THE IMPACT OF GOVERNMENT EXPENDITURE ON GROSS DOMESTIC PRIVATE INVESTMENT IN NIGERIA (1975-2012)

by

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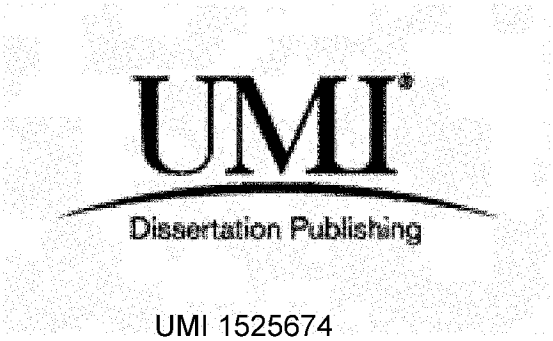

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ABSTRACT

The study investigated the long-run relationship between government expenditure and gross domestic private investment in Nigeria during the period 1975 to 2012. Therefore, the impacts of five components of government expenditure on gross domestic private investment were examined using Johansen co-integration and error-correction technique. The empirical results showed that in the long-run government expenditure on administration and agriculture have positive effects on gross domestic private investment, while government expenditure on human capital development, infrastructure, and public debt servicing have negative effects on gross domestic private investment.

This study policy recommendation suggested government to increase its expenditure on key areas such as, education, health, agriculture, and infrastructure, in order to encourage and stimulate investment in the private sector. This is because domestic private investment promotes economic growth and development.

Key Words: Fiscal policy, Government Expenditure, Crowding-out effect, Private investment, Unit root test, Co-integration, Error correction model

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LIST OF ABBREVIATIONS

ADF	Augmented Dickey-Fuller
AIC	Akaike Information Criterion
CBN	Central Bank of Nigeria
ECM	Error Correction Model
GDP	Gross Domestic Product
IMF	International Monetary Fund
JAMB	Joint Admission Matriculation Board
MDGs	Millennium Development Goals
NBS	Nigerian Bureau of Statistics
NEEDS	National Economic Empowerment and Development Strategy
OLS	Ordinary Least Square
OPEC	Organization of the Petroleum Exporting Countries
PP	Phillips and Perron
PRSP	Poverty Reduction Strategy Paper
SAP	Structural Adjustment Programme
UN	United Nations

VAR	Vector Autoregression
WDI	World Development Indicator

DEDICATION

This research thesis is dedicated to the Almighty God, to my parents; Prince and Mrs. Henry Osinike, and to all scholars who genuinely seek knowledge as a means towards making the world a better place.

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To the most faithful, most high God the creator of the universe I say thank you. Glory, honor, and splendor be ascribed unto You. His grace has been sufficient for me. Because He lives, I can face tomorrow!

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The role of government as an engine which stimulates economic growth and development cannot be overemphasized. Even though there is a "renewed interest in the role of private sector as an engine of economic growth" (Gatawa and Bello, 2011, p. 46), government still has a role to play by creating an enabling ground in which the private sector can thrive. Government uses various macroeconomic policies to lead the economy on the path of sustainable growth and development, and one of such policies is the fiscal policy.

According to Anyanwu and Oaikhenan (1995, p. 362), fiscal policy is "taken to refer to that part of government policy concerning the raising of revenue through taxation and other means and deciding on level and pattern of expenditure for the purpose of influencing economic activities or attaining some desirable macroeconomic goals." Medee and Nenbee (2011, p. 172) also said that fiscal policy "entails government's management of the economy through the manipulation of its income and spending power to achieve certain desired macroeconomic objectives (goals) amongst which is economic growth".

Jhingan (2008) says that an extensive use of fiscal policy is indispensible for economic development. Fiscal policy can be used for allocation, stabilization, and distribution functions of the government. The government can influence a desired economic outcome by cutting down tax rate, and/or increasing public expenditure and investment. This will encourage consumption, and also increase aggregate demand, which can spur economic growth. It is often used during economic recession to stimulate the economy. This is known as expansionary fiscal policy. On

the other hand, the government can increase the tax rate and/or reduce public expenditure. This will decrease consumption of certain goods therefore, aggregate demand will decrease. It is often used to correct inflationary problems. This can be referred to as contractionary fiscal policy. Therefore, as Anyanwu and Oaikhenan (1995, p. 362) point out, "a primary objective of fiscal policy is to balance the use of resources of public and private sectors and by so doing, to avoid inflation, unemployment, balance of payments pressures, and income inequity".

However, for the purpose of this study, only one of the fiscal policy instruments, which is, government expenditure is discussed.

The controversy over the crowding out or crowding in effect of government expenditure on private investment has lead to an increasing interest of economists to examine the relationship between government expenditure and private investment. In the Nigerian economy, both the public (government) sector and private sector exist together, and together they play roles to improve the economic growth. As a result of this, "the use of government expenditure to enhance private investment is being advocated" (Gatawa and Bello, 2011, p. 47).

As Gatawa and Bello (2011, p. 46) point out, "the idea of a private sector led economic growth in Nigeria is therefore traceable to the observed success of the major industrialized countries; which attributed to the resilience of their organized private sector." The expected role of the government in the economy changed because of the poor economic performance of the country during the period that the government played the major role in the economy. As a result of failure of the government sector to bring the economy to the desirable path of economic growth, "market oriented structural reform programs such as privatization; deregulation and liberalization were adopted to ensure a reduction in the role of government in the economy" (Gatawa and

Bello, 2011, p. 47). Therefore the new role of the government was to "concentrate its resources in areas that complements rather than crowd-out private sector investment, thereby creating an enabling environment for the private sector investment" (Gatawa and Bello, 2011, p. 47). Therefore, "against the background of deepening economic crises that began in the 1980s following the oil market glut and world economic depression, the federal government (President Babangida's Administration) introduced the Structural Adjustment Program (SAP) in 1986" (Bello, Nagwari, and Saulawa, 2011, p. 9). Moreover, according to Gatawa and Bello (2011, p. 47), "the National Economic Empowerment and Development Strategy (NEEDS) was launched for the period (2004-2007) in Nigeria which emphasized on the evolution of a private sector led market oriented economy with competition as a driving force."

Furthermore, according to Bello, Nagwari, and Saulawa (2011, p. 16), "Aschaver (1989a) noted, the precise effect of government expenditure on private investment depends on the type of government expenditure being considered." Some components of government expenditure crowd-out private investment, whereas others crowd-in private investment.

Therefore in this study, I decomposed the Nigerian government expenditure into five components namely, administration, agriculture, infrastructure, human capital development, and public debt servicing. Each of the effects of these five components of government expenditure on gross domestic private investment was examined separately, in order to determine the components that crowds-in private investment and crowds-out private investment.

However, I was more interested in the long-run relationship, in discussing the impact of fiscal policy on gross domestic private investment, because in the long-run, all factors and variables are flexible and vary. There is no fixed factor or variable in the long-run. Also, since

the goal of any economy is to achieve a sustainable economic growth and development, the long-run effects of government policies would be more beneficial in leading a path to sustainable economic development.

Furthermore, the Nigerian government expenditure is made up of two main categories namely, government recurrent expenditure and government capital expenditure. According to the Central Bank of Nigeria, recurrent expenditure is defined as the expenditure incurred in the payments of transactions within one year, while capital expenditure is defined as the expenditure incurred in the payments for non-financial assets used in production process for more than one year.

However, for the purpose of this study, government recurrent expenditure was used to capture the impact of government expenditure on gross domestic private investment in Nigeria. I chose government recurrent expenditure because government capital expenditure have experienced missing values for some years and is not broken down into smaller components as the recurrent expenditure. This can be verified from the Central Bank of Nigeria (CBN) statistical bulletin. Moreover, since government capital expenditure is an expenditure on long-term projects, government does not keep spending (capital expenditure) on a particular project, every year, rather every two years, three years, five years, or ten years, as the case may be. This explains the missing values in government capital expenditure for certain years. More so, some expenses for capital projects are being captured in recurrent expenditure because, government recurrent expenditure is on yearly basis and includes costs of maintenance of capital equipment used for the long-term projects and salary of long-term project workers.

1.2 Statement of Problem

Abata, Kehinde & Bolarinwa (2012, p. 84), says that "despite the lofty place of fiscal policy in the management of the economy, the Nigerian economy is yet to come on the path of sound growth and development." "There is no doubt that the failure of government fiscal policies, rather than the failure of monetary policies, is the main reason why most of the past developmental programs undertaken by the government have come to naught" (Ezeoha and Uche, 2010, p. 97). According to Medee and Nenbee (2011), the economy is still entangled in chronic unemployment, rising rate of inflation, dependence on foreign technology, reliance on foreign exchange earnings from crude oil, and more.

Nigeria, a country endowed with diverse resources, including human and natural resources such as oil and gas, fertile and highly-priced agricultural land, and solid minerals has great potentials for economic growth and development. In spite of all these abundant resources, since the year Nigeria became independent in 1960, the changing governments from the military regime to this civilian regime have not made sufficient efforts to harness these resources into productive use, in order to channel the country into the path of sustainable growth and development. The aftermath is that the economy of Nigeria is still performing below her capacity and potential.

According to Gatawa and Bello (2011, p. 47), "the failure of the government to achieve rapid and sustained economic growth of the Nigerian economy spurred the debate on whether the government or the private sector should spearhead the nation's economic growth process." Gatawa and Bello (2011, p. 47) also say that "in the five decades of her post-independent era, the government dominated the economic activities of the country with tremendous increases in its expenditure. For example, federal government expenditure as a percentage of GDP increased by 220.6% between 1975 and 2005". However, in Nigeria, private investment has been persistently low, recording less than 6% growth rate since 1970 (Chibber and Palwa, 1994). As Gatawa and Bello (2011, p. 48) point out, this low performance of private investment is a factor responsible for the low growth rate of Nigeria's Gross Domestic Product (GDP) and its share of GDP has been low, having only 21 percent share of GDP in 2005.

"Private sector operators argued that the factors which militate against their contributions to the economy include high cost of doing business, unstable macroeconomic policies, infrastructural bottlenecks, faltering consumer spending, lack of capital investment and stifling effect of multiplicity of taxes" (Gatawa and Bello, 2011, p. 48). Therefore as Gatawa and Bello (2011, p. 48) point out, "the very low productivity/uncompetitivenes of the private sector is therefore as a result of the hostile business environment."

Hence in this research, I examined how government can use its fiscal policy (government expenditure) to create an enabling ground where private sector investment can thrive. The impact of different components of government expenditure on gross domestic private investment is investigated, to know the extent each component of government expenditure contribute to encourage or discourage the growth of domestic private investment, which is capable of creating

more jobs in the economy, thereby reducing the unemployment rate and hence improving labor productivity which increases the national output or Gross Domestic Product (GDP).

1.3 Objectives of Study

The main objective of this research is to empirically assess the impact of government expenditure on gross domestic private investment in Nigeria from 1975 to 2012. In order to understand the "crowding-out" issue, the impact of each component of government expenditure will be examined, because different components may generate different impacts, that is, "crowding-in" or "crowding-out".

Moreover, the specific objectives are:

1. To empirically assess the long-run impact of different components of government expenditure on gross domestic private investment in Nigeria from 1975 to 2012.
2. To evaluate the trend of government expenditure, as well as gross domestic private investment within the period under review.
3. To analyze the long-run relationship between each component of government expenditure and gross domestic private investment in Nigeria, with the main focus on the long-run relationship.
4. To observe the long-run relationship between real Gross Domestic Product (GDP) and gross domestic private investment in Nigeria.

1.4 Research Questions

The research questions of the study are as follows:

1. What has been the trend of fiscal policy (government expenditure) movements from 1975 to 2012?

2. What is the long-run relationship between each component of government expenditure and gross domestic private investment in Nigeria?

1.5 Research Hypotheses

The following hypotheses guided the research framework:

H_0: There is no significant long-run relationship between each component of government expenditure and gross domestic private investment in Nigeria.

H_1: There is a significant long-run relationship between each component of government expenditure and gross domestic private investment in Nigeria.

1.6 Significance of Study

The use of fiscal policy instrument; government expenditure by the government to regulate the economy can encourage or discourage the growth of domestic private investment which also has a direct impact on the economic growth of the country. Therefore it is important to assess the effect of government expenditure on gross domestic private investment in Nigeria. This study would contribute to existing literature on fiscal policy and private investment. The study would also evaluate the importance of government expenditure by examining its impact on the gross domestic private investment in the economy.

This study is of significance in the following ways:

1. It provided an objective view of the effectiveness of one of the fiscal policy instrument, which is government expenditure in encouraging gross domestic private investment.
2. The study also provided an econometric basis upon which to examine the effects of government expenditure on gross domestic private investment in the Nigerian economy.
3. It provided policy recommendations to policy-makers on ways to make the Nigerian economy vibrant through encouraging government expenditures geared towards enhancement of gross domestic private investment.
4. The research is also an invaluable tool for students and researchers that want to know more about the effect of government expenditure on gross domestic private investment of a developing nation, Nigeria as a case study.

1.7 Scope of Study

In an economy, there are two main fiscal policy instruments which the government uses to regulate the economy. These instruments of fiscal policy are government expenditure and taxation. However, this study focused on one of the instrument, which is government expenditure. Furthermore, government expenditure can affect all forms of investment in the economy such as, foreign direct investment, domestic private investment, and foreign private investment abroad. However, the study focused on gross domestic private investment. Moreover, this research covers the period of 38 years, from 1975 to 2012. This period started at the first post oil price crisis of 1973. Within this study period, there was a second oil price crisis, which was from 1979 to 1980. During the period, the federally collected oil revenue increased from 4,555.80 million naira in 1978, 8,880.80 million naira in 1979 to 12,353.30 million naira in 1980. However, after 1980, as the oil price began to drop, the federally collected oil revenue

began to drop to the normal range, before it began to increase again at post Structural Adjustment Program (SAP) period, which is after 1986. It is known theoretical and empirically that government revenue has an impact on the level of government expenditure, because government spends based on its budget. It is therefore interesting to examine the impact of government expenditure on gross domestic private investment starting from 1975. My research period ended in 2012 to ensure the availability of data for my study.

1.8 Framework of the Research

This research thesis is divided into five chapters. The first chapter encapsulates the introduction highlighting background of the study, statement of the research problem, objectives, scope, research question, research hypotheses, and framework of the research. Chapter two covers the review of relevant literature. Chapter three presents the research methodology while chapter four entails the findings and data analysis. Finally, chapter five covers the summary, conclusion and policy recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The relationship between government expenditure and gross domestic private investment has not only caught the interest of scholars over the years, it is also an interesting area to explore especially with reference to economic performance of an oil dependent country like Nigeria. Section 2.2 of this chapter examines the importance of private investment for sustainable economic growth, while section 2.3 covers theoretical literature. Furthermore, Section 2.4 discusses empirical literature in both developed and developing countries, while Section 2.5 focuses on explaining the crowding-out effect using the IS-LM model. More so, Section 2.6 explains the public policies in Nigeria, during the study period. Section 2.7 focuses on the overview of government expenditure in Nigeria, while Section 2.8 discusses the overview of domestic private investment in Nigeria. Section 2.9 summarizes and concludes the chapter.

2.2 The Importance of Private Investment for Sustainable economic Growth

Nigeria is one of the few countries of the world blessed with abundant natural resources such as, crude oil, minerals, metals, forests, amongst others. According to statistical data in the Organization of the Petroleum Exporting Countries (OPEC) bulletin, Nigeria is ranked the twelfth largest producer of crude oil in the world, the fifth largest crude oil exporter in the world, and the ninth largest crude oil reserves as at 2012. Despite the potentials of natural resources, according to World Bank (2012), Nigeria, with a real GDP (constant 2000 US$) of $ 91,957,591,866.33 and real GDP per capita (constant 2000 US$) of $ 565.99 as at 2011, is

unfortunately, still a low-middle income country. Moreover, according to World Bank (2012), the percentage of Nigerians living in absolute poverty, that is less than two dollar per day, is 84.49% and the percentage of Nigerians that live in extreme poverty, that is less than one dollar and twenty-five cents per day, is 67.98% as at 2010.

However, it is important to note that the growth of private investment in a country can significantly have a positive effect on the economic growth and development of the country, as well as reduce poverty. According to White (2005, p. 9), "increasing private investment levels is fundamental to poverty reduction. Without it, developing countries are unable to spur the growth of their economies or to sustain the reduction of poverty over the long-term." Private investment is integral for sustainable economic growth and development, because, when investment is low, the productive capacity of the economy will decrease and lead to a reduction in "growth and job creation, and fewer opportunities for the poor to improve their livelihoods" (White, 2005, p. 9). Therefore, the growth of private investment is essential in achieving a sustainable economic growth in a developing country as Nigeria.

