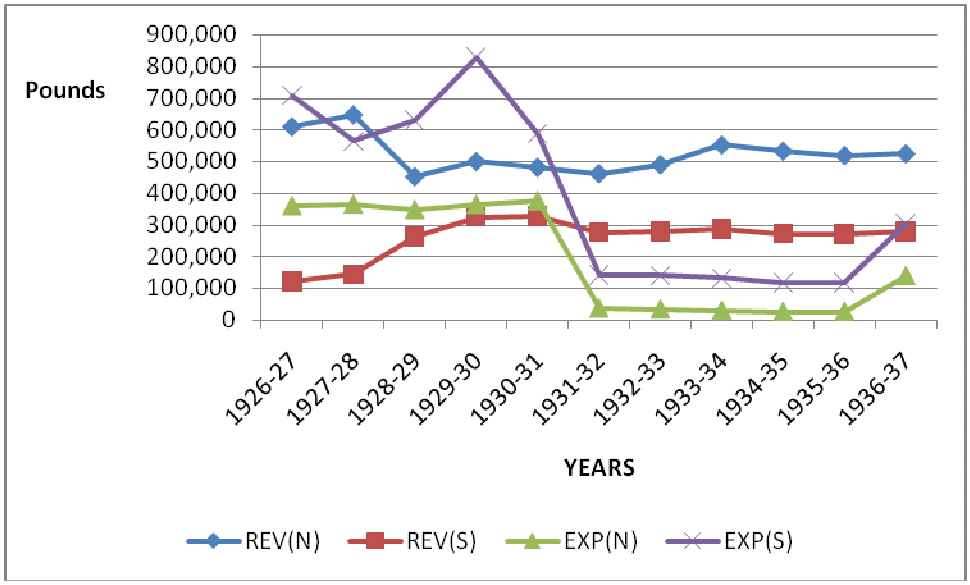



From Figure 2.7 above, the North contributed more to the central fund than the south, but the federal government's expenditure on services was more in the South than the North. A similar argument is put forth in the period, 1926/26- 1938/39. Table 2.14 and Figure 2.8 indicate the picture more clearly.

Table 2.14: Revenue contributed from North and South and Expenditure in the Regions

| YEARS | REV(N) | REV(S) | TOTAL.R | EXP(N) | EXP(S) | TOTAL.EX |
|---|---|---|---|---|---|---|
| 1926-27 | 608,660 | 121,030 | 729,690 | 361,102 | 708,752 | 1,069,854 |
| 1927-28 | 645,800 | 143,850 | 789,650 | 366,340 | 564,139 | 930,479 |
| 1928-29 | 452,000 | 264,070 | 716,070 | 349,057 | 629,904 | 978,961 |
| 1929-30 | 499,295 | 327,166 | 826,461 | 365,798 | 829,009 | 1,194,807 |
| 1930-31 | 481,126 | 329,294 | 810,420 | 377,056 | 587,100 | 964,156 |
| 1931-32 | 461,781 | 277,163 | 738,944 | 36,879 | 142,265 | 179,144 |
| 1932-33 | 489,710 | 279,400 | 769,110 | 34,223 | 140,171 | 174,394 |
| 1933-34 | 551,328 | 287,020 | 838,348 | 30,246 | 131,250 | 161,496 |
| 1934-35 | 531,940 | 272,900 | 804,840 | 26,445 | 116,379 | 142,824 |
| 1935-36 | 518,325 | 272,300 | 790,625 | 27,049 | 116,477 | 143,526 |
| 1936-37 | 523,795 | 279,930 | 803,725 | 140,411 | 304,345 | 444,756 |
| 1937-38 | 579,100 | 291,050 | 870,150 | N.A | NA | NA |
| 1938-39 | 586,960 | 269,220 | 856,180 | N.A | NA | NA |
| TOTAL | 6,059,198 | 3,008,196 | 9,067,394 | 3,830,223 | 8,736,786 | 12,567,009 |

Figure 2.8: Revenue and Expenditure from North and South




It is clear from Table 2.14 and Figure 2.8 that the North contributed more to the central fund thean the South but in terms of service provision in the regions, the expenditure in the Sourthern Region was more than that of the North. It is logical therefore that the revenue from the North was used to develop the Sourth. The third set of data used for same argument is the contribution to the central fund by the three regions from 1939/40-1947/48.

Table 2.15 Regions' Contribution to Central Funds

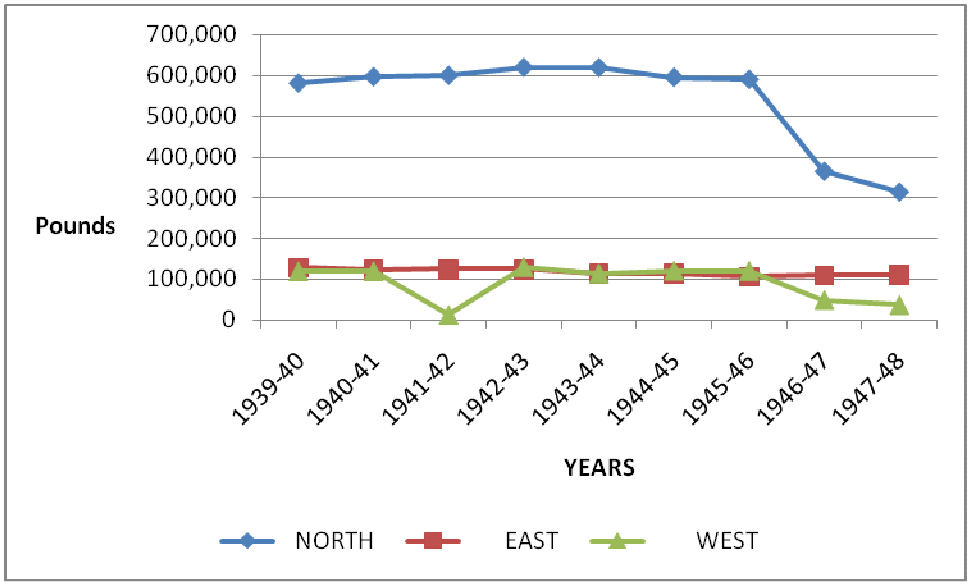
| YEARS | NORTH | EAST | WEST | TOTAL |
|---|---|---|---|---|
| 1939-40 | 581,410 | 127,940 | 119,620 | 828,610 |
| 1940-41 | 597,000 | 123,300 | 120,100 | 840,400 |
| 1941-42 | 600,500 | 123,500 | 12,800 | 736,800 |
| 1942-43 | 620,000 | 124,000 | 130,050 | 874,050 |

| | | | | |
|---|---|---|---|---|
| 1943-44 | 619,500 | 114,380 | 114,640 | 848,520 |
| 194445 | 595,740 | 114,140 | 121,210 | 831,090 |
| 194546 | 590,738 | 107,092 | 120,779 | 818,609 |
| 194647 | 364,620 | 109,760 | 49,220 | 523,600 |
| 1947-48 | 313,520 | 110,770 | 36,910 | 461,200 |
| TOTAL | 4,883,028 | 1,054,882 | 824,969 | 6,762,879 |

***Source: New Nigerian, Saturday, Feb. 2010 p.10***

The data and the correspondent figure show that the North contributed more than the Southern and Western regions.

Figure2.9: Region's Contribution to Central Fund (1939/40-1947/48)




The above shows the nature of conflict that features on regional basis. Other incidences of contestations are the Supreme Court judgment in the onshore-Offshore dichotomy in 2002, the unresolved issues at the National Political Conference in 2005, etc.

The stormiest issue is the revenue allocation manifested in the numerous commissions set to recommend the acceptable formula as seen earlier. The resource control issue has degenerated to a serious dimension, especially in the Niger Delta Region. The communities in the Niger Delta Region have now resorted to violence and open conflicts over resources control matters for two basic reasons: (i) that communities and Governors in the Niger Delta should have 'control' over 'their' resources or at least be given preferential treatment in the sharing of its rents. (ii) Since they are the immediate victims of the negative externalities of oil and gas production which is the major source of the country's revenue, they should be adequately compensated. At present, if the communities in the Niger Delta are not in conflict with the oil multinational companies

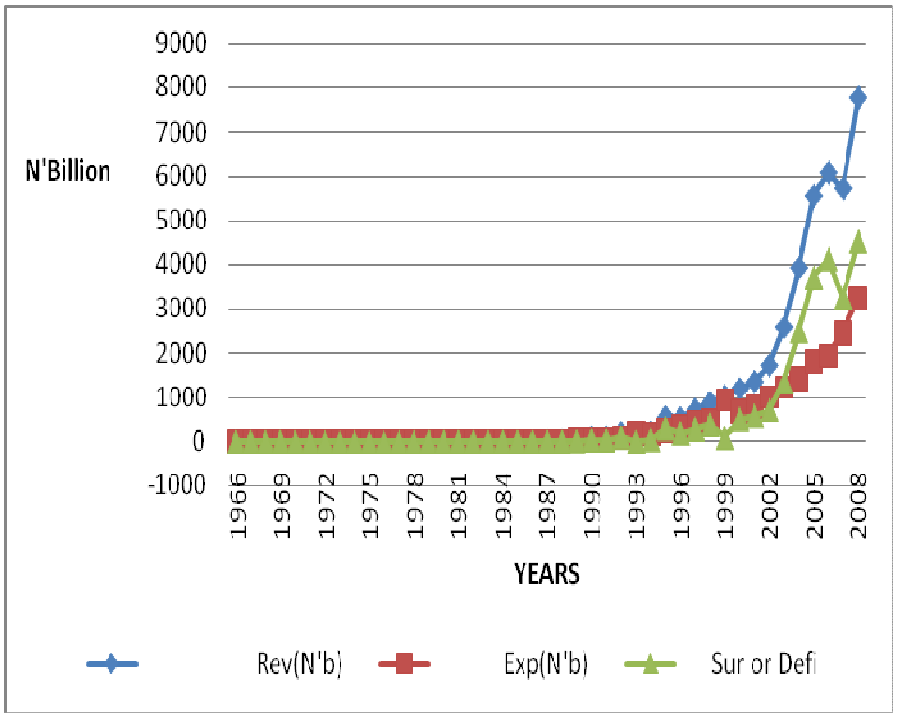
over land rights or compensation for environmental degradation, they are in dispute with the government over oil wealth and resource control or they are in conflict with one another over claims to ownership of oil fields (Zandvliet and Pedro, 2002). Therefore, the situation in the region is not whether there will be trouble, but it is a question of when and where (Garba, 2004). The tension and the open conflicts have enormous costs to the communities in particular and the country at large. Details are contained in Appendix 2.

Appendix 2 gives a summary of the sources and dates of the events. The sources outlined are mainly from the national dailies. The parties involved in the conflicts, possible causes and effects are summarily presented. The major players are the militants, government security agents, oil producing companies, the communities, and oil workers. The main causes of disputes range from disagreement over claim of ownership of oil fields, unsatisfactory conditions of living of the Niger people, developmental issues, compensations, and resource control. The effects of the clashes were bloody and devastating. Many lives were lost in the process, villages and settlements burnt and properties destroyed. In addition, economic activities were halted, oil production stopped at different intervals and much revenue lost in the process.

### 2.4 The Trend of Revenue, Expenditure and Deficit Growth performance

The trend of revenue, expenditure and deficits for the country from 1966 to 2008 are presented in Figure 2.10. From 1966 to 1970, the total revenue and expenditure per year was less than one Billion Naira. Within the period, it was in 1970 that there was a deficit of N0.27 billion. When oil activities became more pronounced, the revenue of the country increased drastically. This is clearly seen as there was an increase of revenue from N1.405 billion in 1972 to N4.537 in 1973 and there have been sustained increases. The major source of revenue in the country is from oil industry. In fact, today the economy of the country has come to depend entirely on oil. There has been an astronomical increase in revenue from 1999 to 2008. The increase was N1, 034.54 billion in 1999 to N5, 547, 5 billion in 2005 and in 2008, the revenue stood at N7, 756.62 billion.

Figure 2.10: Trends of Revenue, Expenditure and Deficit/Surplus

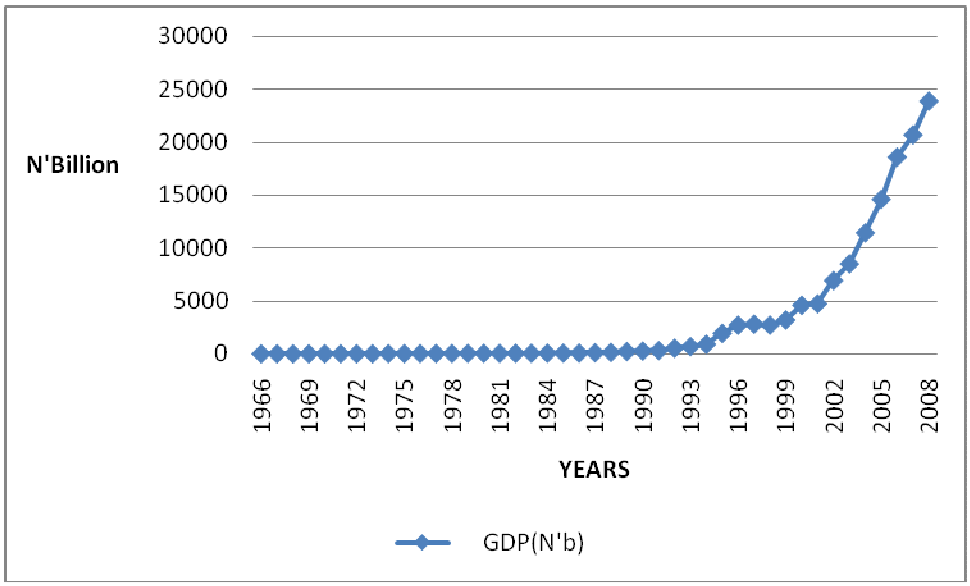



Source: CBN Statistical Bulletins

The Expenditure pattern shows consistent deficit from 1975 to 1978. That was the period of civil unrest or war in the country, so planned expenditures exceeded actual revenue. Thereafter, there has been years of surpluses and deficits. However, from 1989 to 2008, the trend shows only surplus, though of varying degrees. As mentioned earlier, the period from 1966 to date is the era of fiscal centralization in Nigeria. Within this period, there are interwoven regimes (see Table

2.12) and policy shifts. These seriously shaped the growth performance. Figure 2.11 shows the performance of growth (GDP) from 1966 to 2008.

Figure 2.11; Trend of GDP (1966-2008)




Source: CBN Statistical Bulletin, 2008

From Figure 2.11, the graph appears almost flat from 1966 to 1990[17]. From 1966 to 1970, the growth performance ranged from N2 billion to N8 billion. It increased from N8.63 billion in 1973 to N18.82 billion. There have been sustained increases from 1992. It was N532.61 billion in 1992, N1, 933. 21 billion in 1995 and in 2008, the rate stood at N23, 842.17 billion.

**2.5 Sectoral Contributions to Economic Growth**

[17] However, it is clear from data that there were variations in growth performance within the period

This section analyses the contribution of sectors to growth in the country. For the purpose of convenience, four sectors are chosen for the analysis. These are Agriculture, Industry, Manufacturing and Services. The analysis covers the period from 1967 to 2008. The period is however divided into two; 1967 -1990 and 1991- 2008 for ease of discussion and tables are respectively used.

Table 2.16: Sectors Shares to GDP (1967-1990)

| Years | Agriculture | Industry | Manufacturing | Services |
|---|---|---|---|---|
| 1967 | 55.40 | 11.78 | 5.50 | 32.81 |
| 1968 | 51.65 | 10.79 | 5.65 | 37.56 |
| 1969 | 49.49 | 15.56 | 6.35 | 34.95 |
| 1970 | 41.28 | 13.76 | 3.67 | 44.95 |
| 1971 | 40.04 | 17.34 | 3.38 | 42.61 |
| 1972 | 38.27 | 19.94 | 3.90 | 41.79 |
| 1973 | 35.14 | 25.09 | 4.04 | 39.78 |
| 1974 | 31.83 | 35.24 | 3.33 | 32.93 |
| 1975 | 31.73 | 28.50 | 5.03 | 39.77 |
| 1976 | 29.12 | 32.27 | 5.06 | 38.60 |
| 1977 | 2957 | 31.42 | 4.57 | 39.01 |
| 1978 | 30.48 | 33.33 | 6.53 | 36.18 |
| 1979 | 28.65 | 37.82 | 8.79 | 33.52 |
| 1980 | 20.63 | 45.57 | 8.38 | 33.80 |
| 1981 | 26.91 | 37.58 | 9.18 | 35.51 |
| 1982 | 30.84 | 33.33 | 9.55 | 35.82 |
| 1983 | 33.22 | 29.73 | 9,90 | 37.05 |
| 1984 | 37.77 | 27.78 | 7.82 | 34.45 |
| 1985 | 37.31 | 29.18 | 8.74 | 33.51 |
| 1986 | 38.66 | 26.00 | 8.73 | 35.34 |
| 1987 | 36.68 | 33.31 | 6.76 | 30.01 |
| 1988 | 40.60 | 30.83 | 7.52 | 28.57 |
| 1989 | 31.34 | 43.19 | 5.29 | 25.47 |
| 1990 | 32.71 | 41.37 | 5.54 | 25.92 |

Source: Iyoha (2008), CBN Statistical Bulletin 2007

Table 2.16 shows the sectoral shares to GDP within the period. The discovery of crude oil in commercial quantities in the country brought about a sizeable reduction in the agricultural share of GDP. From the GDP share of 54.94% in 1966, it reduced to 51.65% in 1968, to 31.73% in 1975, and to 20.63% in 1980. From 1980 to 1990, the share contribution to GDP showed some marginal increases as indicated in Table 2.16 .There was

however continuous reduction from 40.60% in 1988 to 32.71% in 1990. Where as Agricultural sector's contribution to GDP showed a downward trend, that of the industrial sector showed a continuous increase, except from 1983 to 1986. From the contribution of 12.32% in 1966, the sector's contribution to GDP in 1969 was 15.56%, 25.09% in 1973 and to as high as 45.57% in 1980. The performance of the industrial sector was attributable to the production of oil, which became so important to the sustenance of the economy. The relative significance of crude oil was influenced by several factors including:

i) The increase in output and massive exportation of crude oil,

ii) Nigeria's membership in the Organization of Petroleum Exporting Countries (OPEC)

iii) Astronomical increase of oil prices, due, particularly to the Arab-Israel war in 1973.

Because of these major factors, the industrial sector's contribution rose continually in the 1970s, the manufacturing sub sector's contribution to GDP decreased from 6.35% in 1969 to 3.38% in 1971. The trend showed instances of decreases and increases. Its share contribution to GDP decreased marginally till it stood at 8.38% in 1980. The contribution of service sector also increased from 32.81% in 1969 to 44.95% in 1970. Its share contribution decreased marginally till it stood at 33.50% in 1980.

In the early 1980s, the socio-economic conditions in Nigeria in particular and Africa in general deteriorated. The per capita income in Sub-Saharan Africa fell at the rate of 2.2% in the 1980s (Iyoha 2002). Nigeria's per capita income reduced from US$ 710 in 1980 to US$ 270 in 1989. Nigeria's economic crisis in the early 1980s was attributable to:

i) Collapse of oil prices

ii) Rise in international interest rates and

iii) Domestic policy mistakes

The impact of these factors is shown in the sectoral performance in the early 1980's (see Table 2.16). The economic hardships of the early 1980s resulted to the introduction of Structural Adjustment Programme (SAP) in 1986. The major objective was to restructure and diversify the productive base of the economy in order to reduce dependence on the oil sector and on imports. The main SAP measures were:

i) Deregulation of the exchange rate

ii) Trade liberalization

iii) Deregulation of the financial sector

iv) Rationalization and privatization of public sector enterprises and

v) Adoption of appropriate domestic policies (by eliminating subsidies), especially for petroleum products.

The introduction of SAP did not help matters. Rather it is alleged to have led to a process of de-industrialization and rising unemployment (Iyoha, 2008). Table 2.16 clearly reveals that SAP triggered a shrinking of manufacturing sector. With the introduction of SAP in 1986, the manufacturing sector's share contribution to GDP reduced from 8.73% in 1986 to 7.52% in 1988 and to 5.54% in 1990. The services sector was also negatively affected by SAP. With the share contribution of 35.34% in 1986, it decreased to 28.57% in 1988 and to 25.92% in 1990. Where as the industrial sector showed continued increases from 26% in 1986 to 41.37% in 1990, Agricultural sector's performance increased from 38.66% in 1986 to 40.68% in 1988 but decreased again to 32.71% in 1990.

Table 2.17: Sectors Shares in GDP (1991-2008)

| Years | Agriculture | Industry | Manufacturing | Services |
|---|---|---|---|---|
| 1991 | 30.43 | 45.57 | 5.90 | 24.00 |
| 1992 | 23.80 | 58.26 | 4.32 | 17.94 |
| 1993 | 24.16 | 58.65 | 4.00 | 17.18 |
| 1994 | 28.57 | 50.24 | 4.94 | 21.19 |
| 1995 | 31.61 | 46.68 | 5.36 | 21.71 |

| | | | | |
|---|---|---|---|---|
| 1996 | 30.70 | 49.17 | 4.84 | 20.12 |
| 1997 | 33.63 | 44.79 | 5.08 | 21.57 |
| 1998 | 38.98 | 33.43 | 5.24 | 27.58 |
| 1999 | 36.56 | 35.24 | 4.89 | 28.20 |
| 2000 | 28.81 | 43.55 | 4.01 | 27.63 |
| 2001 | 30.60 | 47.78 | 3.89 | 21.62 |
| 2002 | 31.18 | 43.80 | 4.58 | 25.02 |
| 2003 | 26.41 | 49.37 | 3.99 | 24.21 |
| 2004 | 16.61 | 56.93 | 3.68 | 26.45 |
| 2005 | 16.90 | 56.2 | 3.78 | 26.90 |
| 2006 | 17.50 | 54.00 | 3.78 | 28.40 |
| 2007 | 32.7 | 39.14 | 2.5 | 12.12 |
| 2008 | 30.9 | 41.7 | 2.5 | 11.6 |

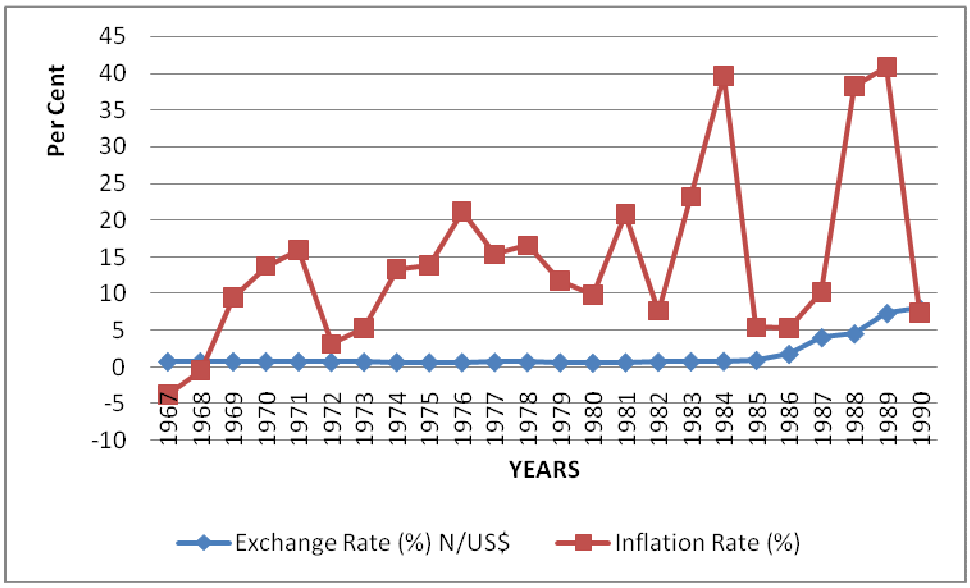
Source: Iyoha (2008:), CBN Statistical Bulletin 2007

As mentioned earlier, there are periods of regime changes and policy shifts which have consequences on the growth performance of the country. Agricultural sector's performance decreased from 1991 to 1994 as evidenced in Table 2.17.

Agriculture's share contribution to GDP appears to hover around 30% from 1995 to 2002. There was a drastic reduction from 31.18% in 2002 to 26.41% in 2003 and to 17.50% in 2006. One of the major reasons is the reallocation of resources from the agricultural sector to industrial sector, particularly the oil sub-sector. That has actually resulted to an 'impressive' performance of the industrial sector, statistically. From Table 2.17, there were increases from 45.57% in 1991 to 50.24% in 1994. The data again indicated a downward trend in the sector's contribution to GDP from 46.68% in 1995 to 44.79% in 1997 and to 43.80% in 2002. From 2003 to 2006, there were steady increases in the sector's performance. The manufacturing sector continued to decrease from 5.90% in 1991 to 4.84% in 1996 and to 3.89 in 1999. From 2003 to 2006, the percentage share contribution of manufacturing sector to GDP was approximately constant at 4%. The data

for exchange rate and inflation rate from 1967-2008 is used to Illustrations Figures 2.12 and 2.14, representing the periods 1967-1990 and 1991-2008 respectively.

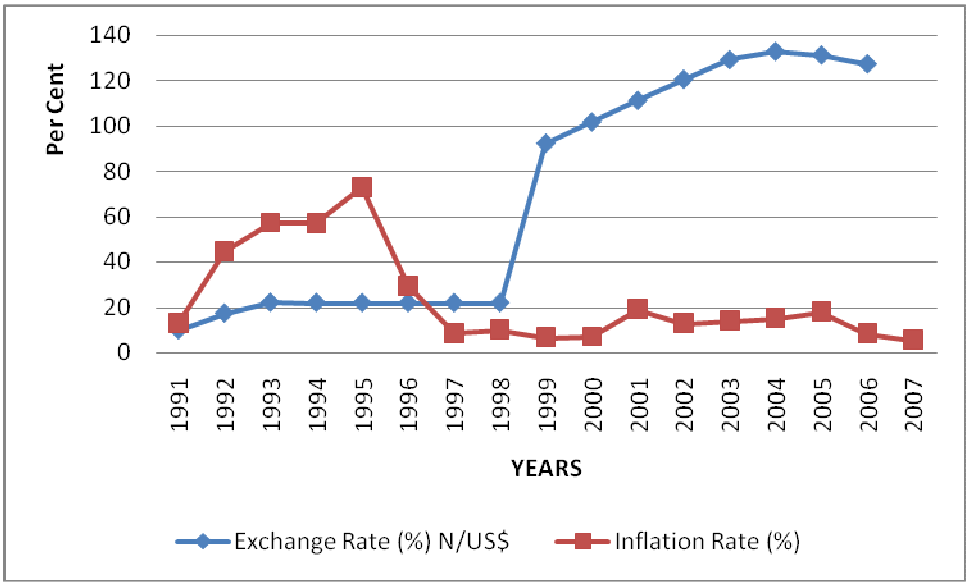
Figure 2.12: Trends of Exchange rate and Inflation (1967-1990)




Source: CBN Statistical Bulletin, 2008

As Figure 2.12 indicates, the fixed exchange rate regime continued up to 1971, after which the country had exchange rate regime referred to as 'managed float' till 1975 (Uwatt,2004). From 1980 to 1985, Nigeria's exchange rate was pegged to a currency basket, but from 1986, it was allowed to float. It means the Naira was left to find its value in competition with other international currencies. That was a SAP measure and the exchange rate increased steadily, from one US$ to N1.7545 in 1986 to one US$ to N8.0383 in 1990. The floating exchange rate had serious negative impact on the economy. The sector heated badly was the manufacturing sector. Since the Nigerian manufacturing sector is highly import dependent, for spare parts, raw materials and some specialized personnel, the high exchange rate within the period made many to reduce production and some even folded up. That is clearly shown in the sector's contribution to GDP from 1986 to 1990 (see Table 2.16). Inflation rate, which was negative in 1968 (-0.4%) rose to 16% in 1971. The rate continued to change as the policies and regimes change within the period. It however, stood at 39.6% in 1984 and reduced to 5.4% in 1986. It again rose to as high as 40.9% in 1989 and dropped sharply to 7.5% in 1990. So, the high exchange rate together with high inflation rate could not enhance growth within the period.

Figure 2.13: Selected Economic Indicators (1991-2007)




Source: CBN Statistical Bulletin, 2008

From the floating exchange rate regime, the exchange rate has been on the increase since 1986,. From about 8% in 1990, the rate increased to 17.2984% in 1992 and in 1993, it stood at 22.0654%. From 1994-1998, the exchange rate was approximately 21%, but continued to increase from 1999. It increased to as high as 132.888% in 2004, and by 2006, the rate was 127.4%. The inflation rate also increased considerably within the period. From 13% in 1991, inflation rose sharply to 44.5% in 1992 and continued to increase till it reached 72.8%, the highest ever in the history of Nigeria so far. The rate again declined to 29.3% in 1996 and then continued to fall and in 2006, the inflation rate was 8.2%.

## CHAPTER THREE

## LITERATURE REVIEW

### 3.1 Concept and Measurement Issues

#### 3.1.1 Fiscal Centralization

Fiscal centralization is a situation where fiscal powers are centered more at the central level of government. According to Olomola, (1999), fiscal centralization means the federal government assumes full responsibility for most of the economic activities of the public sector while other tiers of governments have less responsibility for economic activities.

Traditional systems in some parts of the world, particularly Asia, have been highly centralized for centuries. Early development economists also discouraged the development of local government by advising officials of developing countries that they could maximize growth by centralizing control over the economy. Development strategies were based on central planning, large scale technology transfer, industrialization and spatial centralization to capture economies of scale and promote growth. Thus, development responsibilities were concentrated at the centre, and local authorities were largely neglected (Henderson, 2000 and Mills, 2000).

Local governments were introduced in many developing countries through colonization and development assistance, often taking a form that neither met their intended purpose nor gained acceptance from the local people (Mawhood, 1983). According to Smoke,(2000), Post-independence leaders, who were left with an institutional framework that was not consistent with their culture and needs, commonly used local governments for administrative and control purposes rather than to promote self-determination, democratization and economic development.

In many developing countries, a general lack of managerial and technical expertise has been used as an excuse to avoid the formation of local government institutions and an effective working relationship between the central and local governments. Given the limited pool of human resources and the scarcity of training and educational facilities, some central governments feared competition for qualified staff if decentralized governments were strengthened (Rondinelli and Nellis, 1986). The most important reason local governments have been neglected in developing countries is that strong central governments often oppose decentralization. Some reasons for this reluctance are legitimate, such as the need for

nation building in ethnically fragmented societies and central macroeconomic control in fragile economies. Equally important, however, is the reality that the governing elite, who may be dominated by particular ethnic groups, fear the loss of power and wealth inherent in meaningful decentralization. In addition, central ministries and/ or political parties that control substantial resources rarely want to share them with autonomous local governments (Olowu and Smoke 1992)

### 3.1.2 Fiscal decentralisation

The word decentralization suggests that a power which is by nature held by the centre, moves elsewhere (Raffaele and Emanuela, 2004). Decentralisation takes different forms in literature. These are *political, administrative, economic*, and *structural* forms. By *Political decentralization,* it means larger decision-making power is left to citizens and their representatives. *Administrative decentralization* is a situation where all subordinates of administrative levels act as agents of the central authority through delegation, devolution and de-concentration. *Economic decentralization* involves privatization and deregulation which shifts responsibilities and functions from the public to private sector

*Structural decentralisation* concerns the number of government levels, which in the world varies from 1 (Singapore) to 5 (China). Admittedly, the geographical dimension plays a leading role. Singapore would be the most centralised State in the world, but also the United Kingdom is centralised, as the local government tasks are limited to the powers granted by the Central Government. However, geographical dimensions affect the Central Government's possibility to control local bodies and implement a strong decentralisation, which may be necessary in practice though not in laws. Structural complication implies coordination problems, particularly with reference to administrative aspects. From this point of view, decentralisation may take up three forms: namely ***deconcentration*** – which is the weakest, where the proxy is given to government levels within the Central Government itself, and which is usually used in unitary States. Rondinelli (1983) defines it as the situation where all subordinate administrative levels act as agents of the central authority. The reason for administrative decentralisation mostly lies in the possibility to reduce the Central State's bureaucratic burden and it is in these terms that unitary States pursue it.

In this case too, it is possible to have different degrees of decentralization, as one may shift the authority from the capital to the government representatives on the territory or limit oneself to foreseeing a supervision of the Central Government. In France, up to 1982, any

local Act had to be validated by the Prefect to become operational. This is also a way to decongest the capital which in unitary States tends to attract a considerable share of the population, while the urban distribution is better in federal States. (Pacini et al; 1993).

The second form of administrative decentralization is ***delegation***, where the functions are shifted from the upper to the lower government levels, which become more autonomous but also accountable towards the Central Government. Usually delegation is given to a public body or an agency for a service provision for which a tariff is required. Finally, the strongest form of decentralisation is ***devolution***. In this case, the local government has full power in managing the policies it wishes to fund. Obviously, minimum standards may be foreseen, but local authorities are somehow autonomous.

Financial responsibility is a core component of decentralization. If local governments and private organizations are to carry out decentralized functions effectively, they must have an adequate level of revenues as well as the authority to make decisions on expenditures. Fiscal decentralization means endowing local bodies with financial resources – either own-source revenues or transfers – sufficient to carry out their functions ( Raffaele and Emanuela, 2004). Tiebout (1961) defines fiscal decentralization as the decentralization of the fixed structure, purely from the economic point of view of efficiency. As simply put, it is the existence in one country of more than one level of government, each with different expenditure responsibilities and taxing powers.

Fiscal decentralization can take many forms, (Kirubi, 2005:25)

(i) Self-financing or cost recovery through user charges,

(ii) Co-financing or co-production arrangements through which the users participate in providing services and infrastructure through monetary or labour contributions;

(iii) Expansion of local revenues through property or sales taxes, or indirect charges;

(iv) Intergovernmental transfers that shift general revenues from taxes collected by the central government to local governments for general or specific uses; and

(v) Authorization of municipal borrowing and the mobilization of either national or local government resources through loan guarantees.

In many developing countries local governments or administrative units possess the legal authority to impose taxes, but the tax base is usually so narrow that they do not raise enough revenues and therefore, depend on central government subsidies. In many cases, central government controls are so ingrained that no attempt is made to exercise that authority without prior approval (World Bank). It is for such reasons that decentralization initiatives recognize the importance of providing financial resources to decentralized institutions to enable or empower them to carry out their functions and responsibilities.

