THE IMPACT OF INTERNALLY GENERATED REVENUE (IGR) ON OUTPUT IN KWARA STATE

(1988-2017)

BY:

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NIGERIA**

APRIL, 2019

DECLARATION

I hereby declare that this research work titled *"THE IMPACT OF INTERNALLY GENERATE REVENUE (IGR) ON OUTPUT IN KWARA STATE"* has been carried out by me in the Department of Economics under the supervision of DrAuduIshaya and Prof. Peter P. Njiforti. The information derived from the literature has been duly acknowledged in the text and a list of references provided. No part of this thesis was previously presented for other award of degree or diploma at this or any other institutions to the best of my knowledge

_____ _____

KOLAWOLE PETER KINGSANJO **Date**

CERTIFICATION

This thesis titled "THE IMPACT OF INTERNALLY GENERATED REVENUE (IGR) ON OUTPUT IN KWARA STATE" by Kolawole Peter Kingsanjo meets the regulations governing the award of the degree of Master of Science in Economics of the School of Post Graduate, Ahmadu Bello University, Zaria and is this day approved for its contribution to knowledge and literary presentation.

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DEDICATION

This study work is dedicated to GOD Almighty for making this vision come true and to my parents my good-looking spouse and toddler for their patience and understanding throughout my study period.

ACKNOWLEDGEMENT

My genuine and thoughtful gratefulness goes to God Almighty, the Author and the finisher of our faith, who has given me the strength and opportunity to pass through and complete this study. I would like to express my obligation to my supervisors Dr. AuduIshaya and Prof. Peter P. Njiforti for all their time, endurance, observations, submissions and guidance in shaping the course of this study. I am very grateful for the kind of supervisory role you gave me. Thank you very much sir, may God reward you and your families generously.

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ABSTRACT

This study examine the impact of internally generated revenue IGR) on economic output in Kwara State from 1988 to 2017. The data were however analysed using Autoregressive Distributive Lag model (ARDL) and Vector Autoregressive (VAR). The ARDL test for co-integration at the levels of variables carried out by employing the Bound test within the framework of the estimated ARDL model. The first model is Autoregressive Distributed Lag (ARDL) model developed by Pesaran et al (2001), the second model is the Vector Auto regression (VAR) model which is employed to test for impulse response function and serves as a complement to estimated ARDL model. This was done by specifying and estimating of a regression model. Based on the first model, all the varibales were not statistically significant in determining the output level in the state which is contrary to previous studies such as Ogundayo, Onakoya and Afintini(2017);Augus and David(2011) amongst others established a conflicting results. similarly, results of the second model indicates that inflation rate, interest rate as well as gap(deficit) have negative impact on output which conform with the studies of Hakan, Ali and Hassan (2008; Faraji and Kenani(2013) Jelilov (2016) interest rate on output was contrary amongst others.Given the above findings, the study therefore recommended the followings amongst other:The state government should imbibe the culture of fiscal discipline as well as huge capital expenditure so as to ensure growth in output level in the state. Also, the government should ensure that more funds are being expended on developmental project rather than stomach infrastructure couple with adequate and properly monitoring in order to achieve inclusive growth of output similarly, The rate of interest should be market determined in order to encourage investment inflow into the state. Finally, Price control mechanism should be put in place with the aim of checkmating the undesirable effect of inflation rate on the economic output of the Kwara State, Nigeria.

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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

In recent decades, internally generated revenue has remained the main focus of all States and Local Government Areas in Nigeria. Indeed, this is informed by the important role it played in the development of the society. No system or rule can be effectively functional whether foreign or domestic unless it enjoys an appreciable level of financial buoyancy on a sustainable basis. Due to the issue ofinadequate of finance that has been the major problem which both State and Local Governments in Nigeria have been grappling with in recent times, it is a matter of necessity that other means of generating income is exploited. However, many of them have made attempts to exploit economic potentials of their areas which are in abundance, to finance their

activities and enhance their development through other means to generate more revenue. It is curious to note that such efforts are yet to yield desired results as the efforts are offset by problems that impede effective and efficient revenue generation.

Every government needs funds to finance its activities. But the sources of such revenues can hardly be exhaustive. This is so because an efficient Internal Revenue Generation plays a crucial role in the developmental drive of governments at any level. It is more pronounced in developing or transitional economies. Over dependent on the crude oil as a sole means of generating funds has subjected all tiers of governments in Nigeria to serious financial stress as statutory allocations have been fluctuating at abysmal levels. (Adenuga&Ogechi 2013).

The need for state governments to revisit the optimality and adequacy of their revenue generation drive from internal sources within the state has therefore become a matter of extreme urgency

and importance. For example, Taxation which is a necessary ingredient for civilization, in any given society it helps in redistribution of wealth. “The history of man has shown that man has to pay tax in one form or the other, that is, either in cash or in kind, initially to his chieftain and later to organized governments”. (Ojo, 2003).

For any State to achieve meaningful economic development, it requires effective and efficient revenue management, budgetary control and other components of public sector. Revenue generation and management in most emerging economies are for social, economic development and provision of infrastructure. These are made possible through implementation of all possible means of revenue generation within the State, since revenue is considered as the oil in the wheel of progress of any economic setting such as States and LGA in Nigeria.

However, state governments generate their revenues from numbers of sources which include statutory allocations, corporate donations, foreign aids, and of course internally generated revenue (IGR). IGR is one of the sources that have not being fully explored let alone exploited in Nigeria.

This study focuses on the extent to which IGR contributes to the total income of States and LGA using annual time series for the period 1988 to 2017, using Kwara State as a case study. According to the Kwara State’s annual financial report (2016), the sources of revenue available to Kwara State include local licenses, fees, fines, earnings from commercial undertakings, market rates, investment income, aid and grants, rent on government property, retained earnings of parastatals, interest payment and dividend, loans, taxes. Other sources include statutory allocations from federation account, value added tax (VAT), drawings from excess crude account.

IGR also serves as a tool for social engineering, for example revenue is the blood that flows through the veins of every viable, efficient and successful government, for Government institution to be viable, reliable and efficiently sustainable, there is need for strong and efficient bedrock of internally generated revenue that could prevent the government from the swirl of macro responsibilities shocks in terms of socio, political and economic spending. in Nigeria, Lagos state had been one of the IGR dependent sustainable state with N268.2billion IGR in 2015 and projected over N404billion IGR in 2016 close to N682.7billion in 2015 revenue generation of the entire country, as a result of which Lagos state is less 'pressured' However, the IGR generated in Kwara State had been on a decline with N12billion, N7billion in 2014 and 2015 respectively. With N22billion domestic debt and projected of N60billion in 2016 IGR and N128billion fiscal year budget 2016. Thus, there is need to analyze each source of IGR and suggest to the state the probate solution. Inadequate IGR serves as hindrance for State Government to keep the society moving, because as government gets more revenue and commission more projects, more money is put in circulation, more employment opportunities arise and more business opportunities are created which impact positively on living condition of the Populace in the State.

1.2 Statement of the Research Problem.

Most state governments in Nigeria do no longer perform their civic responsibilities simply because of poor finances arises from internally generated revenue. The bad financial situation is further aggravated by the prevailing inflationary situation in this country which erodes the value of funds available to render essential social services to the people. Economic growth is highly associated with fund, much revenue is needed to plan, execute and maintain infrastructures and facilities at the state government level. Kwara State, like many other states in Nigeria, relies

mostly on Federal Government Allocation for her survival. The pitiable state of Nigeria economy as a result of free falling in the price of crude oil has resulted to shortfall in the revenue generated by the federal government from the oil sector. This has seriously affected the federal allocation, to not only Kwara State, but all the states of the federation.

According to the Kwara State annual financial report *(2016)*, revealed that, the Kwara State IGR dropped from N12 billion in 2014 to N7 billion in 2015, which is 36.8% reduction; and federal government allocation to Kwara State fell from N3.4billion in 2014 on monthly basis to N1.4billion in 2015 on monthly basis being about N24billion in the shortfall which accounted for 58.8% decrease. This shortfall has not made the government of the state to pay the salaries of the workers promptly, incessant strike by government owned schools, non- payment of pensioners most of which stand as backdrops in the proper, effective and reasonable implementation of government policy talk less of execution any project within the state. There is need therefore to source for more revenue to augments the federal base allocation called for investigating into more ways of sourcing for IGR within the state.