Furthermore, as White (2005, p. 10) points out, "governments are required to become more investment oriented if they are to increase the levels of private investment." Government need to create an enabling ground that encourages private investment to thrive through her policies and regulations as private investment contributes immensely to economic growth and development. More so, White (2005, p. 10) states that, "investment climate determines the contribution private firms make to economic growth and prosperity. However, it is public sector policies and behaviors that play a key role in shaping conditions for investment." Therefore, "improving government policies and behaviors that shape the investment climate drives growth"

(White, 2005, p. 10). White (2005) also points out that "private firms are critical actors in the quest for investment and economic growth [and that] private firms are at the heart of the development process" (p. 9). This is because; private firms are "driven by the quest for profits, they invest in new ideas and new facilities that strengthen the foundation of economic growth and prosperity" (World Bank, 2004, p. 1). Hence, there is need for reform in a specific set of public policies and institutions, in order to enhance the impact of private investment, sustainable economic growth, and development on poverty reduction.

Therefore, from the citations above, it becomes apparent that the role of private investment in promoting economic growth and development in a developing country such as Nigeria is very vital. Thus, it becomes important to look into various investment theories in economics, in order to have a better connection on different economic thoughts and how investment evolves.

2.3 Theoretical Literature

2.3.1 Keynesian Theory

The theory originated from Keynes in 1936. Gatawa and Bello (2011, p. 49) reiterated, "the theories of investment dated back to Keynes (1936), who first called attention to the existence of an independent investment, function in the economy."

According to Udah (2010, p. 260), "Keynes had argued that investment depends to a large extent on the prospective marginal efficiency of capital, relative to interest rate which is the opportunity cost of capital. He stresses the volatility of private investment given that investors cannot predict for a certainty the returns on investment." Therefore, investment decisions are mainly propelled by investors' inclination.

Furthermore, Gatawa and Bello (2011, p. 49) point out that "a central feature of the Keynesian analysis is the observation that although savings and investment must be identical ex-post, savings and investment decisions are, in general, taken by different decision makers and there is no reason why ex-ante savings should equal ex-ante investment." This implies that savings for investment are driven by individual investors' decision making process; hence it is subjective in nature. Therefore, ex-ante savings and investment are not equal, they varies, depending on the factors the investor considered while making investment decisions.

Wang (2005, p. 493) also states that "arguments along the Keynesian lines (i.e., the general IS-LM framework) focus mainly on the ways that the government chooses to finance its spending. It is argued that if increased government spending is mainly financed by borrowing, then the interest rate is likely to move up in the financial market due to more competition for available funds." Therefore, the increase in interest rate will reduce private investment. This argument is what is generally known as the crowding-out hypothesis.

The Keynesian view also assumes that there is unemployment in the economy and that the interest rate sensitivity of investment is low. In that case, expansionary fiscal policy will lead to little or no increases in the interest rate and increase output and income. In addition, this view assumes that government spending increases private investment due to the positive effect of government spending on the expectations of the investors. Therefore, there is crowding in rather than crowding out (Aschauer, 1989; Baldacci, Hillman and Kojo, 2004).

Despite the fact that the theory of investment emerged from Keynes, the Keynesian investment theory has faced some opposition. One of such oppositions is the accelerator theory of investment.

2.3.2 The Accelerator Theory of Investment

According to Gatawa and Bello (2011, p. 49), "the next phase in the evolution of investment theory gave rise to the accelerator theory, which makes investment a linear proportion of changes in output." Anyanwu and Oaikhenan (1995, p. 75) explained that "although the modern form of the acceleration hypothesis was put forward by Clark in 1917, the original idea of the principle is traceable to the works of Aftalion in 1911." Moreover, "in the accelerator model, expectations, profitability, and capital costs play no role" (Gatawa and Bello, 2011, p. 49). However, under the accelerator theory of investment, "current net investment is a function of changes in income, it explains net investment as a function of growth in aggregate demand" (Anyanwu and Oaikhenan, 1995, p. 75).

Furthermore, the accelerator theory postulates that "an increase in government spending will lead to a higher level of income which, in turn, may crowd-in private investment since private agents are induced (and are also able) to invest more as the higher level of income boosts savings" (Wang, 2005, p. 494). Hence the accelerator investment theory posits that government expenditure crowds-in private investment.

There are two versions of the acceleration theory of investment. These are, fixed and flexible accelerator theory of investment. According to Anyanwu and Oaikhenan (1995, p. 76), "the fixed accelerator is characterized by two distinguishing features based on the underlying assumptions. In the first case, there is an assumed fixity of the ratio of current desired capital stock to current output." This can be shown as:

$$k = K^*_t/Y_t \ldots\ldots\ldots (1)$$

Where K^* is the desired capital stock and Y_t is current level of output.

Equation 1 can also be expressed as:

$$K^*_t = kY_t \ldots\ldots\ldots (2)$$

In equation (2), a firm's desired capital stock is a function of the current level of output in period t. This equation (2) shows a "firm's desired capital stock as a proportion of the output in the current period where k is the factor of proportionality" (Anyanwu and Oaikhenan, 1995, p. 76).

The value of k determines the level of equation (2), while the actual value of k is a "function of the time period within which the analysis is carried out, longer time frame for the analysis makes the value of k approach zero" (Anyanwu and Oaikhenan, 1995, p. 76).

According to Anyanwu and Oaikhenan (1995, p. 76) the second version of the accelerator model can be derived by "assuming that current net investment equals the value of the discrepancy between the capital stock desired in the current period and the actual capital stock in the previous period." This assumption can be expressed as;

$$I_t = K^*_t - K_{t-1} = \Delta K \ldots\ldots\ldots (3)$$

A net rate of investment that guarantees the optimality of capital stock would result to,

$$K_{t-1} = K^*_{t-1} = kY_{t-1} \ldots\ldots\ldots (4)$$

Equation (4) is substituted into equation (3) to yield,

$$I_t = kY_t - kY_{t-1} = k\Delta Y_t \ldots\ldots (5)$$

Equation (5) expresses the accelerator principle. It expresses net investment to a change in the level of output. As Anyanwu and Oaikhenan (1995, p. 76) points out, "it specifies net investment

as being proportional to the discrepancy between the actual level of income in the current period and the level of income in the immediate past period, the factor of proportionality being k, the assumed – fixed-capital-output ratio." This constant is what is described as the accelerator. As long as this accelerator remains positive, even the slightest change in output will yield an accelerated effect on net investment. For instance, assuming output increases by 15 Naira, and K = 3, then, this results to a net investment I_t of 3(15) = 45 Naira increase.

To express equation (5) above in gross terms rather than net terms results to;

$$I_{Gt} = K(Y_t - Y_{t-1}) + D_t \ldots.(6)$$

Equation (6) above expresses gross investment (I_{Gt}) as proportional to the discrepancy between, the current level of income and the level of income in the previous period plus disposable investment. Disposable investment according to Anyanwu and Oaikhenan (1995, p. 77) is the investment that is "made to accommodate the depreciation suffered by capital goods in the course of usage."

According to Gatawa and Bello (2011, p. 49), "the basic notion behind the [flexible accelerator model] is that the larger the gap between the existing capital stock and the desired capital stock, the greater a firm's rate of investment." Therefore, in each period, firms tend to close a portion of the gap between the actual capital stock and desired capital stock. Gatawa and Bello (2011, p. 49) also point out that "within the framework of the flexible accelerator model, output, internal funds, cost of external financing and other variables may be included as determinants of desired capital stock." In the flexible accelerator investment model, "desired capital stock is proportional to output, but in alternative models, desired capital stock depends on

capacity utilization, internal funds, the cost of external finance and other variables" (Gatawa and Bello, 2011, p. 50).

Gatawa and Bello (2011) also states that Jorgenson (1971) and others have formulated the neoclassical approach, which is a version of the flexible accelerator model. Therefore, neoclassical theory of investment is discussed below.

2.3.3 Neoclassical Theory

According to Udah (2010, p. 261), "Jorgenson (1967 and 1971) and Hall (1977) reviewed the restrictive assumptions of the accelerator theory and formulated the neoclassical approach." In Neoclassical theory of investment, "optimal capital stock is a function of the level of output and user cost of capital. Lags in decision making and delivery create a gap between current and desired capital stocks, giving rise to an investment equation relating to change in the capital stock" (Udah, 2010, p. 261). In addition, Gatawa and Bello (2011, p. 49) point out that "in this approach, the [desired or] optimal capital stock is proportional to output and the user cost of capital," which in turn depends on the price of capital goods, the real rate of interest, the rate of depreciation and the tax structure.

On the other hand, the neoclassical theory of investment is also centered on the substitutability or complementarity relationships between government expenditure and private investment. According to Wang (2005, p. 494), "the substitutability hypothesis is derived from the view that higher government expenditure on capital goods will raise the rate of capital accumulation beyond the optimal level, as judged by private agents, and this will cause private agents to cut their investment in order to re-establish the optimal rate of capital accumulation in the economy." Therefore, this implies that government expenditure on capital goods will

substitute private investment, which is the crowding-out effect. On the other hand, "the complementarity hypothesis emphasizes that government spending on infrastructure and human capital is likely to raise the marginal productivity of private capital and therefore induce more private investment" (Wang, 2005, p. 494), which is the crowding-in effect.

Furthermore, Kutepeli (2005, p. 185) explained that "while the neoclassical school advocates *crowding out*, the Keynesian model argues that an increase in the government spending stimulates the domestic economic activity and *crowds in* private investment." However, it is important to note that in both models, interest rate and income are essential determinants of investment. "This collaborates the views of both Keynesian and neoclassical theories of investment" (Udah, 2010, p. 260).

Kutepeli (2005, p. 186) also explained that the "Neoclassical view assumes full employment and advocates competitive markets against government intervention. The neoclassical loanable funds theory explains that the balancing of savings and investment will be solved by the interest rate mechanism." The malfunctioning or slow operations of this mechanism are as a result of short-term variations in employment and output (Grieve, 2004). Kutepeli (2005, p. 186) also reiterated that "in case of an increase in government spending, interest rates have to increase to bring the capital market into equilibrium, dampening private investment" (Beck, 1993; Heijdra and Ligthard, 1997; Voss, 2002; Amirkhakhali et al., 2003; Ganelli, 2003: 88).

Furthermore, Udah (2010, p. 261) stated that "the assumptions of perfect competition and the exogenously given output are inconsistent", hence, these pose a major setback to this investment theory. In addition, Udah (2010, p. 261) also pointed out that "the assumption of static future prices, output and interest rates is unrealistic given that investment is a futuristic

process and the lags in delivery cannot be introduced in an orderly fashion as predicted by the model."

However, "The neoclassical model has its major appeal in that it addresses the primary motive for investment-that is profit maximization. This suggests that cost-benefit analysis calculations are at the heart of investors" (Udah, 2010, p. 261). Moreover, according to Wang (2005, p. 494), "the important implication of the substitutability and complementarity hypotheses is that the different categories of government expenditure may produce different effects on private investment." Therefore, this study examined different components of government expenditure in Nigeria, in order to evaluate their effects on domestic private investment in the period under investigation.

2.3.4 Rational Expectation Theory

Another counterargument to the Keynesian theory of investment is the rational expectations hypothesis. According to Wang, (2005, p. 494), this hypothesis argue that "debt-financed government expenditure may not lead to a crowding-out effect if private agents fully discount the current debt-financed government expenditure by taking into account the expected increase in future taxes when making their current investment decisions." Similar to the Ricardian equivalence hypothesis, this implies that government fiscal decisions are not relevant to both private investment and the output level.

2.3.5 Tobin's Q Theory

The q-theory of investment was developed by James Tobin in 1969. According to Anyanwu and Oaikhenan (1995, p. 84), it is a dynamic theory of investment that is based on the "premise that investment decision is dependent upon the ratio of the market value of a firm's

financial assets to their replacement cost." If the market value of existing asset is represented as MVA and the Asset Replacement cost is represented as CRA, then the q-theory can be expressed with the q-ratio as:

$$q = MVA/CRA$$

Firms make investment decision based on the value of q. According to Anyanwu and Oaikhenan (1995, p. 84), "depending on whether or not the time frame for the analysis is a short or long term, the value of q could be less than, equal to or greater than one. In the short run, q may not equal one owing to lags and disequilibrium in the relevant factors." However, in the long run, these lags and disequilibria will be eliminated and "within this long run period, the value of q could equal one assuming that within this period, the price of capital equals its productivity" (Anyanwu and Oaikhenan, 1995, p. 84).

Anyanwu and Oaikhenan (1995, p. 84) also points out that "when the value of q exceeds one the decision to carry out investment proposal becomes a rational one but would be irrational if the value is less than one." This is because, "investment would only be profitable if the return on an investment outlay increases the market value of the firm" (Anyanwu and Oaikhenan, 1995, p. 84).

Moreover, according to Udah (2010, p. 261), "Tobin argued that main focus should be the link between the increase in the value of the firm as a result of installation of an additional unit of capital and its replacement cost." Udah (2010, p. 261) also points out that "when the increase in the market value of the extra unit exceeds the replacement cost, firms will want to increase their existing capital or vice versa. This ratio identified in the literature as marginal Q, may differ from the other one because of delivery lags and adjustment or installation costs."

A major criticism of the theory according to Anyanwu and Oaikhenan (1995, p. 85) is that the "q-ratio on which the theory is based is an average ratio. Critics maintain that the marginal rather than the average ratio more crucially affect investment decision making." In addition, according to Udah (2010, p. 261) "Precious (1985) and Hayashi (1982) [argued] that if firms enjoy economies of scale or cannot sell all their products, marginal or average Q will differ." However, Anyanwu and Oaikhenan (1995, p. 85) points out that "this criticism does not seem to be fundamentally devastating to the theory since Summers (1981) has demonstrated that the average q ratio and the marginal q ratio are roughly equal."

Moreover, according to Udah (2010, p. 261) Precious (1985) and Hayashi (1982) also argued that "the assumption of increasing installation cost is suspect. This is because the cost of acquiring additional capital stock by the firm is likely to be either proportional to the investment volume, due to the lumpy nature of most investment projects. Furthermore, since capital goods are firm specific with a low second hand value, disinvestment is more costly than investment."

From the theoretical literature discussed above, it could be seen that different theories that explains investment function and how investment decisions are formed, have evolved over the past decades. Hence, it will be interesting to look into the empirical literature which emanates from the theories of investment. The empirical literature with evidences from both developed and developing country will be discussed below.

2.4 Empirical Literature

The effects of government expenditure on domestic private investment in a country have remained a highly contentious issue in the field of economics and public finance. Empirical studies conducted to investigate the relationship between government expenditure and domestic private investment in both developed and developing countries has not yielded a consistent

result. While some studies found out that there is a positive relationship between government expenditure and domestic private investment, others found out that government expenditure and domestic private investment are insignificant or not related.

The empirical study on the relationship between government expenditure and domestic private investment basically shows if government expenditure crowd-in or crowd-out domestic private investment. However, whether government expenditure will crowd-in or crowd-out domestic private investment depends on a number of factors, such as the type of government expenditure being considered and the country of analysis. Hence, some components of government expenditure crowd-in domestic private investment, while others crowd-out domestic private investment. According to Wang (2005, p. 493), "although many studies have provided valuable insights into this issue, it still remains highly controversial." Bello, Nagwari, and Saulawa (2011, p. 10) state that "The relationship between private and public spending goes back as early as Bailey (1971) and Buiter (1977). These two studies were mainly concerned with the crowding-out effect of public expenditure and the degree of substitutability and complimentarily relationship between private and public spending." Moreover, "the works of Aschaver (1985) and Monadjemi (1993) provided evidence in support of the substitutability hypothesis. On the other hand, Monadjemi notes that, Aschaver (1989), Eremburg (1993), Karras (1994), were supportive of the complementarily nature of public and private spending" (Gatawa and Bello, 2011, p. 50).

Monadjemi (1995) investigated the relationship between public expenditure and private investment. His study was based on the combination of the neoclassical and the accelerator model of investment. He decomposed government expenditure into the following components, defense spending, government real investment, government consumption expenditure, and

government social welfare expenditure such as expenditure on education and health. These components of government expenditure were used as the explanatory variables in investment regression equation.

Wang (2005) examined the relationship between government expenditures and private investment in Canada from the period 1961 to 2000. In the course of the study which examined the effects of five components of government expenditure on private investment using Johansen cointegration and Error Correction Model (ECM) technique. The findings of his empirical study show that government expenditure on education and health has positive effects on private investment, thereby crowd-in private investment, whereas government expenditures on capital and infrastructure have negative effects on private investment, thereby crowd-out private investment. While other government expenditure component, including government expenditure on protection of persons and property, expenditure on debt charges, and expenditure on government and social services have no significant effects on private investment. This means that they neither crowd-in nor crowd-out private investment.

The study of Aschauer (1989a) investigated the relationship between public capital and private investment, that is, the effect of public spending on private sectors marginal productivity of capital. The researcher decomposed government expenditure to the following components, expenditure on roads, education, airports and research. The result of the analysis shows an increase in private sectors productivity complements public investment expenditure.