It is in this regard that Raffaele and Emanuela (2004) deem it necessary for central government to design appropriate inter-governmental fiscal transfers:

(i) To bridge the fiscal gap that may result from a mismatch between tax revenue and expenditure needs to provide basic goods and services, which arises from revenue shortfalls,

(ii) To compensate for the presence of interregional differentials in income and resource bases that create inefficiencies due to fiscally-induced migration, as factors of production gravitate towards richer areas,

(iii) To maintain minimum standards across jurisdictions to provide for poorer areas,

(vi) To alleviate inefficiencies arising from inter jurisdictional spillovers, where people enjoy the benefits of a public goods but do not contribute to the cost of providing them, possibly resulting in sub national levels governments considering only the benefits that accrue within their own jurisdiction and under-providing the public goods.

**Measuring Fiscal Decentralization**

The insight into the measurement of fiscal decentralization is mainly from empirical studies. Different studies use different approaches depending on the nature of the work-whether it is a regional, cross-country or individual country study. Generally, three approaches are identified in literature regarding the measure of fiscal decentralization (Markus, 2004; ThieBen, 2003)

Firstly, some researchers work through *output-oriented approach* and count the number of legal, judiciary and other non-binding acts ("policy acts") per government level. Alesina, Angeloni and Schuknecht (2001) choose this approach, measured the intensity of the European Union (EU) in policy-making and developed a certain *de facto decentralization of competences* within the EU. Smoke (2001), and Breuss and Eller (2004) observed that simple quantitative counting of each act does not necessarily inform about its effective impact on the respective policy chapter; the relative importance of EU's policy involvement cannot be examined, when the respective intensity measures of national and sub-national levels are not considered. In addition, the chosen data base CELEX[18] does not inform how many acts are produced within certain periods; hence, the inter-temporal comparisons are not possible.

Secondly, they work through *input-oriented* and measure the *decentralisation of competences via input costs* of those institutions, which are involved in the execution of the several policy areas and located on diverse government levels. Kramer (2000) follows this concept and examines the public personnel costs in Austria, Germany and Switzerland according to different fields of public functions and different government levels. One could observe that as certain policy areas are more decentralized, the higher the Sub-national Government's (SNGs') share of personnel costs in GDP. But this reasoning is blurred on the one hand by difficult methodical selections of different policy patterns in order to retain comparability between various levels of government and between several nations/ states (Kramer, 2000: 27). On the other hand, the level of disaggregated personnel costs does not necessarily mirror the *real* distribution of competences because of diverse salary-structures according to different qualification prerequisites.

Thirdly, they chose the budget data approach and approximate the degree of fiscal decentralization using the sub-national government's share of central government's expenditures or revenues. (Ebel and Yilmaz, 2002; Letelier, 2001; Osterkamp and Eller, 2003; Oates, 1995; Thießen, 2000; Aigbokhan, 1999, Hiroko and Yurika 2009).

Most empirical works on fiscal centralization/decentralization apply the budget data approach where different centralization/decentralization variables are identified and used in the various models. The degree of fiscal centralization/decentralization

[18] See http://europa.eu.int/celex.

variables are usually based on expenditure and revenue shares of the central government and sub-national governments (Hiroko and Yurika, 2009, Campbell, 2008, Aigbokhan, 1999).

Hiroko and Yurika, 2009, identified five fiscal decentralization indicators and are measured as follows:

1. The Local Share of Total Fiscal Expenditure.

$$RLE = \frac{\sum LE_i}{\left(\sum LE_i + CE\right)}$$

Where,

i denotes a local government,

LEi is the expenditure of local government i,

CE is the expenditure of the central government.

RLE represents the ratio of local expenditure to total fiscal expenditure, including local and central expenditures.

This indicator quantifies the extent of local expenditure responsibility compared with central government.

2. The Local Share of Total Fiscal Revenue.

$$RLR = \frac{\sum LR_i}{\left(LR_i + CR\right)}$$

Where: i denotes the revenue of local government i

RLR is the ratio of local revenue to total fiscal revenue; CR is the revenue of the central government, and LR does not include transfers from central to local governments.

3. Local Dependency of Fiscal Transfers.

$$DFT = \frac{\sum FT_i}{\sum LTR_i}$$

Where: FTi represents fiscal transfer from the central government to local government i; LTRi is the total revenue of local government i. So, DFT measures the ratio of total fiscal transfer to local total revenue.

4. Local Fiscal Autonomy

$$FA = \frac{\sum LOR_i}{\sum LTRi}$$

Where: LORi represents own revenue of local government excluding FTi. FA therefore measures the ratio of local own revenue to local total revenue.

5. Local Expenditure Discretion

$$FD = \frac{\sum GR_i}{\sum LTR_i}$$

Where: GRi denotes general revenue of local government i. Here, unconditional transfers are included while conditional transfers are not. Fiscal discretion (FD) therefore measures the ratio of general revenues to local total revenues. This captures the degree of expenditure discretion of local governments.

Similarly, Campbell, (2008) in studying the fiscal structure and economic growth of OECD countries, identified various determinants of growth. Among the major determinants are the fiscal decentralization and centralization variables. The fiscal variables considered were

i. Degree of fiscal decentralization variables based on the expenditure shares and on the revenue shares.

ii. Degree of fiscal centralization variables based on the share of the expenditure of the central government and on the central government's share of total revenue.

iii. Degree of vertical fiscal imbalance variables defined as the ratio of the central government's share of revenue divided by its share of expenditures.

The author did not provide other measurement details, but it is clear that fiscal centralization/decentralization variables are measured from the expenditures and revenues of central and sub-national governments. In that regard, Aigbokhan, (1999), identified and measured three fiscal decentralization variables. These are,

i. Sub-national own source (internally generated) revenue as a ratio of total central revenue.

ii. Sub-national expenditure as ratio of total federal expenditures

iii. Sub-national own source as ratio of total federal expenditure.

It is clear that the nature of decentralization depends on the type of study carried out and the aim and purpose of the study. More importantly, the methodology adopted or used would also determine the nature of measurement of fiscal centralization/decentralization variables.

### 3.1.3 Fiscal Fragmentation

Keith and Thanos, (2002) believe that Fragmentation is difficult to define and measure. Broadly, fragmentation arises when several agents or groups participate in the fiscal decision making process, each with its own interests and constituency to satisfy, and each with some weight in the fiscal decision. From that broad perspective, fragmentation is believed to be responsible for high level of expenditure or large deficits in industrialized countries. Conceptually, fragmentation takes many forms and each concept can be measured indifferent ways. Focusing on the decision making process in a democratic set up, (Kontopoulos and Perotti, 1999) emphasized two forms of fragmentation. These are: (i) ***legislative*** fragmentation and (ii) ***executive*** fragmentation. On the legislative side, the elementary unit is the individual legislator, and the party in a ruling coalition could be considered as the basic decision making unit. That is so because a party is more or less cohesive entity representing the interests of particular groups. In this direction, fragmentation can be measured in terms of the number of parties in the coalition, referred to as *coalition size.* In the executive fragmentation, the elementary unit is a spending *minister.* The rationale for this is that, each spending minister

participates in the formulation of, and makes demands on the overall budget. On that basis, the measure of fragmentation is the number of spending ministers[19] called *cabinet size*.

Markus (2004) in the study of the determinants of fiscal decentralization and its impacts on economic growth of OECD countries conceived and measured fragmentation in a slightly different way from the ones above. Here, fragmentation is considered in terms of territorial structures; that is the expanse of fiscal structures in a federal state. In that regard, fragmentation is measured by the ratio of the number of local government tiers (lowest local tiers; municipalities or communes) to the number of intermediate tiers of government (highest intermediate tiers ie. regions, states, provinces). By this conceptualization and measurement, fragmentation in Nigeria can be viewed as the ratio of local governments (774) to the number of states and FCT (37). Such a ratio would mean that government expenditure decentralization should depend negatively on increasing fragmentation. Also, degree of fragmentation in a country correlates positively with the degree of federalism[20].

By this consideration, the institutional structure of the governments of the individual nations is important. In the United States for instance, Keith and Thanos, (2002) asserts that most local governments are 'polycentric'. Polycentricism is not simply fragmented government but a combination of both single-purpose and multi-purpose authorities with formally independent but often overlapping powers. Where polycentricism exists, measuring the effects of fragmentation is complicated by the nature of the overlapping powers, jurisdictions and institutional forms (Keith and Thanos, 2002). In Europe, the nature of fragmentation is more rationalistic in keeping with its institutional framework. Here, governments are tiered and have clearer multi-purpose responsibilities with fewer overlapping responsibilities and no overlap in jurisdictions. The public choice theory justifying the rationalistic form is fiscal federalism (Bureau and Champsaur 1992, Oates 1972, 1998). Fiscal federalism suggests a strong separation of competencies so that each tier is responsible for both providing and collecting taxes for a given set of services. These different institutional forms make comparison between the US and other nations more problematic.

[19] Fragmentation, by this notion is constructed as the sum of ministers in the areas such as; (i) Industries, trade or ministers with related competences, (ii) Public works (iii) Defense, (iv) Justice (v) Labour (vi) Health (vii) Education (viii) Agriculture (iv) Finance (v) Economic Affairs. etc.

[20] France is one of the exceptions. As a unitary country, she shows the highest degree of fragmentation because of the numerous numbers of municipalities (36,763) relative to only 22 regions (Markus, 2004).

### 3.2 Theories of Fiscal Systems

The discussion in this section centers on the theories of fiscal decentralization and fiscal centralization in relation to economic growth. First of all, the conventional theories of Musgrave (1959) and Oates (1972) are discussed. Secondly, we relate fiscal centralization and fiscal decentralization to economic growth. In this regard, following Markus, (2004) and Susan, (2006), we examine the dimension and the potential impact of fiscal centralization and fiscal decentralization on economic growth. The theoretical overview tries in particular to depict precisely the various channels through which fiscal centralization and fiscal decentralization influence economic growth.

Considering the first part of this section, Musgrave (1959) suggested that public economic policy has three main functional objectives:

(i) to establish an efficient *allocation* of resources.

(ii) to attain a desired *distribution* of income and wealth.

(iii) to maintain high and stable levels of employment and output ( *stabilization*)

The mainstream economists, drawing on the standard Musgrave model provide direction for sharing these functions among different levels of government. The stabilization function entails the maintenance of full employment with stable prices. The primary responsibility for stabilization has conventionally been assigned to the central government. Smoke (2001) advanced three reasons why this function is assigned to the central government: i) because of the obvious problems that would result if sub-national jurisdictions had independent control over their own money supplies. ii) that local economies were considered highly open, so that the effects of local fiscal policy would be dissipated into other areas. iii) deficit finance policies at the local level have not been considered desirable because of concern that repayment would involve substantial real income transfers to creditors external to debtor jurisdictions. On the revenue side, it is argued[21] that the types of revenue sources considered most appropriate for local governments tend to be income inelastic, thereby constraining the ability of local governments to pursue developmental programmes effectively.

[21] See Matteo, 2003, Smoke, 2001, Alm and Boex, 2002 for details.

Contrary to the conventional position of ascribing the stabilization function to the central government, the changes in international macroeconomic environment has given increasing recognition that decentralized levels of government can play a more important stabilization role in industrialized economies. Gramlich (1987) argues in the case of United States that the macroeconomic developments and large federal deficits of the 1980s (financed by externally held debt) have constrained the ability of the federal government to pursue countercyclical policy. He also demonstrated that state governments successfully played a greater stabilization role in the 1970s and the 1080s in the United States. In Less Developed Countries LDCs, however, it is not difficult to justify stabilization as primarily a central government's function. First, macroeconomic fluctuations can be particularly severe in emerging economies, especially in agricultural countries subject to substantial and unpredictable climate variations and countries heavily dependent externally for basic production inputs, manufactured goods and credit. Under such conditions, stabilization policies must be planned and coordinated centrally.

A second important consideration is that, local governments in developing countries often have only a minor role in the economy relative to industrialized nations, frequently accounting for modest percentages of public sector employment and spending. Moreover, they are typically very dependent on central governments for resources and regulated by central agencies, even under relatively decentralized regimes. The impact of their fiscal behaviour is, therefore, extremely limited.

The scope of an active redistributive function depends critically on the existing degree of mobility of individuals and other economic resources. The fiscal federalism theory also places principal responsibility for distribution with the central government. First, only the central government is in a position to redistribute resources from wealthier to poorer jurisdictions. Second, differential local redistribution programmes would be expected to create problems if factors of production were mobile. Wealthy residents and businesses might move out of a jurisdiction practicing redistribution, while poor individuals eligible for benefits would try to move in, thereby undermining the redistributive base. Similarly, Matteo (2003) argued that at lower levels, the obstacles to movements among adjacent communities are not usually very high. Hence an aggressive redistribution policy by local government (through highly progressive income tax) would lead wealthy people to move to near by communities with more favorable treatment, thereby thwarting the policy objectives. Third, local governments tend to have access to revenue sources that are not easily levied in a way that is progressive with respect to income (Smoke, 2001). Although there have been challenges to the

conventional recommendation that distribution be centralized, it is still generally accepted that decentralized governments are typically more constrained than the central government in altering the distribution of income.

The prescribed role of decentralized levels of government in the allocation function is substantial because demand for many public services is not likely to be uniform across space. Welfare gains would thus be enhanced through decentralization because residents in different jurisdictions could choose the mix of public goods and taxes that best conforms to their preferences. In the absence of a market and competitive pricing for public services, community-wide demand would be articulated through the collective decision-making process that is, voting. In this framework, decentralization is desirable not only because of preference differentiation, but also because expenditure decisions are tied more closely to real resource costs in smaller jurisdictions. In addition, when there are a large number of decentralized governments, there is likely to be greater experimentation and innovation in the provision of local public goods, potentially leading to improvements in overall resource productivity.

Extensions of the logic of preference variation suggest that in a system where there are opportunities for mobility, people will move to an area where a local government provides their preferred mix of public services. This produces a market-like solution to the local service provision problem. Equilibrium occurs when people distribute themselves across differentiated communities in such a way that there is no incentive for anyone to move; everyone is satisfied with the services being provided in the jurisdiction in which they reside.

There are important exceptions to the general rule of decentralizing to maximize allocative efficiency. Certain capital-intensive services, such as electric utilities and transportation systems, may exhibit economies of scale in production. In these cases, it is more efficient to provide services on a larger scale and over a wider area. In addition, the provision of some services, such as water and roads, may generate inter-jurisdictional externalities. In such cases, resource allocation is more efficient when the service provision area is drawn such that externalities are internalized.

### 3.3. Fiscal Centralisation and Economic Growth

### 3.3.1. External Effects and Economies of scale

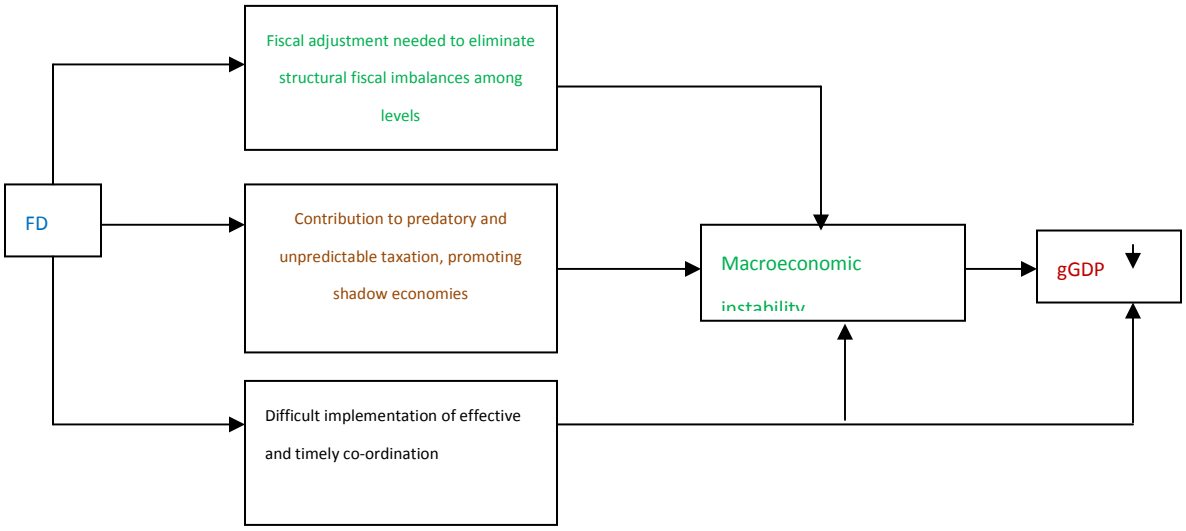
The realization of economies of scale and the internalization of external effects are often considered the main factors for fiscal centralization, especially with respect to the central provision of public goods where average costs can be reduced with increasing output (Ola, 2001, and Parker and Judith, 2006). From empirical investigation, this position does not have a unanimous acceptance among researchers. Samekal, (2001) argues that, for the decreasing costs reason, fiscal centralisation recommendation is not tenable because the information costs for the local citizens, the control costs for the central level and lack of accommodativeness would rather increase the overall costs. In terms of internalization of externalities, central government deals with inter-jurisdictional externalities (pollution abatement) and regulates natural monopolies based on national networks, while local levels tend to control activities that have a regional limited impact (Hemming and Spahn, 1997). Hooghe and Marks (2001) argues further that, externalities arising from the provision of public goods too vary immensely- from planet-wide for global warming to local regions, in case of most city services. So in order to internalize these multifaceted externalities, multilevel governance is needed. Based on the above empirical findings therefore, the link between fiscal centralization and economic growth depends on the nature of the economy, the type of externalities and the economies of scale in question.

Markus (2004) argues that if externality effects are satisfactorily internalized through fiscal centralization, structural imbalances within the economy will be reduced and chances for faster economic growth can be enhanced. Also, cost reductions at the sub-national levels allow for more growth enhancing investments, *ceteris paribus*.

The situation in Less Development Countries (LDCs) is different from the relationship explained above. Given the structural fiscal imbalances in developing economies and the difficulties involved in the implementation of effective coordination within the economy, Markus (2004) argued further that the 'imposition'[22] of fiscal decentralization would result to macroeconomic instability. The scenario would eventually result to negative growth effects. This argument is depicted in Figure 3.1 below.

**Figure 3.1: Stabilization Task, Co-ordination Problems**

[22] By imposition of fiscal decentralization it means a situation where fiscal matters in LDCs are not fully decentralized but policies are handled as if such fiscal matters are fully decentralized.



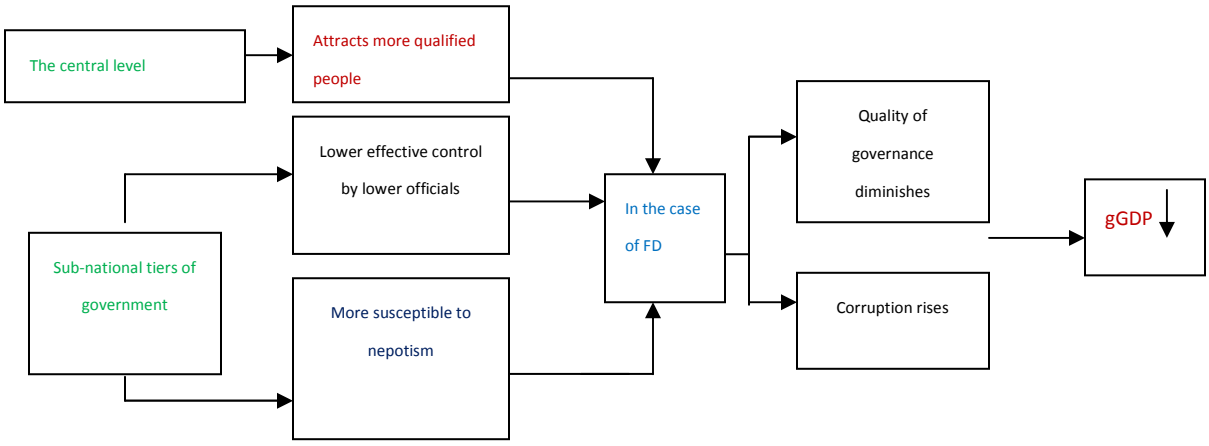

As seen from Figure 3.1, fiscal adjustments are needed to eliminate structural imbalances among different levels of governments especially in developing economies. In reality, fiscal matters usually show imbalances among the levels of governments in LDCs. In Nigeria's case, these issues are well documented[23]. Also fiscal adjustment is a constitutional issue which is subject to serious debates. More so, the parties involved usually take positions that are reluctant to shift grounds, so it becomes difficult to arrive at a consensus on such issues. Hence, the needed fiscal adjustments are hardly met and the imbalance among the levels of governments persists. Fiscal decentralisation may create perverse incentives and may even worsen structural imbalances. Supplemented by the potential contribution of fiscal decentralisation to predatory and unpredictable taxation, macroeconomic instability could arise. Accompanied by co-ordination difficulties, considerable negative effects on growth could be the consequence (Blackburn, 1999).

### 3.3.2 Quality of Governance and Corruption

The quality of governance and the level of corruption under fiscal decentralization system would result to negative impact on growth, particularly in developing economies. The discussion is based on the works of Prud'homme (1994), Tanzi (1995) and Markus (2004) as depicted in Figure 3.2 below.

[23] See Akpan H. Ekpo (1999), Abachi (2007),

**Figure 3.2: Quality of Governance and Corruption**




They argued that decentralization can increase disparities, jeopardize stability, undermine efficiency and encourage corruption. In terms of the quality of governance, the central level attracts more qualified people because of better career opportunities and salaries and would therefore achieve a higher quality of governance. The lower levels on the other hand experience scarcity of qualified personnel and that seriously impede decentralization efforts. As for corruption, they argued that local elites (and indeed national politicians) usually get improved access to public resources via decentralization, what eventual increase opportunities for corruption.

If fiscal centralization is in place, the qualified people would improve the quality of governance and with less corruption in the system; economic growth will be the result. However, the implementation of fiscal decentralisation leads, *ceteris paribus*, to a lower quality of governance and/or to more corruption (Fisman and Gatti, 2000), what in turn impedes proper economic growth.

### 3.4 Fiscal Decentralisation and Economic Growth

#### 3.4.1. Heterogeneous Preferences

The presence of heterogeneous preferences in a country is viewed by Oates (1972) as a strong case for decentralization. Referring to his two central theorems– namely the decentralization theorem and the correspondence principle – the significance of heterogeneous preferences becomes clear. The decentralization theorem justifies the existence of different governments by demonstrating that given non-homogenous preferences, the public goods supply should be diversified. The main assumption being that the central government is unable to diversify its supply and there are no spillovers. According to the correspondence principle, the jurisdiction determining the level of provision of each public good should precisely include the set of individuals consuming it. In other words, it asserts that each public good should be provided by the jurisdiction that has control over the minimum geographic area that would internalize the benefits and costs of each provision.

Markus (2004) believes that when population groups are smaller, the demands of any randomly chosen household will be closer to the demand of the average household in the group. Economic welfare will thus be improved, as the provision of services for each group is closer to each member household's optimum. Therefore, a uniform level of public services offered in each community is inappropriate. "Pareto efficiency can be raised through fiscal decentralization" (Thießen, 2000: 5). Cremer, Estache and Seabright (1994: 5) put it that "each type of good should be provided by a level of government enjoying a comparative advantage in accounting for the diversity of preferences in its choice of service delivery." To sum it up: a strong case in favour of decentralization can be deduced from the consideration of the diversity of local preferences. However, Hemming and Spahn(1997) and Ter-Minassian(1997:22) contended that it is unrealistic to possess complete knowledge of the citizen's tastes and " the

administrative weakness at the sub-national level, especially the lack of modern and transparent public expenditure management systems" could off- set the expected efficiency gain from decentralization induced by heterogeneous preferences.

**Figure 3.3: Decentralization Theorem**




Never the less, if decentralisation attempts are able to satisfy these different preferences, positive economic growth effects may occur. Efficiency gains, the diminution of information, transaction and control costs as well as the realisation of comparative advantages may be the source of these positive growth effects.

### 3.4.2. Inter-jurisdictional Competition

Inter-jurisdictional competition is another theoretical case for fiscal decentralization. According to Markus (2004), the degree of mobility of regional population, the regional propensity to innovate (approximated by the region's share of total patents issued within a country), the degree of inter-jurisdictional economic integration, or the degree of openness (measured by the ratio of the trade volume to GDP) would steer the competition.

With respect to trade and economic integration, empirical works provide diverse suggestions. On the one hand, explaining the fact that small countries can prosper when trade is liberal and markets are open, Alesina and Spolaore (2003) concluded that economic integration and political disintegration go hand in hand. Hence, economic integration is expected to increase fiscal and political autonomy. A positive impact of economic integration on fiscal decentralisation should be the consequence. On the other hand, Letelier (2003 ) argued that "trade oriented economies tend to concentrate a large proportion of taxes on the hands of the central government through the collection of import and/or export tariffs and other related duties". Accordingly, a negative impact of openness on fiscal decentralisation should be expected. Stegarescu (2003) tests the hypothesis that by increasing the market size and the benefits of local provision of public goods and taxes, economic integration could have triggered the

recent process of decentralisation. His results found for OECD countries are consistent with a strong decentralising effect of economic integration as well as of trade openness.

The channels explaining the relation between inter-jurisdiction competition and economic growth is hereby explained and illustrated.

**Figure 3.4 : Productivity Enhancement Hypothesis**



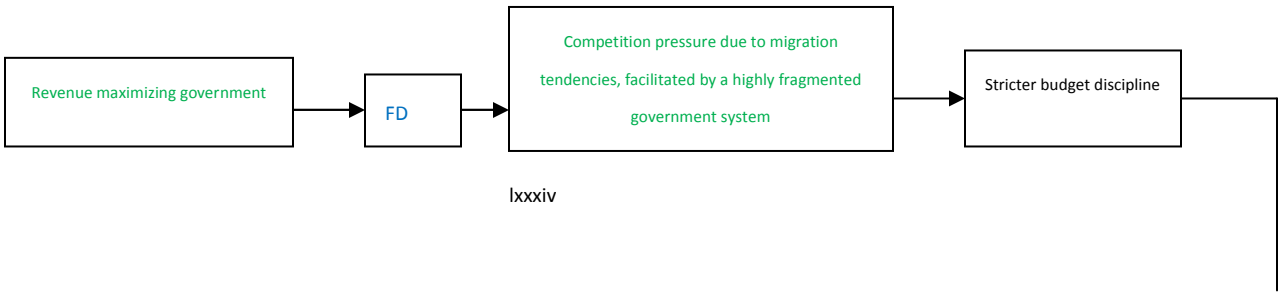

Decentralized government systems enforce competition between the different authorities and strengthen political and organizational innovation. They can realize efficiency gains by utilizing their comparative advantages and by dividing labour efforts corresponding to the respective local resources (Markus, 2004, Raffaele and Emanuela, 2004; Susan, 2006). Positive economic growth effects can therefore be expected.

In other words, Figure 19 depicts the productivity enhancement hypothesis, which indicates that fiscal decentralization enforces not only inter-jurisdictional competition but also the accountability of Sub-national Governments (SNGs), what, in turn, gives more incentives for product innovations of governments. Higher efficiency in the supply of public goods enhances economic growth.

### 3.4.3. Leviathan Model

The Leviathan Model is also used to make a case for fiscal decentralization (Brennan and Buchanan 1980). The leviathan based assumption contends that decentralization limits the expansion of the central government's structure and competition between jurisdictions. In other words, the model posits that if taxes and expenditures are greatly decentralized, total government's intrusion into the economy, ceteris paribus, should be smaller.

**Figure 3.5: Leviathan Restraint Hypothesis**



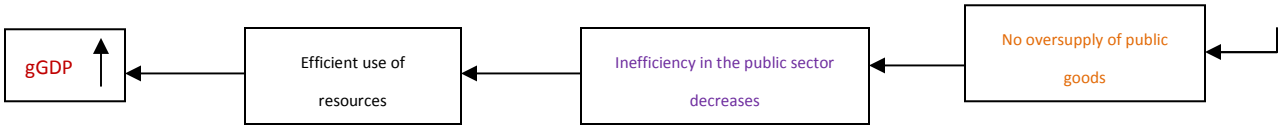



Figure 3.5 above illustrates the Leviathan-restraint-hypothesis. We start the analysis with the works of political economists who consider the effects of inter-jurisdictional competition and to checked the relationship between a fragmented territorial structure and the size of the public sector (Kirchgässner and Schaltegger, 2002): The connection between government expenditures and revenues is strengthened by the existence of a fragmented system, stricter budget discipline is effected and therefore a diminution of the size of the public sector can be expected (Markus, 2004). Thus, an oversupply of public goods and inefficiency in the public sector can be prevented (Thießen, 2000: 8). Fiscal decentralisation triggers inter-jurisdictional competition and stricter budget discipline. Decreasing inefficiency is the consequence, having, in turn, positive effects on economic growth**.**

These conclusions of political economists are based primarily on the *"central policy failure"-theorem*: imperfect information, rent-seeking politicians as well as lobbying-activities of interest groups characterize the Leviathan-behaviour, which leads to a sub-optimal consideration of local preferences and hence to welfare losses. This influence of vested interest can only be enforcement of the political responsibility of the government, what, in turn, can be reached satisfactory through decentralisation.

**Figure 3.6: Dispersion of Vested Interests**

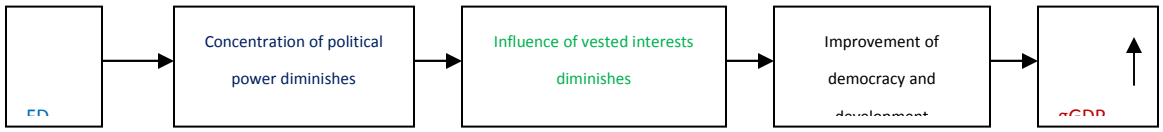



Figure 3.6 shows that fiscal decentralisation diminishes the concentration of political power at the central level. Vested interests can be weakened and democracy can be augmented. The favourable effects from democracy on economic growth include maintenance of the rule of law; free markets, small government consumption, and high human capital ( Barro, 1994)

### 3.5 Impact of Alternative Federal Fiscal Systems

Extensive body of literature (theoretical and empirical) exists on fiscal centralization/decentralization. Much of the empirical works analyze the impact of fiscal centralization/decentralization on economic growth. Linking economic growth with fiscal decentralization/centralization has mainly three reasons (Fritz and Eller, 2004). (i) Growth is seen as an objective of fiscal decentralization/centralization and efficiency in the allocation of resources in the public sector. (ii) it is an explicit intention of governments to adapt policies that lead to a sustained increase in per capita income and (iii) per capita growth is easier to measure and interpret than other economic performance indicators. For these reasons, much of the empirical works relate the fiscal variables with economic growth.

Where as, the theoretical examinations started with the pioneer publications of Tiebout (1956), Musgrave (1959) and Oates (1972), the empirical analysis relating fiscal decentralization/centralization started at the end of 1970s (with Kee1977 and Pommerehne 1977), and estimations concerning the direct impact of fiscal decentralization/centralization on growth started with the works of Oates (1995) and Davoodi and Zou (1998). There after, empirical studies have been undertaken by researchers all over the world and in all economies. Generally, these empirical studies have vast coverage.

(i) Cross-country studies

a Mixed set of developing and OECD countries: Oates (1995), Davoodi and Zou (1998).

b Set of Least Developed Countries LDCs: Woller and Philips (1998)

c High OECD countries: Yilmaz (1999), ThieBen (2000), ThieBen (2003)

(ii) Individual country studies

a Studies covering number of states, provinces or regions in a country: Zhang Zou (1998), Xie Zou and Davoodi (1999), Aigbokhan (1999), Akai Nishimura (2004).

b Comparative studies of two countries: Elliott and Thornton (2006).

The empirical review presented in this section covers broadly, the categories outlined above. The presentation is in two parts. The first section summarizes studies/works that cover the broad categorization. It focuses on the author(s), sample coverage, conceptual framework, empirical methodology and major findings. Details of the first section are contained in Table 3.1. Also included in the first section is the highlight of the methodologies and major findings of some of the empirical works. Section two presents more detailed review of some literature.

**Table 3. 1: Impact of Fiscal Centralization/Decentralization on Economic Growth: Summary of Empirical Studies**

### 3.6.1 Alternative methodologies

With regard to the applied conceptual framework, two approaches are generally used. First, the Davoodi and Zou-approach with the growth model considering different levels of government, secondly, the informal growth regressions employed by Thießen (2000 and 2003) and Lin and Liu (2000). With regard to the chosen empirical methodology, three types of conventional growth regressions can be distinguished: *pure cross-country regressions, panel data regressions based* on several period averages *and* the *cross-country growth accounting method*. In panels usually annual frequency data are used, but it is also possible to construct perennial average panels in order to capture the likelihood of long-run effects (i.e, Davoodi and Zou, 1998; Woller and Phillips, 1998). Pros and cons of the first two regression types are discussed in particular by Thießen (2000 and 2003), who finally gives priority to pure cross-sectional growth regressions based on averages of annual data. The differences between the two approaches are pronounced in his first study, where the estimated pure cross-section regression shows that fiscal decentralization affects GDP growth positively (the coefficient for Western European countries is not significant). Adding the time series dimension and estimating the panel regressions, the significance of the fiscal decentralization indicator disappears completely and the coefficient for European countries becomes even negative.

It is generally observed that most authors choose the panel data method and include *country fixed and time fixed effects* in order to control for individual-specific, time-invariant characteristics of the analysed countries. Besides panel and pure cross-section regressions the *growth accounting procedure* is employed (i.e Thießen, Markus, 2004). *Ordinary least squares (OLS) estimation* pre-dominates the studies, while general least squares (GLS) (i.e Zhang and Zou, 1998; Thießen, 2000), least squares dummy variable (LSDV) (i.e Zhang and Zou, 1998), or maximum likelihood (ML) estimation (i.e Akai and Sakata, 2002) are applied in particular cases. In addition, Desai et al. (2003) estimate simultaneous growth regressions and used three stage least squares (3SLS) estimators in order to correct for simultaneity and the potential endogeneity of certain explanatory variables.

### 3.6.2 Findings

While theory indicates a *positive impact of* fiscal decentralization *on economic growth*, the empirical verifications are only in part able to support this hypothesis. Oates (1995) detects a significant and robust positive correlation between fiscal decentralization and growth. Yilmaz

(1999) finds for unitary countries a significant positive impact of fiscal decentralization on per capita growth while his results for federal countries are inconclusive. Desai et al. (2003) conclude that tax retention as a proxy for fiscal autonomy has shown a significant positive effect on industrial output recovery of the Russian regions since the break-up of the Soviet Union.

