IMPACT OF GOVERNMENT EXPENDITURE ON ECONOMIC GROWTH IN NIGERIA

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A PROJECT SUBMITTED TO THE DEPARTMENT OF ECONOMICS FACULTY OF SOCIAL SCIENCES, UNIVERSITY OF BENIN, BENIN CITY IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF BACHELOR OF SCIENCE (B.Sc. ECON) HONOURS.

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CERTIFICATION

We the undersigned persons certify that this research paper carried out by **Emeso Nathanaella MOMODU** with matriculation number **SSC1702739** in the Department of Economics, Faculty of Social Sciences, University of Benin, Benin City is approved and considered adequate in the scope and content for the partial fulfillment of the requirement for the award of Bachelor of Science (B.Sc) degree in Economics.

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DEDICATION

I dedicate this research work to God Almighty and to my late father Engr. Momodu

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I would like to express my sincere gratitude and appreciation to all who have made it possible one way or the other in the completion of this research paper.

Firstly, I would like to appreciate God Almighty for his unending faithfulness and constant provision in the course of this paper and my tertiary education.

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TABLE OF CONTENTS

ABSTRACT

The aim of this study is to ascertain the impact of government spending on economic growth in Nigeria with a focus on determining the long run and short run relationship between government spending and economic growth. Secondary aim of this study is to ascertain the degree of dependence of economic growth on other independent variables of inflation and labour force. The model employed in this study is the OLS and the Error Correction Mechanism.. The time frame for this study spanned between the year 1981-2020. This study , the study showed that government spending had a beneficial and considerable impact on Nigeria's economic development. This will also succeed if every naira allocated for this index is wisely spent. The Real Gross Domestic Product is negatively and negligibly impacted by capital spending. It demonstrates that the regression model has a negative association with both the coefficient result and the P-Value.

Also, it was noted that raising white elephant project spending will only slow the rate of economic growth. Recurrent expenditure for example spending on education has a favourable and considerable effect on Nigeria's economic expansion. This demonstrates that an increase in education spending will probably lead to a rise in economic growth. This will also succeed if every naira allocated for this index is wisely spent.

However, it was suggested that Government spending, both capital and ongoing, needs to be managed and tracked during execution to improve comparably successful outcomes in relation to economic growth. They should see to it that capital and ongoing expenses are appropriately managed so as to improve the country's foreign relations as it relates to conducting business with other nations. This will have a long-term effect of stabilising the economy and increasing the value of her currency, which will result in economic growth .

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND TO THE STUDY

Government spending or expenditure remains a pivotal instrument in the development process of an economy. It plays an important role in the working of any economy at almost all stages of growth and development. The birth of the Keynesian Economics School of thought saw the end of the Great Economic Depression of the 1930s; this drew greatly the attention of both developed countries (DCs) and the less developed countries (LDCs) to the adoption of fiscal and monetary policies in the stabilization and achievement of some specific macroeconomic goals and objectives.

Nations began to see the relevance of government involvement in economic stabilization. Although, this development was in contrast to the prevailing classical view about the working principles of the invisible hands of demand and supply that interplay to create necessary adjustments in relation to output determination and employment (Johnson et al. 2001; Shaikh 2009; Backhouse 2015).

Most developing and developed countries today use government spending to improve income distribution, direct the allocation of resources in desired areas, and influence the composition of national income (Assi et al., 2019; Vtyurina, 2020; World Bank, 2015). In developing countries for instance, the variation in government spending pattern is not only projected to guarantee stabilization but also to spur economic growth and expand employment opportunities (World Bank, 2015).

Economic growth refers to the increase in output of an economy's capacity to produce goods and services needed to improve the welfare of the citizens of the country (Balami, 2006). Growth is seen as a steady process which involves rising of output of goods and services in the economy. Growth is meaningful when the rate of growth is much higher than population growth because it has to lead to improvement in human welfare. Therefore, growth is seen as a steady process of increasing the productive capacity of the economy and hence, of increasing national income being characterized by higher rates of increase of per capita output and total factor productivity, especially labour productivity (Balami, 2006).

There are two major categories of economic policies that have been widely utilized over a vast period of time for the general purpose of economic stabilization and for the achievement of some essential macroeconomic goals and objectives in specific terms. These policies are fiscal and monetary. Although the two policies are different in terms of their structure and the application of their fundamental instruments, however, they are generally targeted at achieving similar goals and objectives of maintaining economic stability in most nations (Beetsma and Jensen 2005; Claeys 2006). While the latter is generally a formidable instrument in the hands of the apex bank of various nations, the former exists as an important economic instrument in the hands of the governments of various nations.

Fiscal policies are government policies that are strategically designed to regulate or stabilize the economy through various forms of taxes and expenditures. They are economic policies that integrate government strategies for generating revenue basically via taxation and its subsequent strategies for making decisions on how the corresponding revenue that is generated would be allocated for attaining targeted economic goals. According to Jhingan (1997), fiscal policy aims at ensuring long-run economic stability by the adjustments of short-run economic fluctuations in such a way that a government uses its expenditure and revenue programs to generate desirable effects while avoiding those effects that are undesirable on a nation's income production, and employment levels.

However, the relationship between government expenditure and economic growth has generated a series of controversy among scholars especially in Nigeria (Akpan, 2005). Although, it is believed that government of developing countries have embarked on various spending programs in order to achieve some lofty macroeconomic goal. Unfortunately, no strong conclusion was generated in economic theories about the effect of government expenditure on economic growth. Some scholars believe that a rise in government expenditure is necessary for increase in output and can reverse economic downturns, while some did not support the claim that increasing government expenditure promotes economic growth rather it slows down the overall performance of the economy (Ogboru, 2017; Saidu & Ibrahim, 2019).

For instance, The World Bank, (2015) proposed that in developing countries, the variation in government spending pattern is not only projected to guarantee stabilization but also to spur economic growth and expand employment opportunities. In addition, Okwu et al, (2012) argue that increase in government expenditure on socio-economic and physical infrastructures encourages economic growth. Other scholars in support of the positive impact of government expenditure on output growth and development of a country are not limited to (Jibir & Aluthge, 2019a; Ahuja & Pandit, 2020; Aigbeyisi, 2013; Akanbi, 2014; Awode & Akpa, 2018;; Bose, Haque & Osborn, 2007; Idris & Bakar, 2017; Ihugba & Njoku, 2017; Jibir & Babayo, 2015; Srinivasan, 2013; Nyarko-Asomani, et al., 2019; Olayungbo & Olayemi, 2018).

Conversely, some scholars like Ekpo (1995) did not support the claim that increasing government expenditure promotes economic growth rather he assert that increasing government expenditure will slow down the overall performance of the economy. Other scholars who suggested that government expenditure has negative effect on output growth are not limited to (Abu & Abdullahi, 2010; Devarajan, Swaroop & Zou, 1996; F¨olster & Henrekson, 2001; Gukat & Ogboru, 2017; Nurudeen & Usman, 2010; Saidu & Ibrahim, 2019; Segun & Adelowokan, 2015).

The conflicting results may be attributed to differences in methodological approach, scope, or dataset. Irrespective of which of the argument may be more convincing, what remains obvious is that there is need for further studies to go beyond their specifications and methodologies. Therefore, this study examines the Impact of Government Expenditure on Economic Growth in Nigeria using latest data from 1981 to 2020, ARDL model and the direction of causality. Recurrent and Capital expenditure will be used as dependent variables while Gross Domestic Product is the dependent variable and proxy for economic growth.

1.2 STATEMENT OF THE PROBLEM

Nigeria is undebatably rich in money and natural resources but surprisingly ranks among top ten poorest countries in the world (author, 2021). Nigeria, having nearly 70% of its population living in relative poverty, with bad infrastructures, poor health facilities, poor educational standard, and other growth and welfare enhancing institutions are in a state of near-collapse, whose roads (most of them) have become death traps due to their deplorable conditions, whose power sector is in a state of moribund, whose rates of unemployment, illiteracy rate, poverty rate (evidenced in the number of people living in shanties, with little or no access to quality education, medi-care, potable water, etc.) is increasing as the clock ticks, whose human development index its continuously reducing, etc. Amidst all these problems the government has continuously increased her expenditure. Therefore one would expect that there will be a comparable achievement on economic growth in Nigeria, but otherwise has been the case.

The problems highlighted above have been there over the years despite various works done by researchers and authors on the field of study. It will be unwise for the researcher of this work to also base the problems of this study on the above stated problems. It is on the above premise the researcher chooses to look at the problem of obsolency of information that is the last time the research was carried out, the geographical problem, that is the areas other researches have not covered and which variables among the government expenditure component have not been tested and as well as the methodological problem, that inform the gaps of this study and which also form the foundation that arouse the interest of the researcher.

1.3 RESEARCH QUESTION

i. Does government recurrent expenditure have any significant impact on economic growth in Nigeria?

ii. Does government capital expenditure have any significant impact on economic growth in Nigeria?

iii. What is the direction of causality between government spending and economic growth in Nigeria?

1.4 OBJECTIVES OF THE STUDY

The major objective of this study is therefore, to ascertain the impact of government spending on economic growth in Nigeria. The specific objectives are:

i. To examine the extent of the impact of government recurrent expenditure on economic growth in Nigeria.

ii. To examine the extent of the impact of government capital expenditure on economic growth in Nigeria.

iii. To determine the direction of causality between government spending and economic growth in Nigeria.

1.5 RESEARCH HYPOTHESES

H_1: There is no significant impact between government recurrent expenditure and economic growth in Nigeria

H_2: There is no significant impact between government capital expenditure and economic growth in Nigeria?

H_3: There is no causality between government spending and economic growth in Nigeria?

1.6 SCOPE OF THE STUDY

The scope of this study covers the period of 40 years from 1981-2020. This period is chosen to cover the period after oil discovery and increase in revenue arising from the oil boom in the late 1970s. The secondary time series data for this study will be sourced from the Central Bank of Nigeria's statistical bulletin, the World Bank, journals, articles and other statistical sources.

1.7 JUSTIFICATION OF THE STUDY

The study offers important insights for the government with regard to its spending on both capital and recurrent expenditure. Although, the private sector is not left out as it will be useful to private actors working in the field of infrastructure development of organisations. These actors are not limited to engineers, materials procurement officers, project managers, consultants, developers, policymakers, programme designers and contractors. Moreover, researchers, students and academics will find it useful as a reference.

This study is beneficial for the oversight functions of government in public finance administration. The users of infrastructure sometimes rely on research such as this to gain insight into governance. This study exposes knowledge and information to various users, such as private individuals and electors. Additionally, donors and rating agencies may find this work useful for performance appraisal and financial analysis

1.8 LIMITATIONS OF THE STUDY

In the course of conducting this research, the following constraints were experienced; Due to the nature of this research work, which deals with secondary data only it was difficult to gather the necessary figure like the statistical data for the dependent variable. Hence the researcher has to consult some statistical bulletin, journal and the internet in other to come up with the right figures. The major challenge faced in this study was the difficulty in sourcing for accurate and reliable data. This study was able to surmount this problem by relying on published data from Central Bank of Nigeria (CBN) and World Development Indicators (WDI). Thus, data were obtained from CBN Annual Reports and Statement of Accounts, NBS and WDI’s repository of information.

1.9 ORGANIZATION OF THE STUDY

This study is divided into five (5) chapters. Chapter One contains the introduction of the study while Chapter Two is the review of relevant literature, chapter Three examines the research method adopted and specification of the appropriate models, while chapter Four focuses on presentation and analysis of results. Chapter Five summarizes the entire study and also brings out the conclusions and policy recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 CONCEPTUAL LITERATURE

Government spending/expenditure are the costs that are usually incurred by the government for the provision and maintenance of itself as an institution, the economy and society. According to Adolph Wagner (1835), Government expenditures usually tend to increase with time as the economy becomes large and more developed or as a result of increase in its scope of activities. According to Taiwo (2012), government's spending is a fiscal instrument which serves a useful role in the process of controlling inflation, unemployment, depression, balance of payment equilibrium and foreign exchange rate stability. In the period of depression and unemployment, government spending causes aggregate demand to rise and production and supply of goods and services follow the same direction.

As a result of the increase in the supply of goods and services couple with a rise in the aggregate demand exerts a downward pressure on unemployment and depression. In Nigeria, the federal government's expenditures are broadly divided into capital and recurrent expenditure. The recurrent expenditure consists of government expenditure on administration such as wages, salaries, interest on loans, maintenances etc. whereas the capital expenditure are on projects like roads, airport, health, education, electricity generation, telecommunication, water etc. Capital expenditures are investments with multiplier effects on the economy in terms of public benefits. In most cases government intervention has brought stability in income and employment in the economy. Public expenditure is therefore an important tool that brings about egalitarian society through the provision of welfare facilities (Ogba, 1999).

Government expenditure is functionally classified into four (4) categories in Nigeria: administration, economic services, social and community services, and transfers with capital and recurrent expenditure consumptions for each class (CBN, 2011). This paper adopts CBN's definition of government expenditure as a working definition.

2.1.1 Concept of economic growth

Muritala and Taiwo (2011) defined a country economic growth as a long term rise in capacity to supply increasing diverse economic goods to its population, this growth capacity based on advancing technology and the institutional and ideological adjustment that is demand. In other words, economic growth refers to increase in a country's potential Gross Domestic Product (GDP), although this differs depending on how national product has been measured. Jhinghan (2011) stated that economic growth is the quantitative sustained increase in a country's per capita output or income, accompanied by expansion in its labour force, consumption, capital and volume of trade. While economic development is economic growth plus change. An economy can grow but may not develop.

However, it is difficult to imagine economic development without economic growth. Though they differ in concept, they are sometimes used interchangeably.

2.1.2 Government spending on infrastructure and economic growth

There appears to be a consensus in the research that for a country to progress in its sustainable development goals, as advanced by the United Nations Development Programme (U.N.D.P.) (2015), there is a need for strong growth in national income. Improvements in infrastructure quality and economic growth are also necessary because, clearly, economic growth will affect citizens' lives positively, such as in the area of poverty reduction. Government spending on infrastructure is critical. However, some academic research has established that government spending is harmful to economic growth because large public sectors reduce the level of economic activity and, as such, the level of economic growth (Mitchell, 2005), while other studies find that government spending improves production and economic growth (Aregbeyeni & Kolawole, 2015; Babalola, 2015). The inconsistencies in research findings call for concern, especially in matters of this nature which affect citizens' welfare. Hence, this study attempts to probe into the relationship between government spending and economic growth.

Edame and Fonta (2014) examined the impact of government expenditure on infrastructure in Nigeria based on a co-integration and error correction specification. The study analysed the results but failed to give an interpretation of the implication of the results, which is necessary for policy formulation and decision-making. The present study discusses the implication of its research findings. Mitchell (2005) investigated the impact of government spending on economic growth in the United States. The study does not cover developing economies such as Nigeria, where there is a dearth of such studies. This study fills the identified gap by covering Nigeria, which is a developing economy. Iheanacho (2016) investigates government expenditure and economic growth from 1986 to 2014, but the study did not describe the variables. Also, the study did not link its findings to the principles in the theoretical framework which underscore the study. The current study describes the research variables and goes further to argue the findings based on some applicable theories.