Gatawa and Bello (2011) analyzed the effect of government expenditure on gross domestic private investment in Nigeria using time series annual data for the period of 1975 to 2009. They had thirty-four observations. In their empirical study, they applied the cointegration and multiple regression techniques in analyzing the data. The result of their analyzed data show that the actual

effect of government expenditure on private investment varies depending on the type of expenditure under consideration. Federal government recurrent expenditure has a negative relationship with the private investment, this implies that it crowd-out domestic private investment during the period of study. Furthermore, the study revealed a positive relationship between inflation rate and domestic private investment.

More so, the studies of Bello, Nagwari, and Saulawa (2011) examined the extent to which government spending crowd-in or crowd-out private investment in Nigeria. This study used a time series annual data for the period of 1975 to 2009, which includes 34 observations to investigate this relationship. Moreover, "the paper lays emphasis on disaggregating the capital and recurrent spending of the federal government and examining their separate effect on private investment" (Bello, Nagwari, and Saulawa, 2011, p. 9). The results from the analysis indicate that certain components of government spending crowd-in private investment, while others crowded-out private investment. "The study concluded that the result of the analysis confirmed the basic findings of some earlier studies that the actual impact of government spending on private sector investment varies depending on the type of government spending under consideration" (Bello, Nagwari, and Saulawa, 2011, p. 18).

Furthermore, the study of Bairam (1990), which covered twenty African countries from 1960 to 1985, estimated an investment function and consumption function in which government expenditure was an argument. In the case of Nigeria, the finding revealed a positive but insignificant effect of government expenditure on private investment and a negative but significant impact in private consumption.

Paiko (2012) examined deficit financing and its implication on private sector investment in Nigeria, using annual time series data from 1990 to 2007 for analysis. Ordinary Least Squared

(OLS) technique was applied in calculating the relative impact of deficit financing on private investment in Nigeria. The author concluded that "the impact of government expenditures on private investment and also how the financing of budget deficit have not only affected the performance of private investment but also how it crowds out private investment in Nigeria" (Paiko, 2012, p. 45). The findings also showed a negative relationship between deficit financing and private investment in the period under investigation. This implies that deficit financing crowds-out private investment in Nigeria.

In addition, Ekpo (1995) used the ordinary least squares method to examine the relationship between private investment and public expenditure, and decomposed government expenditure into various components for analysis. The attempt investigated the impact of categories of government expenditure on private investment in Nigeria. The study isolated infrastructure expenditure (as social services expenditure that does not compete with private investment) from real sector investment expenditure such as the manufacturing and construction, which competes with private investment. The results from the study's analysis showed that social services expenditure crowd–in private investment, while real sector expenditure on manufacturing and construction crowd–out private investment. The study also found out that expenditure on education and health crowd-in or complements private investment in Nigeria.

Blejar and Khan (1994) examined the effects of public deficit on private investment in the following countries, Cote d'Ivoire, Thailand, and Argentina. The result of their analysis shows that there is a negative relationship between public deficit and private investment in all the countries in their investigation. However, the effect is much stronger in Thailand but weak in Cote d'Ivoire and Argentina.

In the study of Chibber and Pahwa (1994), the determinants of the rates of change of private investment in Nigeria using co-integration and error correction model were examined. The result of their analysis showed public investment (public capital stock) has positive effect on private investment.

Wu and Zhang (2009) investigated the relationship between government expenditure and private investment in China, with in the period of 1978 to 2004. Co-integration and error correction technique were applied to examine the effects of three categories of government on private investment. The empirical results showed that government investment expenditure crowds out private investment in the short-term and crowds in private investment in the long-run. Also the government consumption expenditure and government transfer expenditure crowd out private investment, but has an insignificant effect.

From the review of the various studies above, apparently the effect of government expenditure on private investment is a controversial subject matter in economics. According to Gatawa and Bello (2011, p. 52), "the neoclassical economists oppose government spending from both philosophical point and also due to the crowding–out effect on private spending. Keynesian analysis however stresses the fact of market failure as the basis for government intervention." In the next section, the concept of crowding out effect will be further explained and illustrated using the IS-LM model.

2.5 The Crowding-out Effect and the Investment Saving-Liquidity Preference Money Supply (IS-LM) Model

There are two different perspectives on the impact of increased government expenditure and investment on gross domestic private investment. According to Anti Essay (2012), the first

view argues that government spending or expenditure crowds-out private investment. The author's argument explained that increase in government expenditure requires financing, and government usually finances expenditure through imposition of taxes or imposition of a "higher demand for funds from the government in the capital markets" (Anti Essays, 2012, para. 1), as a result, interest rate will increase and capital becomes more expensive. According to Anti Essays (2012, para. 1), "this would reduce the amount of savings available for private investors and decrease the expected rate of return of private capital, leading to a crowding-out effect on private investment." Wang (2005) also points out that increases in government spending financed by issuing more bonds will drive up the interest rate and the higher interest rate will crowd out some amount of business investments and offset the effect of the increase in government spending on aggregate demand.

Furthermore, Carlson and Spencer (1975, p. 2) point out that "the notion, popularly known as "crowding-out" effect of Government expenditures, has recently gained wide-spread attention at two-levels." These are the policy level and the academic level. At the policy level, Carlson and Spencer (1975, p. 2) say that "public officials have expressed concern that massive current and projected Federal deficits will have a deleterious effect on private capital expenditures for some time to come." On the other hand, at the academic level, Carlson and Spencer (1975, p. 2) also point out that "crowding-out is at least one of the issues which help to distinguish between followers of the two major macro-economic schools of thought - Keynesians and Monetarists."

Moreover, Carlson and Spencer (1975, p. 3) explains that "crowding out implies that an increase in Government spending, given flexible prices and a constant money supply, has no

lasting effect on nominal income. In other words, the steady state Government spending multiplier, under the above conditions, is approximately zero."

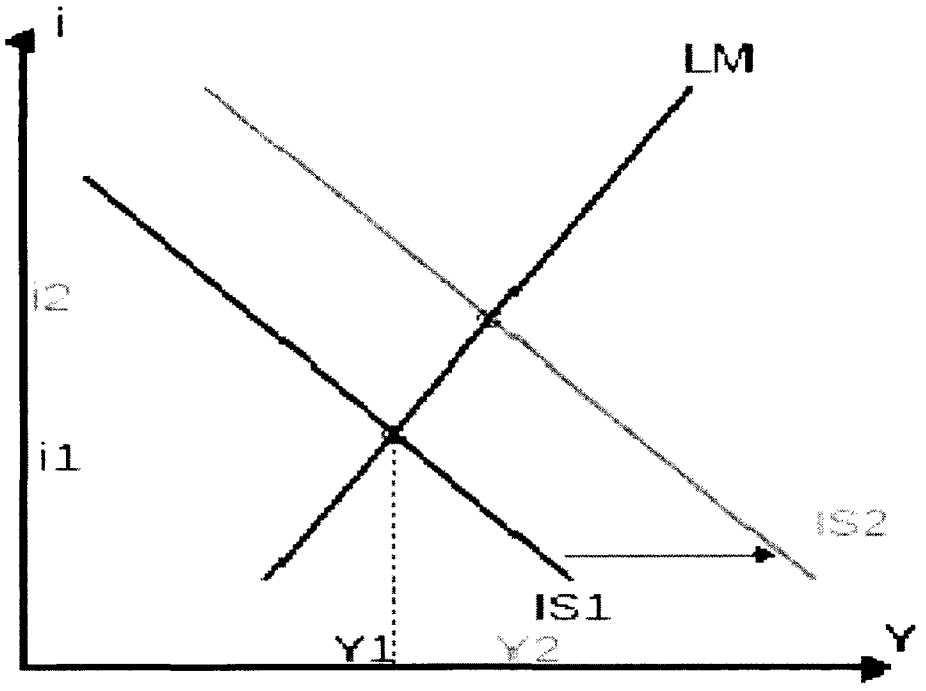
Carlson and Spencer (1975, p. 3) explains further that

> "by approximately zero, we mean that increased Government demand may crowd out exactly the same amount of private demand, slightly less, or slightly more. There is complete crowding out of $1 of Government demand displaces $1 of private demand, partial crowding out if $1 of Government demand displaces less than $1 of private demand, and over crowding out if $1 of Government demand displaces more than $1 of private demand. The increased Government demand may increase aggregate demand temporarily, permanently, or not at all."

On the other hand, according to Anti Essays (2012, para. 2), "the non-traditional view is that government expenditure and public investment can create additional favorable conditions for private investment, for instance, by providing or promoting relevant infrastructure such as roads, highways, sewage systems, harbors or airports." The existence of good infrastructural facilities could encourage private investment and therefore increase their productivity. As a result, as Anti Essays (2012, para. 2) points out, this can then "take advantage of better overall infrastructures and potentially improved business conditions, which would result in having a crowding-in effect on private investment. This may arise in many developing countries where the economy's resources are un- and under-employed."

According to Carlson and Spencer (1975, p. 2), "many of the developments in the crowding-out controversy can be described in the context of the standard IS-LM analytic framework." Crowding out and crowding in effect can be explained using the IS-LM diagram below:

Figure 2.1: Investment Saving-Liquidity Preference Money Supply (IS-LM) Model



Source: IS-LM Model, en.wikipedia.org/wiki/IS-LM_model

In the IS-LM framework, "which is the cornerstone of most macroeconomics courses taught throughout the western world, the IS curve represents the locus of points (pairs of interest rates and real income) in which the real sector of the economy is in equilibrium, and the LM curve represents a similar locus of points for which the demand for money equals the supply" (Carlson and Spencer, 1975, p. 2). Therefore, from Figure 2.1 above, IS represents the fiscal policy effect while LM represents the monetary policy effect. i is the interest rate and Y in the real Gross Domestic Product (GDP). When government intervenes in the economy using the fiscal policy, the IS curve shifts or moves, depending on the type of measure applied. The government can either apply expansionary or contractionary fiscal policy measures. From Figure

2.1 above, it is evident that the government applied the expansionary fiscal policy (reduction in tax and or increase in expenditure), because the IS curve shifts to the right from IS1 to IS2 and the real GDP increased from Y1 to Y2. Also, as a result of the expansionary fiscal policy applied by the government, the interest rate increased from i1 to i2, therefore, resulting to a crowding out effect. This is because, a higher interest rate discourages investment as it increases the opportunity cost of borrowing money.

"The subject of crowding out is approached by first investigating a number of separate 'cases' which provide various explanations of how crowding out might occur. Next, the role of stability considerations in the controversy is assessed. Finally, several econometric models are examined to; determine what empirical implications they have for the crowding-out issue" (Carlson and Spencer, 1975, p. 2).

According to Wang (2005, p. 494), "it is frequently argued that the crowding-out effect will be absent when a fiscal expansion is coupled with an accommodating monetary policy because the latter prevents interest rates from moving up. In the IS-LM framework, this policy option is interpreted as a simultaneous rightward shift of both IS and LM curves."

Carlson and Spencer (1975, p. 2) also points out that "The IS-LM apparatus has distinct limitations, but because of its widespread use as a pedagogical device, it serves a useful function in highlighting the issues in the crowding-out controversy." Therefore, IS-LM model is still relevant in explaining the crowding-in and crowding-out concept.

Having discussed both the theoretical and empirical literature as relates to the subject matter above, it becomes necessary to examine the public policies and the movement of gross domestic private investment, as well as government expenditure in Nigeria, during the period of

review. The manner in which, public policies impact the government spending behaviour and hence the gross domestic private investment, will be examined in the next three sections below.

2.6 Public Policies in Nigeria

My research period started from the third National Development plan (1975-1980). As Anyanwu and Oaikhenan (1995, p. 366) pointed out the second National Development plan, which was from the period of 1970-1974 and it "accorded a leading role to government just as it considered public enterprise as crucial to growth and self – reliance due to capital scarcity, structural defects in the private sector and perceived danger of foreign dominance of the private sector." However, the third National Development Plan proposed "some shift in resources allocation in favor of rural areas, which were said to have benefited little from the economic growth of 1970's." (Anyanwu and Oaikhenan, 1995, p. 366) This was to ensure that the subsistence farmers and people in the rural area are partakers of the benefits from public expenditure. More so, Anyanwu and Oaikhenan (1995, p. 366) point out, "the poorer sections of the population were to be provided subsidized facilities such as water supply, health services, electricity, etc." However, "an exception was the 1977/78 to 1979/80 fiscal year which was essentially restrictive." (Anyanwu and Oaikhenan, 1995, p. 367)

Furthermore, during the Third National Plan which was from 1981 to1985, "the role of fiscal policy was viewed mainly as the generation of revenue through increased tax effort and the control of public spending" (Anyanwu and Oaikhenan, 1995, p. 367). However, this was contrary to the "background of the austere fiscal outlook of the government" (Anyanwu and Oaikhenan, 1995, p. 367). In July 1986, the Structural Adjustment Program (SAP) was introduced. This policy advocated for the deregulation of the Nigerian Economy, hence, "the financial resources for public expenditure for the rest of the 1980s and beyond were likely to be

less than was previously envisaged" (Anyanwu and Oaikhenan, 1995, p. 367). Also, as Anyanwu and Oaikhenan (1995, p. 367) point out, "given the uncertainty in the oil market and substantial debt repayment falling due, there was need to curtail government expenditure, especially those involving foreign exchange." Just as other policies and programs advocated by International Monetary Fund (IMF) and World Bank, different measures were instituted to curtail the government expenditure. As Anyanwu and Oaikhenan, (1995, p. 367) point out, such measures include "reduction of the growth of government wage bill; reduction in government subsidies on fertilizer, foods petroleum and petroleum products; limiting or delaying new investments, and the rationalization, and hence the privatization and commercialization of public enterprise, thereby efficiency of investment and expenditure control and administration."

Moreover, according to Anyanwu and Oaikhenan (1995, p. 367), "government aimed at effort of combat inflation hence budgetary deficit were to be avoided [therefore,] government expenditure was made more cost- effective and kept levels that were consistent with the nation's resources, realistic growth targets, and general economic stability," during the first National Rolling Plan, which was from 1990 to 1992. Hence, the government emphasized on private sector participation through privatization and commercialization, in order to boost the efficiency in allocation of scarce development resources. Therefore, public sector was to focus on laying more emphasis on activities such as, provision of adequate infrastructures, appropriate policy, et cetera, in order to encourage private investment to thrive.

On the other hand, the Second National Rolling Plan (1991-1993) targeted a balanced budget in 1991 and a surplus in 1992 as well as continued selective withdrawal from commercial activities and increased privatization and commercialization of public enterprises (Federal Republic of Nigeria, 1991).

During the first tenure of the civilian rule in Nigeria, National Economic Empowerment and Development Strategy (NEEDS) was formed by President Obasanjo. It was designed for the period of 2003 to 2007. The objective was to "enable Nigeria achieve a turn around and grow a broad based market oriented economy that is private sector - led and in which people can be empowered so that they can, as a minimum, afford the basic needs of life" (Akpobasah, 2004, p. 2). NEEDS's distinguishing feature from the National rolling plan which it replaced is that NEEDS "is Nigeria's Poverty Reduction Strategy and gains inspiration from the Poverty Reduction Strategy Paper (PRSP) which had been under preparation since 2001" (Akpobasah, 2004, p. 2).

From year 2007 to 2011, the public policy in place is the The Seven-Points Agenda, formed by late President Umaru Yar'Adua. According to Dode (2010, p. 2), this agenda "aimed at keying into the objectives of the Millennium Development Goals (MDGs)" of the United Nations (UN). The current president, Goodluck Jonathan continued with the late President Umaru Yar'Adua's Seven-Point Agenda until 2011, when he introduced the Transformation Agenda. The Transformation Agenda is designed for the period 2011 to 2015. According to Gyong (2012, p. 95), "the Transformation Agenda itself is focused on three key areas which include strong, inclusive and non-inflationary growth; employment generation and poverty alleviation and value re-orientation of the citizenry." This Agenda hopes to redirect Nigeria towards the path of sustainable economic growth and development.

In regards to the public policies in Nigeria explained above, the trend of government expenditure in Nigeria under the period of investigation will be analyzed. The analysis will emphasize on the significant economic events and policies within the period under review.

2.7 An Overview of Government Expenditure in Nigeria

Following the objectives of this study, this section will begin by examining the trend of government expenditure in Nigeria from 1975 to 2012. The trend of various functional components of government expenditure will also be discussed.