Akai and Sakata (2002) demonstrate that fiscal decentralisation affects economic growth of the US states positively and economic volatility negatively – thus, fiscal decentralisation is conducive for providing a stable economic growth. Zhang and Zou (2001) detect a positive effect of the per capita fiscal decentralisation shares on Indian regional economic growth; however, the effect is only significant for the per capita revenue share. A significant and robust *negative impact of* fiscal decentralisation on China's provincial economic growth is revealed by Zhang and Zou (1998 and 2001). Key infrastructure projects with nation-wide externalities, which are too decentralised in China, are the main reason for this result. Davoodi and Zou (1998) find for the developing countries also a negative effect of fiscal decentralisation on growth, albeit not significant, and for the developed countries no clear relationship. Woller and Phillips (1998) concur with Davoodi and Zou (1998) in finding no significant and robust relationship in LDCs. At best, they are able to detect a weak inverse relationship between the revenue share and growth. Xie et al. (1999) find for the US states also *insignificant coefficients* on local and state spending shares, but they argue, referring to their adopted theoretical model, that insignificant fiscal decentralisation shares indicate consistency with growth maximization. However, Markus (2004) observed that the model could even be wrong and insignificance could also indicate that fiscal decentralisation is irrelevant to growth and should have no effect.

Thießen (2003) tests the *convergence of the* fiscal decentralisation *shares towards a medium degree* implementing three dummy variables, which represent a low, medium and high degree of fiscal decentralisation. Within the sample of 21 OECD countries the low and high degree are significant at the ten percent level, while the medium degree is significant at the five-percent level. The medium degree is associated with higher long-run per-worker growth than either a low or high degree. In this way, the observed trend of convergence among high-income OECD countries towards a medium degree of fiscal decentralisation tends to promote economic growth (see Thießen, 2003). Akai et al. (2004) classify their data set for fiscal decentralisation variables also into high, medium and low degrees of fiscal decentralization in order to test the robustness

of their estimations. All coefficients of the classified expenditure shares are highly significant at the one-percent level and show positive signs. Thus, fiscal decentralization is considered conducive to growth regardless of the current degree of decentralisation.

### 3.7 Empirical Review

Giampaolo (2002) examined the fiscal decentralization and the autonomy of the local governments in Italy. The work which evaluated the Italian experience focused on three critical issues. (i) The consistency between the objective of enhancing efficiency through fiscal decentralization and the objective of ensuring reasonable uniform standards for essential public services (health) in every local community. (ii) The trade-off between interregional redistribution and the incentives of local governments to pursue active tax policies. (iii) The effects of local governments' fiscal autonomy on the North- South Dualism.

The local governments in Italy were known to be financially dependent on grants from the central government. However, the reform implemented in the 90s introduced a new system of equalization grants meant to support regions with small tax bases. To evaluate the effect of the reform, the author based his analysis on a formula that takes into account three key areas: the fiscal capacity, the health need and the economies of scale in the provision of public services. The transfer, *Ti*, to Region *i*, will be determined as the difference between the amount of VAT assigned according to an equalizing formula (*EVAT*) and the VAT assigned to the Region on the basis of the estimated consumption of Region's residents (*CVAT*). This he formally stated as:

$$Ti = EVATi - CVATi \quad \text{---------- 3.1}$$

and

$$EVAT = n_i\left[\frac{RVAT}{\sum_i n_i} + \beta\sum \bar{\tau}_j\left(\bar{b}_j - b_{ij}\right) + \left(g_{hi} - \bar{g}_h\right) + \gamma\left(p_i - \bar{p}\right)\right] \quad \text{----- ---------- 3.2}$$

where *ni* is Region's *i* population, *RVAT* is the regional share of national *VAT*, *j t* is the base rate for regional tax *j*, *bij* is the base of regional tax *j* in Region *i*, *b j* is the average base of tax *j* over all *OSR*, *ghi* is the expenditure required to meet the health need of Region *i*, *g* is the average expenditure to meet the overall health need of the *OSR*, *pi* is an estimate of the standard expenditure but for health in Region *i* and *p* is the average of the *pi* among the *OSR*. All variables inside the square brackets are in per-capita terms. The parameters $\beta$ and $\gamma$ are assumed to be equal to 0,9 and 0,7 respectively. By substituting 3.1 into 3.2 we get:

$$Ti = n_i \left[ \left\{ \frac{RVAT}{\sum_i n_i} - \frac{CVAT_i}{n_i} \right\} + \beta \sum_j \bar{\tau}_j \left( \bar{b}_j - b_{ij} \right) + \left( g_{hi} - \bar{g}_h \right) + \gamma \left( p_i - \bar{p} \right) \right] \text{ ---------- 3.3}$$

This formula highlights the three criteria that determine the size of the transfer received or paid by Region *i*. The first two terms equalize fiscal capacity among Regions, the third redistributes resources according to the health need and the fourth corrects the distribution of resources in order to compensate smaller Regions that cannot fully exploit economies of scale in the provision of their services.

In order to illustrate the effect of the transfer on the distribution of the region's revenue, the author simulated the implementation of the new transfer system based on equation 3.3 above. The results show that the sign and the size of the transfers are mainly driven by the fiscal capacity component due to the large divergence in tax bases across Regions. All Northern Regions, with tax bases larger than average, must give up some of their revenue, while all Southern Regions receive a positive integration to their own resources. The situation of the Regions in the middle of the peninsula is somewhat mixed: roughly, large Regions (like Emilia R. and Lazio) are contributors while small ones (like Marche and Umbria) are beneficiaries. The transfers activated by the correction for health need are in general smaller and they flow in quite different directions. The Southern Regions are now mainly contributors as their health need is lower than average due to a younger population. The main beneficiaries appear to be the Central Regions and Liguria, which is the Region with the higher percentage of aged people in population. The last term in the equalization formula benefits the small Regions (Liguria, Marche, Umbria, Molise, and Basilicata) irrespective of their geographic location.

Taking the analysis of Zou (1996) as a starting point, Ramiro (1998) studied the existence of a direct relationship between fiscal decentralization and economic growth. Zou's model was built gradually and arrived at four set of equations:

$$\dot{k}_p = (1 - \tau_f - \tau_s)y - (1 + \tau_c)c \quad \text{----------3.4}$$

$$\dot{k}_s = (\tau_s + \tau_f)y + \tau_c c - E \quad \text{---------- 3.5}$$

$$\dot{c} = \frac{u'(c)}{-u''(c)}\left[(1 - \tau_f - \tau_s)y_p - p\right] \quad \text{---------- 3.6}$$

$$\dot{E} = \frac{v'(E)}{-v''(E)}\left[\tau_s (1-\alpha)^{-1} y_s - p\right] \quad \text{---------- 3.7}$$

Where $\tau_f$ = federal income tax, $\tau_s$ = local income tax, $\tau_c$ = local consumption tax, $(\alpha)$ = investment matching grants, $k_p$ = stock of private capital $k_s$ = stock of public capital, c = private consumption, E= local public consumption.

The author identified the failure of the model to include the process for fiscal decentralization as its major limitation. This work therefore concentrates on the need to incorporate a tax decentralization process and examine its effects on economic growth in a representative region. By including this process in Zou's (1996) model, the work determined the optimal level of tax decentralization for regional growth. Merely for illustrative purpose, the Spanish economy as a whole was considered and he arrived at a hypothesis that progress in tax decentralization does contribute to economic growth.

Enrique and Ady (2001) analysed the factors determining the efficiency of fiscal decentralization process within the sub-national government with particular focus on Mexico. The authors centered the analysis on states' institutional framework which they claimed has not been considered vigorously in earlier studies. The outcome of the study indicated that the states' institutional framework is the most important element in determining the fiscal decentralization of the country. Other relevant factors according to the study are the differences in professional capacities among public servants, the legal framework, the management systems and the technical infrastructure. These factors collectively

determine the achievements and shortcomings of fiscal decentralization in Mexico. The factors are indeed heterogeneous and diverse; hence, a successful fiscal decentralization policy should be differentiated in the rhythm of its implementation and in the instruments for its promotion.

Examining the issue on comparative basis, Ebajemito and Abudu (1999) related the intergovernmental fiscal relations in Nigeria with those in Australia, Canada and United States of America. The study revealed that the fiscal arrangement in Nigeria favours a high concentration of finances at the centre. This, according to the study, can be attributed to the prolonged military rule in the country. While the practice in Canada shows decentralization of resources in favour of lower levels of governments, that of the United States has assumed a middle course. And the experience in Australia is the same with what is obtainable in Nigeria.

In a study on fiscal decentralization and economic development among Nigerian states, Ugbogu (1983) investigated the relation between the patterns of fiscal decentralization within the various states of the country. The first important relationship investigated in terms of fiscal decentralization was the relationship between the federal, states and the local governments' expenditure and economic development. Among the economic variables inherent in economic growth tested were the taxing powers of the state, local and federal governments. If a particular level of government was allowed to impose broad-based taxes that have much bearing to economic development, the elasticity of that level of government with respect to GDP will be higher than that of others. Another issue investigated in the study was the nature of the relationship between urbanization and the degree of fiscal decentralization. As the percentage of people in cities increase, the needs for the states and local government also increase. Hence, a high positive correlation between urbanization and the degree of fiscal decentralization should exist. Again, the author investigated the intergovernmental flow of revenue sharing, transfers, and grant-in-aid. The overall effect of grants and transfers from the federal government to the states and local government was analyzed. The analysis was carried out in categories. The first category considered the federal and state governments. It covered 12 states and not the whole 19 states that time due to data problem. Regression models were developed for the analysis and a cross-sectional data was used to estimate the models.

Findings generally revealed that the optimal division of fiscal responsibilities of lower levels of government depended on intergovernmental transfer between the three tiers of government. Such transfers depend on the federal government's revenue and the proportions made available to the other two tiers of governments. Also, it was found that fiscal decentralization depended significantly on the revenue of the

federal government and not on states own revenue. The findings agreed with the hypothesis, especially in developing economies that countries or state within a country with relatively large amount of transfer payment exhibit a greater degree of decentralization. And that state or local government share of public spending increases as a given population is crowded into highly populated cities.

Chete (1998) estimated the degree of fiscal decentralization and assesses its impact on macroeconomic management in the Nigerian economy. The study identifies fiscal decentralization indicators to include sub-national fiscal autonomy, sub-national dependency and sub-national spending share. Using descriptive statistics and correlation relationships, the results of the study shows that the transfer of spending assignment has not been matched by a corresponding reduction in spending share at the centre. Also, a negative correlation exists between fiscal decentralization on one side and inflation and money supply on the other. Two of the indicators- sub-national fiscal autonomy and sub-national spending share exhibited positive correlation between fiscal decentralization and growth. In addition, sub-national dependency is negatively correlated with growth. This, according to the study, could occur when the sub-national governments assign resources to expenditures that do not generate economy-wide growth enhancing programmes.

Similarly, Aigbokhan (1999) investigated the pattern of fiscal decentralization and economic growth in Nigeria. In the analysis of fiscal federalism, the author examined the empirical evidences in Nigeria based on the theoretical provisions. Also, the author adapted a Barro-type endogenous growth model on the argument that the public sector depends on certain degree of fiscal decentralization. Consequently, a basic growth equation resulted:

$$Y = L + K + FDC \qquad \text{----------3.8}$$

Its structural form takes the form,

$$Y = a + bL + cK + dFDC + \varepsilon \qquad \text{---------- 3.9}$$

Where, $Y$ is the total output, $L$ is labour input, $K$ is capital input, FDC is fiscal decentralization[24]

The result showed a high concentration of fiscal resources at the federal level. On the contrary, the sub-national levels experience fiscal mismatch between spending and taxing powers. From the simple endogenous growth model, the result showed that the existing pattern of federalism in Nigeria has a negative impact on economic growth.

The Chete (1988) and Aigbokhan (1999) have one basic and common limitation. Both studies consider fiscal decentralization variables in the analysis of their results. But in Nigeria, the period before 1966 was the era of fiscal decentralization but from 1966 to date, fiscal matters in the country are centralized. The scope of these studies was within the centralized era. It is therefore clear that these studies use fiscal centralization data to estimate and analysis fiscal decentralization models. That makes the results so obtained to be doubtful.

Elliott and Thornton (2006) studied fiscal centralization and decentralization in Russia and China. The comparative study focused on examining the process of creating a separate tax-financed public sector in the two countries, especially the difference involved and the nature of impact on their respective economic growth. The aspect of the study that is of much relevant to the present work is how the authors specified and estimated fiscal centralization. It has already been observed that most works on Nigeria on this subject use data during the period of centralization to estimate fiscal decentralization models, Agbokhan (1999), Chete, (1999). This approach makes result so obtained to be doubtful. The present study can find Elliott and Thornton (2006) useful since they used data during period of fiscal centralistation to estimate centralization models. In discussing the evolution of fiscal systems in China, three different periods with different fiscal systems were identified. Before the 1979, fiscal matters in China were centralized, from 1980 – 1993, there was fiscal decentralization and from 1994 and above, China had fiscal centralization. Specifically, the study covered the period from 1994 – 2004 and included 31 Chinese provinces.

Looking at Nigeria, the country had a period of fiscal decentralization before 1966 and from 1966 to date, fiscal matters are centralized. Since the data for the present study covers from 1970 to 2009, which is the era of fiscal centralization in Nigeria much inference can

[24] FDC is measured in three different ways: Internally generated revenue of sub-national governments as a ratio of total central revenue, sub-national expenditure as ratio of total federal expenditures and sub-national own source as ratio of total federal expenditure.

be derived from Elliott and Thornton (2006). In other words, the present study can be built on the work of these authors especially in relation to the objective of analyzing the effects of fiscal centralization on the federal government, oil producing states and non-oil producing states.

The growth regression specified takes the form:

$$g_t = \ln\left(\frac{Y_t}{Y_{t-1}}\right) = \alpha + X_{t-1}\beta_1 + F_{t-1}\beta_2 + G_{t-1}\beta_3 + Y_{0t}\beta_4 + \mu_t \quad \text{---------- 3.10}$$

Where:

Y = Real provincial GDP, and

X represents vector of provincial-level control variables.

$$X = f(Ipc, Edr, Dpr, Fdi, Ex, \mathrm{Im}) \quad \text{---------- 3.11}$$

Where: Ipc = Investment per capita, Edr, = Educational attainment rate, Dpr = dependency ratio, Ex =Export, Im, = imports.

F represents the vector of provincial level variables.

$$F = f(Rrc, Rtc, Exc, SEhes, Ngs) \quad \text{---------- 3.12}$$

Where: Rrc = Revenue per capital, Rtc = Real transfer from center, Exc = Expenditure on central construction, SEhes =Social expenditure on health, education, and social support, Ngs = Number of government administrative staff.

G represents national level fiscal variables

$$G = f(Fgr, Tgbe, Tgdb, Tgexb) \quad \text{---------- 3.13}$$

Where:

Fgr = Federal Government's share of total government revenue

Tgbe = Total government's budgeted expenditure,

Tgbd = Total government budget deficit

Tgexb = Total government extra budgetary expenditure.

All expressed as share of GDP

Yo = Initial year provisional GDP to check for convergences between provinces.

The regressions were estimated using four different methods[25]. The results indicate different behaviour of the identified variables. Provisional revenues are statistically significant and have the expected signs. Capital construction expenditures have a weak correlated with the provisional revenue share and both are negatively correlated with the national revenue share. Generally, the variables show enhancement in the growth performance of the country.

### 3.9. The Gap in Literature

The literature review has exposed different methods used by different authors in this area of research. Studies on the subject in Nigeria apply mostly structural equations or set of simultaneous equations to analyze the issues concerned (Ugbogu 1983, Chete 1998, NES

[25] Ordinary Least Square (OLS), Pooled Fixed Effect, Two-Stage Least Square (2SLS), Generalized Method of Moments (GMM)

1999). Some of the studies on Nigeria developed decentralization models but used centralized data for the analysis, which makes the results so obtained to be doubtful.

This study however departs from others by first, estimating the cost of maintaining the status quo (fiscal centralization) in Nigeria. Secondly, we build a macro-econometric model and used appropriate data set to analyze the impact of fiscal centralization on the Nigeria economy.

## CHAPTER FOUR

## METHODOLOGY

### Introduction

The methodology of the study is guided by the main thesis of the dissertation. In other words, the methodology is conceptualized in order to achieve the objectives of the study. Specifically, the study is set to achieve two main objectives. (i) to analyze the cost of maintaining fiscal centralization in Nigeria and (ii) to analyze the sustainability of fiscal centralization in the Nigerian economy. We therefore divide the methodology into two broad parts: (i) the Conceptual Framework and (ii) the Empirical Framework. The first part conceptualizes fiscal centralization framework and presents the intricacies that results to conflicts and militancy as well as the associated costs involved. Part two presents an empirical framework of measuring the identified costs. In addition, a macro-econometrics model is build to analyze the sustainability of fiscal centralization Nigeria.

### 4.1 Conceptual Framework

Nigeria as an independent country, experiences both fiscal decentralization (1960-1966) and fiscal centralization (1966 to date). These periods present distinct characteristics in the Nigerian economy. The 1976 reforms and the 1999 Federal Constitution provide and recognized three tier system of governments, comprising the federal, states and the local government. In addition, these laws specified the tax jurisdiction and expenditure responsibilities of each level of government. Also the fiscal laws enacted since 1966 by different governments, especially the military, have progressively centralized the collection of revenue. The laws equally concentrate much of the revenue collection powers in the federal arm of government. The revenue so collected is termed the federally collected revenue (FCR). The institutional provisions for fiscal responsibilities and revenue sharing arrangements have placed the Federal Government in an advantageous position while the lower levels of governments with the exception of Lagos state in recent times depend almost entirely on the central government for finances.

It is clear therefore that institutional provision for the country entails maintaining three levels of governments (Federal, State and Local) and the federal government is responsible for collecting and allocating FCR to the other levels of governments. The FCR is made up of Oil

Revenue (OIR) and Non-oil Revenue (NOIR). The oil revenue sources include petroleum profit tax and royalties, export sales of crude oil, domestic sales of oil, taxes on petroleum products, rents etc. The non- oil component comprises of company income tax, custom and excise duties and Value- Added Tax (VAT) which was introduced in the country in 1994. The federal government is also empowered by law to collect Federal Government Independent Revenue (FIR)[26] which she is not expected to share with other levels of governments. In Nigeria, the fiscal contestation is over revenue sharing.

From the above,

$$FCR = f(OIR, NOIR,) \text{ ---------- 4.1}$$

Where:

*FCR* = Federally collected revenue

*OIR* = Oil revenue

*NOIR* = Non- oil revenue

Equation 4.1 indicates that federally collected revenue in the country consists mainly of oil revenue and non-oil revenue. The oil revenue component which constitutes well over 90 percent of the total revenue is still increasing while the non-oil component is decreasing continually.

The revenue sharing arrangement in Nigeria is vertically among the three levels of governments and horizontally among the states and local governments.

Considering vertical sharing, FCR is shared between the Federal Government, State Governments and the Local Governments. Equation 4.2 then becomes;

FCR = FCRFG + FCRSG + FCRLG ---------- 4.2

[26] FIR comprises revenue from interest payment, rents on government properties, Personal income tax of Armed Forces, Police, External Affairs and residence of Federal Capital Territory (FCT).

Where: FCRFG is the Federal Government's share of FCR, (represented by α1)

FCRSG is the State Governments' share of FCR, (represented by α2)

FCRLG is the Local Governments' share of FCR, (represented by α3)

Dividing equation 4.2 through by FCR, and replacing with $\alpha_1$, $\alpha_2$ and $\alpha_3$ respectively, we have:

$$1 = \alpha_1 + \alpha_2 + \alpha_3 \quad \text{---------- 4.3}$$

Where, $\alpha_{1} =$ $FCR_{FG}$/ FCR, $\alpha_{2} =$ $FCR_{SG}$/ FCR, and $\alpha_{3} =$ FCRLG/ FCR

Equation 4.3 implies that:

$$\left.\begin{aligned} \alpha_1 &= 1 - \alpha_2 - \alpha_3 \\ \alpha_2 &= 1 - \alpha_1 - \alpha_3 \\ \alpha_3 &= 1 - \alpha_1 - \alpha_2 \end{aligned}\right\} \quad \text{---------- 4.4}$$

Equation 4.4 generates serious contentions and agitations among the levels of governments. Where as states and local governments agitate for higher share of the revenue, the Federal Government resists. The main issue of contestation is the rate of sharing the revenue, which acceptable rates have not been, evolved inspite of many fiscal commissions set up for that purpose.

Apart from the vertical revenue sharing, there is also horizontal revenue sharing among the states and the local governments in Nigeria.

From the above, $\alpha_2$ is the component of FCR shared among the states. The states are generally grouped into two broad categories; (i) Oil-producing states and (ii) Non-oil producing states. It follows that;

$$\alpha_2 = \alpha_{21}OPS + \alpha_{22}NOS \quad \text{---------- 4.5}$$

$$\alpha_{21}OPS = \alpha_2 - \alpha_{22}NOS \quad \text{---------- 4.6}$$

$$\alpha_{22}NOS = \alpha_2 - \alpha_{21}OPS \quad \text{---------- 4.7}$$

Where: $\alpha_{21}$OPS is Oil producing states and $\alpha_{22}$NOS is Non-oil producing states.

The present ***fiscal centralized system*** and the ***sharing arrangements*** as presented above have generated severe contestations in Nigeria. The key players[27] in the agitations and conflicts have varied interests. Among the levels of governments, the disagreement is over the rates of revenue allocation. The formation of many fiscal commissions, from Philipson's commission in 1946 to T. Y. Danjuma's fiscal commission in 1988 attests to the fact that revenue allocation rates are highly contestable. Concerning the Federal Government, Oil-producing states and Non-oil producing states, the main contestable issue is ***resource control***. The Federal Government and Non-oil producing states believe (as well as institutional provision) that oil and gas are national resources and should therefore be *'equitably'* distributed to all. The Oil-producing states on the other hand insists that since the resource is obtained from their region, they should have control over 'their own resources' or they would have a greater share of the economic rent of oil. The matter revolves around the derivation principle. The history of the derivation principle seems to suggest that greater percentage was assigned to the Federal Government as shown below.

Table 4.1: The history of Derivation Principle in Nigeria

| Period | % to Oil Producing States | % to Federal Government | % to Distributable Pool |
|---|---|---|---|
| 1960-1967 | 50 | 20 | 30 |
| 1967-1969 | 50 | 50 | 0 |
| 1970-1978 | 45 | 55 | 0 |
| 1979-1981 | 0 | 100 | 0 |
| 1982-1992 | 1.5 | 98.5 | 0 |
| 1992-1999 | 3 | 97 | 0 |
| 1999-Date | 13 | 87 | 0 |

Source: Fagbadebo and Osaretin, 2010

27 The key players are the Federal Government, the States and Federal Capital Territory (FCT), Local Government Areas, the oil producing states (Niger Delta region), the non-oil producing states, communities in Niger Delta region and the Multinational oil companies.

Table 4.1 clearly shows that during the civilian era from 1960 – 1967 the oil producing states enjoyed 50% derivation while the Federal government had 20%. The military regime from 1966 -1979 lowered the oil producing states' share to 45% while the Federal government's share increased to 55%. During the civilian rule from 1979 to 1983, nothing went to the states in form of derivation. In the long military rule from 1982 to 1999, derivation principle ranged from 1.5% to 3%, but as from 1999 to the present is stands at 13%. Several proposals and counter proposals have been presented to the government on several occasions but acceptable rates have not been arrived at.

Among the states, the contentions are over the principles used in sharing the states allocations. The contestation involving the communities in the Niger Delta region, the Federal Government and Multinational oil companies revolves around issues of oil rents, compensation and provision of infrastructure, claims to ownership of oil fields, environmental degradation etc. With oil being strategic as the fiscal basis of the Nigerian state and source of capital accumulation and class formation, the struggles among the major players have been severe and sustained.

The sustained struggles among the key players, especially the communities in the Niger Delta Region resulted to rebellion and open conflicts. Initially, these communities formed themselves into non-violent groups, agitating for the development of the region but the formations gradually transformed into militant groups. Some of the groups include the Movement for the Survival of Ogoni People (MOSOP), the Ijaw Youth Council (IYC), the Movement for the Survival of Ijaw in the Niger Delta (MOSIEND), the Environmental Right Action (ERA), the Pan-Niger Delta Resistance Movement, the Movement for Reparation to Ogbia (MORETO) etc. Over the years, the activities of these movements have changed from their conceived peaceful formation to violent ones.

Before the Amnesty Programme of Late Musa Ya'adua, if the communities in the Niger Delta were not in conflict with the multinational all companies over land rights or compensation for environmental degradation, they were in dispute with the government over oil wealth and

resource control or they were in conflict with one another over claims to ownership of oil fields. Therefore, the situation in the region was not whether there was trouble, but it was a question of when and where (Garba, 2004).

The conflicts and rebellion resulted to diverse forms of costs to the communities, the Niger Deter Region and the Nation as whole. The question then is, how can these costs be measured? In what ways can the impact of the costs on the Nigerian economy be assessed? These are some of the issues the next section of the methodology would address. When properly measured, the generated data will be used for scenario analysis and simulation experiments to assess the likely impact of the costs of fiscal centralization on the growth of the entire economy.

We expect the measure of the costs of fiscal centralization to be very useful. It will be used to support the proposition that fiscal centralization in Nigeria is costly, and as such, not sustainable. Also, the simulation results will be used to infer that decentralization will benefit the federating units.

**4.2 Empirical Framework**

**Measurement of Costs**

The various costs of fiscal centralization to the communities in the Niger Delta Region and the nation as a whole considered in the study include the following: (i) the cost of shut-in of output of oil and gas (ii) cost of damage to infrastructure (iii) the increase in expenditure on defence and internal security (iv) damages during military attacks and counter attacks (v) illegal oil bunkering (vi) loss of lives. For convenience, we divide these cost items into three broad categories. These are:

(i) Oil related costs. The costs elements under this group include the cost of shut in of oil production, military damages and illegal oil bunkering.

(ii) The expenditure allocation costs are the expenditure on defence and internal security and

(iii) Social/Human costs. The cost elements here include cost of damages to infrastructures and loss of lives.

The total cost of the above listed cost items can be presented algebraically as follows:

$$TC = f(CIS, DI, \Delta DE, MD, BKN, LOL) \text{ ---------- 4.8}$$

Where,

CSI = Cost of shut in of oil production

DI = Replacement costs for damaged facilities

ΔDE = Expenditure on defence and internal security

MD = Military damages

BKN = Illegal oil bunkering

LOL = Loss of lives

The conflicts in the Niger Delta Region are violent and take different forms and dimensions. It is either the militants are at war with the government security agents, or they are in contestations with the oil companies or the communities are at war among themselves. In all these, massive destruction of lives and properties is usually the end result. But since the exact number of people lost in such confrontations can not be correctly ascertained and their monetary value can not be estimated, we exclude loss of lives from equation 4.8.

Therefore;

$$TC = CSI + DI + \Delta DE + MD + BKN \text{ ---------- 4.9}$$

Each of these costs is measured and the monetary value indicated. Detail of how the costs are measured is presented in Table 4.2 below.

Table 4.2: Costs Measurement and Data Sources.

| Cost Elements | Measurement Indicators | Data source |
|---|---|---|
| Shut in of oil production | i. Oil companies declaring force majeure<br>ii. Shut down operations due to protests and fire<br>iii. Combats between militants and security agents<br>iv. Barrels per day of crude oil lost will be noted<br>v. From oil price and barrels of oil lost, shut in costs will be estimated. | Published works, News papers, and relevant web sites. |
| Replacement costs for damaged facilities | i. Incidences of severe fighting will be noted<br>ii. Destroyed and damaged infrastructures listed<br>iii. The extent of damage made assessed and<br>iv. Costs of replacement estimated. | Web sites, published works and news papers |
| Illegal oil bunkering | i. Incidences of oil bunkering within the period of militancy will be noted<br>ii. The barrels of oil lost through bunkering noted<br>iii. Using the annual oil price with the estimated quantity of oil lost through bunkering, costs can be estimated. | Published works, web sites, and news papers |
| Expenditure on Defence and Internal Security | i. Both capital and recurrent expenditure on defence and internal security will be noted.<br>ii. The information is obtained as reported in official sources of data in the country. | CBN Statistical Bulletin (various years) |
| Military damage | i. Military combats with the militants will be noted<br>ii. Particular events that led to military formation of Joint Task Force and the use of Mobile Police Units of the Nigerian Police Force will be noted.<br>iii. Particular amount of damages will be estimated | Published works, web sites and news papers. |
| Loss of lives | i. From the fighting, we shall know the estimated number of lives lost from the militants, the security agents, the armless communities and expatriates if any. | Published works, web sites and News papers. |

We use the information from Table 4.2 to estimate the costs of fiscal centralization in Nigeria. The listed cost items (except loss of lives and damaged facilities) are estimated ranging from 2001 to 2008.

### 4.3 Econometrics Analysis

The econometrics analysis of the study is set to examine the likely effects of fiscal centralization on economic growth in Nigeria and it is open to different approaches (see NES, 1999; Adeola et la, 2009; Olofin et la, 2009). The most obvious two are (i) to formulate and specify structural or systems of equations. The equations can be generated from the relevant variables in the fiscal federalism structure in the Nigerian

economy and their linkages to different sectors and sub-sectors in the system. In building such equations, militancy is the core issue as it generates cost in virtually all the sectors of the economy. (ii) the second possible option is to build a Macro – Econometrics Model to analyze the impact of fiscal centralization on the growth of the Nigerian economy.

We have chosen the second option for this study because the country depends almost entirely on the oil sector and the activities of militias affect every sector of the economy. Hence the problem under investigation would be handled better using a macro model than structural equations. In addition, the current wave of studies appear to be more favourably disposed to the use of macro econometrics models and computable general equilibrium models, hence, the application of a macro model for the study is deemed more appropriate.

### 4.3.1 Macro-Econometric Model

In building the macro-econometrics model, we divide the Nigerian economy into five sectors. These are the aggregate demand sector, the production sector, the Nigeria's fiscal system, the financial sector and the external sector.

The aggregate demand function is conceptualized in the Keynesian manner. Hence, we specify it as follows;

$$Y = C + I + G + (X - M) \quad \text{---------- 4.10}$$

Where, Y is aggregate output or real GDP, C is consumption, I is investment, G is government expenditure X is exports and M represents imports. Given the importance of external trade for the country's oil and gas industry, and following Olofin, (2009), we consider the external component of equation 4.10 under the external sector. Other components of the aggregate demand function are discussed and disaggregated as follows.

a). *Consumption* . Consumption is disaggregated into two parts. These are:

(i) Private Consumption Expenditure (PC) and (ii) Government Consumption Expenditure (GCE)

Based on the conventional economic theory, we assume that the current private consumption plan is a function of current disposable income and the previous level of consumption expenditure. Previous level spending refers to the consumption spending in the immediate past period. Hence, the relevant specifications are the following:

$$PC_t = \beta_0 + \beta_1 Yd_t + \beta_2 C_{t-1} \quad \text{---------- 4.11}$$

Where, $0 < \beta 2 < 1$, Ydt is current disposable income, Ct-1 is the consumption spending in the past period.

Given the consumption component, we are concerned with the shot and long term impact of the change caused by militancy on private consumption expenditure. Theoretically, it follows that the short term effect is measured by the marginal propensity to consume (MPC), defined as;

$$\frac{\delta PC_{Et}}{\delta Yd_t} = \beta_1 \quad \text{---------- 4.12}$$

In the long run, consumption is assumed to be stable, hence,

$$PC_t = PC_{t-1} = PC_{t-2} \quad \text{---------- 4.13}$$

Equation 4.13 can be stated as

$$PC_t = \beta_0 + \beta_1 Yd_t + \beta_2 PC_t \quad \text{---------- 4.14}$$

Or $$PC_t = \frac{\beta_0}{1-\beta_2} + \frac{\beta_2}{1-\beta_2} Yd_t \quad \text{---------- 4.15}$$

The long term MPC is defined from equation 4.15

$$\frac{\delta PC_t}{\delta Yd_t} = \frac{\beta_1}{1-\beta_2} \quad \text{---------- 4.16}$$

The government consumption expenditure (GCE) is specified as follows:

$$GCE_t = \beta_0 + \beta_1 Y_t + \beta_2 TGR_t \quad \text{---------- 4.17}$$

Where, $0 < \beta 1, \beta 2 < 1$, Y is total GDP and TGR is total government revenue

With regards to investment, the Keynesian conventional reasoning divides investment into three parts. These are; (i) gross fixed capital formation (GFCF), (ii) government capital expenditure (KE) and (iii) foreign investment expenditure (FIE). It implies that;

$$I_t = GFCF_t + KE_t + FIE_t \quad \text{---------- 4.18}$$

Each of the components of *It* is disaggregated depending on the number of sub-sectors that are considered in the economy.

In the G component in this study, the point of emphasis is on government revenue sources. The expenditure aspect was considered in C and I components and the estimated equations shall be specified accordingly in those sub-sections. Total government revenue is a function of all revenue sources of a country. In Nigeria;

$$TGR = f(OIR, NOIR) \quad \text{---------- 4.19}$$

Where, OIR is oil revenue and NOIR represents non- oil revenue. The TGR or Federally Collected Revenue (FCR) function for Nigerian economy is disaggregated and the relevant equations specified for estimation in the model specification section.

Conventionally, a given level of output is considered to be a function of relevant input variables. Where as, some empirical works particularly in Nigeria apply the specification of the standard Cobb-Douglas production type with 'modifications', (Abdulsalam, 2009), others adopt what can be generally termed an 'indirect approach' in explaining the level of output (Olofin et al, 2009). In the latter approach, the physical output is viewed as a function of own price, other prices and other relevant activity variables. For the purpose of aggregation, real value added is related to physical output, and other input variables. The type of production function used depends basically on the nature of the study and the objectives it is set to achieve. In this study, we adopt the Cobb-Douglas Production function approach in explaining the level of output in the sub-sectors in the production sector and it is stated as;

$$Y = AK^{\alpha}L^{\beta} \quad \text{---------- 4.20}$$

Where Y is the level of output, A represents technological change, K and L are physical units of capital and labour respectively, and α and β are their respective elasticity.

The financial or monetary sector contains behavioural money demand and money supply interactions. In the Quantity Theory of Money postulation;

$$Md = Ms \quad \text{---------- 4.21}$$

Where Md is the demand for money and Ms is the supply of money. The demand for money and the supply of money are both disaggregated. The key variables in this sector are interest rate, the stock of money etc. Theoretically, Md is a function of speculative (SPC), transaction (TRN) and precautionary (PRC) demand for money.

$$Md = f(SPC, TRN, PRC) \quad \text{---------- 4.22}$$

The composition of the Nigerian financial system suggests how the relevant equations would be specified.

The external sector consists mainly of import and export sub-sectors. The variables of interest in this sector are exchange rate, balance of payment, stock of foreign reserve, and the imported and exported commodities.