Chingoiro and Mbulawa (2016) used secondary data covering 2010 to 2014, but there have been developments in macro-economic issues since. The present study is current; the data analysed cover 1980 to 2016, thus both pre- and post-millennium periods are investigated. This study utilizes both primary and secondary data as an innovation to contribute to the existing body of knowledge. This study also combines secondary data with primary data with a more robust interpretation of the findings. It goes a step further to discuss some core public sector theory with core Keynesian economic theories, the Wegner law of public expenditure theory and fiscal illusion theories. The findings are argued based on the underlying theories.

2.1.3 Trend on Government Expenditure and Economic Growth in Nigeria

Over the years, Nigerian governments have been increasingly voting and spending huge amount of money on operating expenses, overhead cost, and infrastructure, with an expectation that the spending would speed up the process of economic growth and development. However, the prevailing realities in the country seem to suggest that the economy is not experiencing the commensurate rate of output growth. Available statistics suggest that Nigeria's public expenditure as proportion of GDP has rather dipped down between 1970 and 2020. For instance, the average public expenditure as a proportion of GDP for the period 1970-79 stood at about 21.07 percent, which slightly rose to 21.57 percent in 1980-89. However, it went down continually; 14.07 and 7.67 percents in 1990-99 and 2000-09 respectively. This means Nigerian government reduces its size and involvement in the economic activities.

Trend Analysis of Government Expenditure and Economic Growth in Nigeria (1981 – 2020)

Year	Govt Exp (N' million)	% of GDP	Govt. Exp. Growth Rate (%)	Recurrent Exp. (% of Govt. Exp.)	Capital Expenditure (% of Govt. Exp.)	GDP Growth Rate (%)
1981-1989	17,793	21.57	23.20	53.86	46.14	-0.93
1990-1999	302,098	19.54	41.24	51.13	48.87	2.31
2000-2009	1,833,034	14.09	15.82	69.12	30.88	7.68
2010-2019	6,945,644	7.68	5.22	62.49	16.16	3.65

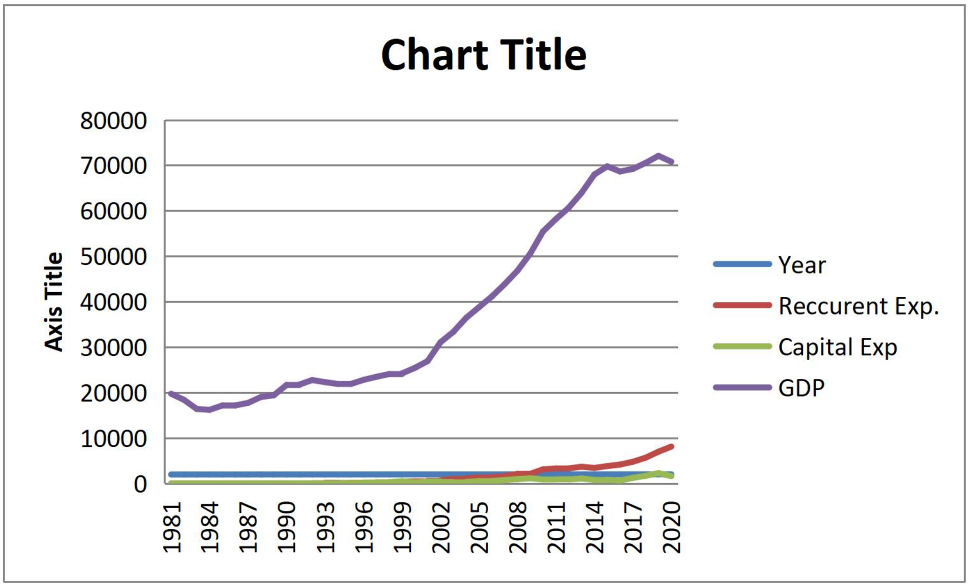
	.32					

Source: Authors' Computation using CBN Statistical Bulletin and World Development Indicator, 2020.

This could be linked to the process of deregulating the economy that begun in 1980s with introduction of Structural Adjustment Programme. More so, between 1981 and 1999, capital expenditure as a proportion of total government expenditures had been high and on increase until 2000-09 when it dipped to 30.88 percent from an average of about 48.87 percent and further decline to 16.16 percent in 2010-19. This falling trend may be connected to the global economic crisis of 2008/09 and process of transition from military regime to democratic dispensation between 1998 and 1999.

Additionally, total government expenditure has been on the increase unabatedly for the period 1970-2019 in Nigeria and a decadal breakdown shows that average annual growth rate of total government expenditure are around 23.20, 41.24, 15.82 and 11.82 percents over the periods 1980-89, 1990-99, 2000-09 and 2010- 2019 respectively (CBN, 2020). Recurrent expenditure constitutes mostly the chunk of the expenditures with exception of 1999. Conversely, Nigeria's GDP has instead grown at a slower rate than the rate at which government expenditure grew. For example, Nigeria's GDP has grown on average rate of about 7 percent for the period 1970-79 but it dropped by an average rate of 0.94 percent over the period 1980-89 due to several recessions in most of the years. More so, the GDP witnessed moderate annual growth rates of 2.31, 7.68 and 4.05 percent over the decades 1990-99, 2000-09 and 2010-19 respectively (World Bank, 2020). Figure 1 clearly depicts that government expenditure and GDP are positively associated with each other as they move on the same trend over the period 1981-2019. This confirms the proposition of Wagner's.

Fig. 2.1 Trend Analysis of Government Expenditure and GDP



2.2 THEORETICAL LITERATURE

This study is based on the following lines of theory: classical, neo-classical, stakeholder, new public management; public expenditure; fiscal illusion; Keynesian theories; and the economic theory of growth.

2.2.1 Classical Theory

Classical economists particularly Adam Smith advocated minimum government intervention in providing public goods, law and order and those investments that cannot be adequately provided by private sector due to their high risk or unprofitable nature (Jibir & Aluthge, 2019b). This doctrine dominated the world economy until the unprecedented Great Depression of 1930s that exposed the failure of the classical system. On the contrary, the Keynesian economists supported the use of public expenditure in promoting growth and development by stimulating aggregate demand especially during economic depression. This provides the obvious reason for government participation in economic activities in the modern time. This is because government is needed to correct short term distortions in an economy (Jibir & Aluthge, 2019b; Singh & Sahni, 1984) and to create socially optimal direction for growth and development of a country (Ram, 1986). Government also exists so as to provide basic services such as health, education, communication, transportation, among others, through expenditures which have an impact on the wellbeing of citizens and business environment for the private sector (Aladejare, 2019; Jibir & Aluthge, 2019b; Ukwueze, 2015).

2.2.2 Neo-Classical Theory

Within the premises of neoclassical growth models of Solow (1956), Cass (1965) and their subsequent modifications, long-run or steady-state economic growth is determined majorly by discount factors (rates of capital depreciation, population growth and technical progress). Although distortionary taxation and productive government expenditures could affect human or physical investment propensities; these changes only affect the steady-state factor ratios, not economic growth rate, as the rate of economic growth transitorily changes and resettles at the old or new steady state (Bleany, Gemmell & Kneller, 2001). By implications, the neoclassical growth models conclude that government spending only affects economic growth rate in the short run. Conversely, endogenous growth models, albeit not all, but those of Barro (1990; 1991) and King and Rebelo (1990) posit that distortionary taxation and productive expenditures will significantly affect both long-run level output path and growth rate with a change in rate of distortionary taxes while it increases with the increase in government productive spending. Endogenous growth models infer that non-distortionary taxation and unproductive government expenditures do not affect the steady-state growth rate (Sala-i-Martin & Barro, 1995).

Also, Wagner (1883) proposed a theory of government expenditure in economic literature. The law states that as the per capita income of a country rises, the share of public spending to gross domestic product also rises - which connote direct positive relationship between them. Put differently, industrialization-driven growth in per capita income incentivizes government to increase its expenditures with direct bearing on social welfare (education, health, etc.), which in turn encourages industries to produce more goods and services as aggregate demand goes up. Increased industrial production finally raises aggregate output. Since the emergence of Wagner's law, there has been debate over the role of government spending on the performance of an economy both at theoretical and empirical level.

2.2.3 Stakeholder theory

Stakeholder theory is based on the assumptions that address morals and values in managing an organisation, originally detailed by Freeman (1984). According to Heath (2009), stakeholder theory recognizes that there are parties involved in management, such as employees, customers, contractors, financiers, communities, public agencies, political groups, trade associations, competitors and trade unions, who sometimes scrutinize government spending. Stakeholder theory is used in this study as a critical-diagnostic tool to identify the points at which stakeholders are vulnerable to breakdowns in the spending process in the absence of moral constraints on the part of government spenders. For instance, stakeholders such as electorates, taxpayers or simply citizens are interested in what the government offers from spending taxpayer's money. They expect a business-like approach to governance in the areas of utmost good faith, transparency and accountability, as enshrined in new public management theory.

2.2.4 New public management (N.P.M.) theory

Gruening (2001) explains that the N.P.M. movement began in the late 1970s and early 1980s. Its first practitioners emerged in the United Kingdom under

Prime Minister Margaret Thatcher and in the municipal governments in the United States that had suffered most heavily from an economic recession and tax revolts, followed by New Zealand and Australia. Their successes put N.P.M. administrative reforms on the agendas of most O.E.C.D. countries and other nations as well. N.P.M. theory involves the introduction of private sector management and incentive methods into a government organisation. Advocates of this theory argue for the incorporation of the basis of private sector methods and incentive structures to improve efficiency in government. Notwithstanding that government business is not for profit, it should strive to deliver on its promises of the dividend of democracy. This is the only way its performance can be measured because there is no standard yardstick for measuring government performance. The measurement of the efficiency or effectiveness of government spending has been subjective to a large extent. Therefore, government should minimise time spent on analysing uncertainty.

2.2.5 Public expenditure theory

The public sector has a role to play in society to ensure the smooth running of economic activities. Also, the goals of government are sometimes numerous and have several stakeholders involved. Therefore, to avoid chaos, efficiency and equity should guide public spending (Hindrizia & Myles, 2005; Samuelson, 1955). Hindrizia and Myles (2005) explain that efficiency concerns the smooth running of public activities. Efficiency has to do with the coordination, collection and monitoring of government revenue and expenditure towards the provision of services to the stakeholders. Equity is about the fair sharing of public gains among stakeholders. The applicable public expenditure theory in this study is based on Wagner's law, known as the law of increasing state spending. Wagner's law was formulated by Adolph Wagner (1835–1917). The theory states that for any country, public expenditure constantly rises as income growth expands.

According to Magazzino, Giolli, and Mele (2015), Wagner's law stipulates that in the process of economic development, the share of the public sector in GDP has been increasing over time. Cosimo, Lorenzo, and Marco (2015) explain that the law is premised on four principles, as follows: that growth results in increased complexity because there are new and continuing increases in public expenditure; that public expenditure increases result in urbanisation and externalities; that the goods supplied by the public sector should have a huge income elasticity of demand; and that growth results in an increase in demand with a resultant increase in public expenditure. This study expects that if growth in expenditure matches economic growth, then it should also translate into economic development; however, this has not been the case in reality in developing nations like Nigeria because sometimes there are elements of fiscal illusion in government activities.

2.2.6 Fiscal illusion theory

The theory of fiscal illusion originates from the work of Puviani (1903) (as cited in Mourao, 2008) and with additional impetus from Buchanan (1967). Fiscal illusion is about the misperception of fiscal parameters. According to Oates (1985), fiscal illusion implies persistent views and biases about public budgetary decisions in any direction based on imperfect information. Afonso (2014) argues that the benefits of government programmes appear to be remote and unrecognized by citizens, while citizens feel more directly the impact of sources of financing the budget, such as taxes. The essence of the theory is to expose the fact that sometimes the real programme of government is concealed to accommodate unnecessary spending. This theory is relevant to this study because the real benefits of infrastructure spending may not necessarily translate into economic growth in the same expectation because of the element of illusion in the system. Oates (1985) argues that the misconception of fiscal parameters could considerably distort economic choices. This study explains the findings based on this theory as an opportunity to show the direction of fiscal illusion in the cost and benefits analysis of government spending on infrastructure towards the ideology of economic growth.

2.2.7 Economic growth theory

The ideology of economic growth has had a long history, since the eighteenth century when Adam Smith published his *Wealth of Nations*, which centres on the pursuit of growth. Economic growth is an increase in the monetary value of goods and services of a country over a given period, as indicated by G.D.P. However, since the 1980s, the growth critique was gradually replaced by the view of ‘decoupling’ of economic growth from environmental deterioration. Such a ‘decoupling’ view was emphasised by the World Commission on Environment and Development as a key strategy of sustainable development in their report ‘Our Common Future’ (1987). In recent years, the possibility of such decoupling has been increasingly questioned by critics, and they instead propose zero-growth or even de-growth. Thus far, the defenders of growth still stand in the dominant position. The scope of the opponents’ arguments has expanded from its initial focus on resource limits and environmental degradation to a broader range of issues. Xue (2010) explains that economic growth is the increase in services produced in a nation over a long time period. It is measured by an increase in G.D.P. adjusted for inflation, and a nation is expected to continually improve its G.D.P. for sustainability.

There are three types of economic growth theory: classical; neo-classical; and the Solo-Swan modern-day theories. This study attempts to investigate the Solo-Swan modern day theory, which focuses on three factors that affect economic growth, including labour, capital and technology, with particular focus on technology regarding infrastructure advancement and economic growth regarding G.D.P. According to Wells (2015), the Solo-Swan theory argues that it is technological advancement that grows an economy because labour and capital adjust according to the advance recorded in technology. The study argues that when government spending is zero, there is little economic growth because enforcing contracts, protecting life and property and infrastructure development would be complicated. Hence, government spending is necessary as supported by Keynesian theory.

2.2.8 Keynesian theory

The theories forming the basis of Keynesian economics were first presented by the British economist John Maynard Keynes (1936) during the Great Depression in his book *The General Theory of Employment, Interest and Money*. According to Blinder (2008), Keynes contrasted his approach with the aggregate supply-focused classical economics that preceded his book. The interpretations of Keynes that followed are contentious. Keynesian theory presupposes that government intervention can stabilise an economy, especially during a recession when there is little money to spend. The theory argues that with government technological intervention, there is increased spending and employment (Jahan, Mahmud, & Papageorgiou, 2014). However, some scholars, such as Aregbeyeni and Kolawole (2015) and Mitchell (2005), argue that Keynesian theory sometimes fails because lower tax rates have been found to boost economic growth. The study states that the Keynesian mindset is still alive among politicians and journalists, who often advocate the need to raise spending to enhance growth. However, in practical terms it is possible to spur economic advancement through tax concessions to attract investors and grow foreign direct investments; this has helped in some United Arab Emirates states like Dubai.