Table 2 in the appendix displays the level of Nigerian Federal Government Expenditure (recurrent, capital, and total) for the period, 1975 to 2012. There was a relative fall in both recurrent and total expenditure in 1978 and in capital and total expenditure in 1979, post oil price crisis of the 1970s. Moreover, capital expenditure decreased from 1981 to 1984, which was the period when fiscal policy was focused on generating more revenue through increased taxation and control of public expenditure, and also the period of the second oil price shock. Total expenditure also decreased in 1981 and 1983 and recurrent expenditure in 1983. However, from 1986, the onset of SAP, both the recurrent and total expenditure experienced a continuous increase till 1994. On the other hand, capital expenditure experienced a decrease in 1987, afterwards, it had a continuous increase from 1988 to 2000. In 2005, when Nigeria received a debt relief to the tone of $18 billion under President Obasanjo's regime, the recurrent expenditure increased continuously, despite the global financial crisis of 2008 till the end of my investigation period in 2012. The total expenditure also had a continuous increase from 2005 till 2011, but however, decreased by 2.27% in 2012, the first year of the Transformation Agenda. The capital expenditure on the other hand, also had an increase from 2005 to 2009 and experienced a decrease in 2010 and 2012. However, in 2011, the capital expenditure experienced an increase. The decrease in capital expenditure at the end of the study period in 2012 led to the decrease in total expenditure in that same year, 2012.

Furthermore, from the onset of SAP in 1986, which encouraged privatization in the Nigerian economy, the recurrent expenditure was N 7,696.9 million or 47.44% of the total expenditure, but towards the end of my investigation period in 2010, it had increased to N 3,325,156.25 million or 72.20 % of the total government expenditure. However, it was N 7,576.4 million or 58.10% of the total government expenditure in 1985, a year before the commencement of SAP reforms. In point of fact, throughout the period from 1987 to 1995, there was no year that had the proportion of the recurrent expenditure, as a percentage of the total federal expenditure below 51%. Moreover, from year 2000, which is a year after the commencement of the civilian system of government in Nigeria, there was no year that had the proportion of the recurrent expenditure, as a percentage of the total federal expenditure below 56%. In general, during the period of investigation (1975-2012), government recurrent expenditure has had a greater proportion of the total government expenditure. Exceptions were the post oil price crisis period of the 1970s and shortly before the commencement of SAP (1975-1983), then on the onset of SAP in 1986, and finally, cutting across the regimes of General Sani Abacha and General Abdulsalaam Abubakar from 1996 to 1999.

On the other hand, the government capital expenditure stood at N 8,526.8 million or 52.56% of total federal expenditure in 1986 and rose to N 874,762.27 million or 18.99% of total expenditure at the end of the investigation period in 2012. Albeit capital expenditure as a proportion of total expenditure stood at 41.90% in 1985 (and in fact 52.82% in 1982), it never exceeded 49% in any year between 1987 and 1995. On the other hand, total government expenditure increased persistently from N 5,942.6 million in 1975 to N 4,605,319.72 million in 2011, representing a total increase of 77,396.71% over the investigation period. As pointed out by Anyanwu and Oaikhenan (1995), "much of this growth in total expenditures was accounted

for by the increase in transfer payments (especially debt service payments), while the share of expenditures on productive activities actually declined."

In general, from the government expenditure trend analysis above, it could be established that the total government expenditure had experienced an increase over the investigation period (1975-2012). Also, on the average, the government recurrent expenditure had a greater proportion of the total expenditure, than the government capital expenditure.

2.7.1 Functional Analysis of Government Expenditure

Table 3 in the appendix further illustrates the functional distribution of total federal expenditure for the investigation period 1975 to 2012. For the purpose of this study, government expenditure is disintegrated into five components. These components are as follows; administration and transfer, agriculture, infrastructure, human capital development, and public debt servicing. The details are explained in the research methodology section of this research (Chapter 3). Figure 2.2 below shows the graph of these five components, and from the plot, it could be seen at a glance that government expenditure in these five components has been volatile over the years.

During the post oil price crises of the 1970s, government expenditure on administration experienced a continuous increase from 1979 to 1982, post second oil price shock of the early 1980s. It increased from N 3,126.90 million in 1979 to N 5,146.98 million by 1982. Furthermore, government expenditure on administration also experienced an increase in 1986 (commencement of SAP) and early post-SAP period (1987-1988). It increased from N 4,739.16 million in 1986 to N 9,158.74 million in 1988. It is important to note that a year (2007) before the settling in of the global financial crisis of 2008, till 2011, towards end of the investigation period, government expenditure on administration experienced a continuous increase. It increased from N 9,589.24

million in 2007 to N 15,586.42 million in 2011. Overall, government expenditure on infrastructure increased from N 6,781.77 million in 1975 to N 10,964.33 million in 2012.

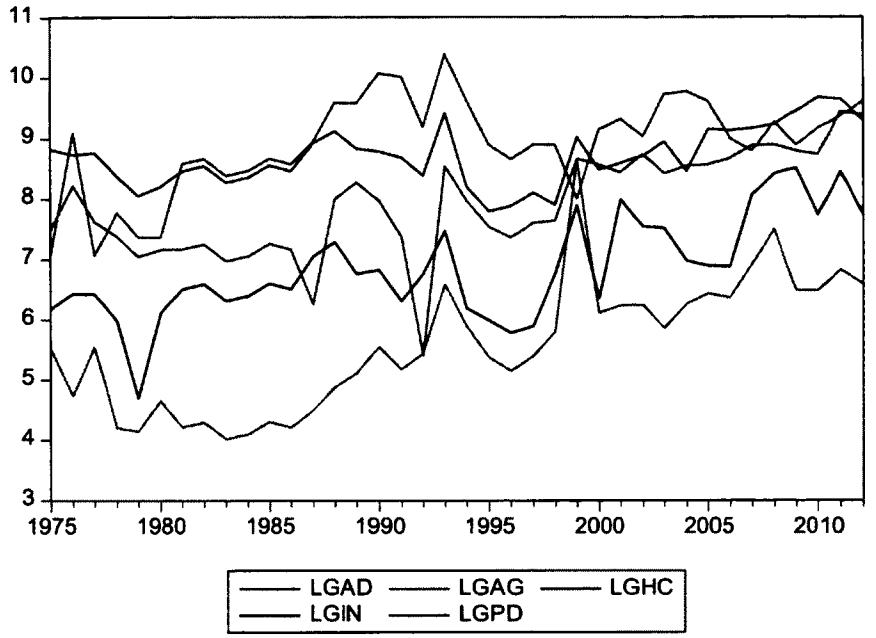
On the other hand, government expenditure on agriculture also experienced a decrease during the post oil price shock of the 1970s. It decreased from N 249.32 million in 1975 to N 63.24 million in 1979. Moreover, government expenditure on agriculture increased from N 60.20 million in 1984, two years before the onset of SAP, to N 258 million in 1990, post-SAP period. It also increased from N 349.08 million in 2003 to N 1,824.59 in 2008, the period of NEEDS and the onset of global financial crisis. In general, government expenditure on agriculture increased from N 249.32 in 1975 to N 730.08 million in 2012.

Furthermore, government expenditure on infrastructure also had a decrease during the post oil price shock of the 1970s. It decreased from N 621.43 million in 1976 to N 109.91 million in 1979. More so, just as other components except, government expenditure on human capital development, government expenditure on infrastructure increased from N 596.42 million in 1984, two years prior SAP, to N 1,459.62 million in 1988, post-SAP period. Government expenditure on infrastructure experienced a decrease from the beginning of NEEDS policy in 2003 till a year prior to the end of the policy, 2006; from N 1,835.43 million in 2003 to N 966.51 million by 2006. This was not as expected because the NEEDS policy was market oriented and focused on encouraging private sector development, it is expected that government would spend more on infrastructure in order to create an enabling environment for private sector to thrive. Also, government expenditure on infrastructure had an increase in a year prior to global financial crisis, 2007 till 2009. It however decreased again in 2010. Overall, government expenditure on infrastructure increased from N 483.87 million in 1975 to N 4,658.11 million in 2011, but decreased to N 2,334.94 million in 2012, the end of my investigation period.

In reference to the post oil price shock period of the 1970s, government expenditure on human capital development followed the path of the earlier discussed components of government expenditure above. It experienced a decrease from N 3,725.48 million in 1976 to N 1,151.39 million in 1979. It decreased further to N 518.93 million in 1987, post-SAP period. However, it is important to point out that government expenditure on human capital development maintained a continuous increased from the year prior to the year Nigeria received debt forgiveness, 2004 till towards the end of my investigation period, 2011. It increased from N 5,136.25 million in 2004 to N 12,653.41 million in 2011, notwithstanding the global financial crisis of 2008. However, it decreased slightly to N 11,977.23 million by the end of my investigation period in 2012.

The last component of government expenditure in this study is government expenditure on public debt servicing. Nigeria has been a country running a budget deficit. A large proportion of government spending is funded through public borrowings, especially from international financial organisations, such as World Bank or International Monetary Fund (IMF). In 2005, a year prior to SAP, and during SAP period, government expenditure on public debt servicing experienced an increase. It increased from N 5,847.80 million in 1985 to N 14,644.81 million in 1988. According to Anyanwu and Oaikhenan (1995, p. 374), "it is not surprising then that Nigeria, in spite of SAP, has been running ever increasing budget deficits." Furthermore, from 2004, a year prior to the debt forgiveness, to 2007, government expenditure on public debt servicing experienced a decrease. It decreased from N 16,835.54 million in 2003 to N 6,608.98 million in 2007. However, despite the debt forgiveness in year 2005, government expenditure on public debt servicing began to experience a continuous increase from 2008 (on set of global crisis) to 2012 (end of my investigation period). It increased from N 10,635.21 million in 2008 to N 14,892.68 million in 2012.

Figure 2.2: Components of Real Government Expenditure in Nigeria from 1975 to 2012



Source: Eview Output, Data from CBN Statistical Bulletin 2012 Edition

In regards to the trend analysis of the government expenditure above, overall, according to Anyanwu and Oaikhenan (1995, p. 380), "the government has not consistently controlled expenditures and hence fiscal deficits." The management of public expenditure over the investigation period has been inefficacious for a number of reasons. Anyanwu and Oaikhenan (1995, p. 380) rightly pointed out that, "although the government has implemented several potentially useful reforms in public expenditure programming (e.g. a system for centralized oversight has been established and rolling plans put in place in principle), these procedural changes have seemingly had very little effect on actual budgeting practices and outcomes." Government regularly yields to greater extra-budgetary expenditure pressures, hence, spending outside the budget. Therefore, government adherence to rules and commitment to spending discipline becomes weak and erratic. According to Anyanwu and Oaikhenan (1995, p. 380)

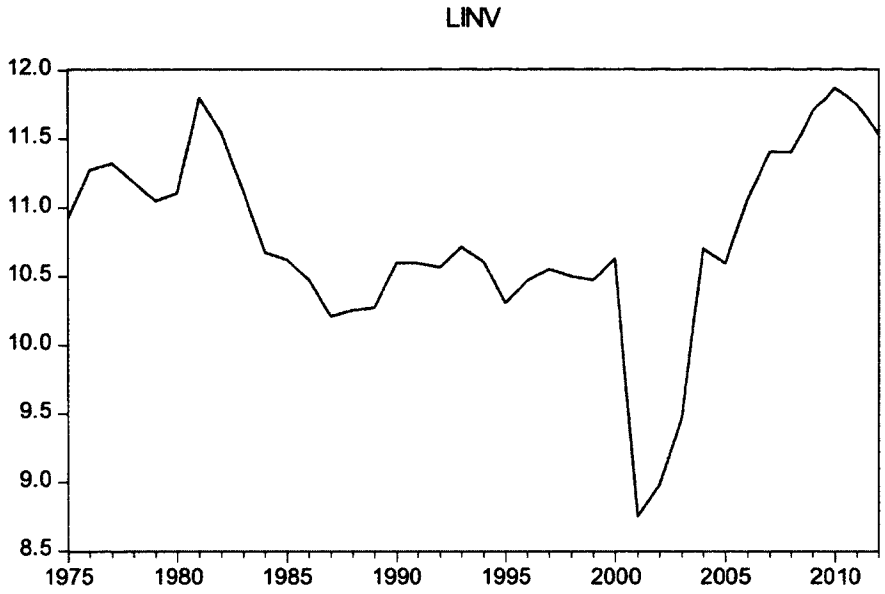
"expenditure decisions and the rationale for expenditure patterns have lacked transparency and the government yields too easily to pressure for greater extra-budgetary spending, even when it is aware of the undesirability of doing so."

Furthermore, the increasing debt strain has also impacted negatively on the management of government expenditure. Prior to the debt forgiveness in 2005, "the government must pay about 5% of the nation's GDP as debt service, which is one of the highest shares among developing nations" (Anyanwu and Oaikhenan, 1995, p. 380). Anyanwu and Oaikhenan (1995, p. 380) further points out that "the overall fiscal balance from 1986 to 1994 averaged -8.71%. This debt obligation, along with excessive expenditures on some areas such as administration and other transfers, had led to deficit financing and necessitated cuts in high-priority expenditures such as economic, social and community services."

2.8 An Overview of Domestic Private Investment in Nigeria

Following the objectives of this study, this section will begin by examining the trend of gross domestic private investment from 1975 till 2012. The discussions will also be focused on economic events and public polies within the period of study.

Figure 2.3: Plot of Real Gross Domestic Private Investment in Nigeria from 1975 to 2012



Source: Eview Output, Data from CBN Statistical Bulletin 2004 and 2012 Edition

From Figure 2.3, graph of the gross domestic private investment in Nigeria above, it could be seen from a glance that the trend of gross domestic private investment in Nigeria has been volatile over the period under investigation. On the average, the performance of gross domestic private investment in Nigeria over the period under investigation has been weak. From Table 3 in the appendix, it could be seen that from the period after the second oil price shock in the early 1980s, there was a consistent decrease in gross domestic private investment, up to the post SAP period. Gross domestic private investment decreased from N 133,217.52 million in 1981 to N 28,369.81 million in 1988. The decrease in gross domestic private investment in the post SAP period is as expected since the purpose of SAP is to reduce government intervention in the economy and thus enhance and encourage privatization and commercialization.

Furthermore, the first-two years of the second national rolling plan also experienced a decrease in the gross domestic private investment. It had a slight decrease from N 40,121.31 million in 1990 to N 38,771.57 million in 1992. Prior to the commencement of the National Economic Empowerment and Development Strategy (NEEDS), as at year 2001, the gross domestic private investment was very low at N 6,331.64 million but by the end of National Economic Empowerment and Development Strategy (NEEDS) in 2007, it has increased to N 89,896.86 million.

Moreover, from Table 3 in the appendix, it is important to note that prior to debt forgiveness in 2005 to the tune of $18 billion by the Paris club, during President Obasanjo's tenure, the gross domestic private investment decreased from N 44,443.72 million in 2004 to N 39,795.29 million in 2005. However, from the year 2005 that Nigeria received the debt forgiveness from Paris club, the gross domestic private investment experienced an increase till towards the end of my investigation period, despite the global financial crisis in year 2008. Hence, from Table 3 in the appendix, it could be observed that the gross domestic private investment increased from N 39,795.29 million in 2005 to N 142,316.45 million in 2010. However, there was a decrease in the last two years of my investigation period. Gross domestic private investment decreased from N 142,316.45 million in 2010, to N 101,699.73 million by 2012.

From the trend analysis of gross domestic private investment above, it could be observed that the movement of gross domestic private investment during my investigation period has not been consistent. Also, gross domestic private investment has performed poorly within the period.

Therefore, government of Nigeria need to increase her investment in the private sector as well as create an enabling ground to encourage private investment, in order to raise the growth of

capital formation in Nigeria. As established at the second section above, it is a given that private investment enhances economic growth and reduces poverty in a developing country, such as Nigeria.

Using an econometric approach, this study will further investigate how the pattern of each component of government expenditure during the investigation period impacted the gross domestic private investment in the same period. The result of the analysis will be presented in data analysis and result section of this study (Chapter four).

2.9 Conclusion

Presented in this chapter is a review of the theoretical and empirical literature submitted by scholars on the subject matter under study on both developed and developing economies. It is interesting to discover that scholars share varying views on the impact of government expenditure on gross domestic private investment. The different econometric techniques and different models used by the writers could have a major impact on the results produced. However, most importantly, the impact of government expenditure on private investment depends on what type or component of expenditure being investigated.

In particular, evidence from Nigeria suggests that most writers investigated the impact of total government expenditure on private investment. Therefore, most of the writers did not decompose government expenditure into various components. Some writers that did decompose government expenditure had different grouping than is to be used further in this study. Hence, the outcome of their investigation varies, depending on the technique used in their analysis.

Finally, as stated in the objective of this study in Chapter one, the trend of gross domestic private investment and government expenditure was also analyzed in this chapter. From the trend

analysis, the movements of gross domestic private investment, as well as government expenditure over the investigation period were discussed with emphasizes on periods significant to the public policy reforms in Nigeria. Both macroeconomic variables have had a weak performance on the average, during the period of my investigation.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The chapter essentially presents the method of achieving the main and specific objectives of this study itemized in chapter one. Section 3.2 covers model specification, while section 3.3 captures the technique of analysis, and section 3.4 gives the data description. The chapter describes the research design, the population, sampling size and technique, data collection instrument, collection process, and analysis.