### 4.3.2. Model Discussion and Specification

Identities and stochastic equations are specified based on the sectors assumed for the country. Since we conceived the Nigerian economy to consist of five sectors, the macro model is also assumed to have five main blocks. These are; the aggregate demand sector, the Nigeria's fiscal system, the production sector, the financial sector, and the external sector.

In the *aggregate demand* component of the model, the Keynesian specification of aggregate demand is the starting point.

$$Y = C + I + G + (X - M) \quad \text{---------- 4.23}$$

It follows therefore that;

$$RY = \Omega + (X - M) \quad \text{---------- 4.24}$$

Where RY is real GDP, Ω is the domestic absorption and X and M are export and import respectively. The theoretical approaches explaining the channels of aggregate demand variables are the relative price approach, the income approach, the Laursen-Metzler synthesis, the monetary approach and the absorption approach. Dauda, (2009) argues that absorption approach analyses macroeconomic issues more than others, as it has the capacity to build in other approaches in explaining channels of relationships among macroeconomic variables. An absorptive capacity is viewed as the ability of an economy or a sector to utilize factor inputs to effect positive returns on output and enhance the growth of the economy. It is the situation whereby an economy or a sector can fully utilize capital inputs to enhance investment and growth of the economy. Using the Keynesian identities and following Garba, 1995, 1998, Olofin 2009, we disaggregate the capacity absorptive components (C, I, G) as follows.

$C = PCE + GCE$ ---------- 4.25

$GCE = C - PCE$ ---------- 4.26

$I = PIE + GIE = GFCE + GE$ ---------- 4.27

$GE = GCE + GIE + DSP$ ---------- 4.28

Where, PIE and GIE are private investment expenditure and government investment expenditure respectively. GE and DSP are government expenditure and debt service payment respectively.

From the foregoing;

$$Y_t = PCE + GCE + PIE + GIE + GE + (X - M) \quad \text{---------- 4.29}$$

Equation 4.29 is the composition of national income with the aggregate explanatory variables.

With fiscal centralization in the Nigerian economy, which results to militancy in the Niger Delta Region, its impact is felt in all sectors of the economy. This is because the economy is heavily dependent on oil sector and the disruption in the sector affects the revenue of the country (FCR)

and consequently, the expenditure of different segments. In that regards, we decompose GE to include government expenditure on militancy or cost of fiscal centralization (GES), where GES is government expenditure on defence and internal security.

Hence equation 4.28 becomes;

$$GE = GCE + GIE + DSP + GES \quad \text{---------- 4.30}$$

Following Garba, 1995, Olofin et al, 2009, Abdulsalam, 2008, the general forms of equations for this sector are specified as follows:

$$PCE_t = f\left(NGDP, PCE_{t-1}, EXB, TFXR, CPI, GES, MS\right) \text{---------- 4.31}$$

$$GCE_t = f\left(OIR, NOIR, EXB, CPI, GCE_{t-1}, TFXR, GES\right) \text{---------- 4.32}$$

$$GFCF_t = f\left(RGDP, CPF, CPI, OPEN, GFCF_{t-1}, EXR, KE\right) \text{---------- 4.33}$$

$$AD_t = f\left(PCE_{t-1}, GCE, GFCF, GES\right) \text{---------- 4.34}$$

Where; RGDP is real GDP, CPI is consumer price index, OIR is oil revenue, TFXR is total foreign exchange reserve, EXB is external debt, OPEN[28] represents openness, EXR is foreign exchange, CPF is capital flight and AD represents aggregate demand. All other variables remained as earlier defined.

In the *Nigeria's Fiscal System,* it has already been established that

$$FCR = f\left(OIR, NOIR,\right) \text{---------- 4.35}$$

$$OIR = f\left(PPT, OTH\right) \text{---------- 4.36}$$

$$NOIR = f\left(CIT, CEO, FIR\right) \text{---------- 4.37}$$

Where:

*FCR* = Federally collected revenue

[28] OPEN = X+M/GDP

*OIR* = Oil revenue

*NOIR* = Non oil revenue

FIR = Federal Independent Revenue

PPT = Petroleum Profit Tax

OTH = Others

CIT = Company Income Tax

CEO = Customs, Excise duties and others

*FCR* is derived from oil (CBN, 2006) and the non-oil component's importance is diminishing progressively as the production and sales of oil continue to increase. In Nigeria, the contestation is on the sharing of FCR. The sharing is usually vertically among the three levels of governments and horizontally among the states and local governments.

Following from Garba 1998, the complete stochastic revenue and expenditure reaction functions of the Nigeria's fiscal system are stated as follows:

$$OIR = f(PPT, OTH) \quad \text{---------- 4.38}$$

$$NOIR = f(CIT, CEO, FIR) \quad \text{---------- 4.39}$$

$$RE = f(OIR, NOIR, EXB, EXR, GRES) \quad \text{---------- 4.40}$$

$$KE = f(OIR, NOIR, EXB, CPI, KE_{(-1)}, Y_{OG}, TFXR, GKES) \quad \text{---------- 4.41}$$

$$CPI = f(MS, EXR, OIR, CPI_{t-1} NOIR, TFXR) \quad \text{---------- 4.42}$$

Equation 4.40 is the composition of government revenue function in Nigeria. The revenue function changes as the development in the country evolves with time. For instance, in the sixties and early seventies, the sources of government revenue were mainly export and import taxes from agricultural products and other internal tax revenue (Olofin, 1985). Today, the bulk of the revenue comes mainly from oil (OIR) and non-oil (NOIR) sources. Also included in the function in this study are variables such as exchange rate (EXR) and RGDP. The government expenditure

functions and the consumer price index are specified in equations 4.41 and 4.42. In addition to the oil and non-oil variables, the GE specification includes external borrowing (EXB), consumer price index (CPI), total foreign exchange reserve (TFXR), and government expenditure on security (GES). Since government spends on both recurrent and capital goods, the GE function is disaggregated into government recurrent expenditure (RE) and capital expenditure (KE). Accordingly, the GES is also disaggregated into government recurrent expenditure on security (GRES) and government capital expenditure on security (GKES) and are included in their respective functions. Generally, the above specification reveals Nigeria's fiscal system and the means of financing expenditure partly from federally collected revenue and partly by borrowing. The specification is deduced mainly from Garba, (1998) framework which revealed that federal government expenditure is sensitive to oil price shocks as they impact directly on FCR. In addition, federal aggregates are generally sensitive to the determinants of federal expenditure components and their transmission mechanisms. The basic assumption underlying this specification is that federal expenditure reaction functions are sensitive to exogenous shocks, federal oil revenue, external debt and the expenditure on militancy, rebellion and conflicts in Niger Delta Region, proxy by government expenditure on security.

*The production sector* in Nigeria is generally grouped into five major areas, viz; Agriculture, Industry, Building and Construction, Wholesale and Retail Trade, and Services (CBN, 2008). Each of these major groups is sub-divided into different units. In this study, we however divide the production sector into four sub-sectors, which are: Oil and Gas sub-sector, Agricultural sub-sector, Manufacturing sub-sector, and others. The aggregate production function takes the form

$$Y = Y_{OG} + Y_A + Y_M + Y_{OTH} \quad \text{---------- 4.43}$$

Where $(Y_{OG})$, $(Y_A)$, $(Y_M)$ and $(Y_{OTH})$ are sub-sector real output. The sub-sector specific specifications in the model are discussed as follows:

The oil and gas sub-sector in Nigeria is dominated by private and the government sectors and the investment in the sector is highly capital intensive. So, we have private capital expenditure (PKE) and government capital expenditure (GKE) prominent in the sector. Being a capital

intensive sub-sector, importation of capital goods is important. So, for the Oil and Gas sub-sector $(Y_{OG})$, the relevant input factors are physical labour inputs (LAOG), import of capital goods (MKG), government consumption expenditure (GCE), foreign investment in industrial sector (FIID) and import of manufactured goods (MMG). For agriculture $(Y_A)$, the input variables are identified as labour inputs (LAG), import of raw material (MMG), import of capital goods (MKG), foreign investment in agriculture (FIAG), government consumption expenditure (GCE), consumer price index (CPI) and lag real output in agriculture. For Manufacturing $(Y_M)$, the relevant input variables are; labour input (LMA) import of raw materials (MRG) capacity utilization (CU), consumer price index, and import of capital goods. Also included in the specification for this sector are real outputs in oil and gas and agriculture sub-sectors as well as government consumption expenditure. For others $(Y_{OTH})$, reference is made to equation 4.43, so that,

$$Y_{OTH} = Y, -(Y_{OG}, Y_A, Y_M) \quad \text{---------- 4.44}$$

From the above, the relevant specifications are made as follows;

$$Y_{OG} = f\left(AL^{\alpha_1} FIID^{\alpha_2} LAOG^{\alpha_3} GCE^{\alpha_4} MKG^{\alpha_5} MMG^{\alpha_6} RGDPOG(-1)^{\alpha_7}\right) \text{---------- 4.45}$$

$$Y_A = f\left(AL^{\alpha_1} FIID^{\alpha_2} LAG^{\alpha_3} KE^{\alpha_4} MKG^{\alpha_5} MMG^{\alpha_6} INF^{\alpha_7} Y_{A-1}{}^{\alpha_8}\right) \text{---------- 4.46}$$

$$Y_M = f\left(AL^{\alpha_1} LMA^{\alpha_2} GCE^{\alpha_3} MKG^{\alpha_4} MRG^{\alpha_5} CPI^{\alpha_6} Y_A{}^{\alpha_7} Y_{OG}{}^{\alpha_8} CU^{\alpha_9}\right) \text{---------- 4.47}$$

$$CU = f\left(MKG, MRM, Y_{OG}, Y_A, Y_M, GES\right) \quad \text{---------- 4.48}$$

The variables in the specifications are as defined above and the superscripts α1------αn represent elasticities. Equation 4.48 is also included in the model due to the general capacity underutilization in the Nigerian economy. This specification is meant to determine the capacity under utilization rate, which may come from all the sectors. Since the oil and gas sector is foreign based, the underutilization in the sector may come mainly from shortage of imported inputs and the one from the non-oil sectors may be from shortage of productive inputs, among other factors.

The *Nigerian financial sector* comprises of money demand (Md) and supply of money (MS), hence,

$$M_D = M_S \quad \text{---------- 4.49}$$

The general specifications are

$$M_D = SPC + TRN + PRC \quad \text{---------- 4.50}$$

$$M_S = \Delta TFX + \Delta CBCrG \quad \text{---------- 4. 51}$$

$$M_S = BDF + DCP + TFX \quad \text{---------- 4.52}$$

Where ΔCBCrG is central bank's credit to government, BDF is budget deficit, and DCP is the domestic credit to private sector, while other variables remain as earlier defined. The stochastic components are;

$$M_D = f(NGDP, INF, EXR, KE) \quad \text{---------- 4.53}$$

$$M_S = f(NGDP, INF, FIID, KE,) \quad \text{---------- 4.54}$$

$$EXR = f(OPEN, TOT, MS, TFXR) \quad \text{---------- 4.55}$$

In this money survey sector, the equations specified are based on the availability of data from the major data source in Nigeria- the Central Bank of Nigeria. Accordingly, the specifications included in the model from this sector are to determine the money stock and the exchange rate in the economy. One of the implications for the demand theory of money is that it is infinitely elastic at low nominal rate (Krugman, 1998). Hence we assume in this study that the demand for money balance is positively related to real gross domestic product, and negatively related to opportunity cost of money. In Nigeria, since the nominal exchange rate has been fixed for a long time, we use the real exchange rate in this study. We also include in the money demand specification inflation rate and government capital expenditure. The money supply equation is conceived as changes in stock of high powered money as specified by Central Bank of Nigeria. Thus the desired money supply is postulated to depend on nominal income, and inflation rate. It is also related to foreign investment in the industrial sector as well as the capita investment in the economy. The exchange rate equation is defined to depend on the index of openness (OPEN), terms of trade (TOT), money supply and total foreign exchange rate.

In the e*xternal Sector,* output $\equiv X - M$ ---------- 4.56

$$X = OIX - NOIX \quad \text{---------- 4.57}$$

$$M = MKG + MRG + MMG + MO \quad \text{---------- 4.58}$$

Where:

OIX is oil export; NOIX represents non-oil export, MO represents import of other goods while MKG, MRG and MMG remain as earlier defined. The functional forms of the variables in the external sector of the model are specified as follows:

$$OIX = f(OPR, OQT,) \quad \text{---------- 4.59}$$

$$NOIX = f(RGDP, TFXR, NOIX_{t-1} OPEN) \quad \text{---------- 4.60}$$

$$MKG = f(RGDP, EXR, TFXR, OPEN, RGDPOG, MKG_{-1}) \quad \text{---------- 4.61}$$

$$MRG = f(RGDP, CU, EXR, TFXR, OPEN, MT, RGDPM_{-1}) \quad \text{---------- 4.62}$$

$$MMG = f(RGDP, CU, EXR, TFXR, OPEN, MT, RGDPM_{-1}) \quad \text{---------- 4.63}$$

$$TOM = f(MKG + MRG + MMG + MO) \quad \text{---------- 4.64}$$

Where EXR is real exchange rate, TFXR is foreign exchange reserve, MT represents import tariff, TOM represents total imports, while other variables remain as earlier defined.

### 4.3.3 The Stochastic Equations

The stochastic equations are derived directly from the discussions and specifications presented in the above section. Equations from each of the sectors are re-stated in stochastic form for estimation. The equations from the production sector are transformed to estimable forms by the use of log.

In the empirical model, the specifications of the determinants of the equations in the model were altered after a trial estimation of the model was made. Variables such as inflation and interest rate which were included in almost all the expenditure equations in the theoretical specifications were dropped. Instead of inflation, the consumer price index is used and that explains why the CPI function is specified in the Nigeria's fiscal system sector. For interest rate, its non-performance in the private and government consumption in Nigeria (for the period of the study) suggest that the principle of inter-temporal substitution in consumption through borrowing and lending, influenced by changes in interest rate does not hold. Thus, the life-cycle theory of consumption, predicted on the variations in interest rate is rejected using the aggregate data. Also

in the discussion and specification of the model, we used real gross domestic product only, but we discovered that nominal gross domestic product performed better in some specifications, so both RGDP and NGDP are used in the empirical specification.

The stochastic specification of the model in each of the five sectors is as follows:

**Aggregate demand Sector**

$$PC = \alpha_0 + \alpha_1 NGDP + \alpha_2 PC_{t-1} + \alpha_3 CPI + \alpha_5 GES + \alpha_6 EXB + \alpha_7 TFXR + \alpha_8 MS + \mu_t \text{ --------- 4.65}$$

$$GCE = \alpha_0 + \alpha_1 OIR + \alpha_2 CPI + \alpha_3 GCE_{t-1} + \alpha_4 TFXR + \alpha_5 GES + \alpha_6 NOIR + \alpha_7 EXB + \mu_t \text{ ----- 4.66}$$

$$GFCF = \alpha_0 + \alpha_1 RGDP + \alpha_2 OPEN + \alpha_3 CPI + \alpha_4 EXR + \alpha_5 GFCF_{t-1} + \alpha_6 CPF + \alpha_7 KE + \mu_t \text{ ---------- 4.67}$$

$$AD = \alpha_0 + \alpha_1 PCE(-1) + \alpha_2 GCE + \alpha_3 GFCF + \alpha_4 GES + \mu_t \text{ ---------- 4.68}$$

**Nigeria's Fiscal System**

$$OIR = \alpha_0 + \alpha_1 PPT + \alpha_2 OTH + \mu_t \text{ ---------- 4.69}$$

$$NOIR = \alpha_0 + \alpha_1 CIT + \alpha_2 CEO + \alpha_3 FIR + \mu_t \text{ ---------- 4.70}$$

$$RE = \alpha_0 + \alpha_1 OIR + \alpha_2 NOIR + \alpha_3 EXB + \alpha_4 EXR + \alpha_5 GRES + \mu_t \text{ ---------- 4.71}$$

$$KE = \alpha_0 + \alpha_1 OIR + \alpha_2 NOIR + \alpha_3 EXB + \alpha_4 CPI + \alpha_5 KE_{t-1} + \alpha_6 RGDPOG + \alpha_7 TFXR + \alpha_8 GKES + \mu_t \quad \text{------ 4.72}$$

$$CPI = \alpha_0 + \alpha_1 MS + \alpha_2 EXR + \alpha_3 OIR + \alpha_4 CPI_{t-1} + \alpha_5 NOIR + \alpha_6 TFXR + \mu_t \quad \text{---------- 4.73}$$

**Production Sector**

$$\log Y_{OG} = \log A + \alpha_1 \log LAOG + \alpha_2 \log GCE + \alpha_3 \log MKG + \alpha_4 \log MMG + \alpha_5 \log FIID + \alpha_6 CIS + \alpha_7 BKN + \alpha_8 RGDPOG(-1) + \mu_t \quad \text{---------- 4.74}$$

$$\log Y_A = \log A + \alpha_1 \log LAG + \alpha_2 \log KE + \alpha_3 \log MKG + \alpha_4 \log MMG + \alpha_5 \log INF + \alpha_6 \log RGDPA_{-1} + \alpha_7 \log FIID + \mu_t \quad \text{---------- 4.75}$$

$$\log Y_M = \log A + \alpha_1 \log LMA + \alpha_2 \log GCE + \alpha_3 \log MKG + \alpha_4 \log MRG + \alpha_5 \log CPI + \alpha_6 \log RGDPA_A + \alpha_7 \log RGDPOG + \alpha_8 \log CU + \mu_t \quad \text{---------- 4.76}$$

$$CU = \alpha_0 + \alpha_1 \log MKG + \alpha_2 \log MRM + \alpha_3 \log Y_{OG} + \alpha_4 \log Y_M + \alpha_5 \log Y_A + \alpha_6 GES + \mu_t \quad \text{--- 4.77}$$

**Financial sector**

$$MD = \alpha_0 + \alpha_1 NGDP + \alpha_2 INF + \alpha_3 EXR + \alpha_4 KE + \mu_t \quad \text{---------- 4.78}$$

$$MS = \alpha_0 + \alpha_1 NGDP + \alpha_2 INF + \alpha_3 KE + \alpha_4 FIID + \mu_t \quad \text{---------- 4.79}$$

$$EXR = \alpha_0 + \alpha_2 OPEN + \alpha_3 TOT + \alpha_4 MS + \alpha_5 TFXR + \mu_t \quad \text{---------- 4.80}$$

**External Sector**

$$OIX = \alpha_0 + \alpha_1 OQT + \alpha_2 OPR + \mu_t \quad \text{---------- 4.81}$$

$$NOIX = \alpha_0 + \alpha_1 RGDP + \alpha_2 TFXR + \alpha_3 NOIX_{t-1} + \alpha_4 OPEN + \mu_t \quad \text{---------- 4.82}$$

$$MKG = \alpha_0 + \alpha_1 RGDP + \alpha_2 EXR + \alpha_3 TFXR + \alpha_4 OPEN + \alpha_5 RGDPOG + \alpha_6 MKG_{-1} + \mu_t \text{ ----- 4.83}$$

$$MRG = \alpha_1 + \alpha_2 RGDP + \alpha_3 CU + \alpha_4 EXR + \alpha_5 TFXR + \alpha_6 OPEN + \alpha_7 MT + \alpha_8 RGDPM + \mu_t \text{ --4.84}$$

$$MMG = \alpha_0 + \alpha_1 RGDP + \alpha_2 CU + \alpha_3 EXR + \alpha_4 TFXR + \alpha_5 OPEN + \alpha_6 MT + \alpha_7 RGDPM + \mu_t \text{ ---------- 4.85}$$

$$TOM = \alpha_0 + \alpha_1 MKG + \alpha_2 MRG + \alpha_3 MMG + \alpha_4 MO + \mu_t \text{ ---------- 4.86}$$

### 4.3.4 Estimation Method, Simulation Experiments and Data Source.

**The Estimation Method**

The macro-econometric model for the study contains 22 stochastic equations from the five sectors of the Nigerian economy (as assumed in this study). These equations are estimated before performing the dynamic simulation experiment to determine the dynamic effect of exogenous variables. The structure of the model is such that some independent variables appear in other equations as dependent variables. Therefore the use of Ordinary Least Square (OLS) techniques to estimate the equations of a macro model gives biased and inconsistent estimates of parameters (Dauda, 2009). To overcome this problem in our study, we used the Two-Stage Least Square (2SLS) method, a method supported by Johnson and DiNardo, (1997) for estimating systems of simultaneous equations. Econometrics views (E-Views) software was used for estimating the empirical equations and for performing simulation experiments. A detail definition of the identities, endogenous and exogenous variables of the model is presented in Appendix 3.

**Data Source**

The main source of data for the study is from the Central Bank of Nigeria (CBN) and the National Bureau of Statistics (NBS). The CBN's Statistical Bulletins of different years were used in compiling the data on the specified variables in the model. Where data on some needed variables were not available, appropriate proxy were obtained. The data used covered the period from 1980 to 2008.

**Simulation Experiments**

Under the simulation experiments, we used the baseline simulation to validate the model to ensure that it is suitable for further analysis. The baseline simulation requires solving the model using the sample data of the variables of the model. In validating the model, the emphasis was on the tracking powers of the model and Theil's Inequality Coefficients.

**Scenarios**

Three scenarios are considered and simulated in the study.

(i) The oil related costs constitute loss of revenue to the country. Specifically, it reduces the oil revenue (OIR) of the government. These costs items include the cost of shut in of oil production, illegal oil bunkering and military damages. If there was no militancy, OIR would have increased by the sum of these costs items ( i.e, OIR*). For this scenario, we increase OIR by OIR* and run the simulation. The impact on the economy is analyzed.

(ii) The second scenario centers on the expenditure allocation costs. Here, government's expenditure on defence and internal security is used. The persistence of militancy in the Niger Delta Region due to the present fiscal centralization makes expenditure on defence and internal security to be sustained and increasing, particularly from 1999 to 2008. We assumed that if there were no militancy, the excess expenditure on defence and internal security would have been used in Agricultural sector to enhance the growth of the economy.

(iii) The third scenario focuses on damages caused by militancy. The damages made on infrastructures, loss of lives and the general insecurity scares away foreign and local investors. Though the value can not be ascertained, it affects investment in the country. We therefore assume a one percent increase in gross fixed capita formation, carry out the simulation and the impact on the economy is analyzed.

The impact of these three scenarios on the economy constitutes the cost of fiscal centralization. If the present fiscal centralization did not result to militancy, the oil related costs would not have been incurred; the excess expenditure allocated to defence and internal security, especially from 1999 to date would have been used in another sector and local and foreign investors wouldn't have been scared to invest in the Nigerian economy. So by using these scenarios to simulate, the results will clearly represent the costs the economy is incurring or the benefits the economy is forfeiting for maintaining fiscal centralization.

## CHAPTER FIVE

## DATA PRESENTATION AND ANALYSIS

This chapter presents the data and analyses the results. The presentation is aimed at achieving the objectives of the study. We recall that the thesis is set to: (i) analyze the cost of maintaining fiscal centralization in Nigeria (ii) analyze the sustainability of fiscal centralization in the country. The first part of chapter five centers on the estimation of costs based on the costs elements and measurement indicators presented in Table 4.2 in chapter four. The presentation of the estimated costs follows the general categorization made earlier in chapter four. That is, the oil related costs, the expenditure allocation costs and the social/human costs. Section two of the chapter presents and discuses the estimation and simulation results of the macro econometrics model. Based on the costs of fiscal centralization and the results of macro econometrics model, it is established that the present fiscal centralization in the country can not be sustained.

### 5.1 The Estimation of Costs of Fiscal Centralization

**Oil related costs**

(i) Shut-in of oil production

Militants' activities usually force oil companies to shut down production. That started when the agitations in the Niger Delta took violent dimensions. So many instances involving the amount of crude oil lost have been reported (Garba, 2004, Hassan, 2007, Fagbadebo and Osaretin, 2010). A summary of shut in of oil production and the amount of oil lost is presented in Table 5.1 below. The information from Table 5.1 is used to estimate the costs incurred as a result of shut in of oil production from 2001 to 2008.

Table 5.1: Shut in of oil production (2001 to 2008)

| Year | Incidence and Daily costs |
|---|---|
| 1997 | Shell Company declares majeure at Bonny Terminal due to local protests and disrupted 210, 000 barrel of crude oil per day |
| 2002 | Chevron declares force majeure on its exports for 10 days due to protests and fire. Between 300,000 and 400,000 barrels per day were halted. The cost is between $0.076 billion and $0.10billion for 10 days.<br><br>Before the fire, about 110,000 barrels per day interrupted by protestors |
| 2003 | Chevron, Texaco, Royal Dutch/Shell, Total and Elf shut in operations due to militancy. That affected 768,000 barrels per day in the Western Niger Delta and 50,000 barrels per day in the Eastern Niger Delta |

Source: Garba (2004),

From Table 5.1, it is clear that the barrels of oil lost due to shut in of oil production kept increasing as the activities of militants intensified. To obtain the trend of crude oil lost from 2001 to 2008, we assume that the crude oil lost was 210,000 barrels per day from 2001 and 2002. From 2003 to 2008, we estimate the loss of crude oil due to shut in of oil production to be 250, 000 barrels per day. Based on these estimates, we obtain a trend of barrels of oil lost from shut in of oil production from 2001 to 2008 as shown in Table 5.2 below.

Table 5.2: Estimated costs of shut in of oil production (2001 to 2008)

| Year | Estimated loss of oil per day | Annual loss of oil (barrels) | Oil Price ($/barrel) | Annual Cost ($'billion) | Exchange Rate (N/$) | Cost in Naira (N'billion) |
|---|---|---|---|---|---|---|

| | (barrels) | | | | | |
|---|---|---|---|---|---|---|
| 2001 | 210,000 | 76,650,000 | $ 24.5 | $ 1.88 | 111.2312 | 209.1 |
| 2002 | 210,000 | 76,650,000 | $ 25.4 | $ 1.95 | 120.5782 | 235.1 |
| 2003 | 250,000 | 91,250,000 | $ 29.1 | $ 2.66 | 129.2224 | 343.7 |
| 2004 | 250,000 | 91,250,000 | $ 38.7 | $ 3.53 | 132.8880 | 469.1 |
| 2005 | 250,000 | 91,250,000 | $ 57.6 | $ 5.26 | 131.3000 | 690.6 |
| 2006 | 250,000 | 91,250,000 | $ 42.8 | $ 3.91 | 127.4000 | 498.1 |
| 2007 | 250,000 | 91,250,000 | $ 41.5 | $ 3.79 | 125.83 | 476.9 |
| 2008 | 250,000 | 91,250,000 | $ 40.2 | $ 3.67 | 126.50 | 464.3 |

Source: Computed by Author.

Given that there are 365 days in a year, we multiplied the estimated loss of barrels of oil per day by the number of days to generate the series for annual loss of barrels of oil from 2001 to 2008. Oil prices and exchange rates are obtained from CBN Statistical Bulletins. By multiplying international oil prices by annual loss of barrels of oil, we obtained the annual costs of shut in of oil production in Dollars. Again, by multiplying the annual costs ($'billion) by their respective exchange rates (N/$), we obtained the equivalent values in Naira for the respective years.

(ii). Illegal oil bunkering

Bunkering is the illegal siphoning of oil from oil pipes. Militancy in the Niger Delta Region made illegal bunkering of oil to thrive and it became the key source of founds for the militant groups. Several militant warlords have either publicly or privately admitted involvement[29]. According to a report of the Brussels based International Crisis Group, Nigeria losses anywhere from 70,000 to 300,000 barrels per day to illegal bunkering, the equivalent output of a small oil producing country. In its annual report in August 2006, Shell Nigeria estimated illegal bunkering losses at 40,000

[29] According to European University Centre for Peace Studies (EPU) research report, bunkers consider the practice a defensible means of providing funds for sustaining the crisis and providing for aggrieved and impoverished residents of the communities in the region. Specifically, one day's worth of illegal bunkering – at 100, 000 barrels and $15 per barrel - will buy quality weapons and sustain a group of over 1000 militants for two months.

to 60,000 in 2004 and from 20,000 to 40,000 barrels per day in 2005. These estimates and their financial equivalent at the appropriate oil prices are presented in Table 5.3 below.

Table 5.3: Illegal Oil Bunkering by Militants.

| Year | Estimated barrels per day | Oil Price ($/barrel) | Estimated costs per day ($billion) | Estimated Annual Costs ($billion) |
|---|---|---|---|---|
| 2004 | 40,000 – 60, 000 | $38.7 | $0.00155 -$0.0023 | $0.565 - $0.84 |
| 2005 | 20, 000 – 40, 000 | $57.6 | $0.0012 - $0.0023 | $0.37 - $0.84 |
| 2006 | 70, 000 – 300, 000 | $42.8 | $0.0030 - $0.013 | $1.095- $4.69 |

Source: Ogbadebo and Osaretin, 2009

From the Table 4.3 above, the estimated annual costs resulting from bunkering increased from $0.37 billion - $0.84 billion in 2005 to $1.095 billion- $4.69 billion in 2006. Taking the average of the ranges from the estimated annual costs, we have $0.985, $0.61 and $2.89 for 2004, 2005 and 2006 respectively. We assume that bunkering activities were not so sever from 2001 to 2003 and so assigned annual costs of $ 0.5. From 2007 and 2008, given the intensity of the militia activities, we assume however that the 2006 value prevailed in these years. We therefore obtain a series from 2001 to 2008 as presented in Table 5.4

Table 5.4: Costs through illegal oil Bunkering

| Year | Annual Cost ($'billion) | Exchange Rate (N/$) | Cost in Naira (N'billion) |
|---|---|---|---|
| 2001 | $0.50 | 111.2312 | 55.6 |
| 2002 | $ 0.50 | 120.5782 | 60.3 |
| 2003 | $0.985 | 129.2224 | 127.3 |
| 2004 | $0.61 | 132.8880 | 81.1 |
| 2005 | $ 2.89 | 131.3000 | 379.5 |
| 2006 | $ 2.89 | 127.4000 | 368.2 |
| 2007 | $ 2.89 | 125.83 | 363.6 |
| 2008 | $ 2.89 | 126.5 | 365.6 |

Source: Computed by Author

(iii). Military Damages

In Nigeria, all forms of violent protests are usually handled by the security agents. In the Niger Delta too, military formations are usually directed to intervene in pretests and agitations by the militants. Specifically, there was the crushing of Adaka Boro rebellion in the 1960s, the Major Okutima Internal Security Task Force of the 1990s, the Odi invasion of 1999, the Joint Task Force of 2003, the Operation Restore Hope, led by Brigadier General Elias Zamani and the use of the Mobile Police Units of the Nigerian Police at several instances to restore peace which often resort to destruction of properties and killings.

Attacks by the Niger Delta militants on the oil industry as well as individuals both Nigerians and expatriates, have been massive. The militant groups were fighting for a greater share of the region's oil wealth after the purported decades of neglect. From January 2006 to August, 2007, there were 59 major attacks. In all those attacks, the Joint Task Force intervened to combat the militants' activities and the destruction was massive. The confrontation between the militants and the government security agents led to a minimum loss of 600, 000 barrels of crude oil per day[30], besides the destruction of properties and lost of lives (Fagbadebo and Osaretin, 2010). That means there was a minimum loss of $9.37 billion from January to December, 2006 and $6.02 billion from January to August, 2007 and $9.15 billion in the whole of 2007.

This period was the period of intense, continuous and sustained fighting between the militants and government security formations. Prior to 2006, there were cases of military combats with the militias as mentioned earlier, but the cases were not as severe as the ones reported in 2006/2007. We therefore assume an annual cost of 1.5 US dollars from 2001 to 2003 and 1.8 US Dollars from 2004 to 2005. We also assume that there were no militants' activities that could warrant military intervention from September to December of 2007, so the cost from January to August is maintained for 2007. Assuming again that the cost of military damages in 2008 was 2.5 US Dollars and given the exchange rate of the Naira, the costs from 2001 to 2008 are presented in Table 5.5 below.

Table 5.5: Costs of Military Damages (2001 to 2008)

[30] This loss of crude oil is mainly from breakdown of oil pipes in the course of fighting and purposeful attacks on oil tanks and storage facilities by militants.

| Year | Annual Cost ($'billion) | Exchange Rate (N/$) | Cost in Naira (N'billion) |
|---|---|---|---|
| 2001 | 1.5 | 111.2312 | 166.8 |
| 2002 | 1.5 | 120.5782 | 180.9 |
| 2003 | 1.5 | 129.2224 | 193.8 |
| 2004 | 1.8 | 132.8880 | 239.2 |
| 2005 | 1.8 | 131.3000 | 236.3 |
| 2006 | 9.37 | 127.4000 | 1193.7 |
| 2007 | 6.02 | 125.83 | 757.5 |
| 2008 | 2.5 | 126.50 | 316.3 |

Source: Computed by Author

The oil related costs are summarily presented in Table 5.6 below.

Table 5.6: Summary of Oil Related Costs (N Billion)

| Year | Shut in of Oil Production | Illegal Oil Bunkering | Military Damages | TOTAL |
|---|---|---|---|---|
| 2001 | 209.1 | 55.6 | 166.8 | 431.5 |
| 2002 | 235.1 | 60.3 | 180.9 | 476.3 |
| 2003 | 343.7 | 127.3 | 193.8 | 664.8 |
| 2004 | 469.1 | 81.1 | 239.2 | 789.4 |
| 2005 | 690.6 | 379.5 | 236.3 | 1306.4 |
| 2006 | 498.1 | 368.2 | 1193.7 | 2060 |
| 2007 | 476.9 | 363.6 | 757.5 | 1598 |
| 2008 | 464.3 | 365.6 | 316.3 | 1146.2 |
| TOTAL | 3386.9 | 1801.2 | 3284.5 | **8472.6** |

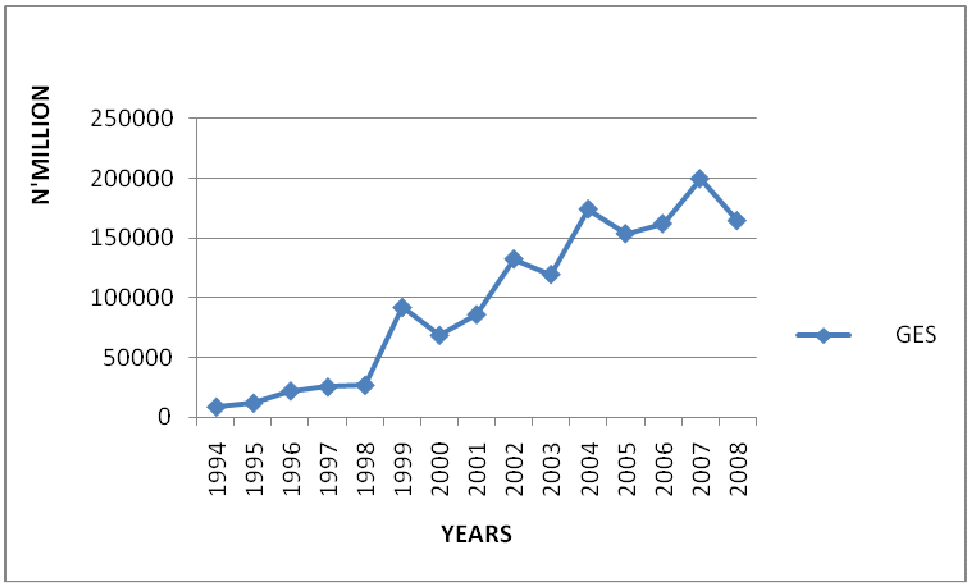
Source: Compiled from Tables 5.2, 5.4 and 5.5

Table 5.6 shows the totals from costs of shut in of oil production, illegal oil bunkering and military damages. As revealed from the table, the total costs of oil related costs items from 2001 to 2008 is eight thousand, four hundred and seventy three billion Naira. This is hug loss of revenue to the government.