2.3 EMPIRICAL LITERATURE

Turning to the empirical ground, there is a plethora of studies that investigated the impact of public spending on output growth. These studies are reviewed thematically along the lines of aggregated and disaggregated studies across developed and developing countries. Aggregated studies conducted their analysis by using total government expenditures as one of the independent variables in their respective models. In that respect, Katrakilidis and Tsaliki (2009) in their study of causal nexus between public spending and output growth, using Greece data between 1958 and 2004, demonstrated a long run equilibrium relationship between public spending and output.

Similarly, Srinivasan (2013) examines the causal nexus between government expenditure and output growth in India. The results indicate one way causality running from economic growth to government expenditure in short-run and long-run. Forte and Magazzino (2016) examined the nexus between public spending and out-put growth using Italian data spanning from1861 to 2008 and the finding established a non-linear relationship between public spending and economic growth for Italy.

Churchill, Ugur and Yew (2016) investigated the nexus between public spending and output growth, the result upheld the conventional belief that large government size is detrimental to growth. The studies by Gupta (2018) and Diyoke, Yusuf and Demirbas (2017) revealed a strong positive correlation between government spending and economic growth. In another study by Dudzeviˇciut˙e, ˇ

Simelyt˙e and Liuˇcvaitien˙e (2018) using data for eight European Union member countries found a strong positive association between public spending and economic growth. Idris and Bakar (2017) and Ihugba and Njoku (2017) found positive impact of government expenditure on output growth. Chimobi (2016) investigated national income and government expenditure nexus in Nigeria and found that there is stable long run relationship between the fiscal variable and economic growth.

The above strand of studies contradicts the proposition of neoclassical growth models that government expenditures cannot increase growth rate at steady-state since the economies have all reached their maximum capacities. However, the findings mostly affirm the submissions of Wagner's law that there is a positive nexus between public expenditures and economic growth. In contrast, Oktayer and Oktayer (2012) investigated the nexus between public spending and output growth using Turkish data for the period 1950-2010 and found no long run co-integration between the variables of interest. Molefe and Choga (2017) analyzed the impact of government expenditure on economic growth in South Africa over the period 1990-2015 using VECM model. Their results suggested that government expenditures have a negative long-run relationship with economic growth.

Ebaid and Bahari (2019) using data for Kuwait found a unidirectional causality running from expenditure to economic growth. Additionally, Olayungbo and Olayemi (2018) using Vector Error Correction Model for 1981-2015 Nigerian data established government expenditure have negative and significant impact on economic growth in both short and long runs. While controlling for structural breaks in ARDL model, Awode and Akpa (2018) supported the findings of Olayungbo and Olayemi (2018); though the findings of the former are insignificant. These studies' findings neither contradict nor affirm the submissions of neoclassical growth models and Wagner's law. This is debatable given that the findings are established in developing countries battling with bribery and corruption.

Alternatively, disaggregated studies broke up public spending into its major components based on functional, economic, sectoral and cross classifications. On the basis of economic classifications, Kneller, Bleaney and Gemmell (1999), using a panel of 22 OECD countries, find that while productive expenditures enhances growth, unproductive expenditures do not. This is supported by Greiner (2014), in which a positive nexus between public capital expenditure and economic growth was found.

Likewise, while applying Gregory-Hansen Structural break technique on 1970-2009 Nigerian data, Oyinlola and Akinnibosun (2013) found that in both short and long run, while capital expenditure has positive and significant influence on economic growth; recurrent expenditure is negatively insignificant in determining economic growth. Similarly, Ebong, et al (2016) examined the impact of capital and recurrent expenditure on economic growth in Nigeria over the period

1970-2012 using VECM. The result reveals that capital expenditure on infrastructures positively and significantly influences economic growth in both short and long runs. Onifade, et al (2020) using ARDL model and 1981-2017 Nigerian data, discovered that recurrent expenditure negatively impacts on national output whereas capital expenditure, albeit insignificantly, positively affects GDP. The findings of these studies have validated the propositions of Barro's (1990) endogenous model that productive expenditures have the potentials to boost level output and economic growth rate in both short and long runs.

Contrariwise, the finding that productive expenditures contribute to growth is also refuted by Devarajan, et al. (1996) using data from 43 developing countries over 20 years. They found that while the share of current expenditure had a positive effect, the share of capital expenditure had a negative influence on per capita growth. Ali et al. (2013) using data set for Pakistan, discovered that capital expenditure does not promote output growth for the period covered. In terms of functional classifications, Lin, Ali and Lu (2015) using a panel of 29 OECD countries found a positive relationship between military spending and education and health expenditure. In same token, using ARDL technique on 2004-2019 Afghanistan data, Barlas (2020) found that current expenditures on education and infrastructure have positive impact on economic growth as opposed to security expenditure, which negatively affects economic growth in Afghanistan.

In contrast, Phiri (2019) in his analysis of the effect of military expenditure on economic growth found that the current level of defence expenditure are too high and does not support growth and development. Similarly, d'Agostino, Dunne and Pieroni (2019) using large sample data for 109 middle and low income countries found that defense expenditure has negative impact on economic growth.

Cross classification disaggregated studies include Nurrudeen and Usman (2010) showing that very few variables were robust in explaining cross-country variations in growth rates, and these include public educational spending and capital stock. Equally, Atilgan, Kilic and Ertugrul (2017) showed that positive nexus exists between social expenditure on health and economic growth. Babatunde (2018) indicated that expenditures on transport, communication, health and education positively and significantly affect output in Nigeria. However, Usman et al. (2011) applied multivariate time series framework for Nigeria to analyze the impact of public spending on output growth. The findings revealed that expenditure on administration, communication, education and transport had negative impact on economic growth in the short run. Further, the co-integration result reveals a long run relationship between public spending and output growth. In another disaggregated analysis, Gukat and Ogboru (2017) found that administrative and community services expenditure show negative effect on growth.

It is apparent from the above that there are mixed, conflicting and inconclusive findings on the relationship between public spending and output growth. Some findings established that aggregate public spending has negative effects on economic growth by crowding out private investment and resulting in inefficiency. This might have occurred (though not directly implied by the studies) as a result of 'too big government size', which is a situation whereby government intervenes in economy beyond the optimal proportion. Also, there is a set of studies which observed that certain components of public spending have positive and significant impacts on output growth and these components include spending on human capital (health and education).

This could be due to increase in labour productivity directly caused by improved human capital. The last set of studies found out that aggregate public expenditure significantly and positively determined economic growth. The findings of existing studies on the impact of government expenditure on economic growth in Nigeria are constrained by time scope, econometric issues and measurement problems. Although this is well researched area; Folster and Henrekson, (2001) pinpoint that most of the earlier studies in the area have serious econometric and measurement predicaments, which if properly addressed would be a great contribution to knowledge. This is self-convincing as better understanding and reliable connection between government expenditure and economic growth could be established.

Given that majority of Nigerian studies (including Onifade, et al, 2020) did not address the issue of structural break, converting capital expenditure into stock variable and they are mostly not up to date, this study seeks to address these research gaps so as to establish more robust and reliable findings and in turn contribute to the body of knowledge on the on-going debate of the impact of government expenditure on economic growth.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 THEORETICAL FRAMEWORK

The theoretical framework of this study is hinged on the neoclassical school of thought. Within the neoclassical context, public expenditure only affects a country's transitional growth rate; but the steady-state growth rate stays unchanged (Arrow & Kurz, 1970). However, the recent proliferation of studies on endogenous growth has produced a number of models connecting public capital with a country's long-term growth rate (Barro, 1990; Devarajan, et al., 1996; Gemmell, et al. 2016; King & Rebelo, 1990). Endogenous growth theories, like Barro (1990; 1991), suggest that public spending would have both temporary and lasting effects on economic growth of a country (Devarajan et al., 1996). The innovative characteristic of the public-policy endogenous growth models of Barro (1990) and Sala-i-Martin and Barro (1995) is that public expenditure can determine both the level of the output path and the steadystate growth rate of a country (Devarajan et al., 1996; Gemmell et al., 2016). This provides the avenue for the application of the public-policy endogenous growth models in the analysis of the impact of public expenditure on economic growth.

Thus, since the goal of this study is to investigate the impact of government expenditure on economic growth in Nigeria, we apply the public-policy endogenous growth model with public capital as one of the factors. Public expenditure is therefore, used as proxy for capital which is further decomposed into capital and recurrent expenditures. We use an aggregate production function (Yt) which integrates public capital expenditure. The Cobb-Douglas production function as the aggregate production function of the economy is specified within the framework of endogenous model in equation 1:

$Y_t = f\,(K_t, G_{1t}, G_{2t})$ ………………………… (1)

Where, Y is the level of output, K is the available private capital, G1 and G2 are government expenditure components and t is the time period. Following Barro (1990), Devarajan et al., (1996) and Gemmell et al. (2016), we leave out private capital as a separate argument in the production function. Like other studies, we consider controlling for other relevant variables in the model. We have incorporated labour force, inflation, trade openness and non-oil revenue into the model. The selection of the control variables is based on their relevance within the context of Nigerian economy. In particular, controlling for labour force in the model is essential as labour is one of the most important factors in production function of most growth models ranging neoclassical to endogenous growth models. For instance, neoclassical growth models suggest that steady-state conditions are determined by discount factors, to which population growth rate (measured by changes in labour input over time) is part and parcel. Given the level of how most economies are integrated through series of bilateral and multilateral strategies, including trade openness, as a measure of integration, in growth model is essential in making the model more robust and realistic. Again, to help the model to capture the macroeconomic (in)stability, inflation is fundamental as it measures the changes in level of all important prices, particularly consumer goods. In view of the Nigerian government's efforts to diversify the economy due to dwindling oil revenue, including non-oil revenue in the model is critical as it could fairly measure the diversification's efforts.

We therefore rewrite equation 1 by considering public capital and accommodating other control variables as:

$Y_t = f(K_t, G_{1t}, G_{2t}, Z_t)$ …………………………………… (2)

Where: Y, G1 and G2 remain as previously defined while Z stands for control variables.

The above approach is appropriate as it enables the researcher to quantify the relationship between government expenditure, revenue and external debt through a multiple regression analysis and causality testing.

3.2 MODEL SPECIFICATION

Upon the background of the neoclassical school of thought, the specified model above has been re-modified following the model adopted from Dikeogu (2016) to be:

$GDP = f(CEX, REX, INF, LF)$ …………………………………… (3)

Econometrically specified as:

$GDP = \beta_0 + \beta_1 CEX + \beta_2 REX + \beta_3 INF + \beta_4 LF + U$... (4)

Where: In the model:

GDP = Gross Domestic Product

CAPEX = Capital Expenditure

RECEX = Recurrent Expenditure

INF = Level of Inflation

LF = Labour Force

The above-mentioned model is then transformed into a log form in other to bring variables to normality as well as compress the scales in which the variables are measured, thereby reducing largeness of some values relative to others or reducing a tenfold difference between two values to a mere twofold difference (Gujarati, 2004).

$\ln GDP = \beta_0 + \beta_1 \ln CEX + \beta_2 \ln REX + \beta_3 INF + \beta_4 \ln LF + U$ ……………. (5)

$\beta_1>0, \beta_2>0, \beta_3<0, \beta_4>0$ … apriori expectation

All the variables are used in log form. Constant term is denoted by β_0, while β_1, β_2, β_3, β_4 are the parameters of the explanatory variables and error term is represented by U. Based on the literature and earlier studies, all the coefficients except β_3 are expected to be positively related with economic growth. Finally, the major estimation technique for this study is the cointegration technique. Hence, the ECM model for this study is specified as;

$$lnGDP = \beta_0 + \beta_1 lnCEX_{t-1} + \beta_2 lnREX_{t-1} + \beta_3 INF_{t-1} + \beta_4 lnLF_{t-1} + ECM_{t-1} + U$$

3.3 METHOD OF ANALYSIS

The study adopts the Co-Integration Test. However, this study also employed Augmented Dickey Fuller (ADF) test for the unit root to ascertain whether the data series has a unit root in order to attain stationary. The study also employed the use of Johansen co-integration test so as to ascertain the long run relationship between variables that were employed for this study. Further, ECM is employed to correct any form of dis-equilibrium in the short run. However, the techniques adopted for this study are further elaborated below;

3.3.1 *Unit Root Test*

This test is the first step and involves testing the stationarity of the variables, and then the order of integration of the individual series under consideration. Researchers have developed several procedures for the test of order of integration. The most popular among them is the Augmented Dickey-Fuller (ADF) test due to Dickey (1979) and Fuller (1981). Augmented Dickey-Fuller test relies on rejecting a null hypothesis of unit root (the series are non-stationary) in favour of the alternative hypotheses of no unit root (the series are stationary). The tests are conducted with or without a deterministic trend (t) for each of the series. A stochastic process y(t) is known as a unit root if its first difference, y(t) - y(t-1) is non-stationary. Basically, a series is said to be integrated of order $I(1)$, if it needs to be differenced once to become stationary. The same holds for an $I(2)$ series which need to be differenced twice to become stationary. If it is of order $I(0)$, then no differencing is necessary.

3.3.2 *The Co-Integration Test*

The second step is the testing of the presence of co-integration between the series of the same order of integration. The analysis of and testing for unit roots naturally lead to the theory of co-integration. The test deals with the methodology of modelling non-stationary time series variables. According to Maddala (1992) as cited in Iyoha (2004, p.86), the theory of co-integration explains how to study the interrelationships between the long run trend in the variables that are differenced away in the Box-Jenkins method. The basic idea behind co-integration is that, if in the long run two or more variables move closely together, even though the series themselves are trended, the difference between them is constant. Simply put, variables are said to be co-integrated if there exist a long-run relationship among them. A lack of co-integration suggests that such variables have no long-run relationship: they can wander arbitrarily far away from each other (Dickey et.al., 1991). In this study, we employ the maximum-likelihood test procedure established by Johansen and Juselius (1990) and Johansen (1991). To determine the number of co-integration vectors, the Trace statistic can be used. The statistic test null hypothesis that the number of distinct co-integrating vectors is less than or equal to q.

3.3.3 *The Error Correction Model*

Given that the existence of Co-integration is established amongst the series, then an Error Correction Mechanism (ECM) first adopted by Sargan (1964) and later popularized by Engle and Granger (1987) is carried out to correct for any dis-equilibrium in the short run. In this model, the dynamics of both short-run (changes) and long-run (levels) adjustment processes are modeled simultaneously, thereby providing information about both the short-run and long-run relationship.

3.4 DETERMINING THE RELIABILITY OF ESTIMATED RESULTS

In a view of evaluating whether the estimates of the parameters are theoretically meaningful and statistically satisfactory, this study will adopt three criterions which are economic or a priori criteria (determined by economic theory), statistical criteria (determined by statistical theory), and econometric criteria (determined by econometric theory).