Adesoji, Adenugba and Chike(2013) in their studies on the effect of IGR on infrastructural development in Lagos employed a survey design while Edogbanya and Ja'afaru(2013) studied the revenue generation in Kogi state and employed descriptive statictics. Similarly, Nnanseh and Akpan(2013); Oseni and Olusola(2013); Asimiyu and Uyikizito(2014); Matthew(2014); as well as Dagwom(2017) employed descriptive statistics in establishing the impact of IGR on infrastructural development and growth. Therefore, to the best knowledge of the researcher, none of the previous studies have been able to use secondary data in analyzing the subject matter. Hence, this study will contribute to knowledge by making use of secondary data analysis in examining the impact of internally generated revenue on output in kwara state.

This research work is therefore to examine the impact of internally generated revenue on output of Kwara State from (1988-2017). Based on the above stated issues, it has become necessary to conduct an analysis on revenue generation in Kwara State.

1. 3 Research Questions:

It is against the backdrop of the afore-mentioned problem that this study sort to answer the following questions:

i. What is the revenue –expenditure gap in Kwara State?
ii. What is the impact of internally generated revenue on output in Kwara State?
iii. What is the impact of revenue –expenditure gap on output in Kwara State?

1.4 Research Objectives

Broadly, the objective of this study is to examine the impact of internally generated revenue on economic output in Kwara State of Nigeria. Specifically, this study will achieve the following objectives:

i. To analyzethe revenue – expenditure gap in Kwara State
ii. To examine the impact of internally generated revenue on output in Kwara State
iii. To determine the impact of revenue – expenditure gap on output in Kwara State.

1.5 Research Hypothesis

Hypotheses are assumption on which a researcher bases his investigation and on the basis of which a confirmation of the assumed conditions are tested and validated. The hypothesis on which this research study is based stated in null form as follows:

H_0: There is significant impact of internally generated revenue (IGR) on output in Kwara State

H_1: There is no significant impact of internally generated revenue (IGR) on output in Kwara State.

1.6 Justification of the Study.

The issues of internally generated revenues on output are crucial to every state in the nation. IGR is the means of expenditure, without which expenditure cannot be made and output is the primary goal of every economy. While there is also growing studies on IGR. However, empirical studies in this Kwara State remain sparse in the state. For instance Kumar (2010) and Aweitey (2003) employed descriptive analysis with the conclusion that revenue generation is the life blood activity of any state.

The study is also important because internally generated revenues affect the individual and the government at large. It will also provide an econometric basis upon which to examine the impact of IGR revenues on output in State. Finally, the finding from the study will guide the government to focus on how appropriate internally generated revenues will be used in creating wealth for the state in order to achieve desirable output.

This study differs from most of the existing literature on the account that the study would examine the impact of IGR on output of Kwara State to the recent period. This study would

therefore contribute to the body of literature on the crucial role revenue generation plays in developmental drive of Kwara State.

1.7 Scope and Limitations of Study

The study would examine the impact of internally generated revenue on outputs for the period of (1988-2017) in Kwara State. The research is intended to be carried out using secondary data. Secondary data will be obtained from the annual reports and statement of account from the office of Accountant General of Kwara State, Ministry of planning and Economic development Ilorin and Central Bank of Nigeria Statistical Bulletin.

1.8 Organization of the Study

The study is organized into five chapters. Chapter one consists of the background to the study, statement of problems, research questions, objectives of the study, the hypothesis testing, justification of the study, the scope and limitation of the study. Chapter two covers definition of terms that are related to the study, Review of related literatures both theoretical and empirical studies. Chapter three focus on Research methodology which includes sources of data, model specification /estimation and various diagnostic tests. Chapter four is the data presentation and analysis of result based on statistical techniques that was use. Finally chapter five is the summary of the major findings, conclusion and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This research work is titled: impact of internally generated revenue on output of Kwara State, it tends to review the following literatures in accordance with the research topic.

There are fairly large literature (theoretical and empirical) on the impact of internally generated revenues on output and the world over. The theoretical and empirical literature regarding the internally generated revenues on economic is mixed. This is because the various types of public revenues have different theoretical literature background.

2.1 Conceptual Definition

2.1.1Economic Growth

The notion of economic growth and its determining factors belong to the main topics of economics discipline. The interests result from the principles of human being, the necessity of satisfaction of unlimited needs. Its sources form and effect was high on the agenda of economist.

According to Arabian economic thinker IbnKhaldum In 1377 provided one of the earliest descriptions of economic growth in his famous mugadima (known as prolegomena in western world) the idea of economic growth then was that increasing either population or tax rate could generate more surplus money for the crown or the country. Adam Smith (1776) saw economic growth (output) to depend on the amount of input (land, labour and capital) and the output is determined by population growth, increase in investment and land and total labour productivity growth, David Ricardo approach to growth was gained through advantageous trade but trade

with other nation on equal term was disadvantageous. Solow (1956) in his growth model emphasize that capital accumulation and exogenous rate of exchange in population and technological progress as the sources of growth, Romer (1986) based his idea that long run growth is determined by economic incentives.

In view of the above, the concept of economic growth refers to growth of potential output. That is production at full employment which is caused by growth in aggregate demand or observed output.

It is theoretically defined as the increased in the value of goods and service produced by an economy. It is conventionally measured as the percentage rate of increase in real GDP.

Gross Domestic Product (GDP) is the monetary value, in local currency, of all final economic goods and services produced in a country during a specific period of time. It is the broadest financial measurement of a nation's total economic activity. The total goods and services bought by consumers encompass all private expenditures, government spending, investments, and exports but exclude imports that take place within a designated country. Below are three different approaches to the GDP formula.There are three methods or formulas by which GDP can be determined:

a. Expenditure Approach

The most commonly used GDP formula, which is based on the money spent by various groups that participate in the economy as follows:GDP = C + G + I + NX

C = consumption or all private consumer spending within a country's economy, including, durable goods (items with a lifespan greater than three years), non-durable goods (food & clothing), and services.

G = total government expenditures, including, salaries of government employees, road construction/repair, public schools, and military machines.

I = sum of a country's investments spent on capital equipment, inventories, and housing.

NX = net exports or a country's total exports less total imports.

b. Income Approach

This GDP formula takes the total income generated by the goods and services produced.

GDP = Total National Income + Sales Taxes + Depreciation + Net Foreign Factor Income

Total National Income – the sum of all wages, rent, interest, and profits.

Sales Taxes – consumer tax imposed by the government on the sales of goods and services.

Depreciation – cost allocated to a tangible asset over its useful life.

Net Foreign Factor Income – the difference between the total income that a country's citizens and companies generate in foreign countries, versus the total income foreign citizens and companies generate in that country.

c. Production or Value-Added Approach

The sum of the value added to a product during the production process. To determine the value added between businesses, the price at which the product is sold by the seller is deducted from the price it was bought for from the supplier.

2.1.2 The Concept of tax revenue/ non tax revenue

Public revenue can be explained both in Broad and Narrow sense. The Broad sense of it includes all income and receipts irrespective of their sources and the nature which the government obtains during any given period of time, while in the Narrow sense it includes all those sources of income which is described as revenue resources. In the broad sense of it. It will also include loans which the government raises under the term public revenue or more properly public income. The distinction however is that in the narrow sense in which the term "public revenues" is used in public finance includes all the receipts of the government irrespective of the facts whether they are subject to future payback.

Revenue generation in Nigeria has been one of the topical issues in recent times especially with the drastically and phenomenal shift from agriculture to crude oil exportation. Nnanseh and Sunday (2013) The occasional dwindle in the price of crude oil and the various predictions of the running out of oil wells in Nigeria in the near future time has rekindled government interest in agriculture and other non-oil sources of revenue to the country and its constituent states. Michael and Akpan (2013) .The emphasis has always been on how to boost internally generated revenues so as to be less reliance on oil and other statutory allocations to states and the last tier of government. Besides, it has been a popular believes that a state with strong internally generated revenue can cater for the social and infrastructural needs of its citizens. The term revenue has

been defined by various authors in different ways (Osagie 1985, Pearce 1986, Bhatia 2001, Adam 2006 and Hamid 2008 etc.). In all revenue is the fund required by the government to finance its activities.

It is said to be the total amount of income accruing to a state from various sources within a specified period of time. Osisami (1994) identified two types of revenue that accrues to state governments to include internally generated revenue and revenue allocated from the Federation Account.