3.2 Model Specification

Earlier studies conducted to determine the impact of government expenditure on gross domestic private investment in Nigeria did not decompose the government expenditure into various components in order to examine their different effects on gross domestic private investment, except for the study by Bello, Nagwari, and Saulawa, (2011). However, Bello, Nagwari, and Saulawa, (2011) did not incorporate the real GDP into their model in order to observe the relationship between real GDP and private investment as I did in my model and analysis. Furthermore, Bello, Nagwari, and Saulawa, (2011) used multiple regression analysis to examine the impact of government expenditure on private investment, whereas I used co-integration and Error Correction Model (ECM) for my analysis, in order to capture both the long-term and short-term impact of the different components of government expenditure on gross domestic private investment.

Therefore, in an attempt to examine the effects of each component of government expenditure on gross domestic private investment in Nigeria, this study adopts only one model, an investment model that has different components of government expenditure and Gross

Domestic Product (GDP) as the independent variables. Gross fixed capital formation is used as a proxy for gross domestic private investment.

In the model of this study, government expenditure is disintegrated into five components and each of their effects on gross domestic private investment is examined. Gross domestic private investment would be the dependent variable, while real Gross Domestic Product (GDP), government recurrent expenditure on administration, government recurrent expenditure on agriculture, government recurrent expenditure on infrastructure, government recurrent expenditure on human capital development, and government recurrent expenditure on public debt servicing would be the independent variable in the model. Following this pattern, this study therefore specifies the models below.

The investment model used to capture both the short-run and long-run impact of various components of government expenditure on gross domestic private investment in Nigeria is specified as:

$$Inv_t = \delta_0 + \delta_1 y_t + \sum_{i=1}^{n} b_i x_{it} + u_t \quad \ldots\ldots\ldots(1)$$

Where: Inv = Real Gross domestic private investment

y = Real Gross Domestic Product (GDP)

x_i, i = 1, 2,....n, are various components of real government expenditures

δ_0, δ_1, and b_i are the coefficients

u = Error term

t = time period

3.3 Technique of Analysis

In this model, the real gross domestic product (GDP) and different components of real government expenditures are the independent variables. This model is similar to that used by Wang (2005), Laopodis (2001), amd Monadjemi (1996). This model has some distinct features which distinguished it from investment models used by other researchers such as Bello, Nagwari, and Saulawa, (2011), to investigate the effect of government expenditure on private investment in Nigeria. Firstly, this model took into consideration both the Keynesian (accelerator) and neoclassical theories of investment by including the real gross domestic product (GDP) as a factor that determines private investment. Secondly, interest rate is not included in the model as an independent variable because its impact on investment is implicitly taken into consideration, as interest rate has its way of working through government deficits and expenditure.

Furthermore, researchers that have carried out this similar research in the past, with Nigeria as a case study, and that also divided government expenditure into various components, such as Bello, Nagwari, and Saulawa, (2011), made use of multiple regression technique for their analysis. However, as pointed out by Wang (2005, p. 495), the "direct application of conventional regression techniques to Equation (1) is not appropriate since most macroeconomic time series variables are non-stationary so as to make conventional hypothesis-testing procedures based on the t , F , χ 2 statistics unreliable." Therefore, in this research study, unit root tests would be performed on the series to determine their level of stationarity. After which, co-integration in macroeconomic time series is also tested to avoid the likelihood of obtaining spurious results and to obtain the long-run relationship among the variables. According to Wang (2005, p. 495), this procedure of testing the unit root and cointegration in macroeconomic time series variables "started gaining popularity in the early 1980.s."

There are various tests employed to check the stationarity of time series, but the most common tests are the Augmented Dickey-Fuller (ADF) (Dickey and Fuller, 1979, 1981) and the Phillips and Perron (PP) (Phillips and Perron, 1988) tests. For the purpose of this research study, the Augmented Dickey-Fuller (ADF) approach is used to test for stationarity of the macroeconomics time series variables in Equation (1).

Dickey and Fuller (1979, 1981) devised a method to formally test for stationarity, which involves testing for the existence of a unit root in the macroeconomics time series variables. This method starts with the AR (1) model.

$$y_t = \phi y_{t-1} + u_t$$

In this model, we need to determine whether ϕ is equal to 1.

The null hypothesis is: $H^0 : \phi = 1$

while the alternative hypothesis is: $H^1 : \phi < 1$

$$y_t - y_{t-1} = \phi y_{t-1} - y_{t-1} + u_t$$
$$\Delta y_{t-1} = (\phi - 1) y_{t-1} + u_t$$
$$\Delta y_{t-1} = \gamma y_{t-1} + u_t$$

where $\gamma = (\phi - 1)$

The null hypothesis is now: $H^0: \gamma = 0$

while the alternative hypothesis is now: $H^1 : \gamma < 0$

where if $\gamma = 0$, then y_t follows a pure random walk, this means that there is a unit root.

The following are the three alternative regression equations proposed by Dickey and Fuller (1979) for testing the presence of unit root.

The first has no constant and no trend:

$$\Delta y_{t-1} = \gamma y_{t-1} + u_t$$

The second has a constant but no trend:

$$\Delta y_{t-1} = \alpha_0 + \gamma y_{t-1} + u_t$$

The third has both a constant and a trend:

$$\Delta y_{t-1} = \alpha_0 + a_2 t + \gamma y_{t-1} + u_t$$

However, because error term may not be white noise, Dickey and Fuller extended their test technique by introducing an augmented version of their test. This new version includes extra lagged terms of the dependent variable, in order to eliminate serial correlation. This new version of Dickey and Fuller test is called the Augmented Dickey-Fuller (ADF) test. For the purpose of this study, the lag length on these extra terms will be determined by the Akaike Information Criterion (AIC).

Therefore, the three alternative regression equations of the Augmented Dickey-Fuller (ADF) test, for testing the presence of unit root are:

$$(1) \quad \Delta Y_t = \gamma Y_{t-1} + \sum_{j=1}^{p} \left(\delta_j \Delta Y_{t-j} \right) + e_t$$

$$(2) \quad \Delta Y_t = \alpha + \gamma Y_{t-1} + \sum_{j=1}^{p} \left(\delta_j \Delta Y_{t-j} \right) + e_t$$

$$(3) \quad \Delta Y_t = \alpha + \beta t + \gamma Y_{t-1} + \sum_{j=1}^{p} \left(\delta_j \Delta Y_{t-j} \right) + e_t$$

where:

t is the time index,

α is an intercept constant called a drift,

β is the coefficient on a time trend,

γ is the coefficient presenting process root, i.e. the focus of testing,

p is the lag order of the first-differences autoregressive process,

e_t is an independent identically distributes residual term

The result of this test depends on the value of γ in any of the three equations of ADF test. If $\gamma \neq 0$ then, there is no unit root. Furthermore, this test also depends on the "t" test, but the critical values for this "t" test are different from the normal "t" test. Table 3.1 below shows the critical values for the "t" test is devised by Mackinnon (1991):

Table 3.1: Critical "t" Values

Model	**1%**	**5%**	**10%**
no constant, no trend	-2.56	-1.94	-1.62
constant, no trend	-3.43	-2.86	-2.57
both constant and trend	-3.96	-3.41	-3.13
Standard critical values	-2.33	-1.65	-1.28

If all the variables in the investment model in equation 1 are integrated in first differencing, then cointegration test will be carried out to investigate the long-run relationship between government expenditure and domestic private investment. According to Wang (2005, p. 496), "the existence of the cointegration relationship indicates that these variables share a mutual stochastic trend and are linked in a common long-run equilibrium."

In this study, the Johansen and Juselius maximum likelihood cointegration technique will be used to test the long-run relationship between private investment and the various components of government expenditure, specified in model (1) above. According to Wang (2005, p. 496), "theoretically, if there are n variables in the system, it is possible to have a maximum of $n-1$ linearly independent cointegrating vectors." As Dickey et al. (1991) noted, the limitation that an economic system places on modification of variables in the long run, can be thought to have been typified by the number of co-integrating vectors. Therefore, it can be inferred that more co-integrating vectors shows that the system is relatively more stable, as the system is stationary in diverse directions, as pointed out by Wang (2005).

Furthermore, if the test result shows that there are more than one co-integrating vectors, then one will have to identify which co-integrating vector shows the true relationship putting in consideration the economic theories as noted by Johansen and Juselius, (1994).

If cointegration exists among the variables in the investment model (1) above, then the error-correction model (ECM) will be applied to determine the short-run relationship between private investment and various components of government expenditure. Therefore the impact of real Gross Domestic Product (GDP) and various components of government expenditure on real gross domestic private investment can be investigated using the error-correction model (ECM):

$$\Delta Inv_t = \delta_0 + \delta_1 \Delta y_t + \delta_2 \Delta \mathrm{Gat}_t + \delta_3 \Delta \mathrm{G}ag_t + \delta_4 \Delta \mathrm{G}in_t + \delta_5 \Delta \mathrm{G}hc_t + \delta_6 \Delta \mathrm{G}pd_t + \delta_7 u_{t-1} + \varepsilon_t$$

Where: ΔlInv = Percentage change in log of real gross domestic private investment

ΔlY = Percentage change log of real Gross Domestic Product (GDP)

ΔlGad = Percentage change log of real government expenditure on administration

ΔlGag = Percentage change log of real government expenditure on agriculture

ΔlGin = Percentage change log of real government expenditure on infrastructure

ΔlGhc = Percentage change log of real government expenditure on human capital development

ΔlGpd= Percentage change log of real government expenditure on public debt servicing

u = error term from the cointegrating equation

ε_t = Error term

$\delta_0, \delta_1, \delta_2, \delta_3, \delta_4, \delta_5, \delta_6$, and δ_7 are parameters

t = time period

This method would be applied using the 8th edition of the Eview statistical software. More so, besides the cointegration and ECM techniques, tables and graphs would be used to examine the effects of government expenditure on gross domestic private investment in Nigeria.

3.4 Data

The estimation period will cover 1975 to 2012 (post oil price shock crisis) and the data used for this study are secondary data obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin 2004, 2011, and 2012 editions. This data from CBN statistical bulletin is compiled by the National Bureau of Statistics (NBS). The GDP deflator (1990=100) is used to deflate all nominal variables. Hence, all the variables used in this study are real variables.

In the Central Bank of Nigeria (CBN) statistical bulletin, the consolidated government expenditures reported for are being divided into two main categories, namely; capital expenditure and recurrent expenditure. Each of these two categories is further divided into four main divisions, which are, Administration, Social and Community Services, Economic Services, and Transfers. There are a total of fifteen components in all the divisions. These are; (1) General administration; (2) Defence; (3) Internal Security; (4) National Assembly; (5) Education; (6)

Health; (7) Other social and community services; (8) Agriculture; (9) Construction; (10) Transport and Communication; (11) Other economic services; (12) Public debt servicing; (13) Pensions and gratuities; (14) Contingencies/subventions; and (15) Other/Other CFR charges.

Among these components, (1), (2), (3), and (4) make up the Administrative division, (5), (6), and (7) belong to the Social and Community Services division, (8), (9), (10), and (11) make up the Economic Services division, and (12), (13), (14), and (15) belong to the Transfers division.

However, the reported government capital expenditure only shows the aggregate for each of the four divisions (Administration, Social and Community Services, Economic Services, and Transfers) and also there are missing values in some years. Moreover, government recurrent expenditure components such as (2), (3), (14), and (15), are incomplete, while the contents of components (7) and (11) were not clearly specified. Therefore, these components were not included in this empirical study. More so, my empirical investigation involves examining the effect of different components of government expenditure on domestic private investment, however, the government capital expenditure reported was not included as well because the contents of its divisions were not clearly specified and it has some missing values in certain years.

The rest of the components are arranged into five variables namely; government expenditure on administration (gad), government expenditure on agriculture (gag), government expenditure on infrastructure (gin), government expenditure on human capital development (ghc), and government expenditure on government public debt servicing (gpd).

These data were rearranged into five components because of the following reasons. Firstly, government expenditure on agriculture can boost food security by creating more empowered

entrepreneurs in the agriculture sector. For instance, when government gives credit to local farmers or even provide them which modern machineries and fertilizer, there is a possibility this type of government expenditure could crowd-in private investment, not only in the agriculture sector, but in other sectors such as transport. Therefore agriculture is seen as an important component of government expenditure which can impact private investment. Secondly, government expenditure in human capital development is also an important component of expenditure which can positively impact the private investment. For instance, when government spends on health and education, it produces healthy, qualified, and literate labour force. Therefore, the labour force will be more productive and hence, boosts private investment, because human capital is the sole of private investment. Thirdly, government expenditure on infrastructure such as transportation, communication, construction of roads and bridges can also have a direct impact on private investment. According to Wang (2005, p. 497), government expenditure on infrastructure "may be positive (crowding in), negative (crowding out), or neutral, depending upon the substitutability or complementarity relationship." Fourthly, government expenditure on public debt servicing shows policy and interest rates effect. As Wang (2005, p. 497) points out, this "reflects previous deficit policies and interest rate effects." Therefore, it is necessary to know the impact previous policies had on private investment. Lastly, government expenditure on administration may crowd-in or crowd-out private investment. Government expenditure on administration such as salary of government workers, administrative expenses, maintenance and miscellaneous expenses, could also impact private investment positively. For instance, some of these workers could also have a private enterprise aside their civil service to the government.

Therefore, in this study the impact of all these components of government expenditure on private investment was investigated. Table 3.2 below shows these variables and the components that made up each of the variables.

Table 3.2 GOVERNMENT EXPENDITURE COMPONENTS

Variable	**Components included in each variable**
gad	**Administration** (general administration)
gag	**Agriculture** (agriculture)
gin	**Infrastructure** (construction, transportation and communication)
ghc	**Human Capital Development** (health and education)
gpd	**Public Debt Servicing** (public debt servicing)

CHAPTER FOUR

DATA ANALYSIS AND RESULTS

4.1 Introduction

The chapter analyzed the data collected for the study. Section 4.2 focuses on the test for unit root and order of integration of the macroeconomics time series data. Section 4.3 shows the Johansen co-integration test for long-run relationship between government expenditure and gross domestic private investment, while section 4.4 covers the Error Correction Model (ECM), which tests for the short-run relationship between government expenditure and gross domestic private investment. Section 4.5 discusses further, the empirical results obtained from section 4.3 and section 4.4. Finally, section 4.6, section 4.7, section 4.8, and section 4.9 focuses on the test for heteroskedasticity, autocorrelation, multicolinearity, and structural break respectively.

The descriptive statistics of all the variables employed in this study (1975 – 2012) are in the appendix. The descriptive statistics for real private investment, real gross domestic product (GDP), real government expenditure on agriculture, real government expenditure on administration, real government expenditure on human capital development, real government expenditure on infrastructure, and real government expenditure on public debt servicing is displayed in Table 1 of the appendix. Also, Figure 2.2 in Chapter 2, the literature review section of this study displays the time trend of these macroeconomic variables.

4.2 Augmented Dickey-Fuller (ADF) Unit Root Tests for Macroeconomic the Variables

In this paper, I will specifically use two of the three alternative regression equations used for testing unit roots and for checking the order of integration of a series using the ADF test method. The equation I chose is the "constant" equation and "constant and trend" equation.

The first equation is:

$$\Delta y_{t-1} = \alpha_0 + \gamma y_{t-1} + u_t \quad \text{....equation (1)}$$

This equation (1) has only constant.

$$\Delta y_{t-1} = \alpha_0 + a_2 t + \gamma y_{t-1} + u_t \quad \text{....equation (2)}$$

Equation (2) has both constant and Trend

Where Y = log of real macroeconomic variables (real gross domestic private investment (linv), real Gross Domestic Product (GDP) (ly), real government expenditure on agriculture (lgag), real government expenditure on administration (lgad), real government expenditure on human capital development (lghc), real government expenditure on infrastructure (lgin), and real government expenditure on public debt servicing (lgpd)).

t = time trend

γ, α_0, and α_2 are parameters

u_t = error term

Hypothesis: It is expected that most macroeconomic time series data have a unit root and therefore not stationary at the level because most macroeconomic time series are not constant overtime.

Ho: $\gamma = 0$ There is a unit root and the series is not stationary

Hi: $\gamma < 0$ There is no unit root and the series is stationary

Decision rule: Reject Ho if $t_k < t_c$ at 5% critical value/significance level, where t_k is the calculated t-value and t_c is the critical t-value, which are already given with the Eview output.

The ADF unit root test is carried out on all the time series variables; real private investment, real GDP, real government expenditure on agriculture, real government expenditure on administration, real government expenditure on human capital development, real government expenditure on infrastructure, and real government expenditure on public debt servicing. The results are shown in Table 4.1 below.