3.4.1 Economic or A priori Criterion

This criterion is based on economic theory and it is aimed at determining whether the signs and sizes of the empirical results conform or are in tandem with standing economic theory postulates. Put differently, it is concerned with determining the consistency of parameter estimates with the signs and magnitude.

Therefore, given the variables under consideration, their parameters and respective a priori signs can be expressed as follows:

$b_0, b_1, b_2, b_3, b_4 > 0$

3.4.2 Statistical Criterion (First Order Test):

This test is based on statistical theory used in evaluating the reliability of the parameter estimates of a given model. According to Gujarati (2004), a test of significance is a procedure by which sample result is used to verify the truth or falsity of a null hypothesis. It encompasses the following tests:

i. ***Standard Error Test:*** This test is of high relevance arising from the fact that sampling errors tend to characterized parameter estimates of a given model. It is therefore essential to measure the size of the sampling error and subsequently determine the degree of confidence in the validity of the obtained estimates (Koutsoyiannis, 1977). The test helps us to know if our estimates are statistically significant or not, and also whether the sample from which we made estimates might have come from a population whose true parameter value are zero (Koutsoyiannis, 1977 p.80).

ii. ***The t-test:*** This test is carried out to ascertain the statistical significance of the individual parameters in an econometric model. It is used in testing the statistical significance of each regression coefficient at a given level of significance (say 1%, 5%, or 10%) with N–K degree of freedom. The table or critical value is given as; $t_{\alpha/2\,(N-K)}$. Where; t = t –critical, α = level of significance N = Sample size K = total number of estimated parameters. Decision Rule If $/t_{cal}/ < t_{\alpha/2\ (N-K)}$ at a given level of significance, we accept H_0 and reject H_1 but if $/t_{cal}/ > t_{\alpha/2\ (N-K)}$ we reject H_0 and accept H_1. In the former, we therefore conclude that the parameter estimate is not statistically significant at a given level of significance while for the latter, we conclude that the parameter estimate is statistically significant at a given level of significance.

iii. ***F Test:*** This test is used to test overall significance of the regression model. Simply put, it is used to test for the statistical significance of the coefficient of determination (R^2). The decision is that, if the computed F test i.e. $Fc_{al} > F_\alpha$ (k-1), (N-K), then we say the overall model is statistically significant at a given significance level. If $Fc_{al} < F_\alpha$ (k-1), (N-K), then we conclude that the overall model is not statistically significant at a given significance level.

iv. ***R^2 and adjusted R^2 test:*** The coefficient of determination (R^2) depicts the percentage variations in the dependent variable that is accounted for by the variations in the independent variables in a given single regression model. It is also known as the measure of the Goodness of Fit of a regression line. The adjusted R^2 depicts the variations in the dependent variable that is accounted for by the changes in the explanatory variables of a given model taking account of the degree of freedom associated with the sum of squares. The adjusted R^2 is used in a multiple regression model.

3.4.3 Econometrics Criterion (Second Order Test)

This criterion is based on the theory of econometrics and aimed at investigating whether the assumptions of econometric method employed are satisfied or not. Examples of tests under this criterion are heteroscedasticity test, Multicollinearity test, autocorrelation test, Normality test, Stability test etc. for this research, focus is confined to autocorrelation test, normality test and stability test.

i. ***Autocorrelation Test:*** The test is used to investigate if the error term of different observations is correlated or not. That is, testing for the randomness of the error term. Hence, the Durbin-Watson method was adopted to test for serial correlation.

ii. ***Stability Test:*** This test is carried out to ascertain whether the variables adopted for this study were stable over the period under review (usually at 5% level). The CUSUM Test is adopted for this study.

iii. ***Normality Test:*** This test is carried out to ascertain whether the stochastic error term is normally distributed with a mean of zero and constant variance. This is expressed symbolically as; $\mu = N(0, \sigma_i^2)$

3.5 SOURCES OF DATA

Time series data from secondary sources for the period 1981 – 2020 is used in carrying out analysis for this study. Among these are data for inflation and labour force which are obtained from Word Development Indicators (WDI, 2021), while gross domestic product, capital and recurrent expenditure were obtained from Central Bank of Nigeria (CBN, 2021) statistical bulletin (various issues).

CHAPTER FOUR

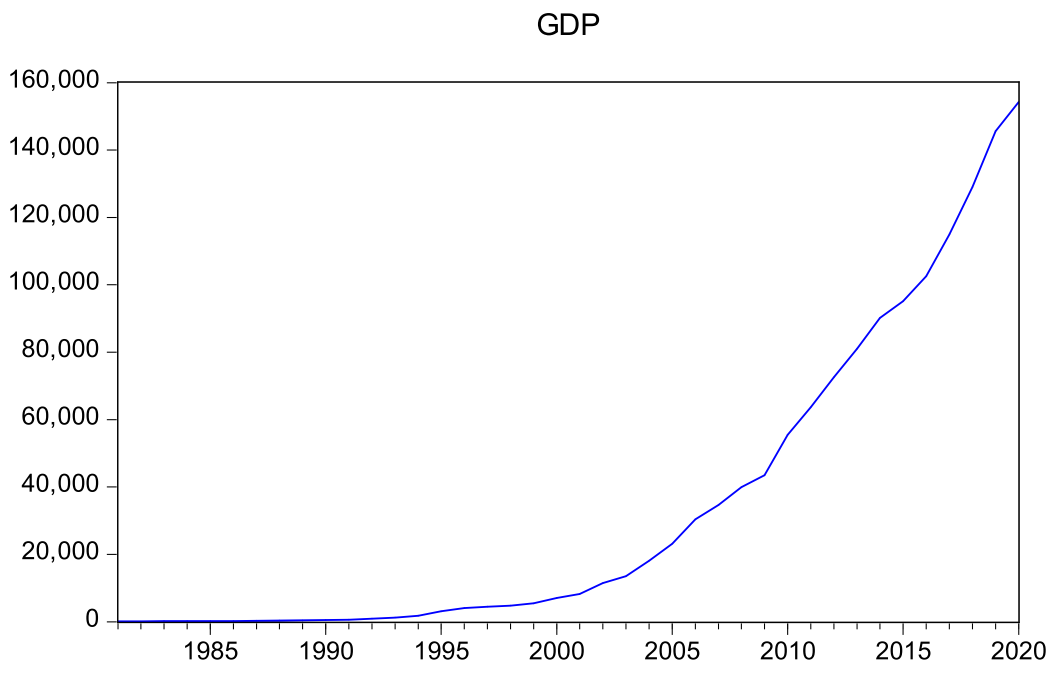
DATA ANALYSIS AND PRESENTATION OF RESULT

4.1 TREND ANALYSIS

Under this section, we examine the trend behavior of all the variables employed in this study over time. The idea is to ascertain whether the variables have experienced stability, fluctuations or stagnation over the years.

Graphical Trend of Regression Variables

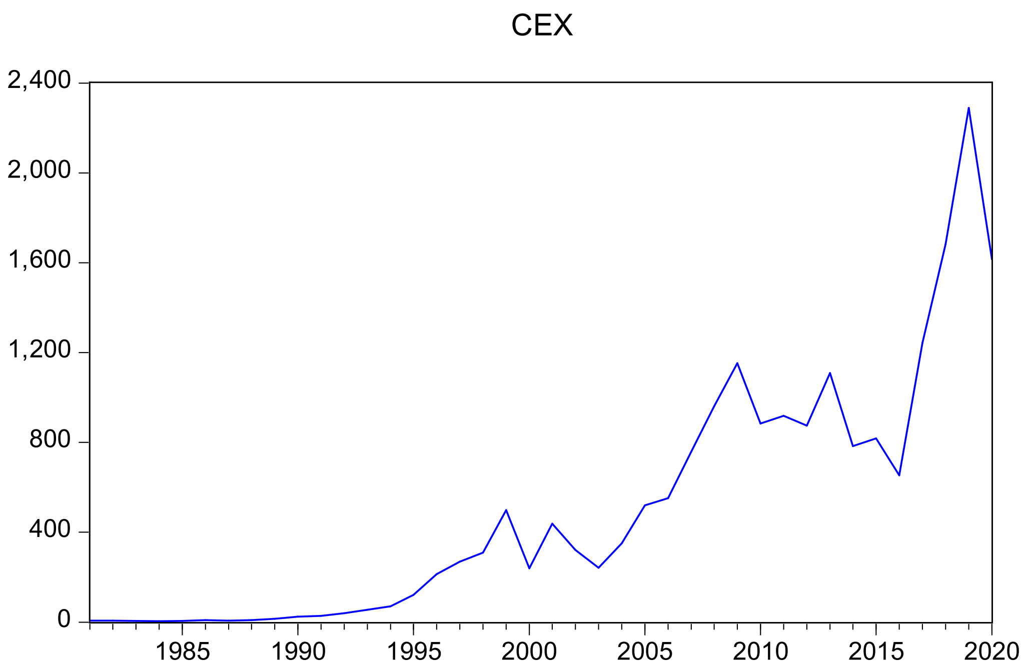
Fig. 4.1.1: Trend of GDP



Source: Authors' Computations using Eviews 10

Figure 4.1.1 above shows that real GDP has experienced a steady increase from the period starting from 1992 to 2020. This implies that GDP experienced a steady increase over the years.

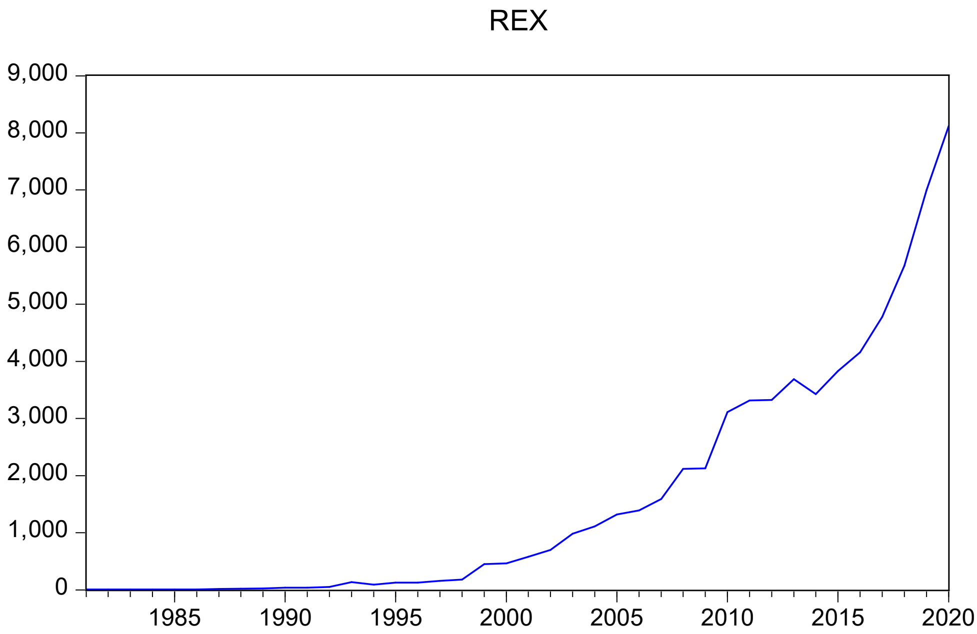
Fig. 4.1.2: Trend of Capital Expenditure



Source: Authors' Computations using Eviews 10

Figure 4.1.2 above shows that Nigeria's capital expenditure experienced a fluctuating increase from 1993 to 2022. For instance, it increased at a decreasing rate from 2004 to 2015 but rose sharply from 2016 to 2020.

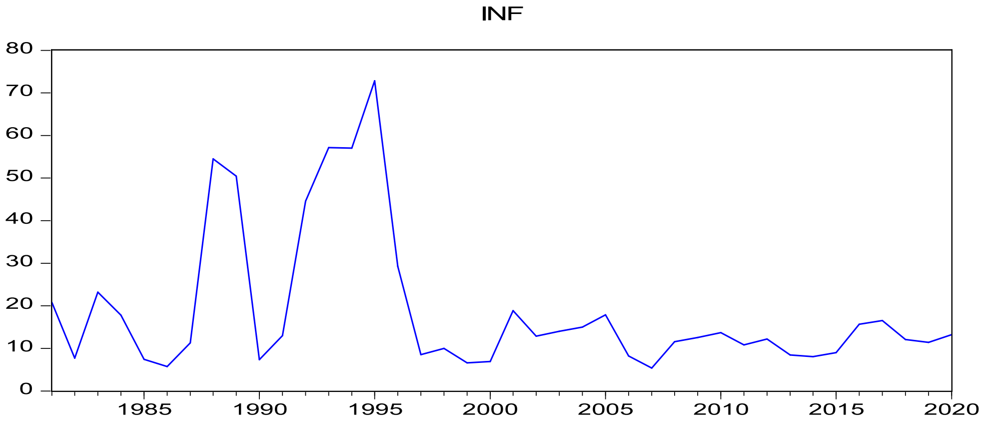
Fig. 4.1.3: Trend of Recurrent Expenditure



Source: Authors' Computations using Eviews 10

Figure 4.1.3 shows above that between the periods of 1986 to 1998, recurrent expenditure experienced a slow growth, although with some level of fluctuations. From 1998 to2020, the recurrent expenditure witnessed a sharp increase. As seen in Q2 of 2009 to 2019, there was a remarkable growth in recurrent expenditure.

Fig. 4.1.4: Trend of Inflation Rate



Source: Authors' Computations using Eviews 10

Figure 4.1.4 above shows that inflation has been experiencing trend instability from 1981 making the inflation rate to fluctuate over the years. In 1995, inflation rate reached it's peak but nosedived in 1997 and continued the usual trend.

Fig. 4.1.5: Trend of Labour Force

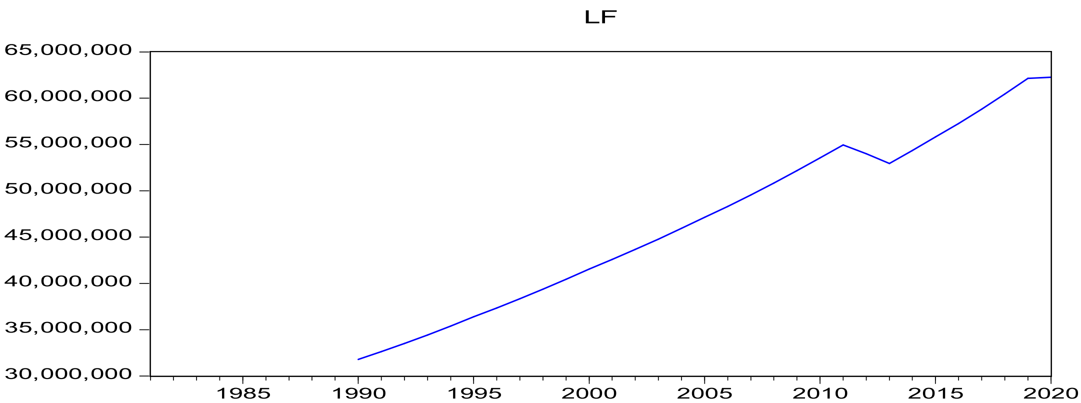


Figure 4.1.5 above shows that between the period 1990 to 2020, Nigerian tax rate has been on a rise. Although, it experienced a slight decline between 2012

and 2014 and it rose again in 2014 (Q2) . However, it has continued on an increasing trend from 20015.