**Expenditure Allocation Costs**

Records for this aspect of cost which concerns the expenditure on defence and internal security are readily available in CBN Statistical bulletin. Records indicate that from 1960 – 1967, there were provisions for defence and internal security, from 1968 – 1993, there was none. Within that period, the provision for internal security was made under general administration. But from 1994 to date, within the period of intense militancy in the Niger Delta region, adequate provisions are made for defence and internal security. In other words, militancy makes the government to provide and spend more money on defence and internal security. As expected, the expenses on defence and internal security keep increasing as militancy in the Niger Delta Region keeps intensifying as shown in Figure 5.1 below.

Figure 5.1: Government Expenditure on Defence and Internal Security.




Sourece: CBN, Statistical Bulletin, 2008

The government expenditure on defence and internal security increased steadily from 1994 to 1998 as revealed in figure 5.1 above. From 1999 to 2008 however, the increase was continuous and astronomical, indicating the excessive expenditure allocated to combat militancy in the Niger Delta Region. It suggests that if there were no militancy, the trend seen from 1994 to 1998 would have continued to 2008. To obtain the excess expenditure allocated to combat militancy in the Niger Delta Region, a univariate time series model for government expenditure on security (GES)[31] is used. The actual series of the variable (GES) from 1980 to 1998 is used to forecast the trend values from 1999 to 2008. The difference between the actual expenditure on defence and internal security and the trend from 1999 to 2008 represents the excess expenditure allocated to combat militancy. The result is presented in Table 5.7 below.

Table 5.7 Expenditure Allocation Cost of Militancy

| Years | Actual Expenditure on Defence and Internal Security (GES) (N'million) | Forecast Values of Expenditure on GES (N' million) | Difference Between the Actual and the Forecast Expenditure on GES (N' million) |
|---|---|---|---|
| 1999 | 96475.6 | 17631.29 | 78844.31 |
| 2000 | 74511.9 | 17687.32 | 56824.58 |
| 2001 | 107136.1 | 17732.51 | 89403.59 |
| 2002 | 164892 | 17768.96 | 147123 |
| 2003 | 138596.1 | 17798.36 | 120797.7 |
| 2004 | 195524.6 | 17822.07 | 177702.5 |
| 2005 | 195214.3 | 17841.2 | 177373.1 |
| 2006 | 185340.9 | 17856.63 | 167484.3 |
| 2007 | 241923.5 | 17869.07 | 224054.4 |
| 2008 | 206913.2 | 17879.11 | 189034.1 |

Source: Computed by Author

[31]The model is specified as $GES_t = \alpha + GES_{t-1} + \mu_t$

**Social/Human Costs**

(i) Cost of Damages to Infrastructures

In the course of fighting in the Niger Delta Region, many infrastructures are destroyed. In 1990, a protest in Umuechem, east of Port Harcourt led to the police destroying or badly damaging 495 houses. In March 2003, the militants were engaged in fierce gun battles with the government security forces. The clashes saw several village communities such as Okerenkoko, Ogbogbene, Benikrukru, Inikorogha, Oburu, Kunukunama, Opuedebubo, Oporoza, Kokodiagbene, Tebujor and many more, invaded by the military and many houses, and other properties were destroyed. Other items such as vehicles, market stalls, electricity, etc were destroyed. The monetary value of replacing such damages can not be estimated but it is important to acknowledge that such costs are incurred.

(ii) Loss of Lives

As explained in the military damages above, the incessant combats between the military formations and the militants resulted to loss of lives. On October 30$^{th}$ and 31$^{st}$, 1990, a protest at Shell's facility at Umuechem, east of Port Harcourt led to the police killing some eighty unarmed demonstrators. In 1992, at the insistent of Shell, some youth were killed in Bonny during a peaceful demonstration against the activities of the oil company. In January 1993, about 300,000 Ogoni organized protestors protested against the activities of oil companies in the area and their action was followed by repeated harassment, arrests, and killing of Ogonis by the Federal government troops. On January 11, 1999, Ijaw women who were engaged in a peaceful demonstration against the marginalization of their people in Port Harcourt were violently tear-gassed, beaten, stripped, and detained by a combined team of policemen and soldiers. Also, the Warri wars of 2003 were allegedly instigated by the activities of some oil companies and Nigerian Naval officers and many people died in the process. The exact number of people lost in the combat between the government security agents and the militants can not be correctly ascertained and the monetary value may not be estimated but it is a huge cost to the country.

**Implications on the Cost of Fiscal Centralization on the Nigerian Economy**

We recall that the vertical sharing arrangements in Nigeria take the form: $1 = \alpha1 + \alpha2 + \alpha3$**.** Where, $\alpha1 =$ FCRFG/ FCR, $\alpha2 =$ FCRSG/ FCR, and $\alpha3$ = FCRLG/ FCR. If N8472.6 billion were not lost to militancy, the money accruable to the levels of governments would have been much

higher. They would have been able; *ceteris paribus* to embark on growth oriented programmes at all levels of governments that would have enhanced the growth of the Nigerian economy.

It is however noted that majority of the States can not survive without the monthly support of the Federal Government exception of Lagos State in recent times. Rather than develop locally based resources, the States now wait for the Federal Government, in the name of allocations from oil revenue every month.

In fact, fiscal centralization in Nigeria has stifled local initiatives. All eyes are on the Federally Collected Revenue so that efforts to develop solid minerals at the states and federal levels are not accorded any priority. Other sources of revenue are also not exploited. As Ajefia, (2007) rightly asked; *what happened to the groundnut pyramids, the cotton, the plywood, the rubber, the timber, the cocoa and the palm oil/kernel which the governments of the former four regions depended upon to fund their respective economic and infrastructure development programmes before the advent of Oil?*. It is clear therefore that the present fiscal centralization has not only killed the initiatives to exploit new sources of revenue but has also brought about a total neglect of former viable revenue sources.

Generally, the system has promoted inefficiency and fostered a sense of over dependence on the Federal Government. In fact, it has created a situation, a system or mechanism that makes lower levels of governments depend on the sharing of FCR every month. As states and local governments depend almost entirely on revenue sharing without production and increased economic activity, economic development in the country can not be assured. This system cannot be sustained, especially with the increasing costs it generates in the Nigerian Economy.

## 5.2 The Estimation and Simulation Results of Macro Econometrics Model.

### 5.2.1 The Estimated Results

The summary of the estimated equations and the actual estimates are contained in Appendix 4, Table 5.1. The equations are presented and briefly discussed in their respective sectors.

**Aggregate Demand Sector**

Table 5.8: Summary of Estimated Equations from the Aggregate Demand Sector.

Eq 5.1 PC = - 235486 - 0.19 * NGDP - 0.53 * PC (-1) + 43781 * CPI - 0.013 * EXB + 23.20 * GES - 3.42 * TFXR + 3.06 * MS
(-1.42) (-0.76) (-3.45) (3.61) (-0.052) (2.79) (-5.18) (9.64)

$R^2$ = 0.95 $R^{-2}$ = 0.93 DW = 2.0

Eq 5.2 GCE = - 118883 + 0.23*OIR + 42410*CPI- 0.034*GCE (-1) - 0.91* TFXR + 17.11*GES - 0.085 * NOIR - 0.19 *EXB
(-0.92) (0.31) (3.85) (-0.15) (-1.77) (2.36) (-0.35) (-0.83)

$R^2$ = 0.98 $R^{-2}$ = 0.97 DW = 1.7

Eq 5.3 GFCF = -36321 + 0.17*RGDP + 2608 *OPEN + 1143 *CPI + 1043* EXR + 0.301*GFCF (-1) + 0.33 *CPF - 0.014* KE
(-0.58) (0.56) (0.38) (0.91) (2.21)(0.98) (0.60)(-0.15)

$R^2$ = 0.99 $R^{-2}$ = 0.98 DW = 2.17

Eq 5.4 AD = 83544 + 1.17 * PC + 0.50* GCE (-1) + 5.57 * GFCF - 1.19 * GES
(0.65) (16.7) (2.89) (2.56) (-0.23)

$R^2$ = 0.99 $R^{-2}$ = 0.99 DW = 1.5

Equations 5.1 to 5.4 are the equations from the aggregate demand sector. The table shows that all the equations in the aggregate demand sector have good fit. They all have adjusted R square of more than 90%. Generally, the estimated equations from the aggregate demand sector indicate that the equations in the sector explain between 93% (eq. 5.1) and 99% (eq. 5.4) of the linear movements in the dependent variables.

**Nigeria's Fiscal System**

Table 5.9 Summary of Estimated Equations from the Nigeria's Fiscal System

Eq 5.5 OIR = 31203 - 6.90e-07 * PPT + 1.70e-06 *OTH
(0.29)(-2.60) (12.3)

$R^2$ = 0.93 $R^{-2}$ = 0.92 DW = 1.0

Eq 5.6 NOIR = 94572 + 7.48e-06 * CIT - 2.56e-06 * CEO + 6.57e-06 * FIR
(0.81) (2.62) (-2.54) (2.59)

$R^2$ = 0.69 $R^{-2}$ = 0.66 DW = 2.1

Eq 5.7 RE = - 25882+ 0.16 * OIR + 0.134 * NOIR + 0.05 * EXB + 746 * EXR + 2.33 * GRES
(-1.91) (3.07) (3.99) (1.50) (0.74) (2.23)

$R^2$ = 0.99 $R^{-2}$ = 0.99 DW = 1.8

Eq 5.8 KE = 26498 - 0.044 *OIR + 0.091 *NOIR - 0.036 *EXB + 3038 *CPI + 0.428 *KE (-1) - 0.26 *RGDPOG +
(0.21) (-0.31) (2.81) (-1.14) (1.86) (1.63) (-0.15)

0.002 *TFXR + 2.56 *GKES
(0.02) (0.85)

$R^2$ $R^{-2}$

Equations 5.5 to equation 5.9 are the equations specified for the Nigeria's Fiscal System sector. The adjusted R- squares from these equations suggest that the equations have good fit. The values of the adjusted R-squares range from 66% from the non-oil revenue equation (Eq. 5.6) to 99% in the recurrent expenditure and consumer price index equations (Eq.5.7 and Eq.5.9 respectively). The adjusted R- square suggests that the model explain between 66% and 99% of the linear movements in the dependent variables in the sector.

**The Production Sector**

Table 5.10 Summary of Estimated Equations from the Production Sector

Eq 5.10 RGDPOG = 53225 + 22 * LAOG + 0.006 * GCE + 0.018 * MKG + 0.20 * RGDPOG (-1) + 0.16 * FIID - 0.04 * MMG
(5.72) (1.32) (2.83) (1.26) (1.53 (1.40) (-1.72)

$R^2$ = 0.86 $R^{-2}$ = 0.82 DW = 1.6

Eq 5.11 RGDPA = 10360 + 298.8*LAG - 0.052*KE + 0.008*MKG + 0.053*MMG -178.6*INF + 0.42*RGDPA (-1) - 0.15*FIID
(0.85) (2.53) (-1.31) (0.36) (1.80)(-1.06) (2.24) (-0.86)

$R^2$ = 0.97 $R^{-2}$ = 0.96 DW = 1.9

Eq 5.12 RGDPM = - 3834 + 108.2*LMA -0.0015*GCE + 0.0002*MKG + 0.005*MRG + 15.42 *CPI + 0.065*RGDPA
(-1.76) (4.90) (- 4.91) (0.15) (0.53) (0.51) (5.38)

- 0.04* RGDPOG + 61.8*CU
(-1.33) (3.24)

$R^2$ = 0.97 $R^{-2}$ = 0.96 DW = 2.4

Eq 5.13 CU = 42.6 -7.50e-06*MKG - 6.70e-06*MRG - 0.00033*RGDPOG - 0.00022*RGDPA + 0.0032*RGDPM
(2.93) (-0.58) (-0.12) (-2.34) (-1.36) (2.98)

+ 0.00022 *GES
(2.5)

$R^2$ = 0.52 $R^{-2}$ 0.38 DW = 1.14

Table 5.10 shows the equations in the production sector. The estimates indicate that the determinants of equations 5.10 to 5.13 fit the model well except for the capacity underutilization equation, Eq. 5.13. The adjusted R squares for equations 5.10, 5.11 and 5.12, representing real output for

oil and gas, agriculture and manufacturing sub-sectors respectively are 0.82, 0.96 and 0.96. It means that the model explains 82% and 96% of the linear variations in these three equations. For equation 5.13 however, adjusted R square is 0.38, meaning that the determinants of capacity underutilization explained only 38% of the linear changes in capacity underutilization. In addition, there is clear evidence of autocorrelation in equation 5.13, based on the DW statistics.

**The Financial Sector**

Table 5.11: Summary of Estimated Equations from the Financial Sector

| | | | | | | |
|---|---|---|---|---|---|---|
| Eq 5.14 | MD = - 119067 + 0.26* NGDP + 1413 * INF - 7873* EXR + 1.81* KE | | | | | |
| | (-0.75) | (7.16) | (0.33) | (-2.72) | (2.44) | |
| | $R^2$ = 0.97 | $R^{-2}$ = 0.96 | DW = 0.8 | | | |
| Eq 5.15 | MS = - 254625 + 0.30 * NGDP + 4886 * INF + 3.11 * KE - 9.19* FIID | | | | | |
| | (-1.60) | (5.10) | (1.02) | (3.27) | (-2.0) | |
| | $R^2$ = 0.97 | $R^{-2}$ = 0.96 | DW = 0.70 | | | |
| Eq 5.16 | EXR = 5.35 + 8.84 * OPEN - 0.017 * TOT - 3.15e-06 * MS - 4.70e-06 *TFXR | | | | | |
| | (0.30) | (4.88) | (-0.14) | (-0.28) | (-0.42) | |
| | $R^2$ = 0.82 | $R^{-2}$ = 0.79 | DW = 0.63 | | | |

Table 5.11 shows the results of the three equations estimated in the financial sector. The determinants generally fit the specifications as the model explained from 79% to 96% of linear changes in the dependent variables.

**The External Sector**

Table 5.12: Summary of Estimated Equations from the External Sector.

Eq 5.17 OLX = 6233 + 0.85 * OQT - 219.5 * OPR
(0.20)(17.4) (-0.61)

$R^2$ = 0.94 $R^{-2}$ = 0.93 DW = 1.30

Eq 5.18 NOIX = - 65710 + 0.31 * RGDP + 0.004 * TFXR + 0.24 * NOIX (-1) - 1473.5 * OPEN
(-4.20) (4.37) (1.23) (1.28) (-1.09)

$R^2$ = 0.96 $R^{-2}$ = 0.96 DW = 1.63

Eq 5.19 MKG = - 56568+ 5.63*RGDP - 2159 *EXR - 0.09 *TFXR + 91240 *OPEN - 15.60 *RGDPOG - 0.55 *MKG (-1)
(-0.23) (3.92) (-1.36) (-1.40) (4.80) (-3.45) (-3.32)

$R^2$ = 0.96 $R^{-2}$ = 0.95 DW = 2.0

Eq 5.20 MRG = - 64721 + 0.44*RGDP + 37.31*CU - 373*EXR + 0.009 *TFXR + 16773*OPEN - 0.48 *MT - 2.25*RGDPM
(-0.86) (1.16) (0.04) (-0.76) (0.57)(3.2) (-0.88) (-0.30)

$R^2$ = 0.97 $R^{-2}$ = 0.96 DW = 1.30

Eq 5.21 MMG = - 380588 + 1.72*RGDP + 1011.12*CU - 2764*EXR + 25781*OPEN - 0.85*MT- 1.62*RGDPM + 0.22*TFXR
(-1.66) (1.46) (0.33) (-1.83) (1.61) (-0.50) (-0.07) (4.85)

$R^2$ = 0.98 $R^{-2}$ = 0.97 DW = 1.9

Eq 5.22 TOM = - 2846.50 + 0.61* MKG + 4.60 * MRG -1.64 * MMG + 235 * MO
(-0.03) (1.10) (2.10) (-1.90) (2.53)

$R^2$ = 0.94 $R^{-2}$ = 0.93 DW = 1.9

Table 5.12 presents the estimated equations from the external sector – Eq 5.17 to Eq 5.22. The results depict that all the equations in this block have good fit. The adjusted R squares lies from 0.93 (Eq. 5.22) to 0.97 (Eq. 5.21), meaning that the model explain from 93% to 97% of the linear variations in the dependent variables. The DW statistics in the sector suggest no serious problem of autocorrelation among the dependent variables.

Looking at the individual variables in the model, there are those that are significant and those that are not significant. Table 5.13 below presents variables that are significant at 5% and 10% and those that are not significant.

Table 5.13: Significance[32] of Variables from the Model

| Equations/Variables | Variables significant at 5% and 10% | Variables not Significant |
|---|---|---|
| Eq. 5.1 Private Consumption Expenditure (PC) | PC (-1), CPI, GES, TFXR, MS | NGDP, EXB |
| Eq. 5.2 Government Consumption Expenditure (GCE) | CPI, GES | OIR, GCE (-1), TFXR, NOIR, EXB |
| Eq. 5.3 Gross Fixed Capital Formation (GFCF) | EXR, | RGDP, OPEN, CPI, GFCF(-1) CPF, KE |
| Eq. 5.4 Aggregate Demand (AD) | PC, GCE (-1), GFCF | GES |
| Eq. 5.5 Oil Revenue (OIR) | PPT, OTH | |
| Eq 5.6 None-Oil Revenue (NOIR) | CIT, CEO, FIR | |
| Eq 5.7 Government Recurrent Expenditure (RE) | OIR, NOIR, GRES | EXB, EXR |
| Eq 5.8 Government Capital Expenditure (KE) | NOIR, | OIR, EXB, CPI, KE(-1), RGDPOG, TFXR, GKES |
| Eq 5.9 Consumer Price Index (CPI) | EXR, OIR, CPI(-1) | MS, NOIR |
| Eq 5.10 Real Output in Oil and Gas (RGDPOG) | GCE, | LAOG, MKG, RGDPOG (-1), FIID, MMG |
| Eq 5.11 Real Output in Agriculture (RGDPA) | LAG, RGDPA (-1) | KE, MKG, MMG, INF, FIID |
| Eq 5.12 Real Output in Manufacturing (RGDPM) | LMA, GCE, RGDPA, CU | MKG, MRG, CPI, RGDPOG |
| Eq 5.13 Capacity Utilization (CU) | RGDPOG, RGDPM, GES | MKG, MRG, RGDPA, |
| Eq 5.14 Demand for Money (MD) | NGDP, EXR, KE | INF |
| Eq 5.15 Supply of Money (MS) | NGDP, KE, FIID | INF |
| Eq 5.16 Exchange Rate (EXR) | OPEN | TOT, MS, TFXR |
| Eq 5.17 Crude Oil Export (OLX) | OQT | OPR |
| Eq 5.18 None-Oil Export (NOIX) | RGDP | TFXR, NOIX (-1), OPEN |
| Eq 5.19 Import of Capital Goods (MKG) | RGDP, OPEN, RGDPOG, MKG (-1) | EXR, TFXR, |
| Eq 5.20 Import of Raw Materials (MRG) | OPEN | RGDP, CU, EXR, TFXR, MT, RGDPM |
| Eq 5.21 Import of Manufactured Goods (MMG) | TFXR | RGDP, CU, EXR, OPEN, MT, RGDPM |

[32] The significant test in this study uses the rule of thumb: $t \geq 2$

| | | |
|---|---|---|
| Eq 5.22 Total Imports (TOM) | MRG, MO | MKG, MMG |

Source: Appendix 4

In aggregate demand sector (Eq. 5.1 to Eq. 5.4), the significant variables are presented in the table as shown above. The significant determinants of private consumption expenditure in Nigeria are lagged private consumption expenditure, consumer price index, government expenditure on security, total foreign exchange reserve and money supply. Observing the magnitude and signs of the coefficients, government expenditure on security and consumer price index have positive contributions to private consumption expenditure in Nigeria. The same situation is obtained in the government consumption expenditure (Eq.5.2). It means then that government expenditure on security is an important determinant of expenditure of the federal government in Nigeria. Given the present fiscal centralization in the country and as earlier illustrated in figure 5.1, this category of expenditure keeps increasing as militancy continuous to intensify in the Niger Delta Region. In the gross fixed capital formation (Eq.5.3), exchange rate is the only significant factor in this specification and has positive sign. All other determinants are not significant but have positive signs except government capital expenditure which is negative. Other variables not significant in the aggregate demand sector are indicated accordingly as shown in Table 5.13

Equations 5.5 to 5.9 constitute the equations in the Nigeria's Fiscal System. All the determinants of oil revenue and non-oil revenue are significant as expected. However, the petroleum profit tax shows negative contribution. The other determinant of oil revenue termed 'others' (OTH) comprises of revenue from export sales, domestic sales, taxes on petroleum products and rents. Again, from 1999 to date, crude oil/gas exports has become another important component of the 'others' and the yield from crude oil/gas exports alone far exceed the income from petroleum profit tax. When all these are put together, petroleum profit tax appeared to be insignificant compared to 'others'. That explains why its coefficient indicates negative sign. In the non-oil equation, all the variables carry positive signs as expected except customs, excise duties and others (CEO), which is negative. In the recurrent expenditure (RE), government capital expenditure (KE) and consumer price index (CPI) equations, both oil revenue and non-oil revenue are significant with positive signs in the recurrent expenditure specification but non-oil revenue is significant in (KE) equation while oil revenue in (CPI) equation. Government recurrent expenditure on security and defence is significant in the recurrent expenditure profile of the federal government. The variables not significant in the in the Nigeria's Fiscal System sector are as indicated.

In the production sector, government consumption expenditure is significant with positive sign in the output of oil and gas but has negative sign in manufacturing. Labour inputs are significant in the agriculture and manufacturing sub-sectors but not significant in oil and gas sub-sector. That is attributed to the fact that oil and gas is capital intensive, where as agriculture and manufacturing; especially in the Nigerian economy is highly labour intensive. In the capacity utilization, among the significant determinants, government expenditure on security is significant and contributes positively to capacity utilization in the country.

The equations in the money survey of financial sector are the demand for money, supply of money and exchange rate (Eq. 5.14 to Eq. 5.16). Inflation rate is not a significant determinant in the demand for and supply of money but has positive sign. Government capital expenditure is significant and positive in the two equations. In the exchange rate specification, the index of openness is significant and positive while other variables are not.

In the crude oil export equation (Eq.5.17) in the external sector, the oil quantity produced contributed positively and is significant while the oil price is not. The index of openness is significant and positive but the import of capital and manufactured goods not significant. Regarding the import of manufactured goods, total foreign exchange reserve has positive contribution and is significant, while variables such as exchange rate, capacity utilization, real output, terms of trade etc are not significant.

### 5.2.2 Baseline Simulations

**Validation of Estimated Model**

The estimation of the macro econometrics model as presented in the preceding section was simulated to analyze the objectives of the study. To validate the estimated model, we examined the graphs of the 22 endogenous variables and use Theil's inequality coefficients. It is expected that the actual values of the endogenous variables tracked with the simulated values. Therefore the actual and the simulated paths of the endogenous variables are plotted together and are presented in Appendix 4 (Figures 5.1, 5.2, 5.3 and 5.4). The four set of figures are plotted from the deterministic- dynamic solution; deterministic static solution; stochastic dynamic solution and stochastic statistic solution respectively. It is generally observed that the simulated and the actual values in the four different situations tracked well.

To show the smallest details, we choose some variables in some sectors to examine their turning points in details. The selected variables are oil revenue (OIR), non-oil revenue (NOIR), government recurrent expenditure (RE), government capital expenditure (KE), oil export (OIX) and non-oil export (NOIX). The choice does not however rule out the impact of fiscal centralization on other macro economic variables in the Nigerian economy. The graphs are presented in Figures 5.2 to 5.7 below.