The concept of internal revenue generation is not strange or absence in many management and economic literatures. The understanding of this concept as investigated in this study lies not only on knowing what it stands for but also on knowing other relevant concepts that are linked to it by way of inference or reference. In other words, an understanding of the concept of internal revenue generation in relation to its role in infrastructural development lies on several other relevant concepts which merit their inclusion in this discussion. Internally generated revenue are those revenues that are derived within the state from various sources such as taxes (pay as you earn, direct assessment, capital gain taxes, etc.), and motor vehicle license, among others. While the statutory allocation from Federation Account, Value Added Tax constitute the external source.

According to Adeniran, Olayinka and Olawale (2013), internally generated revenue are sources through which local governments generate their revenues through their own efforts such as rates, which include property rates, education rates and street lighting. Taxes such as community, flat rates and poll tax. Fines and fees, which include court fines and fees, motor park fees, forest fees, public advertisement fees, market fees, regulated premises fees, registration of births and deaths

and licensing fees; and miscellaneous sources such as rents on council estates, royalties, interest on investment and proceeds from commercial activities. According to Mogues and Ben (2012) sees internally generated funds (IGF) as “own revenues,” “local revenues,” “locally generated funds (LGF),” etc. are used interchangeably to refer to the revenues local governments levy through their local tax and fee assignments.

According to Narayan and Narayan, (2005) internally generated revenue is the revenue that local government generates within the area of its jurisdiction. The primary source of local government sustenance is from federation allocation. It is the livewire of a local government, the extent to which a local government can go in accomplishing its goals will largely depend on its internally generated revenue strength. The capacity of local government to generate revenue internally is one very crucial consideration for the creation of a local government council.

2.1.3 Sources of Revenue to State Government

The constitution of the federal Republic of Nigeria as stipulated in section 27 and 28 of State Government and Local Government (Basic Constitutional and Transitional Provisions) Decree No.15 of 1989 has spelt out the sources of revenue collectable by the state government. The revenue income which is the sums of money provided for the revenue expenditure comes into focus to find out the source which can broadly be categorized into two, namely external sources and internally generated sources. These sources can be further categorized into:

a. Fees and charges

b. Internal taxation

c. Federal government grants

2.1.4 The External Sources of Revenue

The external sources of revenue are in two set-classes:

(A) Statutory allocation from the federation Account in accordance with section 160 sub-section 2 of the Constitution of the federal Republic of Nigeria (promulgation) Decree 1989 which stipulates that any amount standing to the credit of federation account shall be distributed among the federal and state Governments, and the Local Governments in each state on such terms and in each manner as may be prescribed by the National Assembly:

(B)Statutory allocation from each state Government to the Local Governments in its area of jurisdiction; Each state shall pay to the Local Governments such proportion of its revenue(excluding the sums received from the federation Account)on such terms and such manner as may be prescribed by the National Assembly. Section 160 of the Constitution of the federal Republic of Nigeria (promulgation) Decree No.12 of 1989

©Federal Grant-in-aid Section 162 of the Constitution of the federal Republic of Nigeria (promulgation) Decree No.12 of 1989 stipulates that the Federation may make grants to a Local Government to supplement the revenue of that Local Government in such sum and subject to such terms and conditions as may be prescribed by the National Assembly. Because of the irregularities and unenforceability of this revenue sources, it is not advisable for any local Government to rely on it.

The resource allocation systems in force at 1st June, 1992 are as follows; (a) 10% (ten per cent) of internally generated state revenue and the federal government which stands at 20% (twenty per cent) of distributable pool account. These make up the statutory allocation to the local

government finance. The total revenue accruing to the Local Governments in state is allocated to them on the basis of the following criteria;

(a) Equality 40%

(b) Population 30%

(c) Land Mass Terrain 10%

(d) Social Development as represented by school enrolment 10%

(e) Internal revenue effort 10%

2.1.5 The Internal Sources of Revenue

The functions and scope of services stipulated in section 27 and 28 of Local Government (Basic Constitutional and Transitional Provisions) Decree No.15 of 1989 indicate clearly the sources of revenue to a Local Government. The internal sources are as follows;-

A. Rate tenement, penalty for tenement state, state government grants in lien of tenement rate etc.

B. Licenses, fees and fines Obstruction fines, bicycles licenses, dog licenses, wheel barrow licenses, liquor license, vehicles emblem, motorcycle tollage etc.

C. Food control: slaughter and abattoir fees. Bake house license, meat, fish, cold room and butchers license fees etc.

D. Social: Marriage registration fees, town union/organization, age grade registration fees, cinematography, naming/registration of streets, temporal booth permit, mobile open air preaching, betters minstrel fees etc.

E. Health: Registration/dislodging of septic/depot license, improvement of stray animals/registration fees, pest control and disinfectant fees, reinstitution of births/deaths burial fees, dispensary/maternity fees, laboratory test fees, environmental sanitation services fees.

F. Economic: Registration of contractors, petty traders permits, small-scale industries permit, mechanic, welding, electricians' permits etc.

G. Works/Engineering Survey: workshop receipts, hair charges, survey fees, approval of building plans, mortgage/sub-lease approval fees, customary right of occupancy fees and commission on transfer of plots.

H. Commercial undertaking: motor park fees, market fees, transport/mass transits services, rent on local government properties.

2.1.6 Importance of Revenue

Revenue in whatever form is meant for any organization/government for the purpose of fulfilling its obligation to the masses under its jurisdiction, such obligation includes:-

i. To provide protection to lives and properties of the masses.
ii. To improve the standard of living of the masses through the provision of access road, education, health Centre, and employment etc.
iii. To provide social amenities like parking and recreational facilities

Generally speaking, by public revenues is meant the income raised by government through taxes from the public, and natural resources revenue. Taxes and natural resources revenue are not the only sources of public revenue, they are also various other sources of public revenues like fee. Fines, prices gift, profit from government enterprises, deficit financing, (borrowing and money creations) foreign aid (grants, loans) and others

2.1.7 General Classification of Public Revenues

Differing classification of public revenues have been almost as numerous as the writers who have made them. Public revenues are composed of heterogeneous element. Accordingly, the elements are classified according to the different characteristics depending on the type of revenue.

We present here two classification of public revenue by professor. Dalton (1949) and Taylor. (1959)

1) Dalton classification

Dalton classified public revenues on two main classes; Taxes and Prices;

Tax is a compulsory payment while prices are contractual payment

He further subdivided taxes and prices into:

Taxes as; ordinary so called, tributes and indemnities, compulsory loan arising out of war or otherwise, pecuniary penalty for offences imposed by court of law.

Prices; receipts of public properties, receipts from enterprises, fee or payment made for services performed, and receipts from public loan.

11) Taylor Classification

Taylor's classification is more comprehensive and logical. His classification is as a result of the noticeable fault in Dalton classification; He classified public revenue on the basic of economic classification and based his classification on two main concepts; capital account and revenue account

Capital account includes; market loan, income from payment and other aspects such as income from public undertaking and others, while Revenue account include revenue from taxes.

Taylor's classification enables us to make interpretation and is regarded as suitable from developed countries and multinational for accountability and control.

Tax revenue

A tax is a compulsory levy payable by an economic unit to the government without any corresponding entitlement to receive a definite and direct quid pro quo from government. More embracing, tax is a financial charge or other levy imposed on an individual or a legal entity by a state or a functional equivalent of a state. Taxes are also imposed by many sub national government entities. Taxes consist of direct and indirect and many be paid in money or as a labour equivalent. A tax may also be defined as a pecuniary burden lay upon individuals or property to support, a payment exalted by legislative authority.

Taxation has four main purpose or effect; revenue, redistribution, pricing and representative.

The main purpose of taxation is to revenue raise, revenue to spend on road, schools, hospital, and no more indirect government function like good legislature or justice system. This is the most widely known function.

The second is redistribution. This means transferring wealth from the richer section of the society to the poorer section. This function is widely accepted in most democracies, although the extent to which this should happen is always controversial.

The third purpose of taxation which is pricing. Taxes are levelled to address externalities. Tobacco for instance is taxed for example to discourage smoking and many people advocate policies such as implementing a carbon tax.

The fourth and almost the last is the consequential effect of taxation in its historical setting has been on representative. This implies that Rulers tax citizen, and citizen demand accountability from their rulers as the other part of this bargain.

Type of taxes:

They are basically two broad types of taxes.

Direct and indirect taxes

Taxes are sometimes referred to as direct or indirect tax. The meaning of these terms can vary in different contexts which can sometimes lead to confusion. In economies, direct taxes refer to those taxes that are collected from the people or organisations on which they are ostensibly imposed on e.g. income taxes are collected from the person who earns the income. In contrast, indirect taxes are collected from someone other than the person ostensibly responsible for the paying the tax.