Table 4.1: Results of ADF t-test for a Unit Root

Variables	**Constant Only**			**Constant and Trend**		
	Level	1st Difference	Order of Integration	Level	1st Difference	Order of Integration
linv	-1.86	-5.67	I(1)	-1.88	-5.69	I(1)
ly	-1.77	-6.14	I(1)	-2.40	-6.18	I(1)
lgad	-2.64	-8.48	I(1)	-3.42	-8.46	I(1)
lgag	-2.27	-8.85	I(1)	-4.78	-8.72	I(0)
lghc	-2.72	-6.09	I(1)	-4.77	-6.43	I(0)
lgin	-2.70	-8.18	I(1)	-4.25	-8.08	I(0)
lgpd	-1.61	-10.83	I(1)	-2.06	-10.61	I(1)
5% Critical level	**-2.94**			**-3.54**		

Note: The computed t statistics for Log of real gross domestic private investment, Log of real GDP, Log of real government expenditure on administration, Log of real government expenditure on agriculture, Log of real government expenditure on human capital, Log of real government expenditure on infrastructure, and Log of real government expenditure on public debt servicing, using the Constant only as well as Constant and trend equation are presented in this Table.

The result in Table 4.1 shows that all the variables; linv, ly, lgad, lgag, lgin, lghc, and lgpd have a unit root and are non-stationary at the levels, but become stationary at the first difference, in constant only equation. Therefore in the constant only equation, all the macroeconomic variables are integrated in the order of one, I(1). However, in constant and trend equation, lgag, lghc, and lgin are stationary at levels, and hence are integrated in the order of zero, I(0). Since all the variables are integrated in the order of one I(1) under the constant only equation, I will treat all macroeconomic variables in this study as being integrated in the order of one, I(1).

4.3 Johansen Co-integration Test

Furthermore, because all the macroeconomic variables used in this study are integrated in the order of one I(1), I will now proceed to investigate whether there is a long-run relationship among these variable. Therefore, Johansen Co-integration method is used to test for the long-run relationship among the variables. I choose this method because Johansen co-integration method views all variables as endogenous and forms a Vector Autoregressive (VAR) equation to test for co-integration. The results of the multivariate cointegration test are presented in Table 4.2 below at 0.05 critical levels.

Table 4.2: Results of the Multivariate Co-integration Tests

Hypothesis	Trace Statistic	95% Critical Value	Alternative	Maximum Eigenvalue Statistics	95% Critical Value
$r \leq 6$	1.72	3.84	$r \leq 6$	1.72	3.84
$r \leq 5$	8.73	15.49	$r \leq 5$	7.01	14.26
$r \leq 4$	18.17	29.80	$r \leq 4$	9.43	21.13
$r \leq 3$	30.35	47.86	$r \leq 3$	12.18	27.58
$r \leq 2$	56.27	69.82	$r \leq 2$	25.92	33.88
$r \leq 1$	91.50	95.75	$r \leq 1$	35.23	40.08
$r \leq 0$	139.30*	125.62	$r \leq 0$	47.80*	46.23

Estimated	Cointegrated		Vectors	(Normalized)			
Vector	LINV	LY	LGAD	LGAG	LGHC	LGIN	LGPD
1	1.0	1.30*	2.73*	0.55*	-1.35*	-1.02*	-1.78*

Note: r denotes the number of cointegrating vectors. * indicates the significant cases. The lag length is determined using the minimum value of the Schwarz Information Criterion.

From the Johansen cointegration test result above, it could be seen that, both the trace test statistic and the maximum eigenvalue test statistic reject the null hypothesis that the number of cointegrating vectors is zero, and indicate that there is one cointegrating equation at the 0.05 level. Therefore, there is one co-integrating equation in the model and hence, there exist a long-run relationship among the macroeconomic variables and they share a long-run equilibrium path.

Table 4.2 above also reports the normalized cointegrating vector coefficients. The estimated coefficient for real government expenditure on administration (gad) and real government expenditure on agriculture (gag), show that both have a positive impact on real gross

domestic private investment (inv) in Nigeria in the period under investigation. This implies that they crowd-in real gross domestic private investment in the long-run. On the other hand, real government expenditure on human capital development (ghc), real government expenditure on infrastructure (gin), and real government expenditure on public debt servicing (gpd) have a negative impact on real gross domestic private investment (inv) in Nigeria, within the investigation period. This suggests that they crowd-out real gross domestic private investment in Nigeria in the long-run.

Furthermore, from Table 4.2 above, it could also be seen that in the long-run, the real GDP has a positive relationship with the real gross domestic private investment in Nigeria, within the investigation period. This is an expected outcome and it is in line with both the Keynesian and the Accelerating theory.

4.4 Error Correction Model (ECM)

Having determined that there is a long-run relationship among the variables in the real GDP equation, I now proceed to investigate the short-run relationship among them. Error Correction Model (ECM) is used to test for the short-run relationship among variables.

The ECM equation is:

$$\Delta lnv_t = \delta_0 + \delta_1 \Delta ly_t + \delta_2 \Delta lGat_t + \delta_3 \Delta lGag_t + \delta_4 \Delta lGin_t + \delta_5 \Delta lGhc_t + \delta_6 \Delta lGpd_t + \delta_7 u_{t-1} + \varepsilon_t$$

Where: ΔlInv = Percentage change in log of real gross domestic private investment

ΔlY = Percentage change log of real Gross Domestic Product (GDP)

ΔlGad = Percentage change log of real government expenditure on administration

ΔlGag = Percentage change log of real government expenditure on agriculture

ΔlGin = Percentage change log of real government expenditure on infrastructure

ΔlGhc = Percentage change log of real government expenditure on human capital development

ΔlGpd= Percentage change log of real government expenditure on public debt servicing

u = error term from the cointegrating equation

ε_t = Error term

$\delta_0, \delta_1, \delta_2, \delta_3, \delta_4, \delta_5, \delta_6$, and δ_7 are parameters

t = time period

Table 4.3: Results of the Estimation of the Error Correction Model

$\Delta lnv_t = \delta_0 + \delta_1 \Delta ly_t + \delta_2 \Delta lGad_t + \delta_3 \Delta lGag_t + \delta_4 \Delta lGhc_t + \delta_5 \Delta lGin_t + \delta_6 \Delta lGpd_t + \delta_7 u_{t-1} + \varepsilon_t$

δ_0	6.05***	(2.19)	[2.76]
δ_1	0.10	(0.17)	[0.57]
δ_2	0.86***	(0.34)	[2.50]
δ_3	-0.17*	(0.15)	[-1.19]
δ_4	0.18*	(0.17)	[1.03]
δ_5	-0.32*	(0.24)	[-1.37]
δ_6	-0.24*	(0.18)	[-1.34]
δ_7	0.61***	(0.18)	[3.45]

Note: The numbers in the bracket ( ) are the standard errors, while the numbers in the bracket [ ] are the t-statistics. The numbers without a parenthesis are the coefficients. Where ***,**,* denotes 1%, 5% and 10% level of significance respectively.

Table 4.3 above reports the result of the estimation of the Error Correction Model (ECM) equation, $\Delta lnv_t = \delta_0 + \delta_1 \Delta ly_t + \delta_2 \Delta lGat_t + \delta_3 \Delta lGag_t + \delta_4 \Delta lGin_t + \delta_5 \Delta lGhc_t + \delta_6 \Delta lGpd_t + \delta_7 u_{t-1} + \varepsilon_t$ using ordinary least square (OLS) method.

The intercept term is positive (6.05) and the estimate is statistically significant at 1% level of significance. The estimate of slope coefficient δ_1 (0.10) indicates that when real GDP increases by 1 naira, the real gross domestic private investment increases by 0.10 naira. But it is not statistically significant. However, since real GDP has a positive effect on real gross domestic private investment, this result is consistent with the general Keynesian and accelerator theories of investment.

The estimate of the slope coefficient δ_2 (0.86) indicates that when the real government expenditure on administration increases by 1 naira, the real gross domestic private investment increases by 0.86 naira. It is statistically significant at 1% level of significance.

The estimate of the slope coefficient δ_3 (-0.17) indicates that when real government expenditure on agriculture increases by 1 naira, the real gross domestic private investment decreases by 0.17 naira. It is statistically significant at 10% level of significance.

The estimate of slope coefficient δ_4 (0.18) indicates that when real government expenditure on infrastructure increases by 1 naira, the real gross domestic private investment increases by 0.18 naira. However, it is statistically significant at 10% level of significance.

The estimate of the slope coefficient δ_5 (-0.32) indicates that when the real government expenditure on human capital increases by 1 naira, the real gross domestic private investment decreases by 0.32. It is statistically significant at 10% level of significance.

The estimate of the slope coefficient δ_6 (-0.24) indicates that when real government expenditure on public debt services increases by 1 naira, the real gross domestic private investment decreases by 0.24. It is statistically significant at 10% level of significance.

The estimate of the slope coefficient δ_7 (0.61) indicates that when the residual of the co-integrating equation is lagged by 1, the real gross domestic private investment increases by 0.61. However, it is statistically significant at 1% level of significance.

The F-statistics which test the joint significance of the independent variables is 4.68 which is larger than 1, and the Prob (F-statistic) is 0.001, this implies that the independent variables, working together are statistically significant at 1% level of significance. The explanatory power of the model as revealed by the R-squared is 0.53. Also, the adjusted R-squared is 0.42.

The Standard error of this regression model is not too high at 0.54. The Akaike info Criterion is low at 1.78 and also, the Schwarz Criterion is also low at 2.13, these imply that the regression result is reliable and the result from this model is not spurious.

Furthermore, Table 4.3 above shows that the real GDP has a positive relationship with real gross domestic private investment in Nigeria, under the period of review. This empirical result is both consistent with both the general neoclassical and Keynesian accelerator theories of investment.

4.5 Empirical Results Discussion

From the result of the ECM equation in Table 4.3 above, it can be seen that in the short-run, government expenditure on administration (gad) crowds-in gross domestic private investment. Also, government expenditure on human capital development (ghc), such as health and education crowds-in gross domestic private investment. On the other hand, government expenditure on agriculture (gag), crowds-out gross domestic private investment. More so, government expenditure on infrastructure (gin), such as, construction, transportation, and

communication crowds-out gross domestic private investment. Furthermore, government expenditure on public debt services (gpd) also crowds-out gross domestic private investment.

Hence, in the short-run, government expenditure on administration (gad) and government expenditure on human capital development (ghc) crowd-in gross domestic private investment. While, government expenditure on agriculture (gag), government expenditure on infrastructure (gin), and government expenditure on public debt services (gpd) crowd-out gross domestic private investment in Nigeria during the period under investigation.

Furthermore, from the empirical results above, it could be observed that the long-run impact and the short-run impact of government expenditure on gross domestic private investment are almost the same. Exceptions are the impact of government expenditure on agriculture (gag) and government expenditure on human capital development (ghc). In the short-run, government expenditure on agriculture (gag) crowds-out gross domestic private investment, while it crowds-in gross domestic private investment in the long-run. The possible reason may be that it takes a long time to reap the benefits of investment in agriculture. When government spends on agriculture, such as giving subsidies to farmers, servicing of farm machineries for mechanized faming, as well as provision of seedlings and fertilizers to subsistence farmers, in the short-run, there will be little or no economic benefit. Hence government spending crowds-out gross domestic private investment in the short-run. However, in the long-run, when the seed or plants would have germinated and grown healthily, proceeds from sales may be reinvested and this could lead to an expansion in the agricultural sector. Therefore, in the long-run, government expenditure on agriculture (gag) crowds-in gross domestic private investment. Hence government of Nigeria is enjoined to increase her spending on agriculture since it will encourage

domestic private investment even though not immediately, but in the long-run. This will ensure that there is food security and even encourage more youths, especially in the rural areas to engage in agriculture, as this is vital in achieving a sustainable economic growth and development in Nigeria.

On the other hand, in the short-run, government expenditure on human capital development (ghc) crowds-in gross domestic private investment, while it crowds-out gross domestic private investment in the long-run. The possible reason may be that as government spends on human capital, for example education, by providing funds for building more schools, in the short-run, the benefits become evident as there would be more universities to take in more students who pass Joint Admission Matriculation Board (JAMB) examination. There by reduces the number of years student spend at home before they get into the higher institution to sharpen their skills and knowledge, as Anyanwu et al., (1997) rightly point out, education provides access to paid employment, increases productivity, and enhances health.

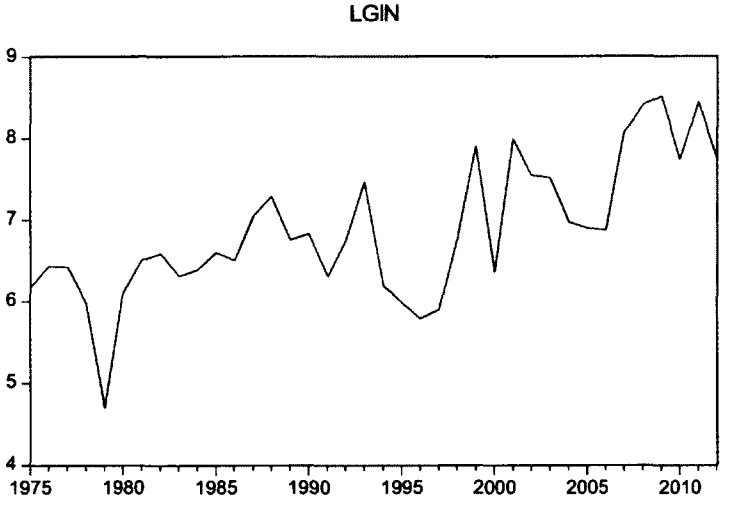
However it is known that the government expenditure on education has been inadequate. As Ijaiya and Lawal (2005, p. 269) point out, "the budgetary allocation to the education sector in Nigeria has been inadequate to meet the demand of the sector." This may be the reason it crowds-out gross domestic private investment in the long-run, as a result of inadequate fund. Omotor (2004, p. 105), also points out that "incessant strikes, closure of schools and other vices account for poor quality teaching and quality of products." This is also as a result of inadequate funding in the sector. Hence, when there is poor quality teaching and poor quality products, unemployment rate increases as a result as the graduates would become unemployable.

Therefore, government of Nigeria should endeavor to provide adequate funding to human capital development, in order to sustain the crowding-in effect in the short-run to the long-run.

However, since the main focus in this research thesis is on the long-run relationship between government expenditure and gross domestic private investment, as stated in the introductory part of this study, the empirical results from the long-run relationship above can be discussed further below.

Firstly, real government expenditure on infrastructure (gin) crowds-out real gross domestic private investment. One would have expected that government spending on infrastructure would boost domestic private investment because from Figure 4.1 below, government expenditure on infrastructure has been on the increase overall. It increased from 466million naira in year 1975 to 10,761million naira in year 2011.

Figure 4.1: Real Government Expenditure on Infrastructure



Source: Eview Output, Data from CBN Statistical Bulletin 2012 Edition

However, this empirical result obtained could be as a result of different issues such as misappropriation of funds allocated to the infrastructure sector. According to the Federal Government of Nigeria Draft National Transport Policy (2010, p. 25),

> "In 1985, about 23 percent of national roads were in a bad state. This rose to 30 percent in 1991 and 50 percent in 2001. The current dependence of Nigeria on its road system increases the urgency of addressing this issue. Unless roads and bridges are kept in good conditions they cannot support the desired socio-economic development of the country."

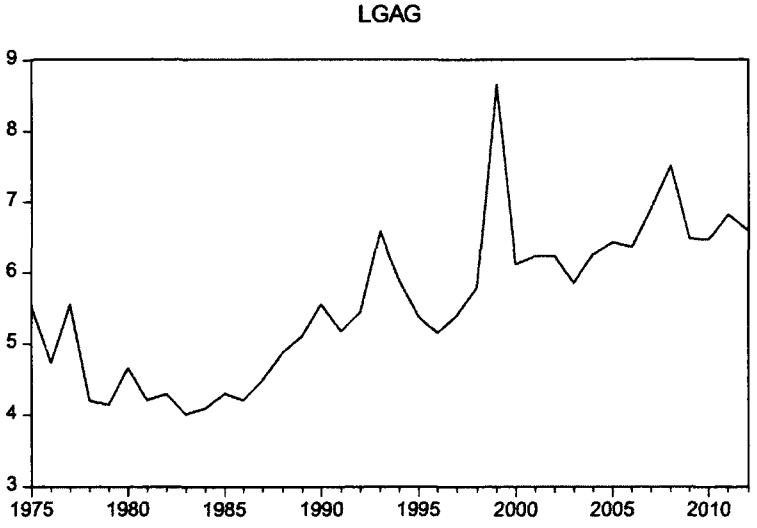
However, from Figure 1 above, it could be seen that despite the fact that government expenditure on infrastructure increased from 597.3 million naira in year 1985 to in 3,107.9 million naira in year 2001, the percentage of bad national road increased form 23 per cent in 1985 to 50% in 2001. This explains that the funds allocated to the infrastructure sector in the period under review, have been misappropriated. Hence, instead of the government expenditure on infrastructure to result in an improvement in the sector, the need of the sector aggravated. Also, it is important to point out that development of the infrastructure sector such as construction, transport, and communication, is necessary in Nigeria, in order to encourage investment in the private sector. Hence, lead the Nigerian economy towards the path of sustainable economic growth and development. As the Federal Government of Nigeria Draft National Transport Policy (2010, p. 25) points out,

> "A road study undertaken in 1998 indicates that N300 billion will be required over the next 10 years to bring national road network into a fairly good condition. After the recovery, an average of N24 billion will be required each year for subsequent maintenance and N32 billion per year for road rehabilitation. Further neglect of these roads implies a loss of network value of N80 billion per year and additional operating cost of N53 billion per year.