**Figure 5.2: Baseline Simulation (OIR) Actual and Simulated**

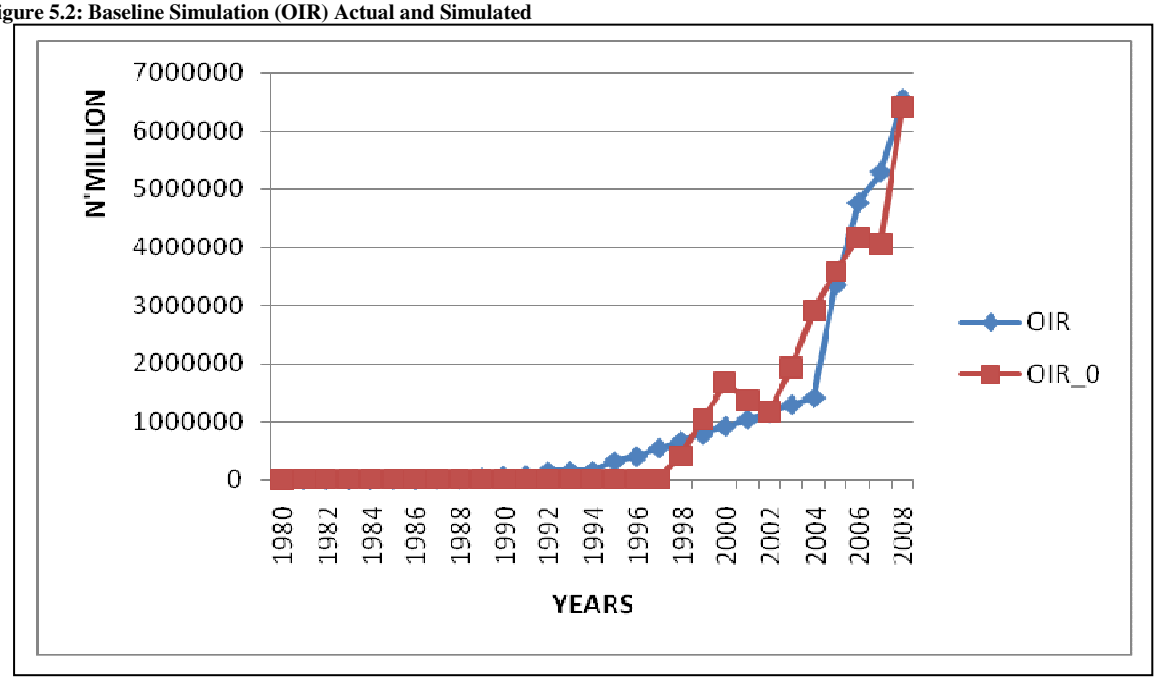



**Fig. 5.3: Baseline Simulations (NOIR) Actual and Simulated**

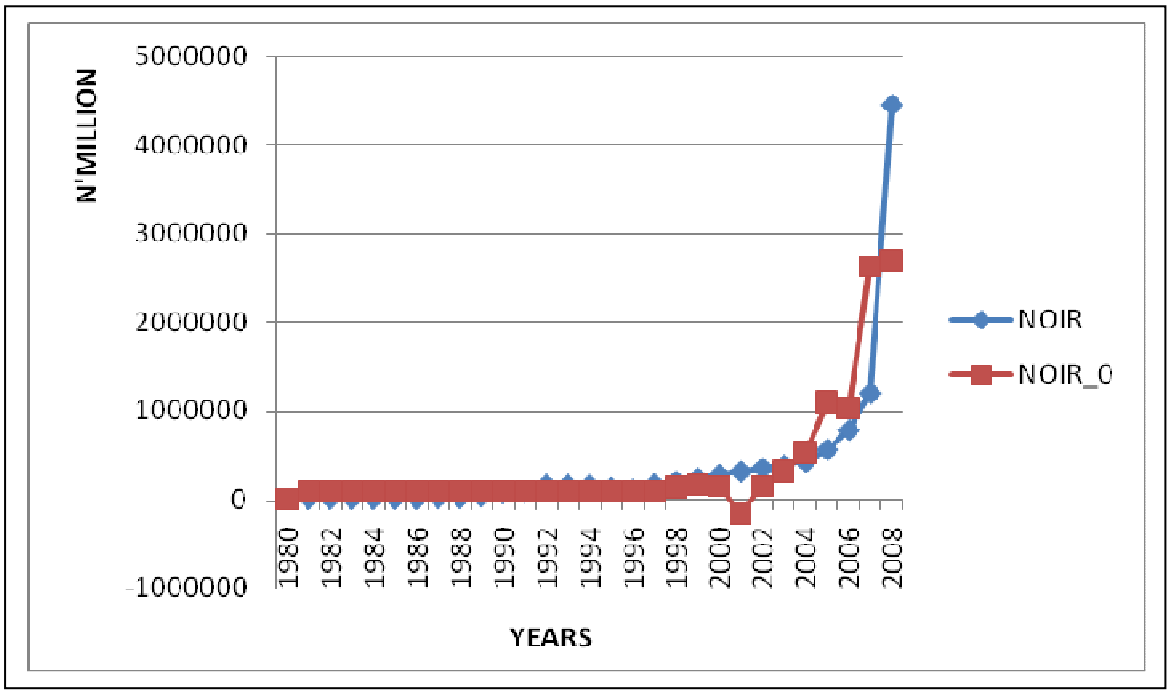


**Figure 5.4: Baseline Simulation (RE) Actual and Simulated**

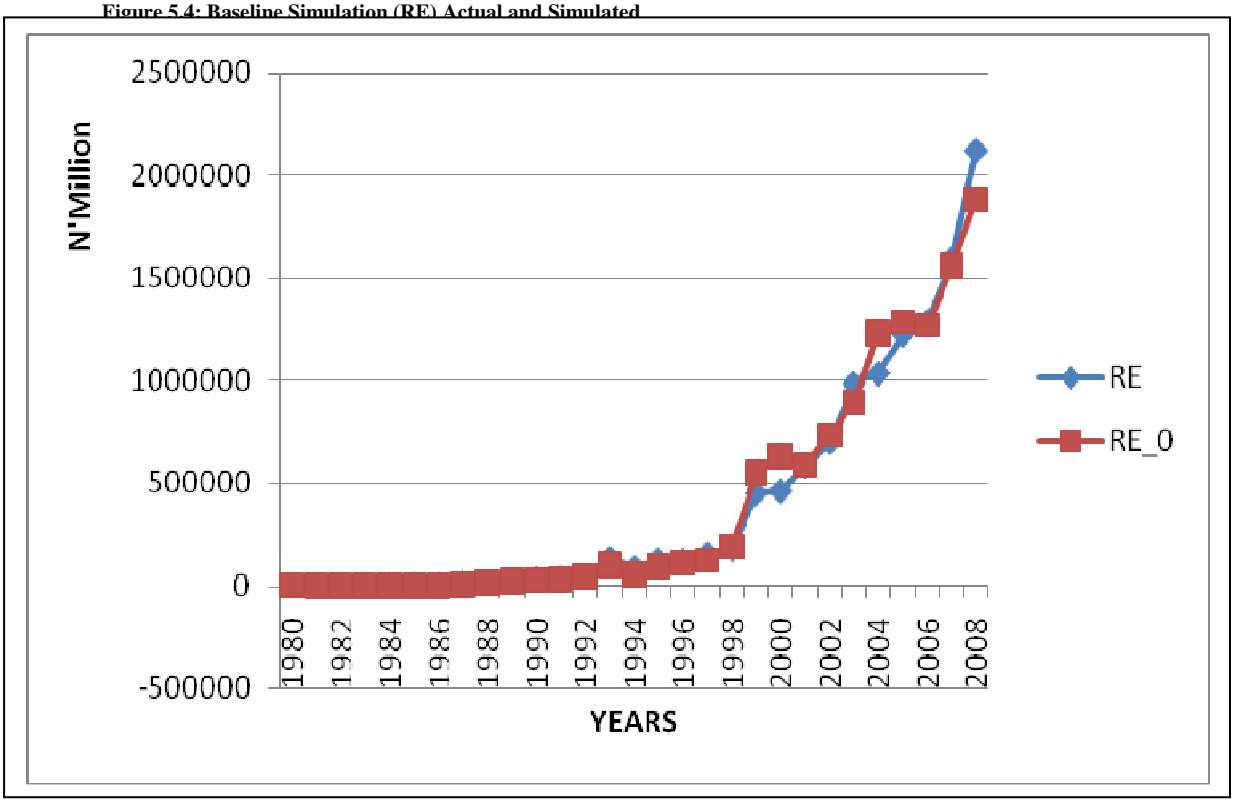



**Fig. 5.5: Baseline Simulation (KE) Actual and Simulated**

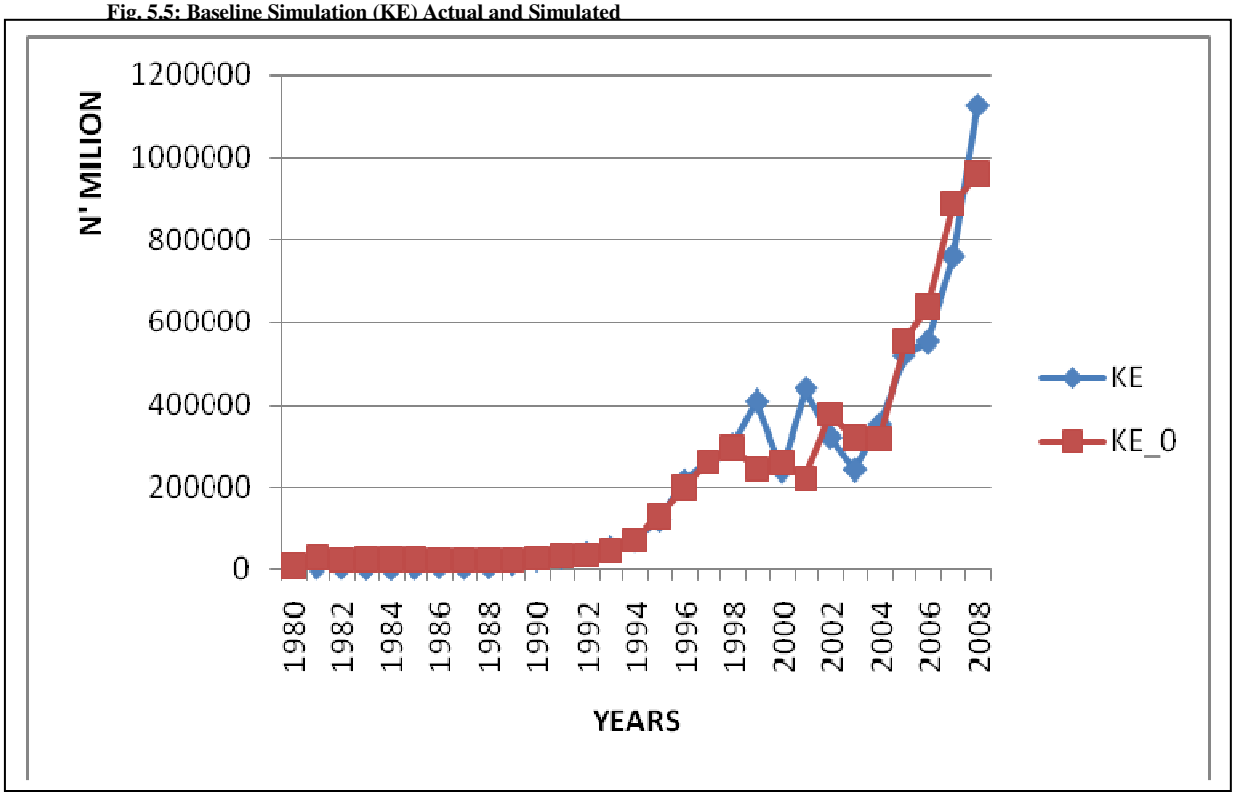


**Figure 5.6: Baseline Simulation (OLX) Actual and Simulated**

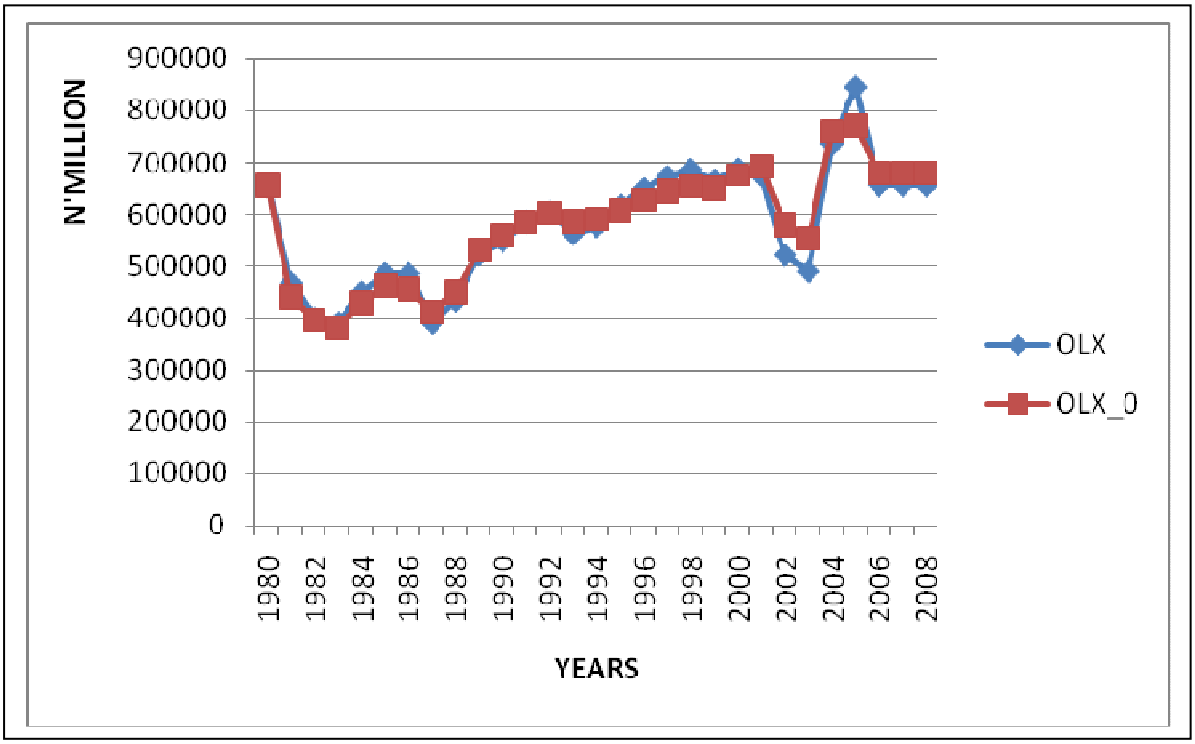
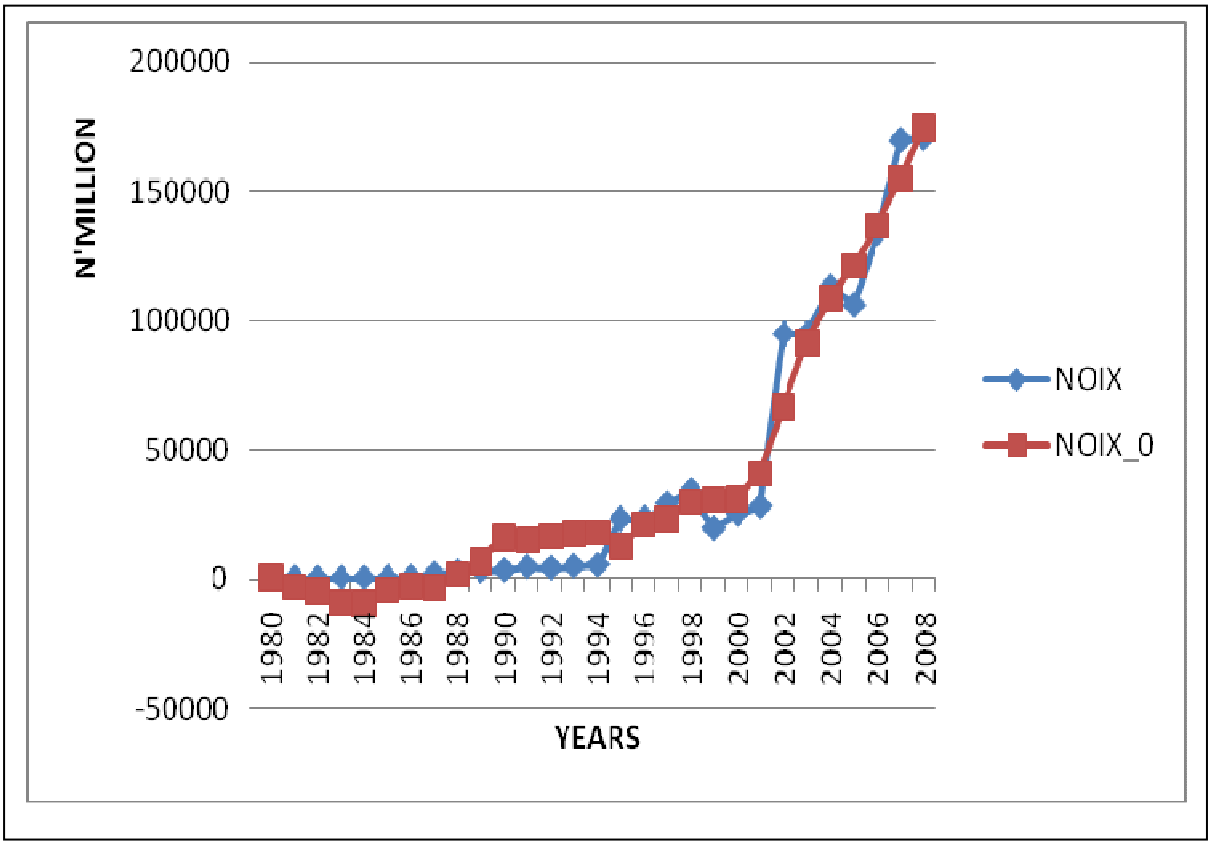



**Fig. 5.7: Baseline Simulations (NOIX) Actual and Simulated**



The macro-econometrics model is usually used to forecast the performance of the macro variables in the model. The solutions for forecast are the *static solution* and *dynamic solution.* Static solution implies that values of the endogenous variables up to the previous period are used each time the model is solved. Static solution is the most appropriate for predicting a one step ahead forecast over the historical data. The dynamic solution on the other hand implies that variables before the solution sample are used when performing the forecast. It is the best for a multi-step forecast. Examining Figures 5.2 to 5.7, it is clear that for a one-step and multi-step ahead forecast, the macro model performs well. The model has good tracking power. In other words, the simulated values were able to replicate the critical turning points of the historical data, meaning that the model is appropriate for policy analysis and projections of the macro variables of the Nigerian economy.

Again the model validation statistics presented in Table 5.14 are used to validate the performance of the model.

Table 5.14 Summary Statistics of Model Validation

| **Equations** | **Theil's Inequality Coefficient** | **Bias Proportion** | **Variance Proportion** | **Covariance Proportion** | **Correlation Coefficient** |
|---|---|---|---|---|---|
| Private Consumption Expenditure (PC) | 0.382 | 0.055 | 0.660 | 0.286 | 0.93 |
| Government Consumption Expenditure (GCE) | 0.186 | 0.510 | 0.169 | 0.321 | 0.96 |
| Gross Fixed Capital Formation (GFCF) | 0.215 | 0.849 | 0.010 | 0.142 | 0.91 |

| | | | | | |
|---|---|---|---|---|---|
| Aggregate Demand (AD) | 0.235 | 0.492 | 0.168 | 0.340 | 0.93 |
| Oil Revenue (OIR) | 0.837 | 0.339 | 0.658 | 0.003 | 0.69 |
| None-Oil Revenue (NOIR) | 0.960 | 0.076 | 0.924 | 0.000 | 0.77 |
| Recurrent Expenditure (RE) | 0.530 | 0.374 | 0.620 | 0.005 | 0.86 |
| Government Capital Expenditure (KE) | 0.399 | 0.288 | 0.623 | 0.089 | 0.85 |
| Consumer Price Index (CPI) | 0.216 | 0.693 | 0.278 | 0.028 | 0.92 |
| Real Output in Oil and Gas (RGDPOG) | 0.099 | 0.003 | 0.118 | 0.878 | 0.77 |
| Real Output in Agriculture (RGDPA) | 0.225 | 0.119 | 0.327 | 0.554 | 0.78 |
| Real Output in Manufacturing (RGDPM) | 0.131 | 0.128 | 0.000 | 0.871 | 0.65 |
| Capacity Utilization (CU) | 0.096 | 0.052 | 0.168 | 0.779 | 0.14 |
| Demand for Money (MD) | 0.990 | 0.227 | 0.737 | 0.036 | 0.79 |
| Supply of Money (MS) | 0.990 | 0.227 | 0.737 | 0.035 | 0.80 |
| Exchange Rate (EXR) | 0.221 | 0.313 | 0.276 | 0.410 | 0.90 |
| Crude Oil Export (OLX) | 0.104 | 0.003 | 0.665 | 0.331 | 0.54 |
| None-Oil Export (NOIX) | 0.423 | 0.714 | 0.220 | 0.067 | 0.87 |
| Import of Capital Goods (MKG) | 0.440 | 0.779 | 0.113 | 0.108 | 0.84 |
| Import of Raw Materials (MRG) | 0.496 | 0.474 | 0.514 | 0.011 | 0.90 |
| Import of Manufactured Goods (MMG) | 0.766 | 0.358 | 0.638 | 0.002 | 0.77 |
| Total Imports (TOM) | 0.349 | 0.170 | 0.475 | 0.355 | 0.83 |

Source: Computed by Author

The summary statistics, as contained in the above table are Theil's inequality coefficient, decomposed into Bias Proportion, Variance Proportion, and Covariance Proportion. Also, the Correlation Coefficients between the simulated values and the endogenous variables are shown.

The bias proportions are expected to be low. The results show that the causes of the discrepancies between the actual and the simulated values of most variables are not precipitated by the differences between their means. Except for variables such as gross fixed capital formation, consumer price index as well as money demand and supply, which show relatively high bias proportions. That does not however cancel the effective forecasting performance of the model. The variance proportion of the inequality coefficients are also quite low, indicating that the discrepancies between the actual series and the simulated are not caused by differences between their variances. Few exceptions observed in oil and non-oil variables, government recurrent and capital expenditures and monetary variables not withstanding would not invalidate the model. The covariance proportion and the correlation coefficients are generally high, indicating that the model for the study is suitable for forecasting and policy simulations.

**Simulation Experiments**

The following scenarios are simulated:

(i) If there were no militancy, federally collected revenue would have been higher by the costs incurred through the oil related costs. We therefore divide oil related costs by 29 years (the scope of the study) and add to OIR equation and carry out the simulation[33].

(ii) Government expenditure on defence and internal security has been increasing due to militancy especially from 1999 to 2008. We used the series of the variable (GES) from 1980 to 1998 and established the trend from 1999 to 2008 and obtained the difference between the actual and the trend values. If there was no militancy in the country, the extra money spent on defence and internal security (the difference between actual and trend) would have been used in another sector to enhance the growth of the Nigerian economy. We assume the money would have been used in the agricultural sector and the simulation conducted.

(iii) The third scenario focuses on damages caused by militancy. The damages made on infrastructures, lost of lives and the general insecurity scares away foreign and local investors in Nigeria. Though the monetary value can not be ascertained, it affects the gross fixed capital formation. We therefore assume a one percent increase in gross fixed capital formation; if there were no militancy, and the impact on the economy analyzed.

As stated earlier, the analysis will be counterfactual. The outcome of the simulation will constitute the costs of the present fiscal centralization on the Nigerian economy.

[33] The oil related costs amounts to N 8472.6 Billion. Therefore, N8472.6 divided by 29 years, we have an annual cost of N 292.2 billion, which is equivalent to N 292200 Million

**Simulation Results**

The scenarios are simulated and the results[34] reported in Table 5.15 below.

Table 5.15: Oil Revenue increased by the oil related costs, Changes in expenditure on Defence and Internal Security used in Agricultural sector and 1 percent increase in Gross Fixed Capital Formation

| Equations/Variables | Oil related costs Added to Oil Revenue (N 292200 million) | Difference between Actual Defence Expenditure and Fitted trend invested into Agricultural Sector | 1Percent increase in Gross Fixed Capital Formation |
|---|---|---|---|
| Eq.5.1 Private Consumption Expenditure (PC) | 9.915243 | 10.31307 | 9.330457 |
| Eq.5.2 Government Consumption Expenditure (GCE) | 6.044812 | 6.226841 | 5.708023 |
| Eq.5.3 Gross Fixed Capital Formation (GFCF) | 1.825055 | 1.927262 | 1.508959 |
| Eq.5.4 Aggregate Demand (AD) | 6.883439 | 7.205184 | 6.54225 |
| Eq.5.5 Oil Revenue (OIR) | -0.13762 | 0.492363 | -0.47282 |
| Eq.5.6 None-Oil Revenue (NOIR) | -0.87488 | -0.66175 | 0.431061 |
| Eq.5.7 Recurrent Expenditure (RE) | -0.22202 | -0.11596 | -0.11669 |
| Eq.5.8 Government Capital Expenditure (KE) | 8.875758 | 8.831668 | 8.698424 |
| Eq.5.9 Consumer Price Index (CPI) | 6.222974 | 6.214095 | 5.797813 |
| Eq.5.10 Real Output in Oil and Gas (RGDPOG) | 0.792334 | 0.789309 | 0.707693 |
| Eq.5.11 Real Output in Agriculture (RGDPA) | -1.46618 | -2.62297 | -1.20227 |

[34] Observation of the results in Table 5.15 reveals the same pattern of signs for the three scenarios. Concerned about the results, we simulated 10% increase in GFCF and 1% decrease in GFCF (results not reported). It was observed that the impact on the key variables still follow the same pattern and signs. The differences are only in the magnitude of the changes (increase or decrease).

| | | | |
|---|---|---|---|
| Eq.5.12 Real Output in Manufacturing (RGDPM) | -2.11159 | -1.36954 | -1.95766 |
| Eq.5.13 Capacity Utilization (CU) | -1.89413 | -3.86086 | -1.70015 |
| Eq.5.14 Demand for Money (MD) | 2.921679 | 3.105139 | 3.025527 |
| Eq.5.15 Supply of Money (MS) | 5.127204 | 5.351795 | 4.912097 |
| Eq.5.16 Exchange Rate (EXR) | -0.43556 | -0.85109 | -0.49148 |
| Eq.5.17 Crude Oil Export (OLX) | 0.01718 | 0.011197 | 0.054971 |
| Eq.5.18 None-Oil Export (NOIX) | -0.27463 | -0.12549 | -0.16132 |
| Eq.5.19 Import of Capital Goods (MKG) | -2.46811 | -2.2287 | -1.90539 |
| Eq.5.20 Import of Raw Materials (MRG) | 0.297659 | 0.308859 | 0.480592 |
| Eq.5.21 Import of Manufactured Goods (MMG) | -0.31322 | -0.2647 | -0.01202 |
| Eq.5.22 Total Imports (TOM) | -0.11255 | -0.1161 | -0.39078 |

Source: Computed by Author

If there were no militancy, the oil related costs incurred would have been part of the oil revenue therefore, the impact of simulation, as presented in the table above; is seen in all the key variables of the sectors of the Nigerian economy. In the aggregate demand sector, private consumption expenditure increased by 10 percent, government consumption expenditure increased by 6 percent and gross fixed capital formation increased 1.8 percent. The behavours of these variables are as expected because the absence of militancy would have meant additional money to the federal government, states and the local governments. That also means more money to government workers in terms of payment of wages and other allowances, more money to local contractors and for other government consumption expenses. In the Nigeria's fiscal system, the results reveal that government capital expenditure increased by 8.9 percent and inflation rate by 6.2 percent. The results from the production sector indicate decreases in agriculture and manufacturing sub-sectors by 1.5 percent and 2.1 percent respectively. The decrease in these sectors could also be attributed to the general neglect of the agriculture sector since the advent of oil and gas resources and the general deterioration of the Nigerian manufacturing sector in recent times. So even if the present fiscal centralization in the country did not result to militancy and the oil related costs incurred were plucked into the oil revenue, there wouldn't have been improvement in the agriculture and manufacturing sub-sectors due to the inherent structural deficiencies. It follows logically as revealed also by the results that non-oil decreased by 0.3 percent and the non-oil revenue component of the federally collected revenue decreased by 0.87 percent. Where as, in the financial sector, money supply in the economy

increases by 5.1 percent, the external sector shows that the import of capital goods and manufacturing goods decreased by 2.5 percent and 0.31 percent respectively.

If the excess expenditure allocated to defence and internal security due to militancy were invested in the agricultural sector, the impact, as revealed from the Table 5.15 would almost be like the impact generated by increase in oil revenue. Specifically, the results show that private consumption expenditure, government consumption expenditure and government capital expenditure increased by 10.3 percent, 6.2 percent and 8.8 percent respectively, from the aggregate demand sector. In the Nigeria's fiscal system sector, government capital expenditure and inflation increased by 8.8 percent and 6.2 percent respectively; while the money supply raised by 5.4 percent. In the real sector, the output of manufacturing sub-sector decreased by 1.4 percent, output from the agricultural sector decreased by 2.6 percent. Consequently, the non-oil exports decreased by 1.3 percent, leading to a reduction in non-oil revenue by 0.66 percent

As for the 1 percent increase in gross fixed capital formation, private and government consumption expenditures increased by 9.3 percent and 5.7 percent respectively. Where as, government capital expenditure increased as high as 8.7 percent, consumer price index rises by 5.8 percent .The outputs in agriculture and manufacturing sub-sectors reduced by 1.2 percent and 2 percent respectively. In the external sector, non oil export reduces by 0.16 percent and the import of capital goods by 1.9 percent.

Such impact on the macroeconomic variables has not enhanced the economic growth of the Nigerian economy. These are therefore the costs of maintaining fiscal centralization in Nigeria.

In summary, the simulation results generally revealed the following;

1 For oil related cost added to oil revenue; (a) There is a decrease in government consumption expenditure, private consumption expenditure and gross fixed capital formation of 6%, 9.9% and 1.8% respectively. (b) Aggregate demand and government capital expenditure decreased by 6.9% and 9.9% respectively. (c) There is negative impact on the output of agriculture and Manufacturing sectors of 1.5% and 2.1% respectively.

2 For the expenditure allocated to defence and internal security invested into Agriculture;

(a) Government consumption expenditure and private consumption expenditure reduced by 6.2% and 10.3% respectively and government capital expenditure decreased by 8.8%.

(b) Aggregate demand declined by 7.2% and outputs from Agriculture and Manufacturing sectors reduced by 2.6% and 1.4% respectively.

3 For a one percent increase in investment (GFCF); (a) Government capital expenditure and consumer price index decreased by 8.7% and 5.8% respectively. (b) The outputs in Agriculture and manufacturing reduced by 1.3% and 2% respectively.

## CHAPTER SIX

## SUMMARY, CONCLUSION AND RECOMMENDATIONS

### 6.1 Summary

The study measured the cost of centralization in Nigeria and evaluated its sustainability. The centralization of revenue resources which comes mainly from crude oil, obtained only from the Niger Delta Region at the moment has made the other tiers of governments to be dependent on the federal government. That dependence has generated serious contestations over revenue sharing; vertically among the three levels of governments and horizontally among the states. Another dimension of the contestation is the resource control agitations by the oil producing states, which evolved from non violent protest to costly militancy and open rebellion that threatens the sustainability of the Nigerian state and its fiscal system. The thesis was that the cost of the Nigerian fiscal system is high and increasing and, as a result, the fiscal system is not sustainable.

In the review of literature, the study highlighted the conceptual analysis, theoretical framework and empirical reviews. The theoretical examinations of fiscal centralization or decentralization started with the pioneer publications of Tiebout (1956), Musgrave (1959) and Oates (1972). The study discovered that fiscal centralization or decentralization has different channels through which economic growth can be achieved. That however, depends on the nature of the economy and the period of the study in question. The empirical analysis relating fiscal decentralization/centralization started at the end of 1970s with the works of Kee (1977) and Pommerehne (1977), and estimations concerning the direct impact of fiscal decentralization/centralization on growth started with the works of Oates (1995) and Davoodi and Zou (1998). The empirical studies have been undertaken by researchers all over the world and in all economies. Generally, these empirical studies cover cross-country studies, individual country studies and comparative studies. The studies have different findings. While some conclude that fiscal centralization or decentralization lead to economic growth, others found otherwise. Findings from Nigeria's studies on the subject are inconclusive (NES, 1999, Chete, 1998).

The methodology applied in the study consists of two parts, aimed at achieving the objectives of the thesis. Part one identifies and measures the costs of fiscal centralization in Nigeria. The second part makes use of macro-econometrics model. In building the model, the

Nigerian economy is conceived to consist of five inter-related sectors. These are the aggregate demand sector, the Nigeria's Fiscal system, the production sector, the money survey sector and the external sector. The model contains 22 equations with twenty two endogenous variables and twenty four exogenous variables. The equations were estimated as systems of equations using Two –Stage Least Square (2SLS). The model was found to track the turning points of the endogenous variables and was therefore used to conduct simulation experiments using three scenarios. (i) The impact of the loss of oil revenue by oil related cost as a result of militancy; (ii) the impact of excess expenditure on defence and internal security if invested in the agricultural sector; and (iii) a one percent increase in gross fixed capita formation.

Findings from the study generally revealed that the estimated oil related costs-(costs of shut in of oil production, illegal oil bunkering, and military damages) from 2001 to 2008, sum up to about N8472.6 billion. The revenue allocated to defence and internal security has been increasing, particularly from 1999 to combat militancy in the Niger Delta Region, and damages to infrastructure and loss of lives constitute other devastating cost to the Nigerian economy revealed by the study. From the macro-econometrics model, it was found that fiscal centralization impact negatively on macroeconomic variables and the key sectors of the Nigerian economy in all the three scenarios used to conduct simulation experiments.

### 6.2 Conclusion

The thesis of the study was that the cost of maintaining fiscal centralization in Nigeria is positive and increasing and fiscal centralization is not sustainable in the country. The outcome of the research indicates that the costs involved in maintaining fiscal centralization in Nigeria was indeed very high[35]. The oil related costs, expenditure allocation costs and social/human costs are all positive and increasing. The simulation results show the negative impact of the cost on the aggregate variables and the key sectors of the economy. The study reveals that the oil revenue component the federally collected revenue is continuously reduced by the oil related costs, while the non-oil revenue is also being reduced by the

[35] Other costs outside this study are also revealed. Status quo(maintaining fiscal centralization) would make the multinational oil companies to appropriate more profits through over-invoicing, and the periodic crisis provides them cover to under-report oil quantities produced and transported as well as opportunities for securing further concession. It also provides the oil marketers and Nigerian agents a means of sustained regressive re-distribution of income through higher product prices (Garba, 2004).

fall in the non-oil exports. Therefore, the federally collected revenue, on which the levels of governments in Nigeria depend for vertical and horizontal sharing is significantly lower that it would have not been without the conflicts and costs associated with fiscal centralization. The study thus concludes that fiscal centralization is not sustainable given the rising costs.

### 6.3 Recommendations

Based on the above findings and conclusion, the following two recommendations are made:

(i) The first recommendation is that the government should undertake a negotiated- fiscal decentralization. That will require negotiating with the stakeholders of the Nigerian economy and the contending groups on how fiscal matters could be devolved to lower levels of governments.

**(ii)** Secondly, the government should evolve economic and political actions that will eliminate militancy and all its associated costs. This may require constitutional changes to the structure of the federation and greater effectiveness and efficiency in the delivery of public goods and services at all levels of governments.

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# APPENDIX

**Appendix 1; Table1: Ethnic Diversity in Nigeria**

| Zones/States | Major Ethnic Groups | No. of Minor Ethnic Groups |
|---|---|---|
| ***North West*** | | **54** |
| Kaduna | Hausa | 32 |
| Kano and Jigawa | Hausa | 9 |
| Katsina | Hausa | 1 |
| Sokoto, Kebbi, and Zamfara | Hausa | 12 |
| ***North East*** | | **205** |
| Bauchi and Gombe | Hausa | 64 |
| Adamawa and Taraba | Fulani, Hausa | 112 |
| Borno and Yobe | Karuni | 29 |
| ***North Central*** | | **123** |
| Plateau and Nassarawa | Biron, Angas, Yergem, Hausa | 72 |
| Old Benue and parts of Kogi | Tiv, Idoma, Igala | 12 |
| Old Niger | Hausa, Gwari | 19 |
| Old Kwara and parts of Kogi | Yoruba, Ebira, Igala | 20 |
| ***South West*** | | **4** |
| Lagos | Yoruba | 2 |
| Ogun | Yoruba | - |
| Ekiti and Ondo | Yoruba | 2 |
| Oyo and Osun | Yoruba | - |
| ***South East*** | | **1** |
| Imo and Abia | Ibgo | - |
| Anambara, Enugu and Ebonyi | Ibgo | 1 |
| South-South | | 59 |
| Cross River | Efik | 29 |
| Akwa Ibom | Ibibio | 7 |
| Rivers and Bayelsa | Ijaw, Ogoni, Andoni, Igbo | 10 |
| Edo and Delta | Bini, Urhobo, Ijaw Itsekiri, Igbo | 13 |

Source: Adapted from Mustapha, 2006: 11

Appendix 1,Table 2: **The distribution of Main Mineral Resources in Nigeria**

| Minerals | Main Locations | Level of Production | Importance to national revenue |
|---|---|---|---|
| 1.***Metallic Minerals*** | | | |
| Tin | Jos-Plateau, Zaria, Kano | Mining in Jos | Not important revenue source. |
| Columbite | Jos-Plateau | Mining in Jos | |
| Cassiterite | Jos-Plateau, Birin Gwari | Mining in Jos | |
| Tantalite | Jos-Plateau | | |
| Wolramite | Jos-Plateau | | |
| Molybdenite | Jos-Plateau | | |
| Lead and Zink | Abakaliki and Zurak | | |
| Gold | Ilesha, Minna, Sokoto | | |
| Iron | Kwara, kogi, Benue Anambara etc. | Iron ore mining in Itape, Stell Mills in Jos, Ajaokuta, Aladja, Oshogbo, Ikot, Abasi, Katsina | Not important revenue source |
| 2. ***Non-Metallic Minerals*** | | | |
| Limestone | Generally in Kwara, Edo, Benue, Niger, Oyo | Cement plants in Lagos,Gboko, Nkalagu, Okpella, Sokoto, Calabar | Not important revenue source |
| Marble | In most states | Mining in Igbeti- Oyo State | |
| Industrial rocks and gravel | In most states | Mined in most states for building and construction. | |
| Clay and Shale | In most states | Mining in most states and used for ceramic industries. Mined and utilized in Paint industries. | |
| Kaoline | Rop near Jos, Nsu near Umuahia Iyu in Akwa Ibiom | | |
| Feldspar | Abuja and Egbe in Kwara | | |
| 3. ***Radioactive Minerals*** | | | |
| Uranium | Jos-Plateau and Sokoto | Mining in Jos | |
| Monazite | Jos-Plateau | | |
| Thorite | Jos-Plateau | | |
| Zircon | Jos-Plateau | | |
| 4. ***Fossil Fuels*** | | | |
| Petroleum oil and associated gas | Niger Delta region, Offshore, Ondo Imo states | Crude oil exploitation in Rivers, Akwa Ibom Delta,etc, Petroleum refining Petrochemical plants at Port Harcourt, Warri, gas plant at Bonny; Fertiliser plant at Onne | The most important source of revenue. Over 90% of the nation's income comes from the oil sector. |
| Coal | Anambara, Enugu and Benue State | Coal mining in Enugu | |
| Lignite | Anambra, Imoand Delta State | | |

Source: Akpan Godwin (1999), Modifications with information from CBN

| **Appendix 1, Table 3. Theoretical Basis of Expenditure Assignment** | | | |
|---|---|---|---|
| **Expenditure category** | **Service Responsibility** | **Provision of Service** | **Comment** |

| | | | |
|---|---|---|---|
| Defense | F | F | Benefits/cost are national |
| Foreign Affairs | F | F | Benefits/cost are national |
| International trade | F | F | Benefits/cost are national |
| Environment | F | F | Benefits/cost are national |
| Banking and currency | F | F | Benefits/cost are national |
| Internal Commerce | F | F | Benefits/cost are national |
| Immigration | F | F | Benefits/cost are national |
| Airways/railways | F | F | Benefits/cost are national |
| Industry and agriculture | F,S,L | S,L | Significant interstate spillover |
| Education | F,S,L | S,L | Transfers in kind |
| Health | F,S,L | S,L | Transfers in kind |
| Social welfare | F,S,L | S,L | Transfers in kind |
| Police | S,L | S,L | Primary local benefits |
| Highways | F,S,L | S,L | Some roads have interstate spillover, others are primarily local |
| Natural resources | F,S,L | S,L | Promotes a common market |
| Notes: F=federal, S=state, L=Local | | | |
| Source: Adapted from Aigbokhan 1999 p.336 | | | |

| **Appendix 1, Table 4. Theoretical Basis of Tax Assignment** | | | | |
|---|---|---|---|---|
| Tax Type | Determination of: | | Collection & Administration | Comment |
| | Base | Rate | | |
| Customs | F | F | F | International trade taxes |
| Corporate income | F | F | F | Mobile factor |
| Resources taxes | F | F | F | Unequally distributed |
| Personal income | F | F,S,L | F | Redistribution, mobility, stabilization |
| Wealth taxes | F | F,S | F | Redistributive |
| Payroll | F,S | F,S | F,S | Social programmes |
| Value added tax | F | F | F,S | Admin. Costs, stabilization |
| Sales tax | S | S,L | S,L | Higher compliance costs |
| "sin" taxes Alcohol, tobacco | F,S | F,S | F,S | Health care shared responsibility |
| Gambling, lotteries | S,L | S,L | S,L | State and local responsibility |
| Taxation on "Bads" Carbon | F | F | F | Global/national pollution |
| Motor fuels, effluent charges | F,S,L | F,S,L | F,S,L | Tolls on road use/by extent of pollution |
| Congestion toll | F,S,L | F,S,L | F,S,L | Tolls on road use |
| Parking fees | L | L | L | Local congestion |
| Motor vehicles Registration, driver's licenses | S | S | S | State revenue sources |
| Business taxes | S | S | S | Benefit tax |
| Excises | S | S | S | Immobile base |
| Poverty | S | L | L | Benefit tax, immobile |
| Land | S | L | L | Benefit tax, immobile |
| Frontage/betterment | S,L | L | L | Cost recovery |
| Poll tax | S,L | S,L | S,L | Non-distorting |
| User charges | F, S,L | F, S,L | F, S,L | Payment for services |
| Source: Adapted from Aigbokhan 1999 p.337 | | | | |