In law, the term many have different meaning in the constitutional law, for instance direct taxes refers to poll taxes and property taxes which are based on simple existence or ownership. Indirect taxes are imposed on right privilege and activities (in the USA). Thus a tax on the sales of

property would be considered indirect taxes, whereas the tax on simple owing the property is said to be direct tax.

2.2. The Concept of IGR and its Components

The Concept of Internally Generated Revenue Internally Generated Revenues (IGR) are those sources of government finance generated majorly by the federal, states and local councils, which help in broadening and widening the overall non-oil revenue structure of the state. The current challenges of the three tiers of government in Nigeria is the dwindling level of revenue generation, mostly by the state governments and the absolute dependence on federal allocation which is tilted more in favour of the Federal Government, hence giving rise to annual budget deficits in the states and inadequate financial resources for meaningful growth and viable projects development. In an attempt to marshal out the functions of the local government, the fourth schedule of the constitution of the federal Republic of Nigeria 1999 implicitly specified some of these sources of revenue generation to the state government and local government; both tax revenue and non-tax revenue.

2.2.1 Tax

A fund raised through the various taxes is referred to as tax revenue. Taxes are compulsory contributions imposed by the government on its citizens to meet its general expenses incurred for the common good, without any corresponding benefits to the tax payer. As Taussig puts it, “the essence of a tax, as distinguished from other charges by government, is the absence of a direct quid pro quo between the tax payer and the public authority.” Seligman defines a tax thus: “A tax is a compulsory contribution from a person to the government to defray the expenses incurred in the common interest of all, without reference to specific benefits conferred.

2.2.2 Rate

As one of the independent sources of revenue, people residing within a state government area pay some money to it in form of rates. Rate is, thus a local tax of the local government which is of three types namely property rate, special rate and capitation rate otherwise known as poll tax. Property rate is a fixed percentage amount of the current value of a private property levied on the owner of such a properly. Capitation rate which is also a fixed amount of money levied on all rate able adults living in the local government. It is not only fixed but equal for every payer and like the property rate, it is paid annually.

As a flat rate, it is generally low so that the low income people can conveniently pay.

Special rate is a fixed amount meant to be paid by all rate able adults residing in the local government area. Special rate is usually levied for specific and priority projects like Education, water supply and rural electrification which the local government has inadequate fund for its provision.

2.2.3 Fines

These are penalties imposed by the customary courts in the state on individuals for the contravention of the bye-laws of the state government to regulate and control services allocated to them within their areas of jurisdiction. Note that revenue accruing to the state government through this source is relatively very insignificant.

2.2.4 Earning and Profits

These are profits, interests and premiums accruable to the state government from its investment of funds in private or public economic ventures.

In other words, they are money realized by the state government from commercial ventures and industrial establishments such ventures includes mass transit services, soap industry, bakery, Agricultural farms, shares owned in companies. If such business is effectively managed with minimum local government interference and political influences, the higher revenue could be realized.

2.2.5 Fees and Charges

Revenue is generated through payments for the services which the state government provides such fees are in some cases designed to regulate and in other cases to maintain these services.

Fees and charges are imposed and revenue realized from the issuance of various types of licenses like bicycle, wheelbarrow, canoe and cart license, others are charges on bakeries, sale of liquor in restaurant and public places, erecting of sign-boards registration of births and marriages, motor parks and markets, personal identification, public urinary and toilets etc.

The imposition of fees and charges on these services by the local government always requires enabling laws for them to be lawful.

2.2.6. Grants

The federal and state government give grants often called grants-in-aid, to the state government to enable it discharge its functions effectively particularly in the area of the provision and maintenance of certain basic amenities for the people such basic amenities like water and electricity supply, building of educational and health facilities. The maintenance of roads attract grants four main types of grants which includes general or block grant, specific grants, equalization grant and matching grant.

State governments are expected and are indeed meant to embark on certain development projects that are listed as priorities of government. Consequently any local government of that embarks on such priority projects is given a matching grant which is designed to simulate and encourage development.

2.2.7 Loan

State governments are empowered to obtain loans from the federal, state and other local government. They are also allowed to raise loans from financial institutions like bank and from individuals. They raise loans for incurring capital development projects that are within their statutory functions. Educational, Agricultural and Industrial development Projects, drainage schemes, health and market development are good examples of developmental projects for which loan can be raised.

The fact is that no local government can make any reasonable giant stride in rapid community development without borrowing. It is however important to note loans are necessity provided that they are prudently applied on capital projects for which they are obtained, on capital projects which are expected to be of immense benefits to the people including the coming generation which incidentally are reasonably expected to pay for such loans in future, our of the rates and other forms of taxes they will pay.

2.2.8 Rent on Government Property

Rent on government property could describe as a government income or receipts collected from its assets both natural and otherwise, for example natural resources, forest, land minerals and other assets abroad.

2.2.9 Miscellaneous

Revenue can be generated from the payment of levies like developmental and educational levies. Money can also be realized from rents paid for using any land or building belonging to a local government. Gifts and donations from individuals, philanthropists and corporate bodies also form sources of revenue of the local government.

In conclusion, state government is empowered to generate revenue to enable them carryout their statutory and permissive functions. It is therefore necessary to enhance revenue generation of the local government to enable them, carryout their duties.

For the government, the increase in assets of governmental funds that do not increase liability or recovery of expenditure. This revenue is obtained from taxes, licenses, fines, earnings special receipts or aid and grant, miscellaneous, sale, rate, loan and fees.

2.2.10 Inflation

Though there are numerous schools of thoughts on inflation, the general consensus among scholars is that inflation is a continuous and sustained increase in the general price level of good and services in an economy over a period of time (Fishers, 1993, De Gregorio, 1993, Brunno and Easterly, 1995, Barro, 1995,1996, Malla, 1997,Faria and Carneiro, 2001, Dewan and Husein, 2001, Jhinga, 2003, Umaru and Zubariru, 2012 as cited by Chude and Chude(2015). Izuchukwu and patricia (2015) also viewed inflation as a continuous rise in prices as measured by and index such as the consumer price index (CPI) or by the implicit price deflator for Gross National Product (GNP). According to Lipsey and Chrgstal (1995) inflation reflects a reduction in the purchasing power per unit of money- a loss of real value in the medium of exchange and unit of account within the economy, because when the price level rises each unit of currency buys fewer

goods and services. Likewise, Chawdhury (1993) understands inflation as a state where too much money is chasing too few goods. Where there is inflation the currency losses it purchasing power. A high level of inflation disrupts the smooth functioning of a market economy and at the individual level inflation negatively affects those with fixed income and favours debtors at the expense of creditors, at the firm level, it affects output when firms have to incur cost as they adjust to the new price level

2.2.11. Interest rate

An interest rate is the amount of interest due per period, as a proportion of the amount lent, deposit or borrowed. Interest rate is the amount charged, expressed as a percentage of principal, by a lender to a borrower for the use of assets. Interest rates are typically noted on an annual basis, known as the annual percentage rate (APR). An interest rate it is also defined as the proportion of an amount loaned which a lender charged as interest to the borrower, normally expressed as an annual percentage.

2.2.12 Overview of the Internally Generated Revenue in Kwara State

The revolution of revenue collection in Kwara State started over a decade ago when the present Governor of the state was a commissioner for finance. The state of internally generated revenue was dismally low that efforts to shore it up became inevitable. The government under the leadership of BukolaSaraki as Governor of Kwara State therefore took specific steps that involved the automation of the system of collection and recording of collections through the engagement of revenue experts that saw the IGR moving from less than a meager N100m monthly to about N400m monthly. This was a very significant increase knowing the low level of economic activities in the state then. It is in continuation of this process of revamping the IGR of

the state that made the administration of the present Governor, Abdul Fatah Ahmed to go the full hug by putting together the Kwara State Revenue Administration Bill which was finally sent to the State House of Assembly in 2015.

This bill which was successful passed by the House was eventually signed into law by Governor Abdul Fatah Ahmed on June 22nd 2015 as the Kwara State Revenue Administration Law, 2015 (Law No.6 of 2015). Kwara State Internal Revenue Service (KW-IRS), as we now know it became established by this law. As the sole entity responsible for the effective and efficient administration of tax and related matters on behalf of the Kwara State Government. The implications of this are numerous but some of these positive implications derivable from the law are that: KW-IRS is the only authorized agency to collect revenue for the state Government, autonomous of the state Civic service, empowered to operate as a service reporting through State Board of Internal Revenue to the Executive Governor of Kwara State directly.KW-IRS is performance driven and empowered to engage and disengage its staff in accordance with its set rules and regulations; expected to advise government on social and economic policies that will assist government achieve her developmental goals and objectives, to maintain the integrity of the tax laws processes by eliminating all instances of multiple taxation; and to stimulate voluntary compliance so as to advance maximum representation of the populace in executive decision making.