4.2 OLS REGRESSION ANALYSIS

Table 1 below shows summary regression analysis of the model specified in chapter three of this report. The regression analysis helps us determine the relationship between the dependent variable of GDP and explanatory variables of CEX, REX, INF and LF. The result below shows that a unit increase in Capital expenditure (CEX) will lead to a fall in the GDP as the coefficient is negative. However, this is not Significant at 5% level of significance as the coefficient of CEX is negative. The coefficient of recurrent expenditure (REX) is positive, which means a unit increase in REX increase GDP by 21 units and the probability value is significant at 1% LOS. Furthermore, inflation (INF) and labour force (LF) show a positive relation which means a unit increase in both variables will increase GDP by 31 and 0.1 respectively, although their probability values are not significant at 5% LOS. The R-square shows that 97% of the accuracy of the explanatory variables while 3% are captured by the error term. The model is a good fit as the probability of F statistics is significant at 1%. However, the Durbin Watson statistics is less than 2 which means the variables in the model are serially correlated.

Table 1: OLS regression result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CEX	-7.522080	6.814175	-1.103887	0.2798
REX	21.02486	1.998787	10.51881	0.0000
INF	31.24718	98.93671	0.315830	0.7547
LF	0.000589	0.000436	1.350619	0.1885
C	-22918.44	17785.13	-1.288629	0.2089

R-squared	0.978195	Mean dependent var	43920.57
Adjusted R-squared	0.974841	S.D. dependent var	47873.91
S.E. of regression	7593.614	Akaike info criterion	20.85469
Sum squared resid	1.50E+09	Schwarz criterion	21.08598
Log likelihood	-318.2477	Hannan-Quinn criter.	20.93009
F-statistic	291.6000	Durbin-Watson stat	0.671503
Prob(F-statistic)	0.000000		

Source: Author's computation using eviews 10

4.3 DESCRIPTIVE STATISTICS

Table 1 below shows the summary Descriptive statistics of the variables employed in this study are presented and discussed below. Precisely, the mean, median, minimum and maximum values, standard deviation, the skewness and kurtosis, Jarque-Bera values and their equivalent probability values are also stated in Table 1 below. The mean of each of the series is a pointer to the average of the respective variable as it is used in the study. The standard deviation shows how distributed the variable is from the mean; thus it shows the explosiveness of the series. Additionally, the skewness and kurtosis indicators reveal the asymmetry and peakedness of the distribution while the normality test was conducted using the Jarque-Bera statistic.

In the table, GDP and LF both have a very high mean and standard deviation while CEX, REX and INF have relatively low mean and standard deviations. Also, all the variables employed are shown to be positively skewed, except LF which is negative. The positive values of the kurtosis of this distribution are clear indication that the variables are all leptokurtic i.e. the distributions is peaked and possess thick tails.

Table 2: Descriptive Statistics

	GDP	CEX	REX	INF	LF
Mean	43920.57	646.2739	2071.051	18.09658	46861904
Median	23121.88	519.4700	1321.300	12.55496	47143645
Maximum	154252.3	2288.996	8121.643	72.83550	62259271
Minimum	494.6400	24.04860	36.21960	5.388008	31787602
Std. Dev.	47873.91	548.5416	2197.286	16.63430	9348507.
Skewness	0.925824	1.099330	1.112013	2.129875	-0.014859
Kurtosis	2.587449	3.978188	3.482361	6.409437	1.783706
Jarque-Bera	4.648448	7.479991	6.689494	38.45257	1.911994
Probability	0.097859	0.023754	0.035269	0.000000	0.384429
Sum	1361538.	20034.49	64202.57	560.9938	1.45E+09
Sum Sq. Dev.	6.88E+10	9026938.	1.45E+08	8300.996	2.62E+15
Observations	31	31	31	31	31

Source: Author's computation using eviews 10

4.4 UNIT ROOT TEST

A unit root test is performed on the variables considered in the study. This is due to the fact that most macroeconomic time series data are non-stationary and regressing non-stationary series on each other is bound to produce spurious regression result as specified by Granger and New Bold (1974). The Unit root test is also performed to know whether the variables exhibit certain characteristics such as the mean reversion and finite variance. It is appropriate to test the time series to ascertain whether they are stationary or non-stationary as well as their order of integration. The order of integration is essential because it helps in determining the subsequence long run relationship among the variables.

The null hypothesis is that the series is non-stationary and this is either accepted or rejected based on the t-ratio of the lagged term Xt-1 compared to the tabulated values. If the t-ratio is greater than the critical value, the null hypothesis of the Unit root (i.e. the series is stationary) is rejected. On the other hand if the t-ratio is less than the critical value, the null hypothesis of a Unit roots (i.e. the series is non-stationary) is accepted. The Augmented Dickey-Fuller (ADF) unit root testing approach was employed to ascertain whether the variables employed in the model were free of unit root.

From the stationarity test results below, all the series were found to be stationary at first difference I(1), that is, integrated of order 1, except inflation rare (INF) and labour force (LF) which were stationary at level, that is I(0). Evidently, all the variables fluctuate round a long-run mean that is approximately zero. The stationarity tests results are reported in the tables 2 below.

Table 3: Augumented Dickey Fuller Tests At levels

Variables	Test statistic	1% critical value	5% critical value	10% critical value	Remarks
GDP	-1.318802	-3.610453	-2.938987	-2.607932	NON STATIONARY
CEX	-1.083598	-3.610453	-2.938987	-2.607932	NON STATIONARY
REX	-1.567348	-3.615588	-2.941145	-2.609066	NON STATIONARY
INF	-3.447820	-3.610453	-2.938987	-2.607932	STATIONARY
LF	-3.088752	-3.737853	-2.991878	-2.635542	STATIONARY

Source: Author's computation using eviews 10

Table 3 shows clearly that the variables LGSME, LM2 and INF except INT, are non-stationary at level.

Table 4: Augumented Dickey Fuller Tests at First Difference

Variables	Test statistic	1% critical value	5% critical value	10% critical value	Remarks
GDP	-3.334891	-3.615588	-2.941145	-2.609066	STATIONARY
CEX	-6.356808	-3.615588	-2.941145	-2.609066	STATIONARY
REX	-8.393719	-3.615588	-2.941145	-2.609066	STATIONARY

Source: Author's computation using eviews 10

The ADF test indicates that three of the variables (LGDP, LCEX and LREX) were found stationary at first difference and at 5% level of significance and 1% respectively. Hence, the unit roots for ADF test were rejected at the first difference for the three variables. However, LF and INF were found stationary at 10 percent and 5 percent level of significance. Since they were all found stationary at different orders, they satisfy the condition for using bound cointegration test.

4.5 COINTEGRATION TEST

Cointegration Test is the statistical implication of the existence of a long-run relationship between economic variables. The test stipulates that if variables are integrated of the same order, a linear combination of the variables will be integrated of that same order. The idea behind cointegration analysis is that, although macro variables may tend to trend up and down over time, groups of variables may drift together. Having established that the variables are characterized by a unit root process and integrated of order I(0) and I(1), we then proceed to carry out the co-integration test using the Pesaran (2001) Bound Cointegration Test.

Table 5: Bound Cointegration Test

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	4.889106	10%	2.45	3.52
k	4	5%	2.86	4.01
		1%	3.74	5.06

Source: Author's computation using eviews 10

Using the bound test, it indicates the F-statistic value of 4.889106 is greater than the upper and lower bound of 2.86 and 4.01 at 5%. This implies that long run relationship exists among the variables. This led to the rejection of the hypothesis of no co-integration among the variables. The result thus shows that there is a long run relationship between government spending and economic growth in Nigeria.

4.6 REGRESSION RESULTS

The table belows shows the Autoregressive Distributed lag Error Correction Model (ARDL-ECM) regression result which indicates that for each of the variables of capital expenditure, recurrent expenditure, inflation and labour force, a one percent increase in these variables will lead to a percent change in the dependent variable of economic growth represented by it coefficients GDP. It also showed the statistical significance of each of the independent variables in determining growth of GDP in Nigeria.

Table 6: ARDL Error Correction Model

Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNGDP(-1))	-0.654219	0.287475	-2.275741	0.0632
D(LNCEX)	-0.088745	0.091087	-0.974291	0.3675
D(LNCEX(-1))	0.014294	0.061321	0.233097	0.8234
D(LNCEX(-2))	0.044859	0.059277	0.756764	0.4778
D(LNCEX(-3))	0.050475	0.046254	1.091275	0.3170
D(LNREX)	0.417780	0.158728	2.632041	0.0390
D(LNREX(-1))	-0.156182	0.075894	-2.057886	0.0853
D(LNREX(-2))	0.032242	0.109406	0.294703	0.7782
D(LNREX(-3))	0.360724	0.126151	2.859461	0.0288
D(LNINFL)	0.053098	0.052391	1.013497	0.3499
D(LNINFL(-1))	-0.065464	0.057814	-1.132316	0.3007
D(LNLF)	-1.065064	1.610680	-0.661251	0.5330
D(LNLF(-1))	3.228079	2.830444	1.140485	0.2976
D(LNLF(-2))	-1.695955	2.628125	-0.645310	0.5426
D(LNLF(-3))	2.213253	1.996119	1.108778	0.3100
ECM(-1)*	0.557240	0.430009	1.295881	0.2426

Cointeq = LNGDP - (0.2828*LNCEX -0.6457*LNREX -0.3904*LNINFL + 11.1413*LNLF -182.9300)

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNCEX	0.282762	0.265169	1.066347	0.3273
LNREX	-0.645669	0.643248	-1.003764	0.3542
LNINFL	-0.390405	0.273718	-1.426303	0.2037
LNLF	11.141254	4.811916	2.315347	0.0598
C	-182.930032	80.009624	-2.286350	0.0623

R-squared	0.999675	Mean dependent var	10.15212
Adjusted R-squared	0.998590	S.D. dependent var	1.360734
S.E. of regression	0.051089	Akaike info criterion	-3.059031
Sum squared resid	0.015660	Schwarz criterion	-2.051157
Log likelihood	62.29691	Hannan-Quinn criter.	-2.759337
F-statistic	921.9331	Durbin-Watson stat	2.033052
Prob(F-statistic)	0.000000		

Source: Author's computation using eviews 10

4.6.1 Result Analysis

From table 5 above, the ECM term is not in line with our apriori expectation. The positive sign and the statistical insignificance of the ECM at 5% implies that the speed of adjustment to its long run equilibrium is 55.7%. The coefficient of determination measured by the R^2 is 0.99 which implies that 99.9% of the total variations in economic growth is accounted for by the explanatory variables: capital expenditure, recurrent expenditure, inflation and labour force, while the remaining 0.001% represents the changes in the dependent variable which was not included in the model. It showed that government spending has an impact prediction on the growth of GDP within the period under review. After adjusting the R^2, the total variation becomes 99.8%. Also, the fitness of the model was tested using the F-statistics which shows that the model is statistically fit as indicated by the significance level of 1%. In other words, we are about 99% confident that the explanatory variables of capital expenditure, recurrent expenditure, inflation and labour force, are simultaneously significant when addressing the various factors that influence growth of SMEs in Nigeria. From our Error Correction result, the Durbin Watson statistic was 2.03 indicating that autocorrelation is absent in the estimated model, this makes the estimated model reliable and fit for policy perspective.

Subsequently, the table indicates that capital expenditure in Nigeria has a negative and insignificant relationship with GDP growth during the period under consideration. The implication is that a 0.41778 percent (4.2%) increase in GDP growth is a result of a one percent increase in capital expenditure. However, during the previous year prior to the current year, in Nigeria, capital expenditure exhibits a positive relationship with economic growth (GDP). This implies that a 0.01 percent decrease in capital expenditure in Nigeria is due to one percent increase in the capital expenditure (a year prior to the current year). Also, capital expenditure was not a statistically significant factor determining GDP growth in Nigeria is far below the 5% level of significance.

On the other hand, recurrent expenditure is found to be positively related to GDP growth in Nigeria in the current year. From the analysis, it is seen that a one percent increase in recurrent expenditure will result to a 0.062 (6.2%) percent decrease in growth of GDP in Nigeria during the current year. Recurrent expenditure is found to be a statistically significant factor determining growth of GDP in Nigeria at the 3% probability value which is far below the 5% level of significance.

Furthermore, inflation in the current year exhibited a positive relationship with GDP growth in Nigeria during the period under consideration. It was found that a one percent increase in inflation will lead to a 0.053098 percent (5%) decrease in GDP growth in Nigeria. Also, it was found that inflation has been a negative factor of growth of GDP for previous years prior to the current year. The analysis showed also that inflation is not a statistically significant factor determining growth of GDP in Nigeria at the 0.3499% probability value which is far above the 5% level of significance.

Lastly, labour force in the current year also exhibited a negative relationship to GDP growth in Nigeria during the period under consideration. It was found that a one percent increase in the labour force will lead to a 1.06 percent decrease in GDP growth in Nigeria. Also, it was found out that a year prior to the current year, labor force had a positive relationship with GDP growth in Nigeria. Thus, showing that one percent increase in interest rate will lead to a 3.2 percent increase in GDP growth in Nigeria. The analysis showed also that labour force is not a statistically significant factor in determining GDP growth in Nigeria at the 0.5 and 0.3% probability value which is far above the 5% level of significance.

4.6.2 Discussions of Result

The empirical evidence as presented in Table 5 shows that capital expenditure has an indirect and insignificant impact on the GDP in the short run. This is inconsistent with the apriori expectation of positive relationship of CEX coefficient. However, the result is contrary to the findings Oyinlola and Akinnibosun (2013) who observed that in both short and long run, capital expenditure has positive and significant influence on economic growth. More still, it was discovered from the study that there is a significant effect between recurrent expenditure and GDP in Nigeria. It showed that frequent expenditure on basic amenities non-capital goods had positive effects on the output growth in Nigeria.

This is inconsistent with the findings of Onifade, et al (2020) who discovered that recurrent expenditure negatively impacts on national output, also, Oyinlola and Akinnibosun (2013) found that in both short and long run, while capital expenditure has positive and significant influence on economic growth; recurrent expenditure is negatively insignificant in determining economic growth.