APPENDIX 2: **Contestation in the Niger Delta Region (1995-2005)**

| **Source and Date** | **Parties Involved And Cause(s)** | **Outcome/Effects** |
|---|---|---|
| New Nigerian 22/12/1995. P.7<br>New Nigerian 23/12/1995. P.5<br>New Nigerian 25/12/1995. P.5.<br>New Nigerian 30/ 12/1995. P 5 | Disputes and communal clashes were in Niger Delta Region for a long time. However, the one that was of greatest note was the bloody clash between the Ijaws and Itsekiris over the relocation of a council headquarters from Ogbe Ijoh to Ogidigben. | *Described as "battle of the creeks"<br>*Unspecified number of people murdered or injured.<br>*Houses, properties and in some cases, villages as a whole razed.<br>*Creeks in Warri area transformed into slaughter slabs.<br>*Army drafted to the area to keep peace.<br>*Brutal murder of 4 Ogoni prominent Chiefs.<br>*Ken Saro-Wiwa and 8 others arrested.<br>*Justice Auta Tribunal condemned and the government executed Ken Saro-Wiwa and 8 others.<br>*That marked the genesis and formation of community based movements (i.e. ISMOND, IYC, MOSOP etc.) to protect their communities and fight for their rights. |
| This Week 4/10/97. P.20 | Clashes between soldiers and Ijaw armed youths for the four soldiers kidnapped in Warri. | *Three armed youths killed.<br>*Properties, Shops and Houses destroyed.<br>*Many youths arrested and detained. |
| The Punch 8/10/98. P. 32 | Movement for survival of Ogoni people (MOSOP) clashed with the government (Internal Security Force) for unsatisfactory conditions of living. | *Release of 20 Ogoni youths from detention.<br>*The released youths charged to continue in the struggle. |
| The Punch 9/10/98. P.8 | Ijaw and Ijale communities disputed over the ownership of an oil rich village – Obe Akpata. | *Very bloody and destructive.<br>*Death toll estimated at over 500 people.<br>*Unimaginable destruction of properties. |
| The Punch 17/11/98. P.32 | Government delegation for peace meeting at Agadagben prevented by armed Ijaw because of the "shaddy and flippant manner" the government was said to be handling the dispute. | *The peace meeting did not hold.<br>*Crisis continued.<br>*Killings and destruction of properties continued. |
| The Punch 3/1/99. P.1 | Protesting Ijaw militant Youths(Egbesu) ran into soldiers stationed at government house who opened fire on them. The youths reinforced to fight the soldiers. | *7 Ijaw youths killed and properties destroyed.<br>*Economic activities in Yeanogoa halted. |

| | | |
|---|---|---|
| | | *Residents fled the city.<br>*State of emergency was declared in the state capital. |
| New Nigerian<br>28/1/99 | Ijaw women protested over the alleged killing of Ijaw youths. | *Over 50 women detained in military and police formations in Port –Harcourt.<br>*More tension was raised in the region.<br>*Calls for peace were not yielded to. |
| The Punch<br>17/3/99. P.3 | Community leaders protested and stated conditions for peace in the Niger Delta: That unless a well articulated master plan that will usher in a development commensurate with the level of exploitation is executed, there shall not be peace. | Awaits response from government and multinational oil companies. |
| The Punch<br>14/4/99. P.5 | Urhobo youths and community leader's disagreement over demands from Shell Petroleum Development Company (SPDC).<br>The elders agreed that SPDC should:<br>*Provide well-equipped science lab for Afiesere Secondary school.<br>*Upgrade the community's health care to a 10-bed hospital.<br>*Provide ₦20 million compensation.<br>*The youth, in addition to above demanded an annual payment of N 100million royalty to the community. | *Youths declared state of emergency in the community and threatened to sack the elders.<br>*The community splited in to two factions.<br>*Community chairman, Prof. Joe Omo Ndoyo abducted and held hostage.<br>*Assassination of traditional priest, George Onobruchere.<br>*Onobruchere's family spoiled to revenge.<br>*Tension mounted and inhabitants fled. |
| Sunday Concord<br>2/5/99, P.3 | Ogoni people and Federal Government over their demand of their own state. | *Federal Government to consider the issue.<br>*Tension continued in the region. |
| The Punch<br>13/5/99. P.40 | Renewed Ijaw –Itsekiri crisis as both parties felt unsatisfied with the way government was handling it. | *Renewed killings and destruction of properties.<br>*People fled danger zones and took refuge in schools and churches with untold plights. |
| The Punch<br>1/6/99. P.1 | Ijaw youths attacked Aiuton, an Itsekiri community unaware because of the crisis between the two tribes. | *Panic all over the town and people fled (some parents left children).<br>*50 people feared died.<br>*3 unidentified elderly persons beheaded and their heads carried away.<br>*27 houses burnt and many cars snatched.<br>*Women and young girls raped. |

| | | |
|---|---|---|
| The Punch<br>30/6/99,. P.10 | Clashes between Oporoma and Peremabiri youths, Southern Ijaw LGA in Delta State over the kidnap of two staff of an oil company. | *3 people killed.<br>*Houses and properties destroyed. |
| National Concord<br>11/8/99 | Renewed violence between Ijaw and Ijale. | *Over 100 lives claimed.<br>*Ijale claimed to have repossessed 51 out of the 68 of their villages earlier captured.<br>*Properties and houses destroyed. |
| Sunday Punch<br>17/10/99. P.17 | Okrika youths of Ijaw clashed with Eleme youths for disagreement over a place that a refinery was sited. | *Houses were completely destroyed and set ablaze where possible.<br>*Household items scattered and destroyed.<br>*Many lives lost. |
| The Punch<br>1/11/99. P.40 | Choba community in Rivers State attacked an oil company for not responding favourably enough to their demand. | *Soldiers and anti riot policemen drafted to the area.<br>*Security agents ambushed by the youths.<br>*4 youths killed and many others injured.<br>*The company's (Wilbros Nig. Ltd.) valuable properties were vandalized and looted. |
| New Nigerian<br>13/4/2000. P.1 | Faction Over Leadership In MOSOP. Six Communities in Gokama LGA of Cross River state involved, 2 against 4. | *10 Policemen sent to maintain peace.<br>*The policemen ambushed and taken hostage. 8 of them disarmed and matcheted<br>*5 people killed and properties destroyed. |
| The Punch<br>30/5/2000. P.20 | Urhobo armed youths clash with SPDC following disagreement over the oil spillage in the area. | *Shell stations in Niger Delta were shut down.<br>*Production activities ceased.<br>*Oil workers fled the area. |
| New Nigerian<br>5/11/2000,P.25 | Clashes between two communities in Igbolomabiri in Bayelsa State over the sharing of compensation paid by SPDC.. | *10 People died.<br>*Houses and property destroyed. |
| The Punch<br>13/7/2001. P.48 | Armed youths in Buruntu LGA of Delta State clashed with SPDC. The youths attempted to blow up oil tanks for SPDC's inability to meet their demands. | *Security agents brought there and told to be alert and keep surveillance of oil installations in the area.<br>*The explosion from the attempted bombing killed 3 persons and 11 others were seriously injured. |

| | | |
|---|---|---|
| The Punch<br>27/8/2001. P.4 | Dispute between youths of Firima and Mobil oil company over disagreement on social amenities, employment, contracts, etc. | *Bonny staff of the company were kidnapped, tortured and held captive.<br>*The company shut down operation. |
| The Punch<br>26/1/2002. P.1 | Naval Officers And Ijaw Youths Clashed In Liama, Bayelsa State for the youths took some oil workers hostage. | *3 youths killed and a naval officer injured.<br>*Properties destroyed.<br>*Economic activities halted. |
| The Punch<br>18/5/2002. P.27 | Yeghe and Zappore communities clashed over ownership of Bori, an oil rich town in Ogoni land. | *Bloody clash as 50 people died.<br>*Residential houses, shops, properties, Bori main market and motor park were all destroyed. |
| The Punch<br>19/6/2002. P.5 | Youths of Ozoro and Okpaile communities in Isoko North council of Delta State disputed over sharing of compensation paid by SPDC on Ogini flow station. | *5 persons killed.<br>*20 people injured.<br>*Houses and properties destroyed. |
| The Punch<br>24/4/2004. P.9 | Armed youth in Niger Delta in a hideout attacked oil workers who were busy repairing pipes. | *Staff of Chevron and Texaco oil companies and some security agents were killed. These were 3 Americans, 8 Nigerian oil workers and 4 naval personnel. |
| The Punch<br>26/4/2004, P.1-2<br>Vanguard<br>28/4/2004, P2 | Armed youths in Warri North LG attacked oil workers while crossing from Olere to Dibi Flow Station to inspect work. | *6 oil workers were killed,(2 Americans, and 4 Nigerians).<br>*Incident resulted to crisis between Federal Government and US officials. |
| Vanguard<br>24/11/04. P.1 | Village armed youths clashed with army task force in Warri. | *12 lives lost.<br>*Houses burnt.<br>*Other properties destroyed. |
| The Punch<br>16/1/06 | Residents of 2 Villages in Abi LG in Cross River State disputed over a piece of land where an oil company sited a clinic. | *10 persons killed.<br>*150 houses burnt.<br>*Properties worth millions destroyed. |

Source: Compiled from Scrap Book on Communal Clashes. Vol. I – III, Kashim Ibrahim Library, ABU, Zaria.

APPENDIX 3. Definitions of Variables

| **ENDOGENOUS VARIABLES** | **EXOGENOUS VARIABLES** |
|---|---|
| AD = Aggregate Demand | CEO= Customs, Excise duties and Others |
| CPI = Consumer Price Index | CIT =Company Income Tax |
| CU = Capacity Utilization | CPF= Capital Flight |
| EXR = Exchange Rate | EXB= External Borrowing |
| GCE = Government Consumption Expenditure | FCR= Federally Collected Revenue |
| GFCF= Gross Fixed Capital Formation | FIAG = Foreign Investment in Agriculture |
| KE = Government Capital Expenditure | FIID = Foreign Investment in Industry |
| MD = demand for Money | FIR = Federal Independent Revenue |
| MKG = Import of Capital Goods | GES = Government Expenditure on Security |
| MMG = Import of Manufactured Goods | GKES = Government Capital Expenditure on Security |
| MRG = Import of Raw Materials | GRES = Government Recurrent Expenditure on Security |
| MS = Supply of Money | INF = Inflation |
| NOIR = Non Oil Revenue | LAG = Labour Input in Agriculture |
| NOIX= Non oil Export | LMA = Labour Input in Manufacturing |
| OIR = Oil Revenue | MT = Import Tariff |
| OLX = Crude Oil Export | NGDP = Nominal Gross Domestic Product |
| PC = Private Consumption Expenditure | OPEN = Openness |
| RE = Recurrent Expenditure | OPR = Oil Price |
| RGDPA = Real Output in Agriculture | OQT = Oil Quantity Produced |
| RGDPM = Real Output in Manufacturing | OTH = Others |
| RGDPOG = Real Output in Oil and Gas | RGDP =Real Gross Domestic Product |

| | |
|---|---|
| TOM = Total Import | TFXR = Total Foreign Exchange Reserve |
| | TOT = Terms of Trade |

**APPENDIX 4**

TABLE 5.1: SUMMARY OF ESTIMATED EQUATIONS

Eq 5.1 PC = - 235486 - 0.19 * NGDP - 0.53 * PC (-1) + 43781 * CPI - 0.013 * EXB + 23.20 * GES - 3.42 * TFXR + 3.06 * MS
(-1.42) (-0.76) (-3.45) (3.61) (-0.052) (2.79) (--5.18) (9.64)

$R^2$ = 0.95 $R^{-2}$ = 0.93 DW = 2.0

Eq 5.2 GCE = - 118883 + 0.23*OIR + 42410*CPI- 0.034*GCE (-1) - 0.91* TFXR + 17.11*GES - 0.085 * NOIR - 0.19 *EXB
(-0.92) (0.31) (3.85) (-0.15) (-1.77) (2.36) (-0.35) (-0.83)

$R^2$ = 0.98 $R^{-2}$ = 0.97 DW = 1.7

Eq 5.3 GFCF = -36321 + 0.17*RGDP + 2608 *OPEN + 1143 *CPI + 1043* EXR + 0.301*GFCF (-1) + 0.33 *CPF - 0.014* KE
(-0.58) (0.56) (0.38) (0.91) (2.21)(0.98) (0.60)(-0.15)

$R^2$ = 0.99 $R^{-2}$ = 0.98 DW = 2.17

Eq 5.4 AD = 83544 + 1.17 * PC + 0.50* GCE (-1) + 5.57 * GFCF - 1.19 * GES
(0.65) (16.7) (2.89) (2.56) (-0.23)

$R^2$ = 0.99 $R^{-2}$ = 0.99 DW = 1.5

Eq 5.5 OIR = 31203 - 6.90e-07 * PPT + 1.70e-06 *OTH
(0.29)(-2.60) (12.3)
$R^2$ = 0.93 $R^{-2}$ = 0.92 DW = 1.0

Eq 5.6 NOIR = 94572 + 7.48e-06 * CIT - 2.56e-06 * CEO + 6.57e-06 * FIR
(0.81) (2.62) (-2.54) (2.59)
$R^2$ = 0.69 $R^{-2}$ = 0.66 DW = 2.1

Eq 5.7 RE = - 25882+ 0.16 * OIR + 0.134 * NOIR + 0.05 * EXB + 746 * EXR + 2.33 * GRES
(-1.91) (3.07) (3.99) (1.50) (0.74) (2.23)

$R^2$ = 0.99 $R^{-2}$ = 0.99 DW = 1.8

Eq 5.8 KE = 26498 - 0.044 *OIR + 0.091 *NOIR - 0.036 *EXB + 3038 *CPI + 0.428 *KE (-1) - 0.26 *RGDPOG +
(0.21) (-0.31) (2.81) (-1.14) (1.86) (1.63) (-0.15)

0.002 *TFXR + 2.56 *GKES
(0.02) (0.85)

$R^2$ = 0.96 $R^{-2}$ = 0.94 DW = 2.4

Eq 5.9 CPI = 0.46 + 1.02e-06 * MS + 0.14 * EXR + 9.26e-06 * OIR + 0.98 * CPI (-1) + 3.30e-06 * NOIR
(0.45) (0.31) (3.26) (2.02) (16.3) (1.18)

$R^2$ = 0.99 $R^{-2}$ = 0.99 DW = 1.19

Eq 5.10 RGDPOG = 53225 + 22 * LAOG + 0.006 * GCE + 0.018 * MKG + 0.20 * RGDPOG (-1) + 0.16 * FIID - 0.04 * MMG
(5.72) (1.32) (2.83) (1.26) (1.53 (1.40) (-1.72)

$R^2$ = 0.86 $R^{-2}$ = 0.82 DW = 1.6

Eq 5.11 RGDPA = 10360 + 298.8*LAG - 0.052*KE + 0.008*MKG + 0.053*MMG -178.6*INF + 0.42*RGDPA (-1) - 0.15*FIID
(0.85) (2.53) (-1.31) (0.36) (1.80)(-1.06) (2.24) (-0.86)

$R^2$ = 0.97 $R^{-2}$ = 0.96 DW = 1.9

Table 5.1: Summary of the Estimated Equations Continue

Eq 5.12 RGDPM = - 3834 + 108.2*LMA -0.0015*GCE + 0.0002*MKG + 0.005*MRG + 15.42 *CPI + 0.065*RGDPA
(-1.76) (4.90) (- 4.91) (0.15) (0.53) (0.51) (5.38)

- 0.04* RGDPOG + 61.8*CU
(-1.33) (3.24)

$R^2$ = 0.97 $R^{-2}$ = 0.96 DW = 2.4

Eq 5.13 CU = 42.6 -7.50e-06*MKG - 6.70e-06*MRG - 0.00033*RGDPOG - 0.00022*RGDPA + 0.0032*RGDPM
(2.93) (-0.58) (-0.12) (-2.34) (-1.36) (2.98)

+ 0.00022 *GES
(2.5)

$R^2$ = 0.52 $R^{-2}$ 0.38 DW = 1.14

Eq 5.14 MD = - 119067 + 0.26* NGDP + 1413 * INF - 7873* EXR + 1.81* KE
(-0.75) (7.16) (0.33) (-2.72) (2.44)

$R^2$ = 0.97 $R^{-2}$ = 0.96 DW = 0.8

Eq 5.15 MS = - 254625 + 0.30 * NGDP + 4886 * INF + 3.11 * KE - 9.19* FIID
(-1.60) (5.10) (1.02) (3.27) (-2.0)

$R^2$ = 0.97 $R^{-2}$ = 0.96 DW = 0.70

Eq 5.16 EXR = 5.35 + 8.84 * OPEN - 0.017 * TOT - 3.15e-06 * MS - 4.70e-06 *TFXR
(0.30) (4.88) (-0.14) (-0.28) (-0.42)

$R^2$ = 0.82 $R^{-2}$ = 0.79 DW = 0.63

Eq 5.17 OLX = 6233 + 0.85 * OQT - 219.5 * OPR
(0.20) (17.4) (-0.61)

$R^2$ = 0.94 $R^{-2}$ = 0.93 DW = 1.30

Eq 5.18 NOIX = - 65710 + 0.31 * RGDP + 0.004 * TFXR + 0.24 * NOIX (-1) - 1473.5 * OPEN
(-4.20) (4.37) (1.23) (1.28) (-1.09)

$R^2$ = 0.96 $R^{-2}$ = 0.96 DW = 1.63

Eq 5.19 MKG = - 56568+ 5.63*RGDP - 2159 *EXR - 0.09 *TFXR + 91240 *OPEN - 15.60 *RGDPOG - 0.55 *MKG (-1)
(-0.23) (3.92) (-1.36) (-1.40) (4.80) (-3.45) (-3.32)

$R^2$ = 0.96 $R^{-2}$ = 0.95 DW = 2.0

Eq 5.20 MRG = - 64721 + 0.44*RGDP + 37.31*CU - 373*EXR + 0.009 *TFXR + 16773*OPEN - 0.48 *MT - 2.25*RGDPM
(-0.86) (1.16) (0.04) (-0.76) (0.57) (3.2) (-0.88) (-0.30)

$R^2$ = 0.97 $R^{-2}$ = 0.96 DW = 1.30

Eq 5.21 MMG = - 380588 + 1.72*RGDP + 1011.12*CU - 2764*EXR + 25781*OPEN - 0.85*MT- 1.62*RGDPM + 0.22*TFXR
(-1.66) (1.46) (0.33) (-1.83) (1.61) (-0.50) (-0.07) (4.85)

$R^2$ = 0.98 $R^{-2}$ = 0.97 DW = 1.9

Eq 5.22 TOM = - 2846.50 + 0.61* MKG + 4.60 * MRG -1.64 * MMG + 235 * MO
(-0.03) (1.10) (2.10) (-1.90) (2.53)

APPENDIX 5 Fig: 5.1 Deterministic- Dynamic Simulation (Actual and Simulated)

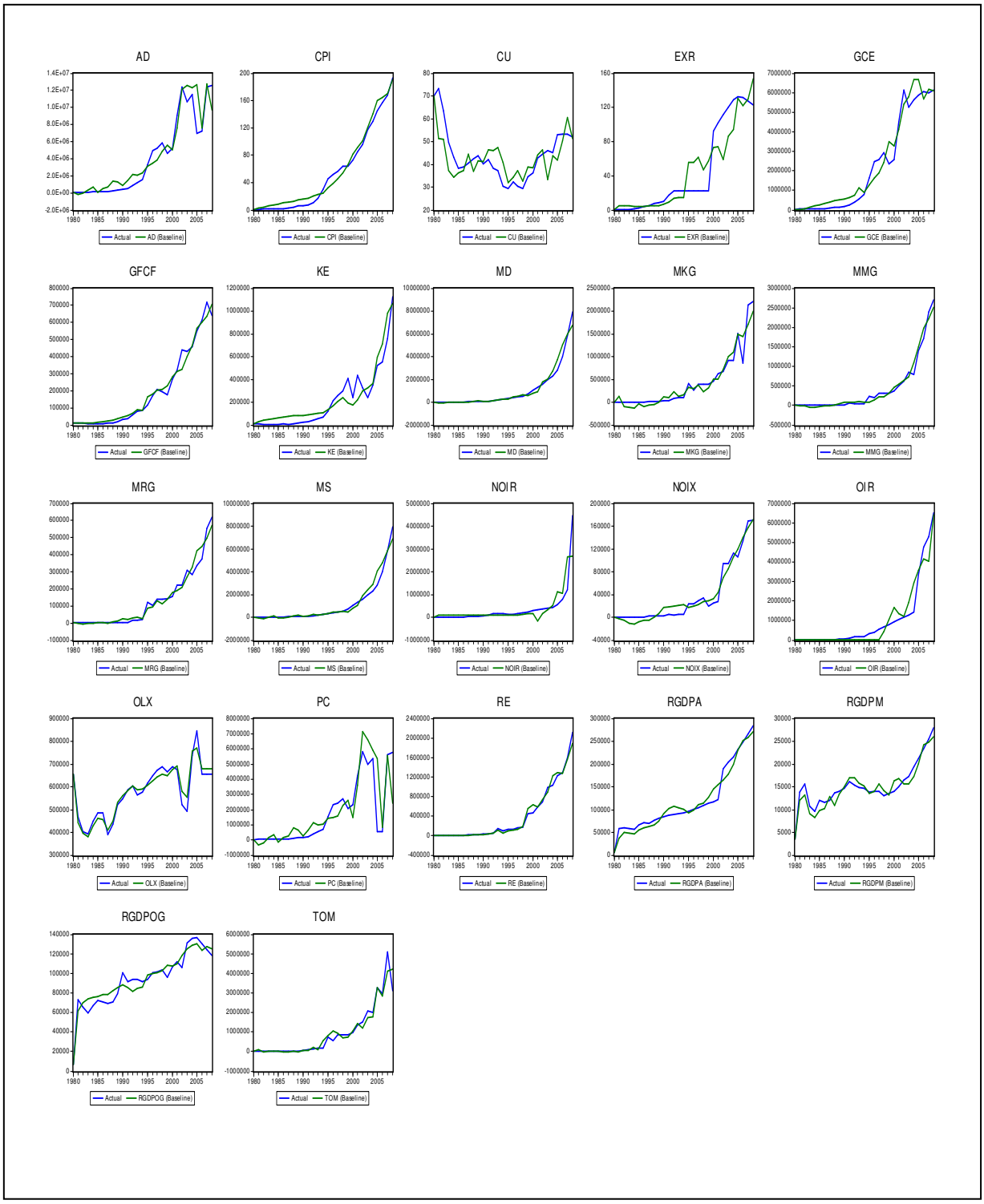


Fig: 5.2: Deterministic- Static; Simulation (Actual and Simulated)

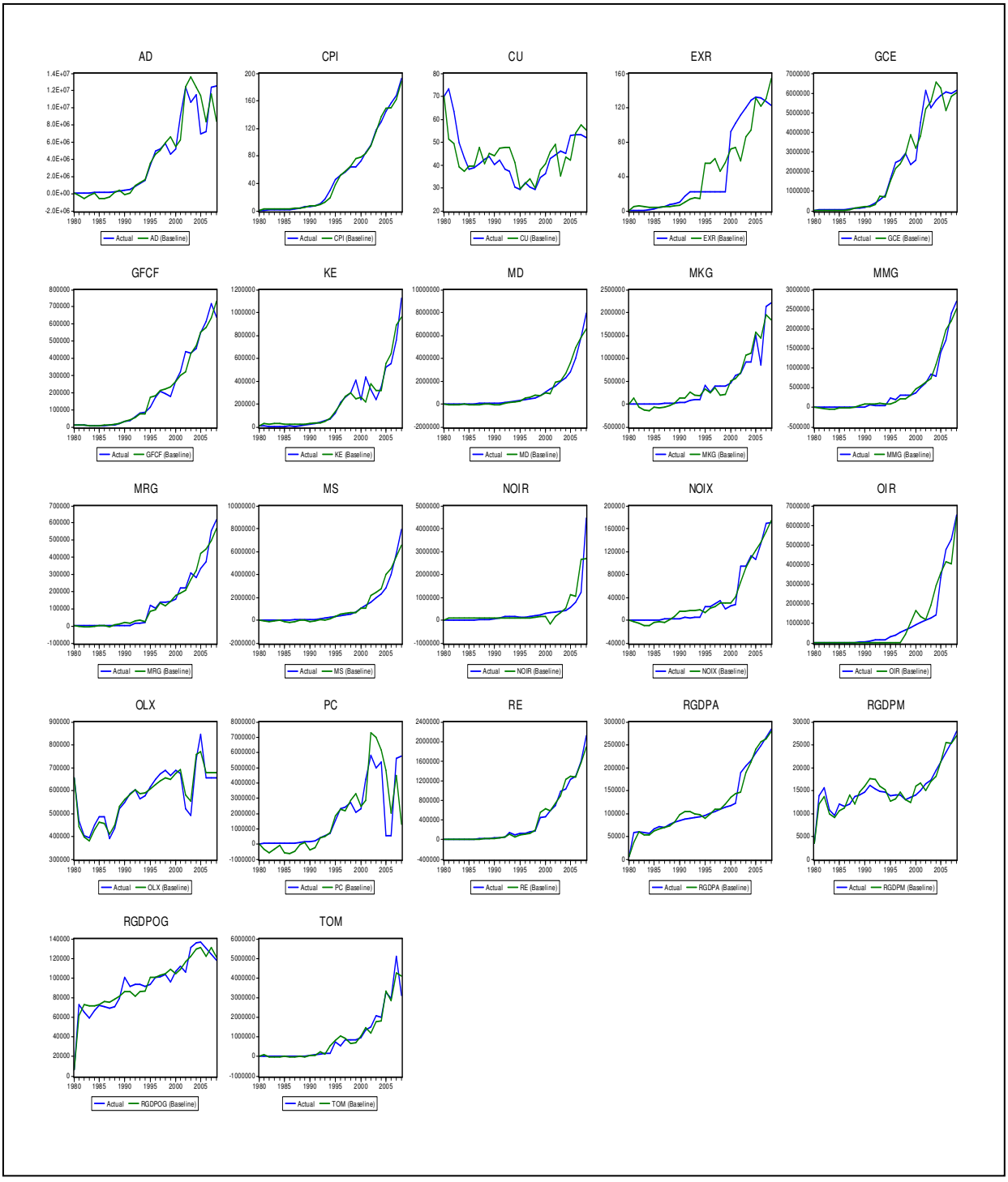


Fig: 5.3: Stochastic- Dynamic; Simulation (Actual and Simulated)

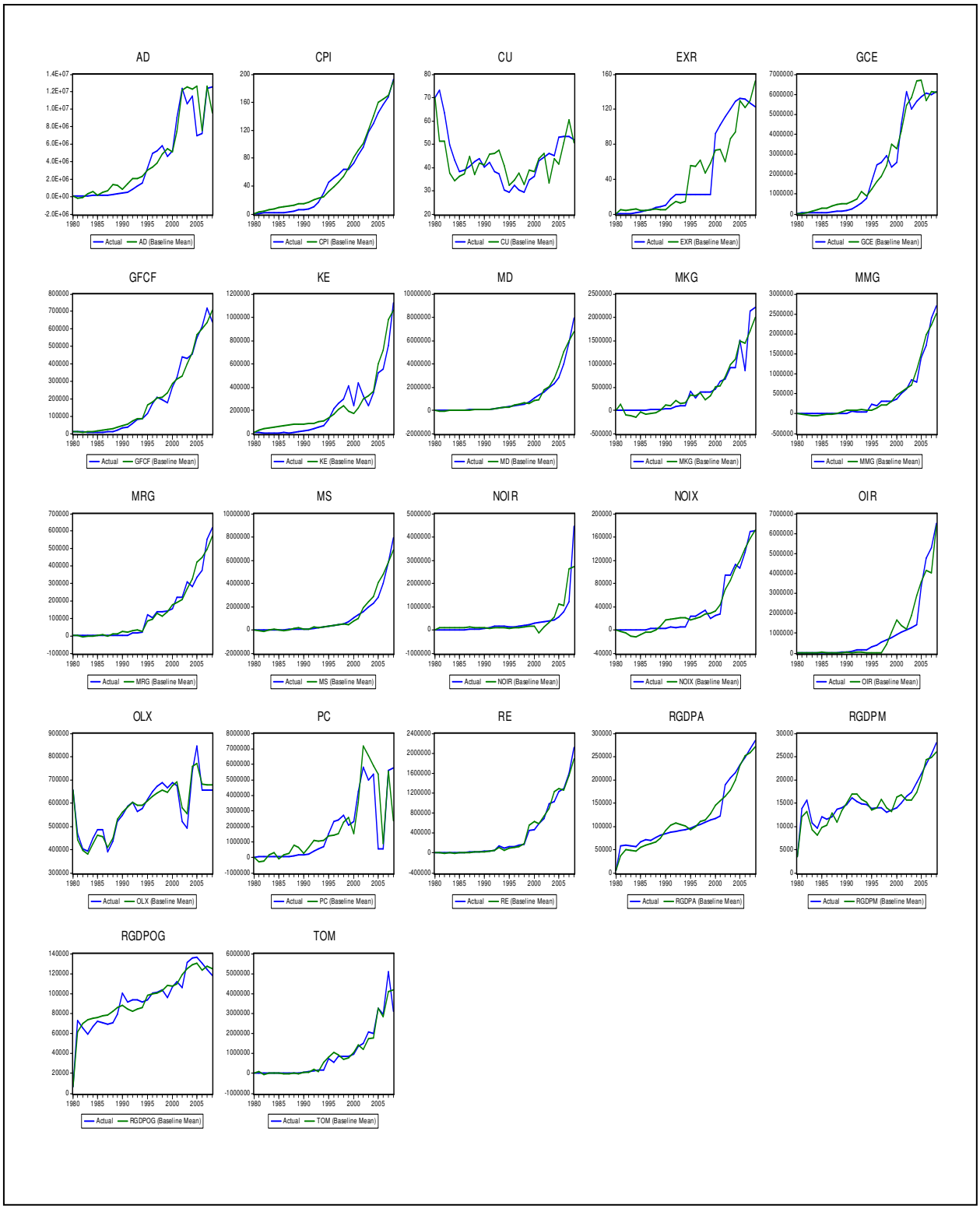
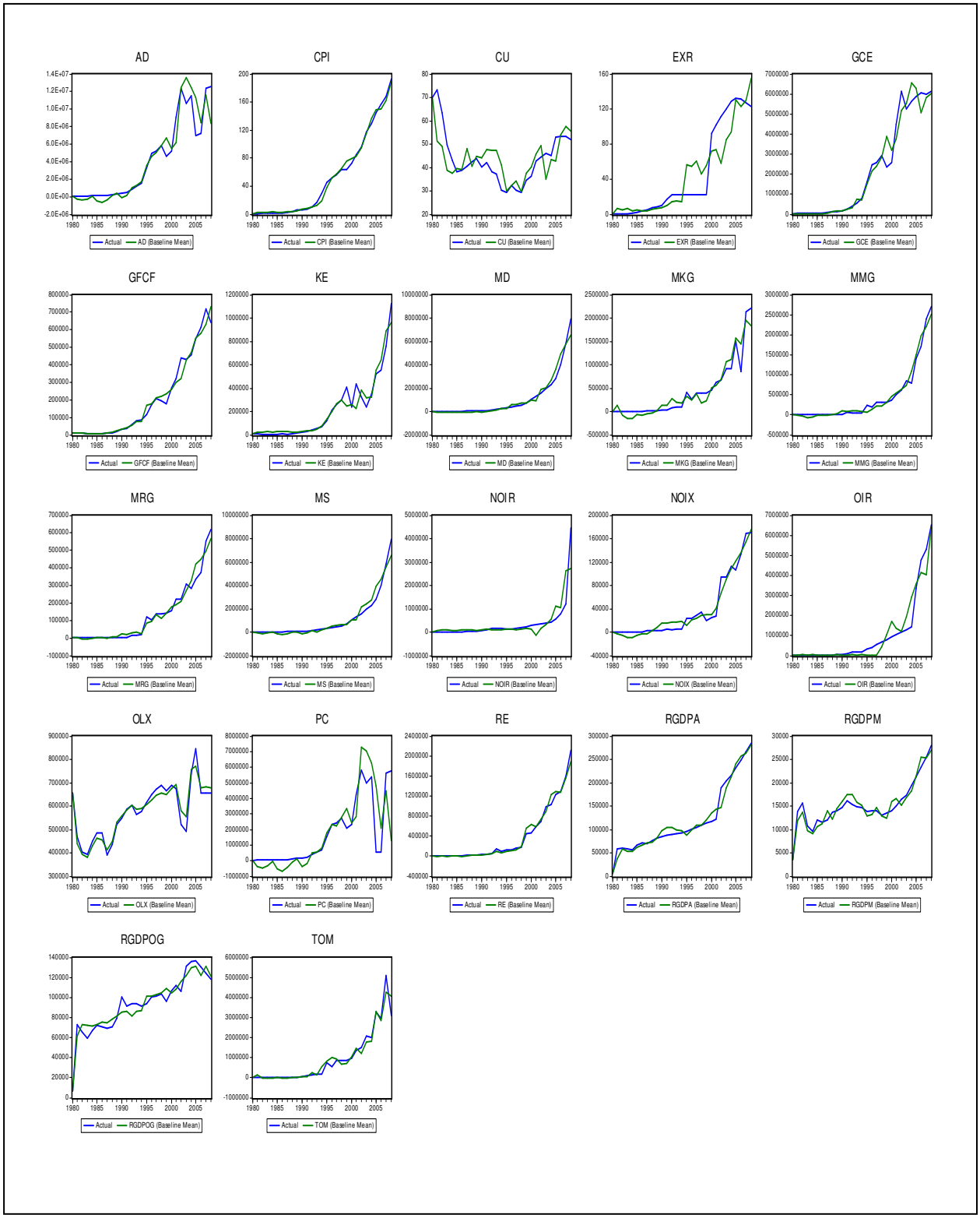