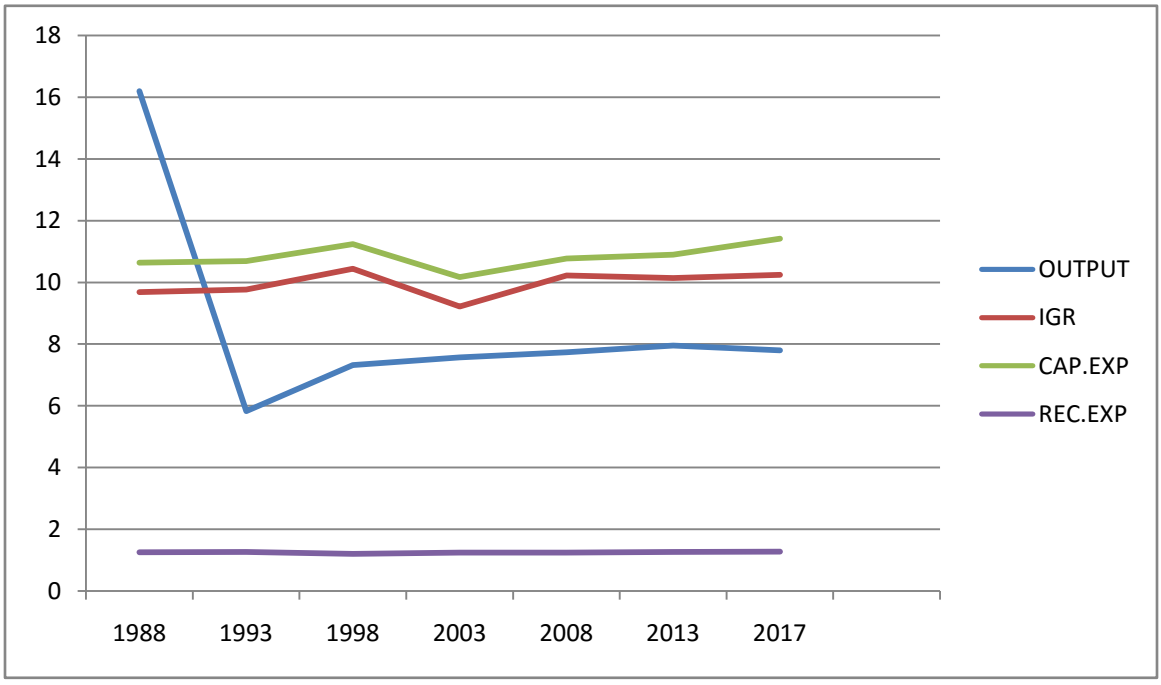
Volume and Trends of Output, IGR, Capital Expenditure and Revene-Expenditure in Kwara State.

The table below shows the trends of the respective variables in kwara state for selected years from 1988 to 2017.

TABLE 1: The Volume of Selected Variables in Kwara State for Selected Years 1988-2017

YEARS	OUTPUT	IGR	CAP.EXP	REC.EXP
1988	16.19	9.67	10.64	1.26
1993	5.83	9.77	10.69	1.27
1998	7.32	10.44	11.23	1.21
2003	7.57	9.22	10.17	1.25
2008	7.74	10.22	10.77	1.25
2013	7.95	10.14	10.89	1.27
2017	7.80	10.24	11.41	1.28

Source: Annual Report of Kwara State (2017)



The table above can however be represented graphically:

Source: plotted by the Author from data obtained from Annual Report of Kwara State (2017)

From the graph above, the trend of output, internally generated revenue as well as Capital expenditure fluctuates over the selected years due to the volatility nature of the economy of

Kwara State. Similarly, the recurrent expenditure depicts linearity over the years which may be due to the level of economic activities in the state.

From the above, therefore, there emerged a clear cut vision and mission respectively: To mobilize revenue for the strategic development of Kwara State. To serve the residents of Kwara State using the most convenient strategies that will add value and integrity to the revenue mobilization process and actualize the developmental objectives of the Government.

2.2.13 Goals and Objectives of Kwara State Internal Revenue Service

In the immediate, short term, the state set to maximize the collection rates by eliminating existing leakages through improved tax collection strategies enumerated above. However in the medium term, we shall develop a solid data base through critical data gathering and information technology. Moreover, in the long term, we shall expand the taxable base by bringing in those not captured before, into the tax net without losing track of our continuous roles to advise the government on tax and social policy measures responsive and supportive of the administration developmental agenda and business/ human welfare focus. Our approach to impact positively on the economy of Kwara State through this community impact programmer, therefore built on the five Es' that will ensure that we work with the various relevant agencies of government to touch the environment positively, support the education system, drive enterprise creation and empowerment that will generate employment.

2.2.14 Economic activities of Kwara State

Economic activities theorized to be bounded by natural resource technology labour, cultural heritage and capital. Talking about kwara economy, kwara state is among the weakest states in Nigeria. The economy of Kwara State cannot be insulated from the Nigerian economy. In

Kwara, things across the country most importantly, we sought to change the ways in which we access revenues especially IGR. Kwara State is still mainly civil services driven environment, so salaries must be paid regularly which also inflates the economy, with the support of the economic environment of Kwara is driving agriculture. An economic activity includes Formal sector and Informal sector examples: private and public, trading and farming respectively. Introduction of infrastructure fund Kwara IFK which was designed to fund all on-going projects and new ones.

2.3 Theoretical Literature:

This study relies on a number of relevant theories, developed by different schools of thought in examining the functional responsibilities state governments perform. These theories will serve as a background for proper understanding of the various sources of public revenues and its effects on economic growth. For the purpose of this study we discussed few of the different theories as there relate to the study.

2.3.1 Theories of Taxations

The theory deals with alternative sources of state income. It discusses and analyses comparative advantage and disadvantages of various forms of revenue and the principle which should govern the choice between them. We discussed for each set of the theories based on the basis on which the tax proposals are generally developed.

2.3.1.1 The social political theory of taxation.

This theory was advocated by Adolf Wagner (1800). Wagner like most Germans of those days did not believe in individual approach to a problem. He wanted that each economic problem

should be looked at in its social and political context and appropriate solution found thereof, Wagner noted in this theory that a society consisted of individual members of the society that form, an entity of its own which needed preservation and care off. Accordingly, a tax system should not be designed to serve individual member of the society but should be used in serving the public as a whole. Wagner was advocating a modern welfare approach in evolving and adopting tax policy. He was especially in favour of using taxation for reducing income inequalities. He maintained that private property, inheritance with the result of state policies are not of any God given right. The state therefore had the right to control the ownership of property and inheritance in the interest of the society as a whole.

However, in modern days taxation has gone beyond mere reducing income inequalities as advocated by Wagner. Now it is believed and widely accepted that tax policy should be effectively used for several purposes as against mere reducing inequalities. Such purposes include; fighting cyclical fluctuations, unemployment, and production of undesirable goods and services, monopolistic and restrictive trade practice, hoarding and for the discouragement of the consumption of certain commodities.

2.3.1.2 The Benefit Received Theory

This theory has a long dated origin and its root lies in the contract theory of the state. Its main theme was that the subject of a country has a contract with the state for the protection of their lives and property and so its part. The state provides various goods and services. This theory also proceeds on the assumption that there is basically an exchange of contractual relationship between tax payer and the state. The state provides certain goods and services to the members of the society and they contribute to the cost of these supplies in proportion to the benefits received.

In this situation, there is no place for issues like equitable distribution of income and wealth. Instead, the benefits are taken to respect the basis for distributing the tax burden in a specific manner. The theory overlooked the possible use of tax policy for bringing about economic growth or economic stabilization.

2.3.1.3 Optimal Theory of Taxation

Most government needs revenue which exceeds that which can be provided by non-distortionary taxes or through taxes which give a double divided. Optimal taxation is a branch of economic that considers how taxes can be structured to give the best outcome in cost. Ramsey (1982) posit that optimal taxation deals with minimizing deadweight lost because deadweight cost are related to the elasticity of supply and demand for good. It follows that putting the highest tax rate on goods for which there is most in elastic supply and demand will result in least overall deadweight cost. However, Atkinson and Stiglitz (1980) developed the optimal theory of direct taxation for the poorest in the society.