On the other hand, findings from the study revealed that there is an insignificant positive effect between inflation (INF) and GDP in Nigeria. This is not surprising as rising inflationary trend is a result of increase in money supply and surprisingly increased level of output in the country. This finding is inconsistent with apriori expectation of negative effect of inflation on output of a country. In addition, the study revealed that there exists an insignificant impact of labour force on GDP growth in Nigeria which is evident by the p-value ($p>0.05$). This may be attributed to underutilization of human capital and excess of unskilled labour over skilled/semi-skilled labour.

4.7 AUTOCORRELATION AND HETEROSKEDASTICITY TEST

Autocorrelation implies that, the residuals in a regression model are correlated while hetero-skedasticity refers to a situation whereby the variances of the residuals in an econometric equation are unequal. Both autocorrelation and heteroskedasticity are seen as serious coercions in the field of econometrics, as they greatly affect the parameters in a regression model and further render the usual F-statistic unpredictable. The Breusch–Pagan test of heteroskedasticity adopted by

Koenker (1981), Honda (1985), Zeilies and Hothorn (2002) were employed to ascertain whether the error term is constant across observation (Homoskedastic) or not while the Breusch-Godfrey Serial Correlation L-M Test was utilized in testing for Autocorrelation. The null hypothesis of the hetero-skedasticity states that there is no heteroskedasticity in the model while the alternative states that there is heteroskedasticity. The decision rule is that if the F-calculated is greater than the F-critical, reject the null hypothesis or if the p-value is greater than 5% (0.05) significant level. From the result as presented in Table below it can be ascertained that autocorrelation was absent in the model.

Table 7: Serial Correlation Test

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.238242	Prob. F(2,4)	0.7984
Obs*R-squared	2.873921	Prob. Chi-Square(2)	0.2376

Source: Author's computation using eviews 10

From the table above we reject the alternative hypothesis for autocorrelation test which says that autocorrelation is present thus accepting the null hypothesis indicating its absence. The probability value exceeds 0.05 significant level; thus it just passes the serial correlation or autocorrelation test. From the Durbin Watson Statistic obtained in our regression result there exists also absence of autocorrelation.

4.8 HETEROSKEDASTICITY

Table 8: Heteroskedasticity Test

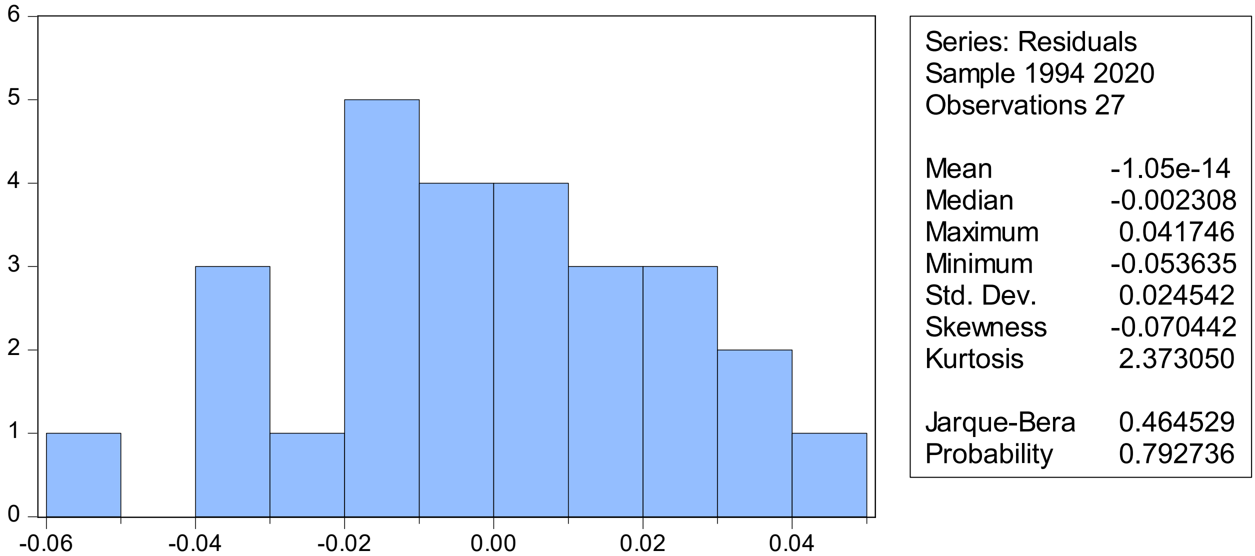
Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	2.412237	Prob. F(20,6)	0.1394
Obs*R-squared	24.01353	Prob. Chi-Square(20)	0.2418
Scaled explained SS	0.814118	Prob. Chi-Square(20)	1.000

Source: Author's computation using eviews 10

The table above shows the absence of heteroskedasticity as the probability value exceeds the required 5% level. Thus we reject the alternative hypothesis that shows the presence of heteroskedasticity and accept the null hypothesis that shows its absence. Thus, the results obtained from our estimation are reliable.

4.9 NORMALITY TEST

Table 8: Jarque-Bera Test of Normality



The table above shows that the series are normally distributed as the probability value exceeds the required 5% level. Thus, we reject the alternative hypothesis that shows states that the series are not normally distributed. Thus, the results obtained from our estimation are reliable.

4.10 STRUCTURAL STABILITY TEST (CUSUM/CUSUM OF SQUARE)

In this segment, we look at the stability properties of the estimation model by utilizing the plots of the Cumulative Sum of Recursive Residual (CUSUM) and Cumulative Sum of Squares of Recursive Residual (CUSUMsq). It is worth noting that, while the CUSUM test is appropriate for identifying systematic variations in the regression coefficients, the CUSUMsq is used in situations where the deviation from the stability of the regression coefficients is sudden and unexpected. The results of the two tests are provided in the figures below.

Hypotheses

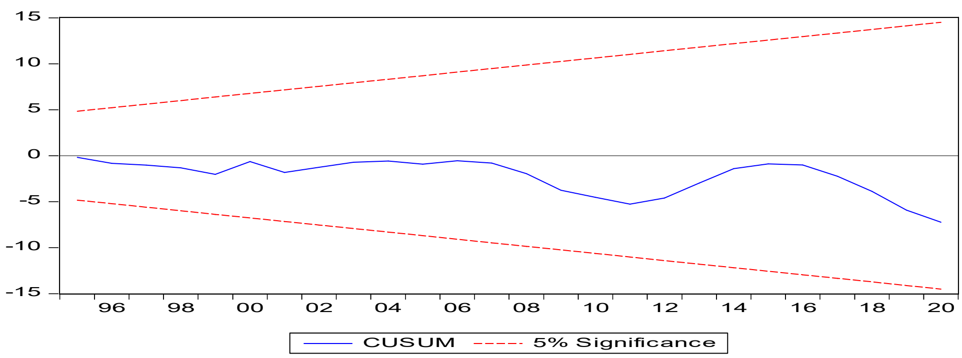
There are two hypotheses guiding the CUSUM test and they are expressed below.

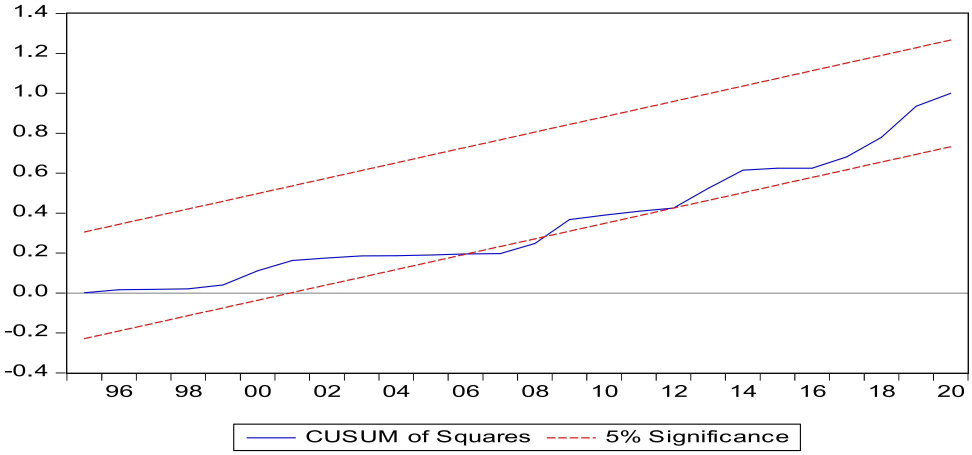
H_0: parameters are stable

H_1: parameters are not stable.

Decision Rule

If the blue line is found between/within the two parallel red lines, we accept the null hypothesis (stable) and reject the alternative hypothesis (not stable). But if the blue line is found across/outside the red lines, we accept the alternative hypothesis (not stable) and reject the null hypothesis (stable). From the graphs presented below, only the CUSUM remained within the 5% critical lines while CUSUM of Square did not remain within the 5% critical lines throughout the whole period thus, signifying parameter stability using only the CUSUM test, however we observe a sudden and unexpected shift in regression coefficients using the CUSUM of square test, during the course of assessment.





From the graphs presented above, both CUSUM and CUSUM of square remained within the 5% critical lines throughout the whole period thus, signifying parameter stability during the course of assessment..

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 SUMMARY OF FINDINGS

The study illustrates how government spending affects the economic growth in Nigerian from (1981-2020). Among other things, the study showed that general administration had a beneficial and considerable impact on Nigeria's economic development. This demonstrates that an increase in general administrative spending will probably lead to faster economic growth. This will also succeed if every naira allocated for this index is wisely spent. The Real Gross Domestic Product is negatively and negligibly impacted by capital spending. It demonstrates that the regression model has a negative association with both the coefficient result and the P-Value.

This demonstrates that raising white elephant project spending will only slow the rate of economic growth. Recurrent expenditure for example, spending on education has a favourable and considerable effect on Nigeria's economic expansion. This demonstrates that an increase in education spending will probably lead to a rise in economic growth. This will also succeed if every naira allocated for this index is wisely spent.

The Real Gross Domestic Product benefits from Health Expenditure, but the Real Gross Domestic Product has little bearing on it. The fact that the P-Value is higher than the usual 0.05 critical value demonstrates that the coefficient result was positive while the P-Value has a negative association. This demonstrates that an increase in health spending will have an effect on economic growth, but only marginally.

5.2 CONCLUSION

This study looked at how government spending affected economic growth in Nigeria between 1981 and 2020. The body of existing evidence demonstrates that scientists have not yet come to a consensus on how government spending affects economic growth in Nigeria. As a result, the impact has not yet been thoroughly established. The scientific endeavour to empirically evaluate the impact of government spending on economic growth has been aided by this study. According to data research, there is a correlation between government spending and economic growth, and while some aspects of that spending had a negative impact on growth, others had a favourable one.

According to Chude N.P. and Chude D.I.'s (2013) Impact of government expenditure on economic growth in Nigeria, which indicated that total expenditure on education is highly and statistically significant and have a positive relationship on economic growth, capital and recurrent expenditures on economic services like general administration and education have a positive and significant impact on economic growth as disaggregated components.

It is consistent with J. Paul Dunne & Nan Tian's (2013) study, Military Expenditure, Economic Growth and Heterogeneity, which found that military spending has a negative impact on economic growth, that capital health spending has a positive impact on GDP but no relationship to economic growth. Recurrent defence spending also has no relationship to economic growth. However, the combined or overall impact of government spending on economic growth is statistically significant, which supports Ukpabi Nnamdi's (2013) findings on the empirical analysis of the impact of government spending on economic growth, which show a positive relationship between government spending and economic growth.

Additionally, this backs up the Keynesian (1936) theory of active government economic intervention through a variety of policy tools. The research also confirms Wagner's (1813) thesis of Ever Increasing State Activity because of the increasing trend in the CBN statistics on government spending and economic GDP. As a result, this research is consistent with lots of evidence that government spending affects economic growth both directly and indirectly. The study goes on to say that the components of government spending (General Administration, Defense, Education, and Health) taken into account in this study are significant factors in explaining economic growth in Nigeria and that the country's political system has little to no bearing on that growth.

5.3 RECOMMENDATIONS

Given the result of the analysis therefore, the following are recommended:

The following advice is offered in light of the researcher's findings:

i. Government spending, both capital and ongoing, needs to be managed and tracked during execution to improve comparably successful outcomes in relation to economic growth. They should see to it that capital and ongoing expenses are appropriately managed so as to improve the country's foreign relations as it relates to conducting business with other nations. This will have a long-term effect of stabilising the economy and increasing the value of her currency, which will result in economic growth.

ii. To reach the citizens living in remote areas, the government should also make an effort to raise her spending on health care. The result of her increasing her health care costs is that the residents of the rural region would have better health to carry out their regular farming and fishing activities. However, they should also help provide free health services, such as prenatal care, maternal care, care for children under the age of 5, etc.

iii. In addition to achieving the government's welfare goal, it will improve the health of rural residents. It is important to monitor and effectively use the money allocated to education. This is essential given that education produces advantageous externalities.

The conclusion that it has a negative correlation with Nigeria's economic progress defies conventional economic wisdom. This could be brought on by economic issues like corruption. Moreover, government should also boost its expenditure in this sector since the proportion of federal government education budget to total budget is still relatively low as its falls below the UNESCO established bench mark of 26% for underdeveloped nations. Another reason why the government should be advised to increase funding for education is to reduce the level of strike activity in our educational system and to also increase funding for anti-corruption organisations like the Independent Corrupt Practices Commission (ICPC) and the Economic and Financial Crime Commission (EFCC) to apprehend and punish those who misappropriate and embezzle public funds. Additionally, spending for defence should be rigorously scrutinised because it is one method used by government officials to drain money under the guise of security votes. Last but not least, investments and ongoing costs for economic services should primarily support profitable business ventures. This will increase economic sector activity and maybe offset the detrimental impact on economic growth.