Except roads and bridges are kept in good conditions they cannot support the desired socio-economic development of the country"

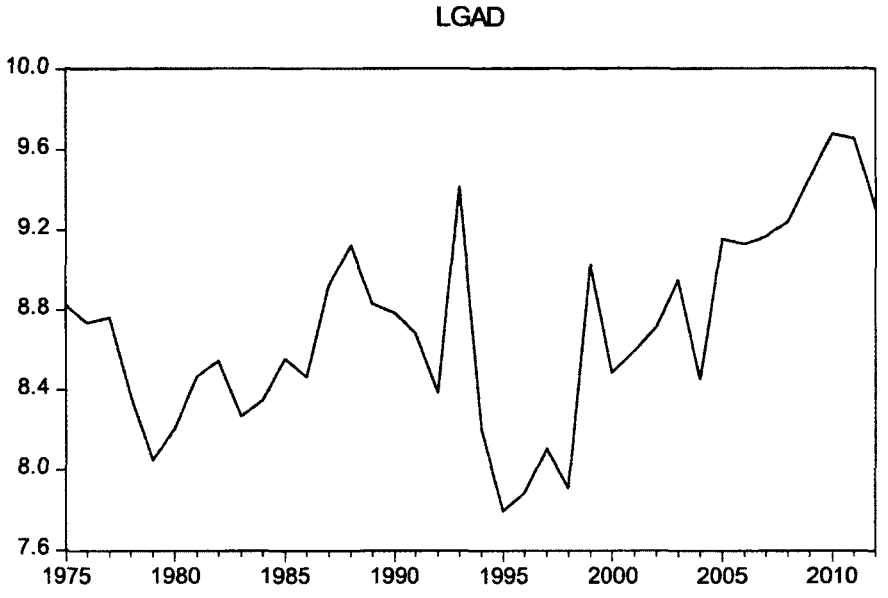
Secondly, real government expenditure on agriculture (gag) crowds-in real gross domestic private investment in the period under review. It could be seen from Figure 4.2 below that real government expenditure in agriculture has been rising slowly; it had a sharp rise in year 1999 and sharp decline in year 2000, and began to rise slowly afterwards. It is expected that government expenditure on agriculture will boost productivity, food security, as well as domestic private investment in the sector. However, it could be seen from Figure 4.2 below that there is a decline in government expenditure on agriculture towards the end of my study period, 2012. Therefore, government of Nigeria need to increase her spending on agriculture since it crowds-in gross domestic investment in the long-run. This will help to solve other development and economic problems such as reduction in unemployment rate and hunger.

Figure 2: Real Government Expenditure on Agriculture



Source: Eview Output, Data from CBN Statistical Bulletin 2012 Edition

Figure 4.3: Real Government Expenditure on Administration

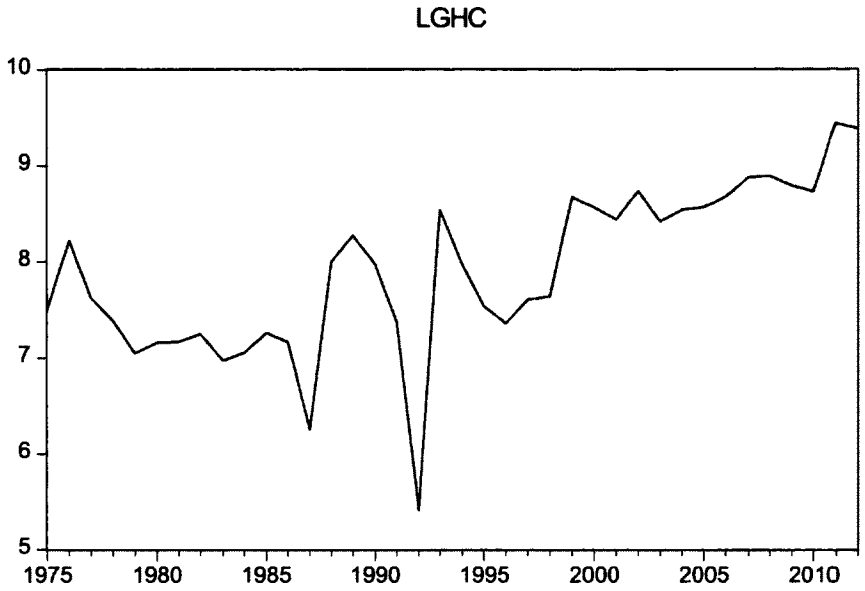


Source: Eview Output, Data from CBN Statistical Bulletin 2012 Edition

Thirdly, according to the empirical result of the period under review, government expenditure on administration (gad) have a crowding-in effect on gross domestic private investment in Nigeria. From Figure 4.3 above, it could be seen that government expenditure on administration has been erratic but has been on the increase, on the average. Increase in government spending in this category, such as increase in federal government allocation to the state government and local government increases expenditure of the state and local government in their states and communities respectively, hence promoting the overall increase in gross domestic private investment in Nigeria. Moreover, increase in federal government salary to civil servants could have also promoted domestic private investment, since Nigeria is a country where a good number of people have their own private ventures, despite retaining white collar job. This does not exclude the government officials, as a good number of them have business ventures

such as commercial farms, transportation investments, schools, and so on. Therefore, when government increases its expenditure on administration, it could crowd-in gross domestic private investment in Nigeria.

Figure 4.4: Real Government Expenditure on Human Capital Development



Source: Source: Eview Output, Data from CBN Statistical Bulletin 2012 Edition

Fourthly, the empirical results for government expenditure on human capital (*ghc*), which comprises of both government expenditure on education and government expenditure on health is not the same as expected. According to Wang (2005, p. 499), government expenditure on human capital (ghc) "adds to the enhancement of human capital and raises labor productivity, it would be expected to stimulate private investment." However, this empirical result shows that government expenditure on human capital development crowds-out gross domestic private investment instead. Also, it could be observed from Figure 4.4 above that government expenditure on human capital development (ghc) has been erratic over the years. As earlier

discussed above, government of Nigeria has not been providing enough funds to the human capital sector (health and education), and since it is a given that government expenditure on human capital development stimulates private investment, government of Nigeria should make adequate funding available to both the health and education sector.

Finally, government expenditure on public debt servicing (*gpd*) also crowds-out gross domestic private investment in the period under review. According to Wang (2005, p. 500), "government expenditure on debt charges takes into account previous deficit policies and the interest rate effects, so it may produce a typical crowding-out effect on private investment." The empirical results support this proposition. This implies that the previous fiscal activities have a long lasting effect on private investment in Nigeria during the period under investigation. Government of Nigeria is known for huge indebtedness, therefore because of the increase in interest rate as a result of government public debt servicing, private investment may be discouraged. Another fiscal activity that could have influenced the empirical result is the debt forgiveness to the tune of $18 billion received by Nigeria from Paris club in year 2005, during President Obasanjo's regime. This debt forgiveness which reduces debt service will increase funds available for government spending on investment and millennium development goals (MDGs), therefore resulting to increase in inflows of private capital and increased private investment. However from Table 3 in the appendix, it could be seen that government expenditure on public debt servicing (gpd) reduced from 2005 to 2007 during the debt relief period, it reduced from N 14,973.31 million in 2005 to N 6,608.98 million in 2007, but by the end of my study period, 2012 government expenditure on public debt servicing has increased again to N 14,892.68 million. Therefore, despite the debt relief in year 2005, government expenditure on public debt servicing continued to increased shortly afterwards.

4.6 Tests for Heteroskedasticity

The Breusch-Pagan-Godfrey test is used to test the presence of heteroskedasticity in the study model. The hypothesis is:

H_0: no heteroskedasticity

H_a: there is heterokedasticity

Reject H_0 if LM- stat > X^2_{p-1}, at degree of freedom (p-1) and 5% significance level.

Table 4 in the appendix shows the result of the heteroskedasticity test using the Breusch-Pagan-Godfrey. From the Breusch-Pagan-Godfrey test in Table 4 of the appendix, the LM = nR^2 is 13.10, and the X^2_{p-1} at 5% significance level and degree of freedom 7 = 14.07. Therefore since the LM-stat < X^2_{p-1}, we do not reject the null hypothesis, therefore, there is no heteroskedasticity. This is also consistent with the informal graphical test of heteroskedasticity.

4.7 Tests for Autocorrelation

For the formal detection of autocorrelation, using the Durbin-Watson test from the original model in Table 6 of the appendix, there is no autocorrelation inherent in this model. The Durbin Watson test is 1.77, and from the d_U, d_L, 4-d_U and 4-d_L critical values, 1.77 lies between d_U and 4-d_U, and since 2 is the point of no autocorrelation, 1.77 is close to 2, therefore, I conclude that there is no autocorrelation. Also comparing Durbin-Watson statistics with the critical values of Durbin-Watson (**0.05**, **k**, **n**) table (where **k** is the independent variables excluding intercept used in the regression, which is 7, and **n** is the total observations, which is 37. 0.05 is the level of

significance), $d_L = 1.07$ and $d_U = 1.95$. Since Durbin-Watson statistics (1.77) > d_L (1.05) but < d_U (1.95), the test yields an inconclusive result.

Note: The testing procedure is:

- if $d < d_L$ accept alternative hypothesis of positive first order autocorrelation;
- if $d > d_U$ accept the null hypothesis of no autocorrelation;
- if $d_L < d < d_U$ the test is inconclusive;

Furthermore, since the Durbin Watson test may give inconclusive result as seen above, and does not test for higher order autocorrelation, I will now use the Breusch-Godfrey LM to further test for the presence of autocorrelation in my model.

Table 5 in the appendix shows the Eview output of the Breusch-Godfrey LM test for the detection of autocorrelation. The hypothesis is:

H_0: $\rho_1 = \rho_2 = \rho_3 = 0$ no autocorrelation

H_a: at least one of the ρ's $\neq 0$ thus, autocorrelation

Reject H_0 if LM- stat > X^2_{p-1}, at degree of freedom 10 and 5% significance level.

The LM $(n-p)R^2$ is 7.04, and the X^2_{p-1} at 5% significance level and degree of freedom 10 = 18.31. Therefore since the LM-stat < X^2_{p-1}, we do not reject the null hypothesis, hence, there is no autocorrelation. Therefore, since there is no autocorrelation, there is no need to go further to resolve it.

Figure 4.5: Autocorrelation

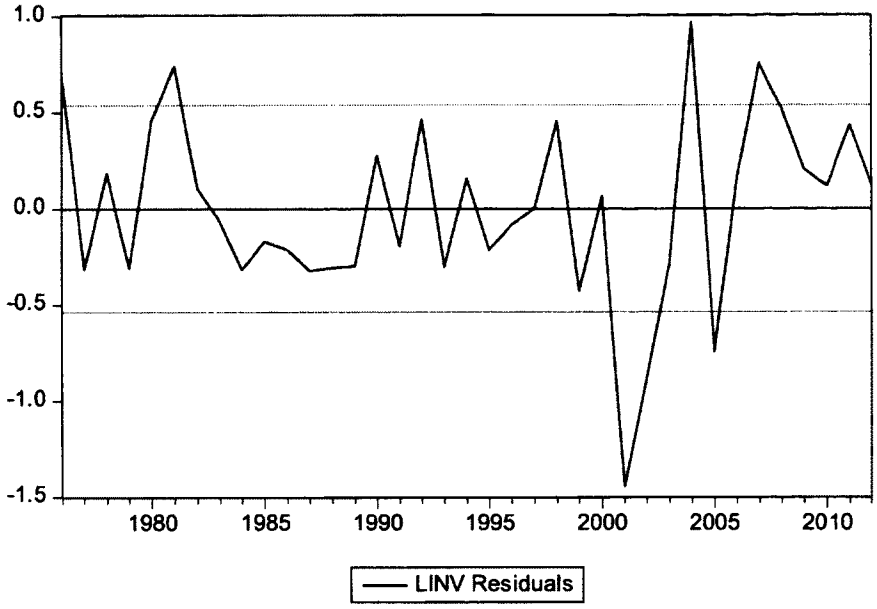


Figure 5 above shows the informal test for autocorrelation. Figure 5 is the line graph of the residual, From Figure 5, it can be seen that the error term is distributed randomly. It moves from positive to negative in a zig-zag form quite consistently. This shows the absence of autocorrelation. Therefore, this informal test is consistent with the formal test above.

4.8 Tests for Multicollinearity

Table 4.4: Correlation Matrix

	LINV	LY	LGAD	LGAG	LGHC	LGIN	LGPD
LINV	1.000000	0.252732	-0.037364	0.166778	0.025538	-0.117822	-0.067714
LY	0.252732	1.000000	0.021663	-0.233015	-0.137934	0.210656	0.513602
LGAD	-0.037364	0.021663	1.000000	0.545573	0.327618	0.497304	-0.105913
LGAG	0.166778	-0.233015	0.545573	1.000000	0.405143	0.572823	-0.420542
LGHC	0.025538	-0.137934	0.327618	0.405143	1.000000	0.030124	-0.112203
LGIN	-0.117822	0.210656	0.497304	0.572823	0.030124	1.000000	-0.260422
LGPD	-0.067714	0.513602	-0.105913	-0.420542	-0.112203	-0.260422	1.000000

Source: Eview Output

In Table 4.4 above, it can be seen that there is a low multicollinearity among the variables in the model. The explanatory variables are not very highly correlated to each other, and there are no exact linear relationships among the sample values of the explanatory variables. The model in this study therefore, does not have a high multicollinearity.

Hence, since there is no heteroskedasticity, autocorrelation, and high multicollinearity inherent in the study model, based on the tests results above, I therefore conclude that the regression result in this study is robust.

4.9 Tests for Structural Break

Since our investigation period covers 38 years, it becomes necessary to check whether or not there is a structural break during the period of investigation. For this reason, the Quandt-Andrews unknown breakpoint test is applied to the estimates from the ECM. The endpoints are determined using 15% trimming to the sample size on each side. The test results are presented in Table 4.5 below.

Table 4.5: Results of Quandt-Andrews Structural Break test

Statistic	Value	Prob.
Maximum LR F-statistic (2001)	2.161669	0.2545
Maximum Wald F-statistic (2001)	12.97001	0.2545
Exp LR F-statistic	0.403618	0.7293
Exp Wald F-statistic	4.571420	0.2333
Ave LR F-statistic	0.681266	0.7386
Ave Wald F-statistic	4.087598	0.7386

Note: probabilities calculated using Hansen's (1997) method

Source: Eview Output

The probability (p-value) of the maximum LR F-statistic is 0.25, which is less than both 0.05 and 0.10 significance level. This implies that the null hypothesis of "no breaks" will not be rejected, hence, the regression results is reliable. This test result indicates that there is no structural break during the investigation period at the all significance levels. This therefore implies that the Johansen co-integration test result and the ECM test result above are acceptable and reliable.

CHAPTER FIVE

SUMMARY, CONCLUSION AND POLICY RECOMMENDATION

5.1 Summary

This study was carried out to investigate the impact of government expenditure on gross domestic private investment in Nigeria within the period 1975-2012. It evaluated the trends of fiscal policy (government expenditure) within the period to establish the relationship between government expenditure and gross domestic private investment in Nigeria. In doing this, secondary data was gathered from the Central Bank of Nigeria (CBN) Statistical Bulletin, for 2004, 2011, and 2012 editions. The dependent variable adopted in this study is the real gross domestic private investment. Real gross fixed capital formation is used as a proxy for real gross domestic private investment. The explanatory variables include real government expenditure on agriculture (gag), real government expenditure on infrastructure (gin), real government expenditure on human capital development (ghc), real government expenditure on administration (gad), real government expenditure on public debt servicing (gpd), and real Gross Domestic Product (GDP).

Theoretical and empirical literatures on the subject matter were reviewed. Under the theoretical literature review, various theories of investment were examined. These theories ranged from the Keynesian economic thought to the neoclassical economic thought. On the other hand, the empirical literature review revealed that the impact of government expenditure on domestic private investment remained a highly controversial issue in macroeconomics. Various researchers' different views and theories of investment were discussed. The neoclassical economists argue that government expenditure crowds out private investment. On the other hand,

Keynesian economists stress the importance of market failure in determining government intervention, and directing government expenditure pattern. Therefore, establishing that there is little or no crowding-out effect on private investment.