2.3.2 Fiscal Federalism:

The analysis of the problems that give rise to, and arise from, the existence of more than one level of government within the same geographical area. As originally developed by Musgrave (1959) and Oates (1972), the "theory of fiscal federalism" concerns the division of public-sector functions and finances in a logical way among multiple layers of government (King 1984). Much of the literature of fiscal federalism consists of relatively unrelated treatments of such issues as the "decentralization theorem" (Oates 1991), models for the assignment of powers (McClure 1993), discussions of intergovernmental spill overs and intergovernmental grants (Break 1980),

fiscal mobility and migration (Wildasin 1991), and vertical fiscal imbalance and dependence (Hunter 1977)

The theoretical discussion of local public goods that has taken place in the context of the Tiebout m. Charles model (Wildasin 1986) is not part of "fiscal federalism" as defined here because it is concerned only with governmental relations at the same jurisdictional level. A more general, and relevant, theoretical framework to approach some of these problems might be the theory of overlapping clubs (Cornes and Sandler 1996), but as yet this has been little developed (Casella and Frey 1992).

Initially, stabilization and distribution were considered to be essentially "central" functions, with the only role for "sub central" (state and local) governments arising in the allocate sphere. From this perspective, the main analytical task of fiscal federalism is to define the appropriate functions and finances of local governments as efficiently as possible—that is, in such a way as to maximize community welfare (often represented, for analytical convenience,

In practice, the overlapping and multidimensional nature of most public-sector activities makes it difficult to apply this approach very rigorously, particularly because few lower-level governments have sufficient own-source revenues to finance the services logically assigned to them. An important element of fiscal federalism from the beginning has thus been recognition of the probable need for intergovernmental grants to close the revenue gap.

The ideals of this school of thought happen to be the most central in the understanding of the subject of this study. This is chiefly due to the fact that the theory of decentralization theorem is importance because the theory emphasized on self-independence which will leads to higher levels of political participation, accountability and administrative and fiscal efficiency within its

jurisdiction and less depends on federal government allocation before they could meet up the cost of running the state expenditure or affairs of the state from time to time.

2.3.3 The SWOT Analysis:

The SWOT analysis; SWOT analysis entails analysing the strengths, weaknesses, opportunities and threats. SWOT analysis is a structured planning method used to evaluate the strengths, weaknesses, opportunities and threats involved in a project and it involves specifying the objectives of the project and achieving that objective. The efficacy of this analysis which makes it relevant to this study is anchored on the grounds that state government operators, chartered accountant, could through regular conduct of SWOT analysis for the state government help in formulating and setting up revenue objectives that are specific, measurable, achievable/attainable realistic and time bound (SMART) and such revenue objectives should also be suitable implementable, measurable, practical, local and evaluable (SIMPLE). Users of SWOT analysis should ask and answer questions that generate meaningful information for each state and find their competitive. SWOT analysis of the local governments IGR could come up with findings which would aid the setting up of realistic revenue objectives that are of SIMPLE & SMART for the state governments.

2.3.4 The Concept of Public Revenue- Expenditure

There are a number of hypotheses on government revenue and spending nexus. The first hypothesis is the “revenue-and- spend” hypothesis. According to this approach, any expenditure budget must be expanded in line with revenue and therefore expenditure must follow revenue. It means that if revenue is raised, then government increases spending. This view supports and suggests that there is a positive causal link between government revenue and its expenditure, Blackley (1986). The second hypothesis is the “spend-and-revenue” which argues that, any

change in government expenditure causes changes in revenue. This hypothesis argues that any large-scale exogenous disturbances like wars and other unstable political conditions or natural disasters, will induce an increase in government spending and therefore an increase in revenues (taxation). The third hypothesis is the “Fiscal Synchronization” which indicates that, government revenue decisions are not made in isolation from government expenditure decisions. The decisions are made concurrently. Therefore, there is a bilateral causality between government revenue and its expenditures.

2.3.5Adolph Wagner's Law of Increasing State Activity

Adolph Wagner, the German economist made an in depth study relating to rise in government expenditure in the late 19thcentury. Based on his study, he propounded a law called "The Law of Increasing State Activity”. Wagner’s law states that "as the economy develops over time, the activities and functions of the government increase”. According to Adolph Wagner, "Comprehensive comparisons of different countries and different times show that among progressive peoples (societies), with which alone we are concerned; an increase regularly takes place in the activity of both the central government and local governments constantly undertake new functions, while they perform both old and new functions more efficiently and more completely. In this way economic needs of the people to an increasing extent and in a more satisfactory fashion, are satisfied by the central and local Governments."

Wagner's Statement Indicates Following Points

i. In progressive societies, the activities of the central and local government increase on a regular basis.
ii. The increase in government activities is both extensive and intensive.
iii. The governments undertake new functions in the interest of the society.

iv. The old and the new functions are performed more efficiently and completely than before.

v. The purpose of the government activities is to meet the economic needs of the people.

vi. The expansion and intensification of government function and activities lead to increase in public expenditure.

vii. Though Wagner studied the economic growth of Germany, it applies to other countries too both developed and developing.

The principal criticisms of Wagner's law have concerned his view of history and of the relationship between the state and its citizens. Peacock and Wiseman also queried whether Wagner's ideas could be applied to all societies at all times and suggested that the time pattern of actual public expenditure growth did not fit well with Wagner's law.

*2.3.6*The Peacock-Wiseman Hypothesis

Peacock and Wiseman conducted a new study based on Wagner's Law. They studied the public expenditure from 1891 to 1955 in U.K. They found out that Wagner's Law is still valid. Peacock and Wiseman further stated that:-

i. "The rise in public expenditure greatly depends on revenue collection. Over the years, economic development results in substantial revenue to the governments, this enabled to increase public expenditure".

ii. There exists a big gap between the expectations of the people about public expenditure and the tolerance level of taxation. Therefore, governments cannot ignore the demands made by people regarding various services, especially, when the revenue collection is increasing at constant rate of taxation.

iii. They further stated that during the times of war, the government further increases the tax rates, and enlarges the tax structure to generate more funds to meet the increase in defense expenditure. After the war, the new tax rates and tax structures may remain the same, as people get used to them. Therefore, the increase in revenue results in rise in government expenditure.

Wagner's law and Peacock-Wiseman hypothesis emphasize on the fact that public expenditure has tendency to increase overtime as revenue increases. Therefore, this research work will draw on the Wagner's law and Peacock-Wiseman hypothesis. (Kalyan City, 2012).

2.3.7Theories of Growth

The part of economic theory that seeks to explain (and hope to predict) the rate at which a country/state's economy will grow over time. Economic growth is usually measured as the annual percentage rate of growth in one or another of the country's major national income accounting aggregates, such as Gross National Product or gross domestic product'

The following are some of the theories of economic growth that have been used by development Economist over the years.

2.3.7.1The Classical Growth Theory

This theory marked the modern concept of economic growth which began with the critique of the mercantilism especially by physiocrats and the Scottish enlightenment thinkers, such as Adam Smith, David Hume. The theory of physocrats was that productive capacity itself was allowed for growth and that improving and creating capital was wealth of nation. They stressed on the important of agriculture and saw urban industry as "sterile". Smith extended the notion that

manufacturing was central to the entire country. Ricardo saw trade as beneficial because of the arbitrage opportunities. Ricardo central point of argument was the theory of comparative advantage component of trade as essential. Thomas Malthus in his essay on the principles of population also argued that any growth in the economy would translate in to growth in population. This is states that although aggregate income will increase income per capital were bound to stay roughly constant.

In view of the above, mainstream theory of economic growth states that with the industrial revolution and advancement in medicine life expectancy, Thus parent will begin to place more value on their children. This led to break down of Malthusian game with income increase faster than population growth.

2.3.7.2The Neoclassical Growth Theory

This was the first attempt to model long run growth analytically by Robert Solow and Trevor Swan in the 1950s. This theory is otherwise called Solow-swan growth model. This theory involves series of equation and which shows the relationship between Labour time and capital output and investment. This model assumes that countries use their resources efficiently and they are diminishing return on capital and labour increase.

The neoclassical make three important predictions;

i) Increase capital relative to labour creates economic growth since people can be productive given capital

ii) Poor countries with less capital per person will grow faster because each investment in capital will produced a higher return that rich countries with ample capital

iii) Because of diminishing return to capital economics will eventually reach a point where no new increase in capital will create growth. This point is what is called a “steady growth”

The model also noted that countries can overcome their steady state and continue growing by inventing new technology. Technology will improve the steady state level of capital increase and invest and growth the neoclassical growth model is a production function with positive and diminishing marginal product as well as constant return to scale and reflect output (Y) to a pair of essential input capital and labour (1/k).