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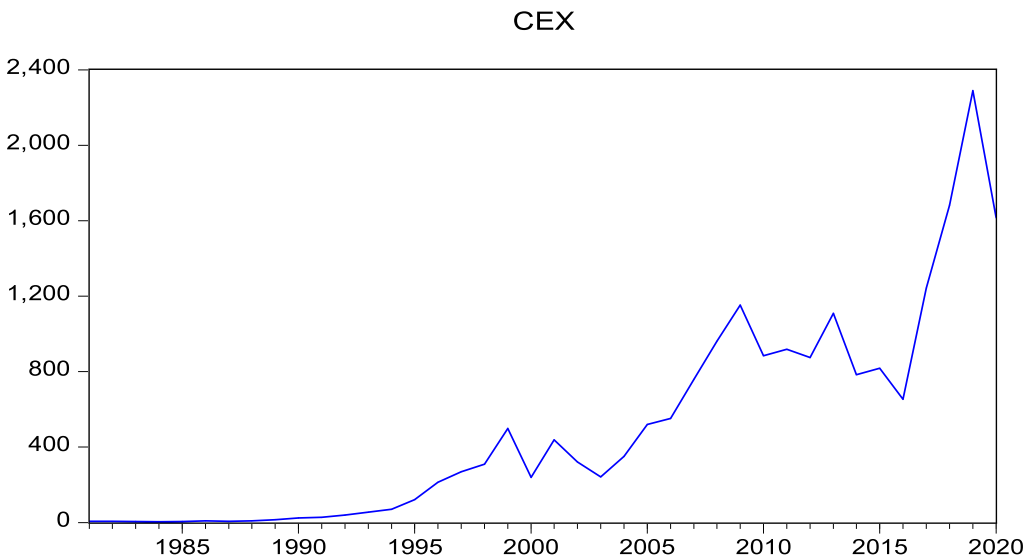
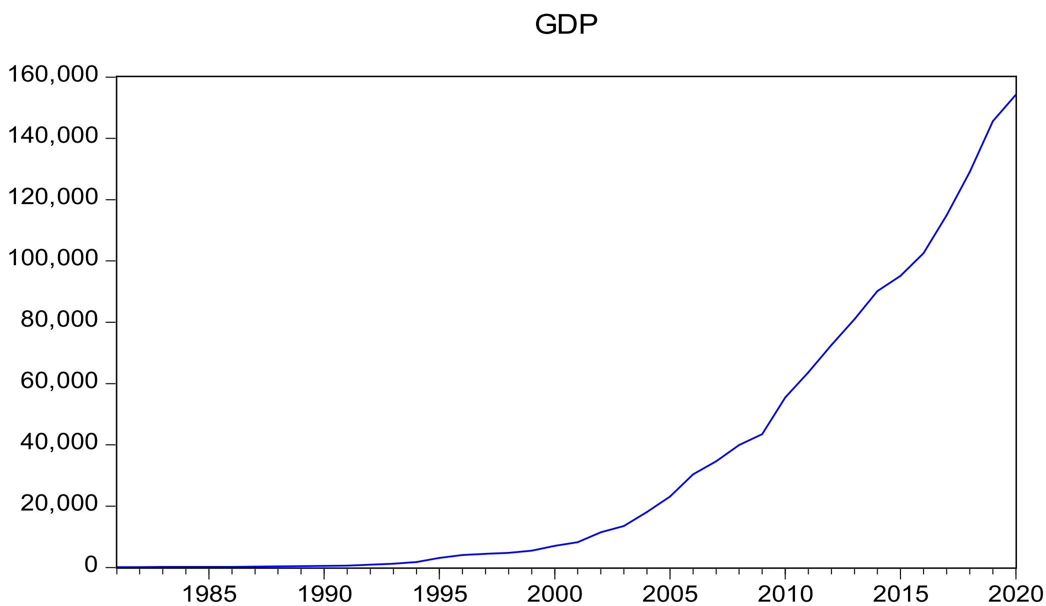
APPENDIX I

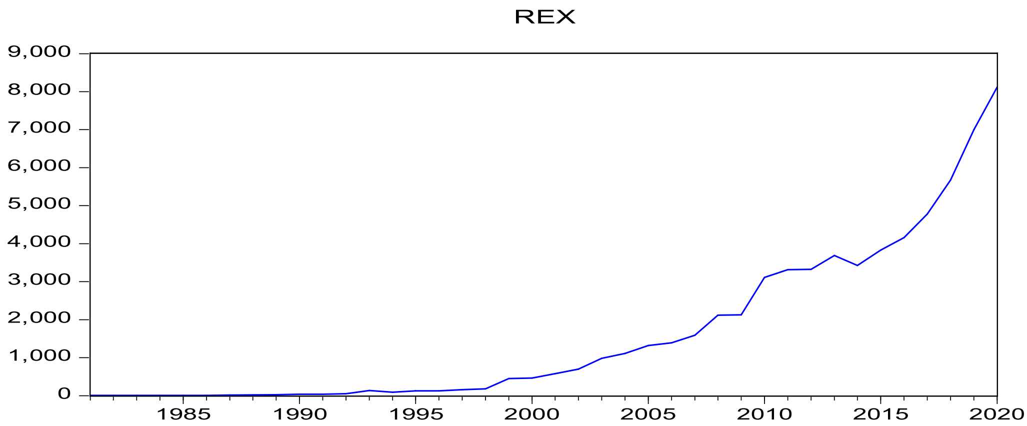
Year	GDP	CEX	REX	INF	LF
1981	139.31	6.57	4.85	20.81282	
1982	149.05	6.42	5.51	7.697747	
1983	158.75	4.89	4.75	23.21233	
1984	165.85	4.10	5.83	17.82053	
1985	187.83	5.46	7.58	7.435345	
1986	198.12	8.53	7.70	5.717151	
1987	244.68	6.37	15.65	11.29032	
1988	315.62	8.34	19.41	54.51122	
1989	414.86	15.03	25.99	50.46669	
1990	494.64	24.05	36.22	7.3644	31787602
1991	590.06	28.34	38.24	13.00697	32625016
1992	906.03	39.76	53.03	44.58884	33503976
1993	1,257.17	54.50	136.73	57.16525	34424333
1994	1,768.79	70.92	89.97	57.03171	35384609
1995	3,100.24	121.14	127.63	72.8355	36383806
1996	4,086.07	212.93	124.29	29.26829	37336353
1997	4,418.71	269.65	158.56	8.529874	38335446
1998	4,805.16	309.02	178.10	9.996378	39374850
1999	5,482.35	498.03	449.66	6.618373	40447932
2000	7,062.75	239.45	461.60	6.933292	41549406
2001	8,234.49	438.70	579.30	18.87365	42586341
2002	11,501.45	321.38	696.80	12.87658	43663607
2003	13,556.97	241.69	984.30	14.03178	44782051
2004	18,124.06	351.25	1,110.80	14.99803	45940926
2005	23,121.88	519.47	1,321.30	17.86349	47143645
2006	30,375.18	552.39	1,390.20	8.225222	48313048
2007	34,675.94	759.28	1,589.27	5.388008	49544711
2008	39,954.21	960.89	2,117.36	11.58108	50833525
2009	43,461.46	1,152.80	2,127.97	12.55496	52173885
2010	55,469.35	883.87	3,109.44	13.7202	53563331
2011	63,713.36	918.55	3,314.51	10.84003	54954440
2012	72,599.63	874.70	3,325.16	12.21778	54004475
2013	81,009.96	1,108.39	3,689.10	8.475827	52957798
2014	90,136.98	783.12	3,426.94	8.062486	54348205
2015	95,177.74	818.35	3,831.95	9.009387	55815157
2016	102,575.42	653.61	4,160.11	15.67534	57266041
2017	114,899.25	1,242.30	4,779.99	16.52354	58814727
2018	129,086.91	1,682.10	5,675.20	12.09473	60448885
2019	145,639.14	2,289.00	6,997.20	11.39679	62151626
2020	154,252.32	1,614.89	8,121.64	13.24602	62259271

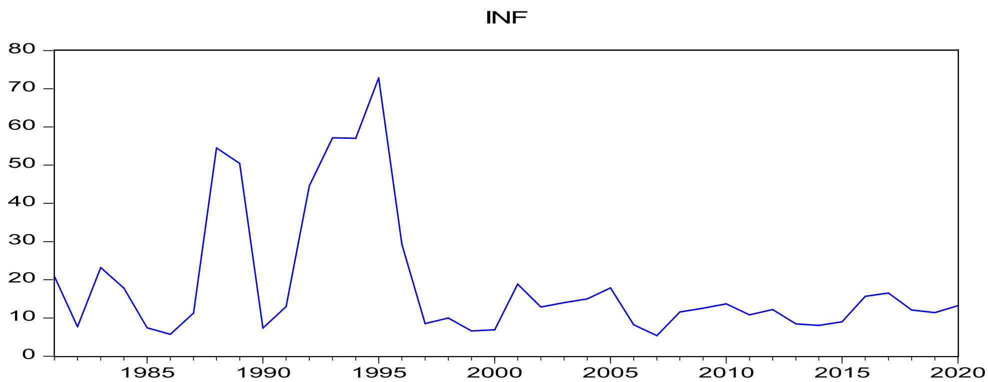
APPENDIX II

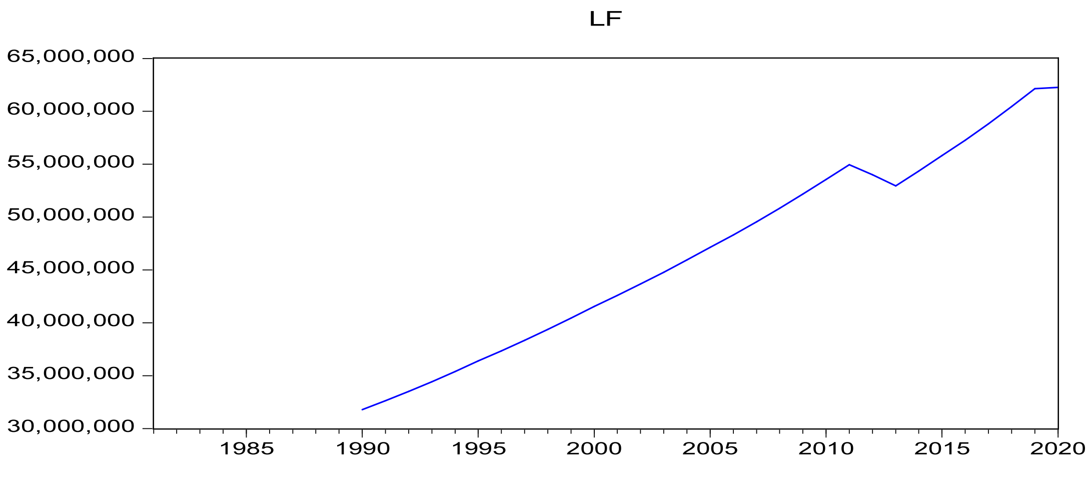
TRENDS






REX
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
1985
1990
1995
2000
2005
2010
2015
2020


INF
80
70
60
50
40
30
20
10
0
1985
1990
1995
2000
2005
2010
2015
2020


LF
65,000,000
60,000,000
55,000,000
50,000,000
45,000,000
40,000,000
35,000,000
30,000,000
1985
1990
1995
2000
2005
2010
2015
2020

DESCRIPTIVE STATISTICS

	GDP	CEX	REX	INF	LF
Mean	43920.57	646.2739	2071.051	18.09658	46861904
Median	23121.88	519.4700	1321.300	12.55496	47143645
Maximum	154252.3	2288.996	8121.643	72.83550	62259271
Minimum	494.6400	24.04860	36.21960	5.388008	31787602
Std. Dev.	47873.91	548.5416	2197.286	16.63430	9348507.
Skewness	0.925824	1.099330	1.112013	2.129875	-0.014859
Kurtosis	2.587449	3.978188	3.482361	6.409437	1.783706
Jarque-Bera	4.648448	7.479991	6.689494	38.45257	1.911994
Probability	0.097859	0.023754	0.035269	0.000000	0.384429
Sum	1361538.	20034.49	64202.57	560.9938	1.45E+09
Sum Sq. Dev.	6.88E+10	9026938.	1.45E+08	8300.996	2.62E+15
Observations	31	31	31	31	31

UNIT ROOT TESTING

Null Hypothesis: LNGDP has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on AIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.318802	0.6112
Test critical values:	1% level	-3.610453	
	5% level	-2.938987	
	10% level	-2.607932	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNGDP)
Method: Least Squares
Date: 11/26/22 Time: 12:30
Sample (adjusted): 1982 2020
Included observations: 39 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNGDP(-1)	-0.010263	0.007782	-1.318802	0.1953
C	0.268315	0.069614	3.854297	0.0004

R-squared	0.044896	Mean dependent var	0.179734
Adjusted R-squared	0.019082	S.D. dependent var	0.115364
S.E. of regression	0.114258	Akaike info criterion	-1.450801
Sum squared resid	0.483028	Schwarz criterion	-1.365490
Log likelihood	30.29062	Hannan-Quinn criter.	-1.420192
F-statistic	1.739238	Durbin-Watson stat	0.958937
Prob(F-statistic)	0.195340		

Null Hypothesis: D(LNGDP) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on AIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.334891	0.0201
Test critical values:	1% level	-3.615588	
	5% level	-2.941145	
	10% level	-2.609066	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNGDP,2)

Method: Least Squares
Date: 11/26/22 Time: 12:32
Sample (adjusted): 1983 2020
Included observations: 38 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNGDP(-1))	-0.474505	0.142285	-3.334891	0.0020
C	0.086545	0.030641	2.824463	0.0077

R-squared	0.236018	Mean dependent var	-0.000266
Adjusted R-squared	0.214796	S.D. dependent var	0.112445
S.E. of regression	0.099639	Akaike info criterion	-1.723329
Sum squared resid	0.357406	Schwarz criterion	-1.637141
Log likelihood	34.74326	Hannan-Quinn criter.	-1.692664
F-statistic	11.12150	Durbin-Watson stat	2.132798
Prob(F-statistic)	0.001988		

CEX

Null Hypothesis: LNCEX has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on AIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.083598	0.7127
Test critical values:	1% level	-3.610453	
	5% level	-2.938987	
	10% level	-2.607932	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNCEX)
Method: Least Squares
Date: 11/26/22 Time: 12:32
Sample (adjusted): 1982 2020
Included observations: 39 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNCEX(-1)	-0.028712	0.026497	-1.083598	0.2856
C	0.284539	0.142452	1.997436	0.0532

R-squared	0.030759	Mean dependent var	0.141153
Adjusted R-squared	0.004563	S.D. dependent var	0.330204
S.E. of regression	0.329450	Akaike info criterion	0.667136
Sum squared resid	4.015882	Schwarz criterion	0.752447
Log likelihood	-11.00916	Hannan-Quinn criter.	0.697745
F-statistic	1.174184	Durbin-Watson stat	2.100798
Prob(F-statistic)	0.285554		

Null Hypothesis: D(LNCEX) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on AIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.356808	0.0000
Test critical values:	1% level	-3.615588	
	5% level	-2.941145	
	10% level	-2.609066	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNCEX,2)
Method: Least Squares
Date: 11/26/22 Time: 12:33
Sample (adjusted): 1983 2020
Included observations: 38 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNCEX(-1))	-1.085061	0.170693	-6.356808	0.0000
C	0.158578	0.060657	2.614325	0.0130

R-squared	0.528851	Mean dependent var	-0.008573
Adjusted R-squared	0.515764	S.D. dependent var	0.484224
S.E. of regression	0.336957	Akaike info criterion	0.713475
Sum squared resid	4.087448	Schwarz criterion	0.799664
Log likelihood	-11.55603	Hannan-Quinn criter.	0.744140
F-statistic	40.40901	Durbin-Watson stat	1.919144
Prob(F-statistic)	0.000000		