Fig. 5.4: Stochastic Static Simulation (Actual and simulated)



| YEARS | MRG | MKG | MMG | MO | TOM | AD | FCR | FCRFG |
|---|---|---|---|---|---|---|---|---|
| 1980 | 1594.2 | 4563.9 | 2908.5 | 29 | 9095.6 | 79282.4 | 15233.5 | 10182.5 |
| 1981 | 2038.5 | 6918.5 | 3834.7 | 47.9 | 12839.6 | 87960.2 | 13290.5 | 6671.5 |
| 1982 | 1849.5 | 5601.5 | 3262.6 | 56.9 | 10770.5 | 90332.6 | 11433.7 | 4617.7 |
| 1983 | 2038.7 | 4183.1 | 2669.3 | 12.6 | 8903.7 | 97744.4 | 10508.7 | 3019.7 |
| 1984 | 1649.8 | 3618.8 | 1890.8 | 18.5 | 7177.9 | 107202.4 | 11253.3 | 4328.3 |
| 1985 | 1549.5 | 3522.6 | 1977.7 | 12.7 | 7062.5 | 119577.2 | 15050.4 | 7708.4 |
| 1986 | 995.8 | 3316.8 | 1660.9 | 10.1 | 5983.6 | 127580.2 | 12595.8 | 5107.8 |
| 1987 | 2673.4 | 9844.2 | 5336.3 | 7.8 | 17861.7 | 177312.7 | 25380.6 | 17985.6 |
| 1988 | 2483.1 | 13027.8 | 5919.5 | 15.3 | 21445.7 | 247663.6 | 27596.7 | 18343.4 |
| 1989 | 3189.6 | 19404.6 | 8256.7 | 9.3 | 30860.2 | 301629.7 | 53870.4 | 43794.2 |
| 1990 | 4891.7 | 27522.2 | 13166.9 | 137.1 | 45717.9 | 380713.9 | 98102.4 | 86633.7 |
| 1991 | 4612.1 | 29705.4 | 54996.7 | 174 | 89488.2 | 485498.5 | 100991.6 | 88302.6 |
| 1992 | 16779.8 | 82598 | 43335.8 | 437.6 | 143151.2 | 871385.1 | 190453.2 | 170021.4 |
| 1993 | 15281.2 | 98857.1 | 51325 | 166.1 | 165629.4 | 1167778.3 | 192769.4 | 165186.4 |
| 1994 | 18883.5 | 92626.8 | 49325 | 1953.5 | 162788.8 | 1547514.7 | 201910.8 | 113397.6 |
| 1995 | 120065.3 | 406258.7 | 227293.4 | 1510.3 | 755127.7 | 3272100.3 | 459987.3 | 336835 |
| 1996 | 101835.5 | 262184 | 195794 | 2813.1 | 562626.6 | 4978105.7 | 523597 | 380510.7 |
| 1997 | 138812.9 | 395152.2 | 309837.9 | 1913.6 | 845716.6 | 5180015.2 | 591151 | 419880.6 |
| 1998 | 139849 | 388562.3 | 307332.8 | 1674.6 | 837418.7 | 5822345.4 | 463608.8 | 259269.7 |
| 1999 | 142298.5 | 401022.9 | 318368.7 | 1825.6 | 863515.7 | 4607298.8 | 9.49E+09 | 9.49E+09 |
| 2000 | 157927.1 | 462670 | 361484.1 | 2941.2 | 985022.4 | 5192986.5 | 1.91E+08 | 1.90E+08 |
| 2001 | 222663.4 | 622176.7 | 508562 | 4778.3 | 1358180.4 | 9049294.9 | 2.23E+08 | 2.23E+08 |
| 2002 | 220060.9 | 677144.6 | 611771 | 3718.9 | 1512695.4 | 12391869.9 | 1.73E+08 | 1.73E+08 |
| 2003 | 306859.9 | 920981.1 | 847787 | 4607.4 | 2080235.4 | 10674220 | 2.57E+08 | 2.57E+08 |
| 2004 | 280717.8 | 910535.5 | 789719.8 | 6072 | 1987045.1 | 11483430 | 3.92E+08 | 3.92E+08 |
| 2005 | 337067.6 | 1512928 | 1407710 | 12272.6 | 3269978.2 | 6964669.9 | 5.55E+08 | 5.54E+08 |
| 2006 | 375547.8 | 857107.7 | 1716602 | 13413.9 | 2962671.4 | 7260240.2 | 5.97E+08 | 5.96E+08 |
| 2007 | 553570.7 | 2124808 | 2404778 | 18751.9 | 5101908.6 | 12355259.1 | 5715600 | 5348372 |
| 2008 | 620405.2 | 2213502 | 2700675 | 19061.5 | 3123644 | 12517594 | 7866590 | 7496534 |

| FCRSG | FCRLG | PKI | Y | RGDPOG | RGDPA | RGDPM | OTRS | GE |
|---|---|---|---|---|---|---|---|---|
| 3695.4 | 0 | 3620.1 | 31546.8 | 6354.3 | 6501.8 | 3485.9 | 15204.8 | 14968.5 |
| 3825.6 | 0 | 3757.9 | 205222.1 | 73019.7 | 57989.7 | 13837.9 | 60374.8 | 11413.7 |
| 3245.7 | 0 | 5382.8 | 199685.3 | 65327.8 | 59450.8 | 15633.5 | 59273.2 | 11923.2 |
| 2958.5 | 0 | 5949.5 | 185598.1 | 59458 | 59009.6 | 10797.4 | 56333.1 | 9636.5 |
| 2772 | 0 | 6418.3 | 183563 | 66884.3 | 55918.2 | 9532.8 | 51227.7 | 9927.6 |
| 3260.8 | 0 | 6604 | 201036.3 | 72152 | 65748.4 | 12032.4 | 51103.5 | 13041.1 |
| 2843.8 | 0 | 9313.6 | 205971.4 | 70791 | 72135.2 | 11582.6 | 51462.6 | 16223.7 |
| 6197.1 | 0 | 9993.6 | 204806.5 | 69014.8 | 69608.1 | 12041.6 | 54142 | 22018.7 |
| 8181.3 | 0 | 11339.2 | 219875.6 | 70837.7 | 76735.7 | 13713.9 | 58588.3 | 27749.5 |
| 9899.8 | 0 | 10899.6 | 236729.6 | 79321.9 | 80878 | 14011.5 | 62518.2 | 41028.3 |
| 16378.8 | 0 | 10436.1 | 267550 | 100223.4 | 84344.6 | 14702.4 | 68279.6 | 60268.2 |
| 19742.2 | 0 | 12243.5 | 265379.1 | 91313.9 | 87503.5 | 16078.5 | 70483.2 | 66584.4 |
| 24497.3 | 0 | 20512.7 | 271365.5 | 93614.3 | 89345.4 | 15357.2 | 73048.6 | 92797.4 |
| 27660.6 | 18316.4 | 66787 | 274833.3 | 93810.1 | 90596.5 | 14788.1 | 75638.6 | 191228.9 |
| 29006.8 | 17321.3 | 70714.6 | 275450.6 | 91387.4 | 92833 | 14591.4 | 76638.8 | 160893.2 |
| 38671.5 | 17875.5 | 119391.6 | 281407.4 | 93536.7 | 96220.7 | 13836.1 | 77813.9 | 248768.1 |
| 41493 | 17586.5 | 122600.9 | 293745.4 | 100239 | 100216.2 | 13953.4 | 79336.8 | 337217.6 |
| 50902.5 | 20443.3 | 128331.8 | 302022.5 | 101717 | 104514 | 14010 | 81781.5 | 428215.2 |
| 66067.1 | 30600.9 | 152409.6 | 310890.1 | 103923.5 | 108814.1 | 13046.3 | 85106.2 | 487113.4 |
| 103657.3 | 43870.3 | 154188.6 | 312183.5 | 96129.2 | 114570.7 | 13494.6 | 87989 | 947690 |
| 251570 | 118589.4 | 157535.4 | 329178.7 | 106827.5 | 117945.1 | 13958.8 | 90447.3 | 701100 |
| 404094 | 128500.5 | 162343.4 | 356994.3 | 112417.4 | 122522.3 | 14935.1 | 107119.5 | 1018000 |
| 388294.7 | 128896.7 | 166631.6 | 433203.5 | 106002.1 | 190133.4 | 16439.4 | 120628.6 | 1018200 |
| 535179.9 | 291406.9 | 178478 | 477533 | 131336.6 | 203409.9 | 17369.6 | 125416.9 | 1226000 |
| 777208 | 375656.3 | 249220.6 | 527576 | 135670.7 | 216208.5 | 19436.8 | 156260 | 1426200 |
| 920985.9 | 493000 | 269844.7 | 561931.4 | 136345.5 | 231463.6 | 21305.1 | 172817.2 | 1822100 |
| 1016078 | 550796.3 | 302843.3 | 595821.6 | 130193.6 | 248599 | 23305.9 | 193723.1 | 1988000 |
| 1109339 | 568300 | 364008.5 | 634251.1 | 124285.1 | 266477.2 | 25535.5 | 217953.3 | 2450900 |
| 1693969 | 722258.6 | 397395.2 | 674889 | 118367.3 | 283913.1 | 27905 | 244703.6 | 3240820 |

| RE | KE | MT | INF | TFXR | EXB | TOT | GFCF | EXR |
|---|---|---|---|---|---|---|---|---|
| 4805.2 | 10163.3 | 2325.8 | 9.9 | 5445.6 | 1866.8 | 155.97 | 10841.2 | 0.5468 |
| 4846.7 | 6567 | 2336 | 20.9 | 2424.8 | 2331.2 | 85.85 | 12215 | 0.6177 |
| 5506 | 6417.2 | 1984 | 7.7 | 1026.5 | 8819.4 | 76.19 | 10922 | 0.6735 |
| 4750.8 | 4885.7 | 1616 | 23.2 | 781.7 | 10577.7 | 84.26 | 8135 | 0.7665 |
| 5827.5 | 4100.1 | 2183.5 | 39.6 | 1143.8 | 14808.7 | 126.6 | 5417 | 0.8938 |
| 7576.4 | 5464.7 | 1728.2 | 5.5 | 1641.1 | 17300.6 | 165.96 | 5573 | 1.7545 |
| 7696.9 | 8526.8 | 3540.8 | 5.4 | 3587.4 | 41452.4 | 149.1 | 7323 | 4.016 |
| 15646.2 | 6372.5 | 5672 | 10.2 | 4643.3 | 100789.1 | 169.98 | 10661.1 | 4.537 |
| 19409.4 | 8340.1 | 5815.5 | 38.3 | 3272.7 | 133956.3 | 145.45 | 12383.7 | 7.3647 |
| 25994.2 | 15034.1 | 8610.9 | 40.9 | 13457.1 | 240393.7 | 187.85 | 18414.1 | 8.0383 |
| 36219.6 | 24048.6 | 11456.9 | 7.5 | 34953.1 | 298614.4 | 240.36 | 30626.8 | 9.9094 |
| 38243.5 | 28340.9 | 16054.8 | 13 | 44249.6 | 328453.8 | 135.81 | 35423.9 | 17.2984 |
| 53034.1 | 39763.3 | 15486.4 | 44.5 | 13992.5 | 544264.1 | 143.63 | 58640.3 | 22.0654 |
| 136727.1 | 54501.8 | 18294.6 | 57.2 | 67245.6 | 633144.4 | 132.1 | 80948.1 | 21.996 |
| 89974.9 | 70918.3 | 37364 | 57 | 30455.9 | 648813 | 126.58 | 85021.9 | 22.0654 |
| 127629.8 | 121138.3 | 55000 | 72.8 | 40333.2 | 716865.6 | 125.89 | 114476.3 | 21.996 |
| 124491.3 | 212926.3 | 63000 | 29.3 | 174309.9 | 617320 | 232.76 | 172405.7 | 21.8953 |
| 158563.5 | 260651.7 | 57.7 | 8.5 | 262198.5 | 595931.9 | 146.82 | 205553.2 | 21.8844 |
| 178097.8 | 300015.6 | 87.9 | 10 | 226702.4 | 633017 | 89.78 | 192984.4 | 21.8861 |
| 449662.4 | 408027.6 | 101.5 | 6.6 | 546873.1 | 2577374 | 137.85 | 175735.8 | 21.8861 |
| 461600 | 239500 | 170.6 | 6.9 | 1090148 | 3097384 | 202.06 | 268894.5 | 92.3381 |
| 579300 | 438700 | 89.1 | 18.9 | 1181652 | 3176291 | 147.4 | 321879.9 | 101.6973 |
| 696800 | 321400 | 181.4 | 19.4 | 1013514 | 3932885 | 119.12 | 438114.9 | 111.2312 |
| 984300 | 241700 | 195.5 | 18.2 | 1065093 | 4478329 | 147.73 | 429230 | 120.5782 |
| 1032700 | 351300 | 217.1 | 15.3 | 2232837 | 4890270 | 148.7 | 456970 | 129.2224 |
| 1223700 | 519500 | 218 | 13.8 | 3647999 | 2695072 | 150.74 | 546812.7 | 132.888 |
| 1290200 | 552400 | 220 | 17.1 | 5425579 | 451462 | 155.56 | 614136.8 | 131.3 |
| 1589300 | 759300 | 220 | 8.2 | 6055717 | 428059 | 155.56 | 720085.1 | 127.4 |
| 2117362 | 1123458 | 220 | 5.4 | 7025728 | 512008 | 155.56 | 641230 | 122.8021 |

| OQT | OLX | DOIC | CPI | CU | LAOG | LAG | LMA | MD |
|---|---|---|---|---|---|---|---|---|
| 760117 | 656260 | 103857 | 0.88 | 70.1 | 108.7 | 92.5 | 119 | 15100 |
| 525291 | 469095 | 56196 | 1.03 | 73.3 | 166.8 | 95.2 | 115.6 | 16161.7 |
| 470638 | 401658 | 68980 | 1.1 | 63.6 | 213.9 | 98.3 | 122.9 | 18093.6 |
| 450961 | 392031 | 58930 | 1.53 | 49.7 | 250.4 | 93.9 | 96.4 | 20879.1 |
| 507487 | 450580 | 56907 | 1.87 | 43 | 287.1 | 100 | 91.6 | 23370 |
| 547088 | 486580 | 60508 | 1.89 | 38.3 | 271.6 | 104.6 | 100 | 26277.6 |
| 535929 | 486584 | 49345 | 2.15 | 38.8 | 362.2 | 108.3 | 103.5 | 27389.8 |
| 483269 | 390514 | 92755 | 2.36 | 40.4 | 340.3 | 116.1 | 122.1 | 33667.4 |
| 529602 | 435797 | 93805 | 3.8 | 42.4 | 474.4 | 138.5 | 108.8 | 45446.9 |
| 625908 | 522481 | 103427 | 5.5 | 43.8 | 607.5 | 153 | 125 | 47055 |
| 660559 | 548249 | 112310 | 5.7 | 40.3 | 679 | 167.5 | 130.6 | 68662.5 |
| 689850 | 585838 | 104012 | 7 | 42 | 478.3 | 191.7 | 138.8 | 87499.8 |
| 711340 | 604300 | 107040 | 10.42 | 38.1 | 169.6 | 206.4 | 136.2 | 129085.4 |
| 691400 | 563614 | 127786 | 16.8 | 37.2 | 164.3 | 211.4 | 131.7 | 198519.1 |
| 696190 | 578044 | 118146 | 29.7 | 30.4 | 177.4 | 209.7 | 129.2 | 266944.9 |
| 715400 | 616900 | 98500 | 45.03 | 29.3 | 200 | 216.8 | 128.8 | 318763.5 |
| 740190 | 648690 | 91500 | 51.47 | 32.4 | 161.2 | 224.8 | 132.5 | 370333.5 |
| 759710 | 673340 | 86370 | 56.73 | 30.4 | 146.1 | 234.1 | 140.6 | 429731.4 |
| 770010 | 687390 | 82620 | 63.49 | 29.3 | 200.9 | 242.4 | 133.9 | 525637.6 |
| 778900 | 666490 | 112410 | 63.63 | 34.6 | 242.3 | 249.1 | 129.1 | 699733.7 |
| 797880 | 688080 | 109800 | 72.87 | 36.1 | 261.7 | 258.2 | 138.9 | 1036080 |
| 817150 | 674930 | 142220 | 84.9 | 42.7 | 297.6 | 267.7 | 145.3 | 1315869 |
| 685773 | 521973 | 163800 | 95.2 | 44.3 | 294.5 | 278.8 | 145.2 | 1599495 |
| 655060 | 490810 | 164250 | 117.9 | 46.1 | 297.6 | 295.5 | 146.7 | 1985192 |
| 900600 | 736400 | 164200 | 129.7 | 45 | 294.4 | 312.3 | 150.2 | 2263588 |
| 919285.6 | 846179.7 | 174200 | 144.7 | 52.8 | 294.4 | 372.3 | 151.3 | 2814846 |
| 813950 | 656090 | 164200 | 157.1 | 53.3 | 296.8 | 390.3 | 153.7 | 4027902 |
| 813950 | 656090 | 184200 | 167.4 | 53.4 | 298.6 | 388.6 | 155.2 | 5809827 |
| 813950 | 656090 | 178412 | 192.6 | 52.1 | 288.6 | 388.5 | 153.9 | 7948369 |

| MS | CPF | FRI | GCE | GC | PC | GRES | GKES | GES |
|---|---|---|---|---|---|---|---|---|
| 15100 | 786.4 | 9.5 | 36746.1 | 5051 | 31695.1 | 595.1 | 127.5 | 722.6 |
| 16161.7 | 584.9 | 10 | 41182.1 | 6619 | 34563.1 | 914.9 | 96.2 | 1011.1 |
| 18093.6 | 2193.4 | 11.75 | 43113.3 | 6816 | 36297.3 | 1039.4 | 84.2 | 1123.6 |
| 20879.1 | 1673.6 | 11.5 | 48549.2 | 7489 | 41060.2 | 896.8 | 200.8 | 1097.6 |
| 23370 | 1385.3 | 13 | 54355.2 | 6925 | 47430.2 | 1100.1 | 38.4 | 1138.5 |
| 26277.6 | 1423.5 | 11.75 | 60673.1 | 7342 | 53331.1 | 1430.2 | 30.6 | 1460.8 |
| 27389.8 | 4024 | 12 | 64322.6 | 7488 | 55934.6 | 1452.9 | 209 | 1661.9 |
| 33667.4 | 5110.8 | 19.2 | 87023.3 | 7395 | 79628.3 | 3843.1 | 18.5 | 3861.6 |
| 45446.9 | 6236.7 | 17.6 | 122266.6 | 9253.3 | 113013.3 | 5777.8 | 271.3 | 6049.1 |
| 47055 | 4692.7 | 24.6 | 146645.9 | 10076.2 | 136569.7 | 6270.5 | 124.1 | 6394.6 |
| 68662.5 | 10450.2 | 27.7 | 180777.9 | 11468.7 | 169309.2 | 6540.2 | 196.4 | 6736.6 |
| 87499.8 | 5610.2 | 20.8 | 231381.8 | 12689 | 218692.8 | 6953.8 | 411.1 | 7364.9 |
| 129085.4 | 11730.7 | 31.2 | 416588.3 | 20431.8 | 396156.5 | 8684.5 | 583.2 | 9267.7 |
| 198519.1 | 42624.9 | 36.09 | 557206.6 | 27583 | 529623.6 | 30570.2 | 1065.5 | 31635.7 |
| 266944.9 | 7825.5 | 21 | 775503 | 88513.2 | 686989.8 | 8601.9 | 1286.8 | 9888.7 |
| 318763.5 | 55999.3 | 20.8 | 1640388 | 123152.3 | 1517236 | 11855.2 | 2031.2 | 13186.4 |
| 370333.5 | 5672.9 | 20.86 | 2474393 | 143086.3 | 2331307 | 21982.7 | 2570.1 | 24552.8 |
| 429731.4 | 10004 | 23.32 | 2572866 | 171270.4 | 2401596 | 25268.9 | 3820.5 | 29089.4 |
| 525637.6 | 32434.5 | 21.34 | 2916850 | 204339.1 | 2712511 | 26745.2 | 6147.7 | 32892.9 |
| 699733.7 | 4035.5 | 27.19 | 2342058 | 252552.6 | 2089505 | 91819.3 | 4656.3 | 96475.6 |
| 1036080 | 16453.6 | 21.55 | 2592214 | 260335.7 | 2331878 | 68557 | 5954.9 | 74511.9 |
| 1315869 | 4937 | 21.34 | 4501438 | 275461.2 | 4225977 | 85922.3 | 21213.9 | 107136.1 |
| 1599495 | 8988.5 | 30.19 | 6148669 | 343582.7 | 5805086 | 132369.9 | 32522.1 | 164892 |
| 1985192 | 13531.2 | 22.98 | 5265430 | 285870 | 4979560 | 119444 | 19152.1 | 138596.1 |
| 2263588 | 20064.4 | 20.82 | 5653900 | 281340 | 5372560 | 174117.5 | 21407.1 | 195524.6 |
| 2814846 | 26083.7 | 19.49 | 5869500 | 367152 | 548357.2 | 153618.1 | 41596.2 | 195214.3 |
| 4027902 | 41734 | 18.7 | 6073906 | 374891.9 | 572197.4 | 161966.5 | 23374.4 | 185340.9 |
| 5809827 | 54254.2 | 18.75 | 6001201 | 367228.1 | 5633973 | 199510.3 | 42413.2 | 241923.5 |
| 7948369 | 37977.7 | 19.02 | 6123210 | 370056.4 | 5753154 | 164500 | 42413.2 | 206913.2 |

| DPS | OIR | NOIR | X | M | OPEN | RGDP | OPR | FIAG |
|---|---|---|---|---|---|---|---|---|
| 257 | 12353.3 | 12353.3 | 14186.7 | 9095.6 | 0.738024 | 31546.8 | 38.8 | 120.5 |
| 1027.4 | 8564.4 | 8564.4 | 11023.3 | 12839.6 | 0.116278 | 205222.1 | 37.1 | 120.5 |
| 1167.2 | 7814.9 | 7814.9 | 8206.4 | 10770.5 | 0.095034 | 199685.3 | 35.6 | 120.5 |
| 1007.1 | 7253 | 7253 | 7502.5 | 8903.7 | 0.088396 | 185598.1 | 30 | 127.8 |
| 1235.3 | 8269.2 | 8269.2 | 9088 | 7178.3 | 0.088614 | 183563 | 29.2 | 128.5 |
| 1606.1 | 10923.7 | 10923.7 | 11720.8 | 7062.6 | 0.093433 | 201036.3 | 28.2 | 126 |
| 1631.6 | 8107.3 | 8107.3 | 8920.6 | 5983.6 | 0.072361 | 205971.4 | 14.2 | 128.2 |
| 3929 | 19027 | 19027 | 30360.6 | 17861.7 | 0.235453 | 204806.5 | 18.5 | 117.3 |
| 9238.7 | 19831.7 | 19831.7 | 31192.8 | 21445.7 | 0.239401 | 219875.6 | 16.1 | 128.9 |
| 13273.7 | 39130.5 | 39130.5 | 57971.2 | 30860.2 | 0.375244 | 236729.6 | 18.6 | 134.8 |
| 23822.3 | 71887.1 | 71887.1 | 109886.1 | 45717.9 | 0.581588 | 267550 | 24 | 334.7 |
| 26414.4 | 82666.4 | 82666.4 | 121535.4 | 89488.2 | 0.795178 | 265379.1 | 20.5 | 382.8 |
| 19400.3 | 164078.1 | 164078.1 | 205611.7 | 143151.2 | 1.285215 | 271365.5 | 20 | 386.4 |
| 81081.6 | 162102.4 | 162102.4 | 218770.1 | 165629.4 | 1.398664 | 274833.3 | 16 | 1214.9 |
| 49400.3 | 160192.4 | 160192.4 | 206059.2 | 162788.8 | 1.339071 | 275450.6 | 16.2 | 1208.5 |
| 51058.4 | 324547.6 | 135439.7 | 950661.4 | 755127.7 | 6.061636 | 281407.4 | 17.4 | 1209 |
| 53047.5 | 408783 | 114814 | 1309543 | 562626.6 | 6.373444 | 293745.4 | 21.6 | 1209 |
| 68539.7 | 546431.6 | 170419.6 | 1241663 | 845716.6 | 6.911337 | 302022.5 | 19.5 | 1209 |
| 64394.5 | 670726.9 | 206967.4 | 751856.7 | 837418.7 | 5.112017 | 310890.1 | 12.8 | 1209 |
| 30843.4 | 795022.2 | 243515.2 | 1188970 | 862525.7 | 6.571441 | 312183.5 | 71.8 | 1209 |
| 131048 | 919317.5 | 280063 | 1945723 | 985022.4 | 8.903206 | 329178.7 | 26.1 | 1209 |
| 155416 | 1043613 | 316610.8 | 1867954 | 1358180 | 9.036935 | 356994.3 | 24.5 | 1209 |
| 163811 | 1167908 | 353158.6 | 1744178 | 1512695 | 7.518114 | 433203.5 | 25.4 | 1209 |
| 363510 | 1292203 | 389706.4 | 3087880 | 2080235 | 10.82253 | 477533 | 29.1 | 1209 |
| 382509.9 | 1416499 | 426254.2 | 4602782 | 1987045 | 12.49076 | 527576 | 38.7 | 1209 |
| 393953.4 | 3354800 | 565700 | 7246535 | 2800856 | 17.8801 | 561931.4 | 57.6 | 1209 |
| 415362.8 | 4762400 | 785100 | 7324680 | 3412177 | 18.02025 | 595821.6 | 66.5 | 1209 |
| 511643.7 | 5287600 | 1200800 | 8120161 | 4381930 | 19.71158 | 634251.1 | 66.5 | 1329.9 |
| 381200 | 6530626 | 4458787 | 9774547 | 5921450 | 23.25715 | 674889 | 66.5 | 1397.2 |

| FIMP | FIMQ | FIID | NGDP | PPT | OTH | CIT | CEO | FIR |
|---|---|---|---|---|---|---|---|---|
| 1503.9 | 677.4 | 2181.3 | 49632.3 | 8 564.3 | 3 789.0 | 579.2 | 1 813.5 | 487.5 |
| 1705.7 | 526 | 2231.7 | 47619.7 | 6 325.8 | 2 238.6 | 403 | 2 325.8 | 1 997.3 |
| 1922.5 | 974 | 2896.5 | 49069.3 | 4 846.4 | 2 968.5 | 550 | 2 336.0 | 732.8 |
| 2128.1 | 511.2 | 2639.3 | 53107.4 | 3 746.9 | 3 506.1 | 561.5 | 1 984.1 | 710.1 |
| 2109.3 | 702.8 | 2812.1 | 59622.5 | 4 761.4 | 3 507.8 | 787.2 | 1 616.0 | 580.9 |
| 2278.1 | 744 | 3022.1 | 67908.6 | 6 711.0 | 4 212.7 | 1 004.3 | 2 183.5 | 938.9 |
| 2810.2 | 2510.4 | 5320.6 | 69147 | 4 811.0 | 3 296.3 | 1 102.5 | 2952.3 | 433.7 |
| 3122.3 | 2260.2 | 5382.5 | 105222.8 | 12 504.0 | 6 523.0 | 1 235.2 | 4710.8 | 407.6 |
| 3637 | 3403 | 7040 | 139085.3 | 6 814.4 | 13 017.3 | 1 550.8 | 5 673.7 | 540.5 |
| 5406.4 | 636.7 | 6043.1 | 216797.5 | 10 598.1 | 28 532.4 | 1 914.3 | 11887.6 | 938 |
| 6339 | 1091.6 | 7430.6 | 267550 | 26 909.0 | 44 978.1 | 2 997.3 | 11494 | 1 724.0 |
| 8692.4 | 0 | 8692.4 | 312139.7 | 38 615.9 | 44 050.5 | 3 827.9 | 11 456.9 | 3 040.4 |
| 9746.3 | 6417.2 | 16163.5 | 532613.8 | 51 476.7 | 112 601.4 | 5 417.2 | 16 054.8 | 4 903.1 |
| 12885.1 | 27686.9 | 40572 | 683869.8 | 59 207.6 | 102 894.8 | 9 554.1 | 15 486.4 | 5 626.5 |
| 14059.9 | 26680 | 40739.9 | 899863.2 | 42 802.7 | 117 389.7 | 12 274.8 | 25555.4 | 3 888.2 |
| 27668.8 | 56747.3 | 84416.1 | 1933212 | 42 857.9 | 281 689.7 | 21 878.3 | 93125 | 20 436.4 |
| 29814.3 | 56792.3 | 86606.6 | 2702719 | 76 667.0 | 332 116.0 | 22 000.0 | 89407 | 3 407.0 |
| 31297.2 | 59221.4 | 90518.6 | 2801973 | 68 574.1 | 348 237.0 | 26 000.0 | 140000 | 8 339.9 |
| 34503.9 | 59970.5 | 94474.4 | 2708431 | 680000 | 25720000 | 33300000 | 10600000 | 11400000 |
| 36282.1 | 58855.4 | 95137.5 | 3194015 | 164300 | 6621000 | 46200000 | 15851000 | 2010000 |
| 37333.6 | 60710.9 | 98044.5 | 4582127 | 252100 | 10666000 | 51100000 | 22530000 | 38100000 |
| 37779.8 | 61611.9 | 99391.7 | 4725086 | 6932000 | 10683000 | 68700000 | 41120000 | 44400000 |
| 39953.6 | 61611.9 | 101565.5 | 6912381 | 3922000 | 8386000 | 89100000 | 41190000 | 68100000 |
| 45719.4 | 61809.1 | 107528.5 | 8487032 | 6835000 | 13908000 | 11480000 | 38610000 | 54200000 |
| 102995.6 | 62145.7 | 165141.3 | 11411067 | 11835100 | 21713000 | 130100000 | 43660000 | 88900000 |
| 133894.5 | 80789.4 | 214683.9 | 14572239 | 19049000 | 28575000 | 16220000 | 62300000 | 21210000 |
| 212729.4 | 105668.4 | 318397.8 | 18654595 | 20383000 | 32492000 | 24490000 | 43260000 | 33300000 |
| 219512 | 132065.5 | 351577.5 | 20657318 | 15006000 | 29646000 | 27630000 | 50100000 | 26870000 |
| 229754.6 | 140497.1 | 370251.7 | 23842171 | 1.71E+06 | 3.81E+07 | 2.80E+07 | 4.93E+07 | 2.70E+08 |

| NOIX |
|---|
| 554.4 |
| 342.8 |
| 203.2 |
| 301.3 |
| 247.4 |
| 497.1 |
| 552.1 |
| 2 152.0 |
| 2 757.4 |
| 2 954.4 |
| 3 259.6 |
| 4 677.3 |
| 4 227.8 |
| 4 991.3 |
| 5 349.0 |
| 23 096.1 |
| 23327.5 |
| 29 163.3 |
| 34 070.2 |
| 19 492.9 |
| 24 822.9 |
| 28 008.6 |
| 94 731.8 |
| 94 776.4 |
| 113 309.4 |
| 105 955.8 |
| 133 594.9 |
| 169 709.7 |
| 170 503.4 |

**Table 3. 1: Impact of Fiscal Centralization/Decentralization on Economic Growth: Summary of Empirical Studies**

| Authors /Years | Sample Coverage: Region/Country | Sample Coverage: Time | Conceptual Framework/Remarks | Empirical Methodology |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| Oates (1995) | 40 countries (no details available) | 1974-1989 | Dissertation research performed by Sang Loh Kin and Oates (Marylan) | No details available |
| Davodi Zou (1998) | 46 developing countries and OBECD Countries | 1970-1989 | They followed Barro (1990): government spending is built into an endogenous growth model and use a Cobb-Douglas production function with public spending (split into three federal levels) as input. | Cross-country panel regression based on averages over five and ten-year periods, with country fixed effects. OLS estimation |
| Woller Philips (1998) | 23 Less Developed Countries | 1974-1991 | They apply the robustness tests of Leaner (1985) and Sala in Martin (1997). | Panel regressions based on annual, three- and five year averages using country fixed effects. No details regarding the used estimator available |
| Zhang Zou (1998) | 28 Provinces of China | 1980-1992 | They follow Barro (1990), Levine and Ranelt (1992), and Davoodi and Zou (1998). They distinguish different spending categories (at the central and provincial level) and analyse their impact on growth. | Cross-province estimations based on provincial annual data, with provincial fixed and random effects GLS and LSDV estimation. |

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|---|---|---|---|---|
| Xie Zou Davoodi (1999) | 50 states of the USA | 1948-1994 | The same theoretical framework is applied as in Davoodi and Zou (1998) | Growth regression based on annual data (further details are not available). OLS estimation. |
| Yilmaz (1999) | 46 countries (no details available) | 1971-1990 | Surveyed in ThieBem (2003). Distinguishes between federal and unitary countries. | No details available |
| Aigbokhan (1999) | Nigeria | 1976-1997 | Barro-type endogenous growth model. | Annual data used for the identified variables. OLS technique used to estimate the parameters of the model. |
| Lin Liu (2000) | China | No details available | The follow Mankiw, Romer and Weli (1992) and specify a Solow (1956) model of economic growth that assumes decreasing returns to all forms of reproducible capital | No details available |

| | | | | |
|---|---|---|---|---|
| ThieBen (2000) | OECD Countries | 1975-1997 | Reference to a theoretical endogenous growth model (further details are not available). | Pure and pooled cross-sectional growth regressions with cross-section weights; growth accounting procedure. GLS estimation |
| Behnisch Buettner Stegarescu (2001) | Germany | 1950-1990 | They analysis different spending categories (education & science (ED&SC), transport & communication (TR & CO) at the central level. | Growth accounting procedure using linear regressions and time series analysis. |

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| Zhang Zou (2001) | 29 provinces of China | 1987-1993 | Following Barro (1990) and Davoodi and Zou (1998), they develop a theoretical model that links multiple sectors of public spending by multiple levels of government to economic growth. | Cross-province estimations based on provincial annual data with provincial fixed effects. |
| Zhang Zou (2001) | 16 major states of India | 1970-1994 | | Cross-state estimations with a five-year forward-moving average of the dependent variable |
| Desal Freinkman<br><br>Goldberg (2003) | 80 Russian region | 1996-1999 | No explicit reference to a theoretical model | Cross-regional single and simultaneous growth regression based on 1996-1999 average data with time specific effects. OLS (with Panel corrected standard errors) and 3SLS estimation |
| ThieBen (2003) | 21 OECD Countries | 1973-1998 | Uses the augmented Solow growth model of | Pure cross-sectional growth regression based |

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|---|---|---|---|---|
| | | | Mankiw,<br><br>Romer and Weil (1992). | on averages of annual data. Panel regressions are not interpreted because of the problem of capturing the likelihood of long-run effects. OLS estimation. |
| Akai<br><br>Nishimura Sakatta (2004) | 50 states of the USA | 1992-1997 | Referring to Barro (1990) and Nishimura (2001), they provided a theoretical model considering difference in the quality of public services due to different abilities of bureaucrats as well as complementarities of jurisdictional public services | Panel cross-sectional growth regressions with time and state fixed effects. Explanatory variables are measured at each initial fiscal year (expect GPOP). Maximum likelihood estimation. |
| Markus E. (2004) | 22 OECD countries | 1972-1996 | He used panel data models | The static variable- intercepts panel data with country-fixed effects used. Panel data regressions of different levels applied. |
| Elliott and Thornton (2007) | China and Russia | 1994-2004 | They specified growth regression models and examined the effect of fiscal variables on the provincial-level growth rates in the two countries. | Pooled fixed effect model, OLS, Two-stage least squares (2SLS), and Generalized Method of Moments (GMM) approach. |

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|---|---|---|---|---|---|
| | | | | | |
| Marius R.B. (2007) | 21 OECD Countries | 1980-2001 | The work is based on the theoretical model of local competition in the provision of public goods. The theoretical model is build on the existing theoretical approaches but with modifications of some basic assumptions. | A simple growth model developed. The method used is the pooled time series analysis, using Panel-Corrected Standard Errors (PCSE) | |
| Campell H. F. (2008) | 23 OECD Countries | 1086-1995 | A measure of concentration based on the Herfindal Index was used together with an economic growth model. | The models were estimated by OLS using the Heteroskedastic- Consistent Covariance Matrix to correct for possible heteroskedasticity. | |
| Bodman et al, (2009) | Australia | 1972-2005 | No reference to specific theoretical framework. | The authors employed the Bayesian Model Average method and incorporated uncertainty variable into the model. | |
| Dauda (2009) | Sierra Leone | 1970-2005 | The theoretical framework for the study was based on the absorption approach to the balance of payment. It was modified by incorporating the fiscal –monetary interaction. | A small macro-economic model was specified and used. The estimated macro-econometrics model consisted of 17 equations; 9 stochastic and the rest, identities. Three Stage Least Square (3SLS) | |

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|---|---|---|---|---|---|
| | | | | was used in the estimation. | |