Furthermore, the study empirically examined the effects of government expenditure on gross domestic private investment in Nigeria, using an annual time series data, covering the period of 1975 to 2012. Johansen co-integration and Error Correction Model were applied in examining this effect. The effect that government expenditure will have on domestic private investment depends on the component of government expenditure being considered. In the long-run, real government expenditure on agriculture (gag) and real government expenditure on administration (gad) crowd-in real gross domestic private investment, while real government expenditure on human capital development (ghc), real government expenditure on infrastructure (gin), and real government expenditure on public debt servicing (gpd) crowd-out real gross domestic private investment. In the short-run, real government expenditure on administration (gad) and real government expenditure on human capital development (ghc) crowd-in real gross domestic private investment, while real government expenditure on agriculture (gag), real government expenditure on infrastructure (gin), and real government expenditure on public debt servicing (gpd) crowd-out real gross domestic private investment.

5.2 Conclusion

In line with the objectives of this study, three major conclusions are as follows:

Firstly, according to the empirical results, some components of government expenditures such as real government expenditure on agriculture (gag) and real government expenditure on administration (gad) have a complementarity (crowding-in) relationship with real gross domestic

private investment. On the other hand, real government expenditure on human capital development (ghc), real government expenditure on infrastructure (gin), and real government expenditure on public debt servicing (gpd) have a long-run substitutability (crowding-out) relationship with real gross domestic private investment during the investigation period.

Secondly, the real GDP has a positive relationship with real gross domestic private investment in Nigeria, in the period under review. This is in line with both the Keynesian and Neoclassical views.

Lastly, the trend analysis of the total government expenditure, as well as the functional analysis of government expenditure was discussed. From the analysis, it could be seen that government expenditure has not followed a consistent pattern. The trend analysis of the gross domestic private investment suggests that the movement of the gross domestic private investment during the period of investigation has been erratic. Also, these trend analyses show a weak performance in gross domestic private investment as well as in government total and functional expenditure.

5.3 Policy Recommendation

Following the empirical results and findings from this study, I present the following recommendations;

1. The government of Nigeria should increase its spending on agriculture and administration, to regenerate crowd-in effect on gross domestic private investment in the long-run. From the plot of government expenditure on agriculture in Figure 4.2, cited at the data analysis and result section in Chapter four, it is viewed that government has been spending less in the

agricultural sector, which is not healthy for improving food security and tackling material poverty at the grassroot level of the nation's human development.

2. Moreover, the government of Nigeria should also increase expenditures on infrastructure (construction, transport, and communication), and human capital development. Even though this empirical study revealed that government expenditure on infrastructure, as well as government expenditure on human capital development crowd-out gross domestic private investment in the long-run, it is also true, from the trend analysis that, government spending on human capital (education and health) and infrastructure has been erratic and insufficient. When the right infrastructures are in place and in the right quality and quantity, private investment is encouraged. Therefore, government should spend more in the construction of road and bridges, transportation as well as communication, in order to enhance the private sector development.

   On the other hand, government should pursue macroeconomic policies that encourage human capital development, such as the policy of Universal Basic Education. This implies, making education free for citizens in primary schools, as well as subsidizing the cost of higher levels of education. Government can also subsidize the health sector costs by providing less expensive healthcare services to its citizens as well as promoting and regulating traditional healthcare, for general affordability of citizens. Generally, government should ensure that education and health services are of good quality and can compete with the international standard. When the labor force is healthy and well educated, it increases the labor productivity, hence, promotes economic growth.

3. Government of Nigeria should endeavor to reduce spending on public debt servicing as it crowds-out gross domestic private investment due to high interest rate effects. With regards to reduction of fiscal deficit and hence debt servicing, the government should make effort to avoid excessive extra-budgetary expenditures. Also, government should consider policy alternative of cutting other government expenditures to make adjustments to only necessary and urgent budgetary expenses. However, the long-run economic goals and other policy measures should be taken into consideration before making such fiscal adjustments.

In conclusion, the military expenditure component of government expenditure is an important and interesting category. Over the years, a lot of debates have been going on this aspect. However this study did not examine the impact of the military expenditure component of government expenditure on gross domestic private investment because there is insufficient data available in this category, within the period under review. Hence, this will also be an important task in future studies.

It is also important to note that the results obtained from this study is subject to a number of factors such as, the availability of data, econometric procedure used, and the investment model used for analysis. Therefore, the study may be viewed as preliminary and suggestive, hence, the results should be considered as a crucial step in resolving important issues on public policy implications in Nigeria.

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APPENDIX

Table 1: Summary Statistics

	LINV	LY	LGAD	LGAG	LGHC	LGIN	LGPD
Mean	10.76501	12.36462	8.701288	5.572997	7.908349	6.862295	8.912089
Median	10.65351	12.52504	8.698071	5.535840	7.973339	6.754122	8.970016
Maximum	11.86581	13.69773	9.678961	8.658256	9.445682	8.512420	10.38972
Minimum	8.753315	10.20994	7.795160	4.017901	5.408758	4.699746	7.070682
Std. Dev.	0.694198	1.011974	0.488215	1.075839	0.863294	0.841631	0.802633
Skewness	-0.858033	-1.069458	0.142762	0.485085	-0.499305	0.150767	-0.681105
Kurtosis	4.212799	3.265617	2.312856	3.079568	3.270275	2.914814	3.120984
Jarque-Bera	6.991628	7.355397	0.876676	1.500305	1.694592	0.155451	2.961232
Probability	0.030324	0.025281	0.645108	0.472294	0.428572	0.925218	0.227498
Sum	409.0702	469.8556	330.6490	211.7739	300.5173	260.7672	338.6594
Sum Sq. Dev.	17.83068	37.89139	8.819109	42.82486	27.57522	26.20869	23.83612
Observations	38	38	38	38	38	38	38

Source: Eview Output

Table 2: Federal Government Recurrent, Capital, And Total Expenditure, 1975-2011 (N million)

YEAR	RECURRENT EXP	% OF TOTAL	CAPITAL EXP	% OF TOTAL	TOTAL EXP	% CHANGE
1975	2,734.9	46.02	3,207.7	53.99	5,942.6	-
1976	3,815.4	48.56	4,041.3	51.44	7,856.7	32.21
1977	3,819.2	43.28	5,004.6	56.72	8,823.8	12.32
1978	2,800	35	5,200	65	8,000	-9.34
1979	3,187.2	43.03	4,219.5	56.97	7,406.7	-7.42
1980	4,805.2	32.10	10,163.3	67.90	14,968.5	102.09
1981	4,846.7	42.46	6,567	57.54	11,413.7	-23.75
1982	5,506	46.18	6,417.2	53.82	11,923.2	4.46
1983	4,750.8	49.30	4,885.7	50.70	9,636.5	-19.18
1984	5,827.5	58.70	4,100.1	41.30	9,927.6	3.02
1985	7,576.4	58.10	5,464.7	41.90	13,041.1	31.36
1986	7,696.9	47.44	8,526.8	52.56	16,223.7	24.40
1987	15,646.2	71.06	6,372.5	28.94	22,018.7	35.72
1988	19,409.4	69.95	8,340.1	30.05	27,749.5	26.03
1989	25,994.2	63.36	15,034.1	36.64	41,028.3	47.85
1990	36,219.6	60.10	24,048.6	39.90	60,268.2	46.89
1991	38,243.5	57.44	28,340.9	42.56	66,584.4	10.48
1992	53,034.1	57.15	39,763.3	42.85	92,797.4	39.37

1993	136,727.1	71.50	54,501.8	28.50	191,228.9	106.07
1994	89,974.9	55.92	70,918.3	44.08	160,893.2	-15.86
1995	127,629.8	51.30	121,138.3	48.70	248,768.1	54.62
1996	124,491.3	36.92	212,926.3	63.14	337,217.6	35.56
1997	158,563.5	37.03	269,651.7	62.97	428,215.2	26.98
1998	178,097.8	36.56	309,015.6	63.44	487,113.4	13.75
1999	449,662.4	47.45	498,027.6	52.55	947,690	94.55
2000	461,600	65.84	239,450.9	34.16	701,059.4	-26.02
2001	579,300	56.90	438,696.5	43.09	1,018,025.6	45.21
2002	696,800	68.44	321,378.1	31.56	1,018,155.8	0.01
2003	984,300	80.29	241,688.3	19.71	1,225,965.9	20.41
2004	1,032,700	72.41	351,300	24.63	1,426,200	16.33
2005	1,223,700	67.16	519,500	28.51	1,822,100	27.76
2006	1,290,201.9	66.57	552,385.8	28.50	1,938,002.5	6.36
2007	1,589,270	64.84	759,323	30.98	2,450,896.7	26.47
2008	2,117,362	65.33	960,890.1	29.65	3,240,819.60	32.23
2009	2,127,971.50	61.63	1,152,796.5	33.39	3,452,990.8	6.55
2010	3,109,378.51	74.13	883,874.5	21.07	4,194,576.51	21.48
2011	3,314,513.33	70.34	918,548.9	19.47	4,712,061.98	12.34
2012	3,325,156.25	72.20	874,762.27	18.99	4,605,319.72	-2.27

Source: CBN Statistical Bulletin, 2011 and 2012 Edition

Table 3: Gross Domestic Private Investment and Government Expenditure Components

YEAR	Y	Inv	Gad	Gag	Gin	Ghc	Gpd
1975	27,172.02	55,798.65	6781.767	249.3202	483.867	1807.526	1207.404
1976	29,146.51	78,807.06	6215.522	113.8261	621.4322	3725.482	8947.35
1977	31,520.34	82,711.50	6390.915	257.9954	614.8534	2047.375	1176.95
1978	29,212.35	72,343.88	4324.045	66.96603	395.2351	1601.288	2383.337
1979	29,947.99	62,871.71	3126.897	63.23996	109.9192	1151.386	1586.221
1980	31,546.76	66,667.08	3659.703	105.391	450.937	1282.769	1580.112
1981	205,222.06	133,217.52	4749.466	67.62891	670.0773	1297.172	5333.453
1982	199,685.25	103,313.02	5146.975	73.28913	726.1654	1405.782	5779.839
1983	185,598.14	67,751.34	3903.592	55.58429	550.7551	1066.166	4383.572

1984	183,562.95	43,363.02	4227.416	60.19529	596.4193	1154.602	4747.212
1985	201,036.27	40,934.55	5207.495	74.1509	734.7022	1422.289	5847.801
1986	205,971.44	35,536.21	4739.155	67.48208	668.6286	1294.365	5321.874
1987	204,806.54	27,159.19	7488.258	89.91408	1148.936	518.9258	7655.577
1988	219,875.63	28,369.81	9158.735	131.5683	1459.615	2982.636	14644.81
1989	236,729.58	28,937.12	6853.083	165.9035	859.2447	3920.372	14506.94
1990	267,549.99	40,121.31	6540.2	258	922.2	2903.5	23822.3
1991	265,379.14	39,968.52	5912.855	177.4588	548.7873	1593.898	22460.31
1992	271,365.52	38,771.57	4393.875	230.6976	856.6947	223.354	9815.443
1993	274,833.29	44,973.00	12262.35	723.5453	1745.066	5115.894	32523.55
1994	275,450.56	40,404.28	3653.871	362.2978	486.6977	2901.568	15125.3
1995	281,407.40	29,820.29	2428.818	217.0355	399.4695	1877.665	7336.789
1996	293,745.38	35,216.28	2659.432	172.4152	324.8934	1571.961	5743.071
1997	302,022.48	38,329.17	3313.425	220.665	363.018	2008.994	7345.881
1998	310,890.05	36,390.66	2719.191	328.538	858.4797	2082.744	7316.118
1999	312,183.48	35,325.93	8327.446	5757.486	2694.56	5848.072	2993.793
2000	329,178.74	41,342.64	4841.751	454.7663	576.0696	5252.298	9406.298
2001	356,994.26	6,331.64	5406.211	508.7166	2962.155	4637.783	11191.49
2002	433,203.51	7,936.78	6070.879	514.4039	1896.249	6236.142	8431.954
2003	477,532.98	12,991.61	7693.874	349.0834	1835.432	4541.073	16835.54
2004	527,576.04	44,443.72	4697.223	522.1607	1065.503	5136.249	17743.14
2005	561,931.39	39,795.29	9455.356	620.623	986.7372	5263.491	14976.31
2006	595,821.61	63,428.72	9220.872	580.5317	966.5055	5872.744	8077.536
2007	634,251.14	89,896.86	9589.242	1004.486	3201.157	7195.26	6608.979
2008	672,202.55	89,244.50	10309.72	1824.586	4515.494	7315.105	10635.21
2009	718,977.33	120,273.64	12769.68	654.191	4976.192	6629.598	7342.014
2010	776,332.21	142,316.45	15977.88	649.1566	2288.938	6208.857	9561.417

2011	834,000.83	126,942.84	15586.42	917.7263	4658.105	12653.41	11751.54
2012	888,893.00	101,699.74	10964.33	730.0785	2334.936	11977.23	14892.68

Source: CBN Statistical Bulletin, 2004 and 2011 Edition

Table 4: Breusch-Pagan-Godfrey Heteroskedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	2.271165	Prob. F(7,29)	0.0567
Obs*R-squared	13.10147	Prob. Chi-Square(7)	0.0697
Scaled explained SS	11.59743	Prob. Chi-Square(7)	0.1146

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 02/25/14 Time: 23:27
Sample: 1976 2012
Included observations: 37

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.007761	1.422204	2.114859	0.0432
LY	-0.168259	0.108736	-1.547406	0.1326
LGAD	-0.638147	0.222624	-2.866475	0.0077
LGAG	-0.010750	0.095151	-0.112975	0.9108
LGHC	0.099701	0.111458	0.894518	0.3784
LGIN	0.479125	0.152462	3.142595	0.0038
LGPD	0.092822	0.114471	0.810879	0.4240
RES(-1)	-0.071791	0.114124	-0.629061	0.5342

R-squared	0.354094	Mean dependent var	0.225983
Adjusted R-squared	0.198185	S.D. dependent var	0.388924
S.E. of regression	0.348258	Akaike info criterion	0.917065
Sum squared resid	3.517227	Schwarz criterion	1.265371
Log likelihood	-8.965694	Hannan-Quinn criter.	1.039859
F-statistic	2.271165	Durbin-Watson stat	1.853413
Prob(F-statistic)	0.056725		

Source: Eview Output

Table 5: Breusch-Godfrey Autocorrelation Test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	3.173958	Prob. F(2,27)	0.0578
Obs*R-squared	7.043106	Prob. Chi-Square(2)	0.0296

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 02/25/14 Time: 23:26
Sample: 1976 2012
Included observations: 37
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.432137	2.122544	0.674726	0.5056
LY	0.125662	0.167700	0.749326	0.4601
LGAD	-0.187345	0.329337	-0.568855	0.5742
LGAG	-0.014224	0.137562	-0.103401	0.9184
LGHC	-0.034905	0.160861	-0.216987	0.8298
LGIN	-0.033391	0.221138	-0.150996	0.8811
LGPD	-0.086900	0.174153	-0.498988	0.6218
RES(-1)	-1.205096	0.511188	-2.357440	0.0259
RESID(-1)	1.272797	0.530100	2.401050	0.0235
RESID(-2)	0.722525	0.313934	2.301523	0.0293

R-squared	0.190354	Mean dependent var	-1.49E-15
Adjusted R-squared	-0.079528	S.D. dependent var	0.481933
S.E. of regression	0.500730	Akaike info criterion	1.679962
Sum squared resid	6.769736	Schwarz criterion	2.115345
Log likelihood	-21.07929	Hannan-Quinn criter.	1.833455
F-statistic	0.705324	Durbin-Watson stat	1.632287
Prob(F-statistic)	0.698796		

Source: Eview Output

Table 6: ECM Test Result

Dependent Variable: LINV
Method: Least Squares
Date: 02/25/14 Time: 07:43
Sample (adjusted): 1976 2012
Included observations: 37 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.045830	2.192805	2.757121	0.0100
LY	0.095003	0.167654	0.566665	0.5753
LGAD	0.857295	0.343250	2.497580	0.0184
LGAG	-0.174034	0.146708	-1.186259	0.2451
LGHC	0.176856	0.171850	1.029127	0.3119
LGIN	-0.322281	0.235071	-1.370997	0.1809
LGPD	-0.237373	0.176495	-1.344928	0.1891
RES(-1)	0.607614	0.175961	3.453122	0.0017

R-squared	0.530337	Mean dependent var	10.76056
Adjusted R-squared	0.416970	S.D. dependent var	0.703225
S.E. of regression	0.536957	Akaike info criterion	1.783012
Sum squared resid	8.361356	Schwarz criterion	2.131319
Log likelihood	-24.98572	Hannan-Quinn criter.	1.905807
F-statistic	4.678063	Durbin-Watson stat	1.768782
Prob(F-statistic)	0.001316		

Source: Eview Output