This is presented thus; K= εY…….…….2.1

Since output is produced with capital and labour and technological possibilities.

The production function is presented as Y=f (k…….……2.2

This shows constant return to scale, if equation 2 is substituted into equation 1 it yields

K= εfs (k 1)……2.3

Solow –sawn concludes that when production takes place under the neoclassical condition of variables proportion and constants return to simple opposition between natural and warranted rate of growth is possible. There may not be any knife edge. The system can adjust to any given rate of growth of the labour and eventually approach a steady state.

Δk /Δk=Δ1/k=ΔY/Y

2.3.7.3The New Growth Theory

The new growth theory was advanced again in the late 1980s and early 1990s by Paul Romer E. Lucas and Robert J. Barro.

They were unsatisfied with the work of Solow and his explanation for a steady state rate of growth. They work to indigenize "technology 'in the 1980s. They also developed the Endogenous growth theory that includes a mathematical explanation of technological advancement' the model also incorporate new concept human capital, the skill and knowledge that makes workers productive. Unlike physical capital, human capital has increasing rate of return. Therefore, there are constant to capital and economics never reach steady state. Growth does not slow as capital accumulate, but the rate or growth depends on the types of capital the county invest in.

2.4 Empirical Literature

The empirical studies of the impact of internally generated revenue on economic growth can be subdivided into various sources of revenue. The studies that focus on the impact/effect of taxation on economic growth, those that focus on natural resources revenue on economic growth, finally, those that treated general revenue on growth.

The studies that were carried out in this direction are; Solow (1959) was the first to examine how taxation affects growth, using the neoclassical growth model. The result show that steady state growth is not affect by tax. In other words, tax policy, however distortionary has no impact on long term economic growth rates, even if it does reduce the level of economic output in the long run. Unlike the new endogenous growth theory pioneered by Romer (1999), produced growth model in which government spending and tax policy can have long term or permanent growth effect.

The study conducted by Wenliyan (2008) on the impact of revenue diversification and economic base on revenue stability: which stated that, revenue diversification has become a

prevalent practice in state and local government finance the trend of revenue diversification, according to the portfolio theory, has far-reaching implication for public financial management as it may change revenue stability which has been an important policy objective for state and local government administrators. This study explores descriptive statistics on how revenue diversification affects revenue stability from both empirical and theoretical perspectives. The findings indicate that revenue diversification affects revenue stability conditional on the instability of a jurisdiction's economic base. And recommend that diversification should be gauged by the condition of its corresponding economic base in order to achieve the goal of revenue stability.

Aweitey JFT (2003) conducted a study on urban financial management revenue raising, budgeting and participation with objectives main sources of existing revenue, borrowing-advantages, in which he adopted the cost-recovery method. Where it's not feasible then a system of subsidization must be adopted to balance off distortion in the cost revenue ratio. In order for system to become entities the major thrust must be on improvement in their revenue mobilization scheme. Their effort must be geared towards improving strategies for enhanced revenue as well as sourcing new revenue. Then concluded with emphasized that revenue generation is the life blood activity of system and therefore much attention should be paid to this activity.

BijayK. (2011) conducted a study on effect of government revenue and economic growth in Kenya: a case of Malindi and Tama River Local Government Authorities who used secondary data and descriptive analysis to analyze the data. The finding shows that the principal focus was in two main components, the revenue generated by the local authorities and fiscal receipts channeled by the central government to the local authorities. The recommendation therefore is to be more concern about others source of government revenue.

Michael (2013)analyzed the amount of internally generated revenue to total revenue of states in Nigeria. The study used descriptive statistics for analyzing the data collected. The finding from the studied suggests that many states despite the fact that resources to generate revenue are present, the IGR being generated remains the same or continue to decline from one year to another. This finding was in line with that of Olusola (2011) who examined ways of boosting IGR of local governments in Nigeria and the impact of IGR has on the total revenue of local governments usedOsun State as a case study. The study therefore recommend that increase of IGR will lead to economic growth.

The study conducted by Adesoji, Adenugba and Chike (2013) on the effects of IGR on infrastructural development in Lagos state. The study used non-experimental research based on survey design and Questionnaires. The finding of the studyshows that IGR has led to infrastructural development in Lagos Sate as a result of adequate revenue generated. Recommendation that more effort should be gear towards others avenue in order to sustain future adequate of funds

Edogbanya and Ja'afaru (2013) conducted a study on the impact of revenue generation in some selected Local Government area of Kogi East Senatorial District.The study made used of descriptive research design and ordinary least square method using simple regression analysis. The findings from this study showed the existence of a significant relationship between internally generated revenue and government project. The study further recommend that government can generate more internal revenue if proper machineries are put in place to complement statutory allocation.

Nnanseh and Akpan (2013) ascertained the extent to which internally generated revenue has contributed to the provision of infrastructure in Akwa-Ibom State. Using an ex-post factor research design, data was analysed with simple percentages while simple regression statistics was used. The study found that internally generated revenue (IGR) significantly and positively to the provision of water, electricity, and road networks, the study concludes that IGR has contributed to infrastructural development in the State.

Ahamed et al, (2015) examined the relationship between expenditure and internally generated revenue in Local Government area of Adamawa State. The study used static panel estimation of pooled OLS, fixed effect and random effect estimation. The study used internally generated revenue and recurrent and capital expenditures as dependent and independent variables respectively. It was found that the impact of change in recurrent expenditure on internally generated revenue is higher than the impact of change in capital expenditure on the internally generated revenue. It was concluded that there exist a presence of a significant relationship between capital and recurrent expenditure and internally generated revenue (IGR).

Oseni and Olushola (2013) analyzed the amount of internally generated revenue to total revenue of states in Nigeria. The study used descriptive statistics and trend plot to analyze the data collected. The finding from the study suggests that many states despite the fact that resources to generate revenue are present, the IGR being generated remains the same or continue to decline from one year to another. The study found that a significant relationship exist between IGR and total revenue of states in Nigeria. The study recommend that the absence of good and vibrant informal sector coupled with few industries will cause IGR to be low.

Asimiyu and Uyikizito (2014) examined the relationship between IGR and state government expenditure. The study used analytical and descriptive approaches. The findings suggest that a direct relationship exist between the growth rate of IGR and capital expenditure.The study therefore recommend thatgovernment should continue to do more in term of fund raising in order to meet up with government expenditure all time.

Mathew (2014) examined the impact of tax revenue on Nigeria economy: A case study of Federal Board of Inland Revenue. The study used descriptive survey design and chi=square statistical tool of analysis. The findings from the study shows that tax revenue significantly affect the revenue generated in Nigeria. The recommendation notice of tax reform at the beginning of every financial year should be supported with handbills and poster written in local languages such as igbo, hausa, yoruba and other languages as this will enable illiterate perform their civic responsibilities.

Dagwom (2017)examined the contribution of state IGR to economic growth of Nigeria: The study adopted panel data analysis. The findings shows that the state IGR has little and insignificant contribution to economic growth in Nigeria. The study recommend amongst others that more financial control and value for money audit should be carried out to minimize wastages, inefficient and corruption in the Nigeria tax system.

Augus and David (2011) examined the impact of VAT on economic development of emerging nations. The study used analysis of variance. The finding shows that VAT allocation alone accounted for 91% in expenditure pattern of Adamawa state from 2001 to 2009. The study recommend that revenue allocations especially VAT should not only have impact positively on the economic and human developments by the citizens of that state.

Ogundayo, Onakoya and Afintini(2017) studied the impact of taxation revenue and economic growth in Africa. The study adopted fixed and panel data. The finding shows that tax revenue is positively related to GDP and promote economic growth in Africa.The study therefore recommend that in the midst of harsh economic condition such as crashing oil price, rising exchange rates drop in Naira value the government should be ready to develop a comprehensive tax structure or model that will grow, nurture and sustain its tax economic base so as to drive economic performance.

Abiola and Ehigiamusoe (2014) examined the internally generated revenue and its implications on fiscal viability of state governments in Nigeria. The study used descriptive approach. The findings shows a direct relationship between the IGR and capital expenditure, growth rate of IGR was 20.1percent which is very low to growth rate of GDP which stood at 30 percent, capital expenditure 34.2 percent higher than the growth rate of that IGR. The study recommend that more revenue should be given to rural area to finance capital projects to enable them grow their IGR so as to promote economic development.