REX

Null Hypothesis: LNREX has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on AIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.567348	0.4891
Test critical values:	1% level	-3.615588	
	5% level	-2.941145	
	10% level	-2.609066	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNREX)
Method: Least Squares
Date: 11/26/22 Time: 12:33
Sample (adjusted): 1983 2020
Included observations: 38 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNREX(-1)	-0.026296	0.016777	-1.567348	0.1260
D(LNREX(-1))	-0.344295	0.155129	-2.219408	0.0330
C	0.408741	0.110111	3.712075	0.0007

R-squared	0.163268	Mean dependent var	0.192012
Adjusted R-squared	0.115455	S.D. dependent var	0.252745
S.E. of regression	0.237707	Akaike info criterion	0.040103
Sum squared resid	1.977665	Schwarz criterion	0.169386
Log likelihood	2.238052	Hannan-Quinn criter.	0.086100
F-statistic	3.414710	Durbin-Watson stat	1.963109
Prob(F-statistic)	0.044183		

Null Hypothesis: D(LNREX) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on AIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-8.393719	0.0000
Test critical values:	1% level	-3.615588	
	5% level	-2.941145	
	10% level	-2.609066	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNREX,2)
Method: Least Squares
Date: 11/26/22 Time: 12:33
Sample (adjusted): 1983 2020
Included observations: 38 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNREX(-1))	-1.323169	0.157638	-8.393719	0.0000
C	0.253881	0.049577	5.120913	0.0000

R-squared	0.661827	Mean dependent var	0.000565
Adjusted R-squared	0.652434	S.D. dependent var	0.411279
S.E. of regression	0.242468	Akaike info criterion	0.055305
Sum squared resid	2.116473	Schwarz criterion	0.141494
Log likelihood	0.949201	Hannan-Quinn criter.	0.085971
F-statistic	70.45451	Durbin-Watson stat	1.926604
Prob(F-statistic)	0.000000		

INF

Null Hypothesis: LNINF has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on AIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.447820	0.0151
Test critical values:	1% level	-3.610453	
	5% level	-2.938987	
	10% level	-2.607932	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNINF)
Method: Least Squares
Date: 11/26/22 Time: 12:34
Sample (adjusted): 1982 2020
Included observations: 39 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNINF(-1)	-0.482920	0.140065	-3.447820	0.0014
C	1.282236	0.387290	3.310793	0.0021

R-squared	0.243160	Mean dependent var	-0.011586
Adjusted R-squared	0.222705	S.D. dependent var	0.678473
S.E. of regression	0.598171	Akaike info criterion	1.860042
Sum squared resid	13.23894	Schwarz criterion	1.945353
Log likelihood	-34.27082	Hannan-Quinn criter.	1.890651
F-statistic	11.88746	Durbin-Watson stat	1.591113
Prob(F-statistic)	0.001425		

LF

Null Hypothesis: LNLF has a unit root
Exogenous: Constant
Lag Length: 6 (Automatic - based on AIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.088752	0.0410
Test critical values:	1% level	-3.737853	
	5% level	-2.991878	
	10% level	-2.635542	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNLF)
Method: Least Squares
Date: 11/26/22 Time: 12:35
Sample (adjusted): 1997 2020
Included observations: 24 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNLF(-1)	-0.056497	0.018291	-3.088752	0.0070
D(LNLF(-1))	0.641302	0.219192	2.925753	0.0099
D(LNLF(-2))	-0.849587	0.275324	-3.085768	0.0071
D(LNLF(-3))	0.436814	0.305590	1.429411	0.1721
D(LNLF(-4))	-0.699722	0.311884	-2.243533	0.0394
D(LNLF(-5))	0.209841	0.274480	0.764503	0.4557
D(LNLF(-6))	-0.551592	0.239385	-2.304205	0.0350
C	1.039774	0.330382	3.147188	0.0062

R-squared	0.608677	Mean dependent var	0.021306
Adjusted R-squared	0.437474	S.D. dependent var	0.013252
S.E. of regression	0.009939	Akaike info criterion	-6.123494
Sum squared resid	0.001581	Schwarz criterion	-5.730810
Log likelihood	81.48193	Hannan-Quinn criter.	-6.019315
F-statistic	3.555282	Durbin-Watson stat	1.825064
Prob(F-statistic)	0.016886		

ARDL AND COINTEGRATION

Dependent Variable: LNGDP
Method: ARDL
Date: 11/26/22 Time: 12:44
Sample (adjusted): 1994 2020
Included observations: 27 after adjustments
Maximum dependent lags: 2 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (4 lags, automatic): LNCEX LNREX LNINF LNLF
Fixed regressors: C
Number of models evalulated: 1250
Selected Model: ARDL(2, 4, 4, 2, 4)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LNGDP(-1)	0.903021	0.352587	2.561131	0.0428
LNGDP(-2)	0.654219	0.287475	2.275741	0.0632
LNCEX	-0.088745	0.091087	-0.974291	0.3675
LNCEX(-1)	0.040807	0.054349	0.750830	0.4812
LNCEX(-2)	-0.014294	0.061321	-0.233097	0.8234
LNCEX(-3)	-0.044859	0.059277	-0.756764	0.4778
LNCEX(-4)	-0.050475	0.046254	-1.091275	0.3170
LNREX	0.417780	0.158728	2.632041	0.0390
LNREX(-1)	0.178797	0.118989	1.502634	0.1836
LNREX(-2)	0.156182	0.075894	2.057886	0.0853
LNREX(-3)	-0.032242	0.109406	-0.294703	0.7782
LNREX(-4)	-0.360724	0.126151	-2.859461	0.0288
LNINF	0.053098	0.052391	1.013497	0.3499
LNINF(-1)	0.098988	0.050302	1.967877	0.0966
LNINF(-2)	0.065464	0.057814	1.132316	0.3007
LNLF	-1.065064	1.610680	-0.661251	0.5330
LNLF(-1)	-1.397913	2.237179	-0.624855	0.5551
LNLF(-2)	-3.228079	2.830444	-1.140485	0.2976
LNLF(-3)	1.695955	2.628125	0.645310	0.5426
LNLF(-4)	-2.213253	1.996119	-1.108778	0.3100
C	101.9360	50.65913	2.012193	0.0909

R-squared	0.999675	Mean dependent var	10.15212
Adjusted R-squared	0.998590	S.D. dependent var	1.360734
S.E. of regression	0.051089	Akaike info criterion	-3.059031
Sum squared resid	0.015660	Schwarz criterion	-2.051157
Log likelihood	62.29691	Hannan-Quinn criter.	-2.759337
F-statistic	921.9331	Durbin-Watson stat	2.033052
Prob(F-statistic)	0.000000		

*Note: p-values and any subsequent tests do not account for model selection.

BOUND COINTEGRATION

ARDL Cointegrating And Long Run Form
Dependent Variable: LNGDP
Selected Model: ARDL(2, 4, 4, 2, 4)
Date: 11/26/22 Time: 12:51
Sample: 1981 2020
Included observations: 27

Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNGDP(-1))	-0.654219	0.287475	-2.275741	0.0632
D(LNCEX)	-0.088745	0.091087	-0.974291	0.3675
D(LNCEX(-1))	0.014294	0.061321	0.233097	0.8234
D(LNCEX(-2))	0.044859	0.059277	0.756764	0.4778
D(LNCEX(-3))	0.050475	0.046254	1.091275	0.3170
D(LNREX)	0.417780	0.158728	2.632041	0.0390
D(LNREX(-1))	-0.156182	0.075894	-2.057886	0.0853
D(LNREX(-2))	0.032242	0.109406	0.294703	0.7782
D(LNREX(-3))	0.360724	0.126151	2.859461	0.0288
D(LNINF)	0.053098	0.052391	1.013497	0.3499
D(LNINF(-1))	-0.065464	0.057814	-1.132316	0.3007
D(LNLF)	-1.065064	1.610680	-0.661251	0.5330
D(LNLF(-1))	3.228079	2.830444	1.140485	0.2976
D(LNLF(-2))	-1.695955	2.628125	-0.645310	0.5426
D(LNLF(-3))	2.213253	1.996119	1.108778	0.3100
CointEq(-1)	0.557240	0.430009	1.295881	0.2426

Cointeq = LNGDP - (0.2828*LNCEX -0.6457*LNREX -0.3904*LNINF + 11.1413*LNLF -182.9300)

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNCEX	0.282762	0.265169	1.066347	0.3273
LNREX	-0.645669	0.643248	-1.003764	0.3542
LNINF	-0.390405	0.273718	-1.426303	0.2037
LNLF	11.141254	4.811916	2.315347	0.0598
C	-182.930032	80.009624	-2.286350	0.0623

SERIAL CORRELATION TEST

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.238242	Prob. F(2,4)	0.7984
Obs*R-squared	2.873921	Prob. Chi-Square(2)	0.2376

Test Equation:
Dependent Variable: RESID
Method: ARDL
Date: 11/26/22 Time: 12:56
Sample: 1994 2020
Included observations: 27
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNGDP(-1)	0.507356	0.923410	0.549438	0.6119
LNGDP(-2)	-0.059911	0.351648	-0.170371	0.8730
LNCEX	-0.077253	0.217877	-0.354569	0.7408
LNCEX(-1)	-0.002587	0.082281	-0.031439	0.9764
LNCEX(-2)	1.82E-05	0.077586	0.000234	0.9998
LNCEX(-3)	-0.033792	0.124907	-0.270541	0.8001
LNCEX(-4)	-0.031716	0.078438	-0.404342	0.7066
LNREX	0.172274	0.401480	0.429097	0.6900
LNREX(-1)	-0.001101	0.170600	-0.006453	0.9952
LNREX(-2)	-0.080258	0.164577	-0.487660	0.6513
LNREX(-3)	-0.070621	0.163456	-0.432046	0.6880
LNREX(-4)	-0.098555	0.240202	-0.410298	0.7026
LNINF	0.034766	0.085051	0.408767	0.7036
LNINF(-1)	-0.019837	0.090381	-0.219482	0.8370
LNINF(-2)	-0.021073	0.081201	-0.259518	0.8080
LNLF	-2.138520	3.946439	-0.541886	0.6167
LNLF(-1)	2.242369	5.926040	0.378393	0.7244
LNLF(-2)	-2.376616	6.196112	-0.383566	0.7208
LNLF(-3)	1.871472	5.266840	0.355331	0.7403
LNLF(-4)	-1.689184	4.168464	-0.405229	0.7060
C	33.75771	76.73362	0.439934	0.6827
RESID(-1)	-0.621110	1.130971	-0.549182	0.6121
RESID(-2)	0.974118	2.500174	0.389620	0.7167

R-squared	0.106442	Mean dependent var	-1.05E-14
Adjusted R-squared	-4.808130	S.D. dependent var	0.024542
S.E. of regression	0.059147	Akaike info criterion	-3.023426
Sum squared resid	0.013993	Schwarz criterion	-1.919565
Log likelihood	63.81625	Hannan-Quinn criter.	-2.695190
F-statistic	0.021658	Durbin-Watson stat	1.833396
Prob(F-statistic)	1.000000		

HETEROSKEDASTICITY TEST

Heteroskedasticity Test: Breusch-Pagan-Godfrey

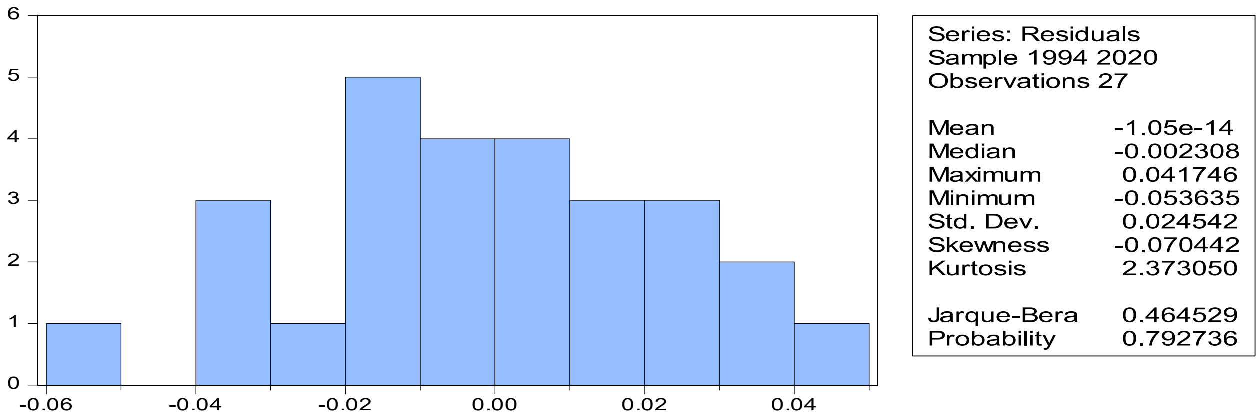
F-statistic	2.412237	Prob. F(20,6)	0.1394
Obs*R-squared	24.01353	Prob. Chi-Square(20)	0.2418
Scaled explained SS	0.814118	Prob. Chi-Square(20)	1.0000

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 11/26/22 Time: 12:57
Sample: 1994 2020
Included observations: 27

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.081487	0.475462	-0.171386	0.8696
LNGDP(-1)	0.007854	0.003309	2.373393	0.0553
LNGDP(-2)	-0.002471	0.002698	-0.916000	0.3950
LNCEX	-0.001822	0.000855	-2.131293	0.0771
LNCEX(-1)	0.000610	0.000510	1.195295	0.2771
LNCEX(-2)	-0.000746	0.000576	-1.295675	0.2427
LNCEX(-3)	1.61E-05	0.000556	0.029002	0.9778
LNCEX(-4)	-0.000470	0.000434	-1.081879	0.3209
LNREX	0.000649	0.001490	0.435931	0.6781
LNREX(-1)	-0.000593	0.001117	-0.531281	0.6143
LNREX(-2)	0.000911	0.000712	1.279340	0.2480
LNREX(-3)	-0.002696	0.001027	-2.625998	0.0393
LNREX(-4)	-0.002362	0.001184	-1.995048	0.0931
LNINF	-2.15E-05	0.000492	-0.043643	0.9666
LNINF(-1)	-0.000523	0.000472	-1.107578	0.3105
LNINF(-2)	-0.000278	0.000543	-0.512453	0.6266
LNLF	-0.017005	0.015117	-1.124881	0.3036
LNLF(-1)	0.043318	0.020997	2.063035	0.0847
LNLF(-2)	-0.033649	0.026565	-1.266644	0.2522
LNLF(-3)	0.044235	0.024666	1.793345	0.1231
LNLF(-4)	-0.032899	0.018735	-1.756033	0.1296

R-squared	0.889390	Mean dependent var	0.000580
Adjusted R-squared	0.520691	S.D. dependent var	0.000693
S.E. of regression	0.000479	Akaike info criterion	-12.39621
Sum squared resid	1.38E-06	Schwarz criterion	-11.38833
Log likelihood	188.3488	Hannan-Quinn criter.	-12.09651
F-statistic	2.412237	Durbin-Watson stat	2.251676
Prob(F-statistic)	0.139380		

NORMALITY TEST



STABILITY TEST