Oti and Odey (2017) carried out research on analysis of internally generated revenue and capital expenditure utilization in Cross River State. The study used descriptive statistics. The finding from the studied reveal that increase in government expenditure without corresponding revenue will widen the budget deficit. The study recommend that Cross-River State government should increase the size of its IGR in order to accommodate the capital expenditure of the state.

Olusola, Siyanbola and Tunji (2014) conducted a study on the role of internally generated revenue in Nigeria. The used econometrics technique through ordinary least square (OLS) regression. The finding from study revealed that miscellaneous sources of revenue such as

fines, rent, license, interest payment grant are statistically significant at 5 percent confidence level while rate is statistically insignificant due to inadequate remittance to treasury by rate collectors. The study recommend that local government council should intensify efforts toward carrying-out aggregate collection of these sources and block every loopholes that have made the collections to be insignificant.

Mbah and Onuona (2018) examined the effect of internally generated revenue on infrastructural Development of South East states of Nigeria. The study used ex-post facto design (descriptive statistics, correlation and linear multiple regression. The finding from the study reveals that there was a significant relationship between IGR and cost of infrastructural in the South East State as at the date of the study. The study recommend that government should increase IGR in order to meet up the cost of infrastructural.

Cordelia, Micheal and John (2018) studied the impact of internally generated revenue on economic development in Nigeria. The study used ex-post facto research design, multi-regression and t-test for test of hypotheses. The findings from the study revealed that TIGR , SIGR and LIGR have robust and significant positive impact on RGDP. The study recommend that government official with corruption history should not be allow to continue to handle responsibilities rather, people with integrity should be given opportunity to occupy government positions that are sensitive and could help achieve economic development objective.

Maurice, Felix, Tabitha and Hilary (2015) studied the challenges of expanding internally generated revenue in Nigeria. The study adopts a conscious survey of relevant literature on our subject matter. The study maintains that apart from the fact that the fiscal federalism apparently seen unfavorable to the local government functional responsibilities it has nevertheless the

provided for adequate source for their IGR to augment the federally allocated funds. The study recommend that in order to achieve meaningful economic development goal more funds are required.

Agya, Ibrahim and Emmanuel (2015) studied the internal revenue generation in Taraba State, Nigeria: problems and prospects. The studyused both structure and unstructured questionnaires and simple percentage was used to analyzing the data. The findings shows that revenue machinery are inadequate and outdated, inadequate staff and lack of professional personnel in revenue section and inadequate provision of social service. The recommendation was to upgrading existing revenue machinery and up-grading the laws capacity building involving training and retraining of staff and stop political interference in the appointment into the revenue task force.

Moshood (2015) conducted a study on Local Government Revenue and Performance in Kwara State. The study adopts the uses of questionnaires to elicit data on the perceptions of local residents on the level of local government's performance. The findings shows that when local government assumes a level of fiscal self- reliance, autonomy expands and performance level begins to appreciate, Good performance IGR is attainable with or without complete fiscal autonomy.The Studytherefore recommendthat a strong approach to expand the scope of local autonomy will have to come through a corresponding expansion in IGR mobilization.

Yahaya (2009) studied the challenges of taxation in Kwara State.The study adopts descriptive statistics and survey. With objective to investigate the problems hindering efficient taxation of Kwara State in order to provide useful suggestions to the state. The finding from study shows a lot of impediment to tax revenue within the period. The recommendation with strong points as

follows; that government should put in place appropriate and efficient strategies to reduce poverty among the people and to promote political stability, an effective utilization of collected taxes would encourage tax payment.

2.4.1 Gap Identified In the Literature

The study attempt to fill this gap after extensive review of literature on (internally generated revenues) on output which includes revenues from taxes, licenses, fees and fines, rent on government property and statutory allocation. To determine the revenue expenditure gap, impact of IGR on output, gap on inflation and interest rate. To make the work unique we used Auto regression Distributed Lag (ARDL) Vector Auto regression (VAR) impulse response function using annual time series data from (1988 – 2017)

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the research methodology adopted for this work. It consists of section on study area, theoretical framework, model specification, data requirement and data sources as well as methods of estimation.

3.2The Study Area

Ilorin, the state capital of Kwara State is located on latitude 8º30' and 8º50'N and longitude 4º20' and 4º35'E of the equator. Ilorin city occupies an area of about 468sqkm and it is situated in the transitional zone within the forest and the guinea savannah regions of Nigeria. It is about 300 kilometres away from Lagos and 500 kilometres away from Abuja the federal capital of Nigeria. The climate of Ilorin is tropical under the influence of the two trade winds prevailing over the country. Ilorin metropolis experiences two climatic seasons i.e. rainy and dry season. The rainy season is between March and November and the annual rainfall varies from 1000 mm to 1500 mm, with the peak between September and early October. Also, the mean monthly temperature is generally high throughout the year. The daily average temperatures are in January with 25 ºC, May 27.5 ºC and September 22.5 ºC.

Kwara State is a State in Western Nigeria with it capital city is Ilorin. Kwara State is located within the North central geopolitical Zone, commonly referred to as the middle belt. Founded 27th may 1967, with 16 current LGAs. Kwara State is the ninth largest Nigerian State by area (36,825km^2) (32,500 square kilometres total landmass) rank 30 in Nigeria State with population of 2.371.089 as of 2006 , population of Kwarans was 2.371 million based on the 2006 census.

This population size constitutes about 1.69% of the Nation's total population having relied upon immigration for population growth and socioeconomic development.

3.3Theoretical Framework

This study is anchored on the synthesis of both the Adolph Wagner theory of public expenditure and Peacock-Wiseman theory of expenditure. This is because there seems to be an existing consensus between the two theories that public expenditure has tendency to increase overtime as revenue increases. Nonetheless, the view of Adolph Wagner was that in progressive societies, the activities of government increases on regular basis and also that the expansion and intensification of government functions and activities lead to increase in public expenditure. On the other hand, Peacock-Wiseman is of the view that the rise in public expenditure greatly depends on revenue collection and that over the year economic development results insubstantial revenue to the government. This enables increase in public expenditure. These arguments are what the study sort to build on as both emphasize the role of government revenue either at the state level or national on expenditure.

$Y=f$ (public sector) ……3.1

$Y=f(G_{\bar{E}}, G_R)$ ……..3.2

Where $G\bar{E}$ = Government expenditure which is held constant

Gr = Government revenue

At equilibrium;

$G_E = G_R$

But $G_r = f$ (IGr, SA) ……3.3

Where IGr = Internally generated revenue

SA = Statutory Allocation,

Therefore; from equation (3.2) substitute Gr = IGr, SA

$Y = f(G_{E,}IG_{r,}SA)$ …….3.4

However, IG_r= TX, LC, FF, RGP

Where TX = Tax

LC = Licenses

FF = Fees and Fines

RGP = Rent on government property

From equation (3.4), replace IGr = TX, LC, FF and RGP

Y= f (TX, LC, FF, RGP, SA) ……3.5

Equation (5) can be re-specify into econometrics model

3.4Model Specification

In order to ascertain the extent of which internally generated revenue have impact on output and impact of the gap on output at large. The models are modifying as follows;

$Y_t=\beta_0+ \beta_1TX_t+ \beta_2LC_t+ \beta_3FF_t+ \beta_4RGP_t+ \beta_5SA_t+ U_t$ ……3.6

Where: Y = Outputs

U_t = Error or stochastic term

β_1 = intercept of the regression

$\beta_0,\beta_1,\beta_2,\beta_3,\ \beta_4,\beta_5$ are the parameters of the model

Equation (3.6) can be specified further into modified Wagner law as follow:

$Y_t= \beta_0+ \beta_1GAP_t + \beta_2INF_t + \beta_3INT_t + U_t$ ……3.7

Where GAP = the difference between government expenditure and revenue

INF = Inflation rate

INT = Interest rate

$\beta_{0,}\beta_1, \beta_{2,}\, and \beta_{3,}$ are the parameters

μ_t = Error term

3.5Vector Auto regression model (VAR)

Introduced by sim (1980) the Vector Autoregressive (VAR) method is used to characterize the joint dynamic behavior of a collection of variables without requiring strong restriction of the kind needed to identify underlying structural parameters. This method treats each variable as a linear function of lags of itself and of all the other variables, plus an error term. To specify the model for this study, consider a simple VAR model for six variables *Y*, *TX*, *LC*, *FF*, *RGP* and *SA* as follows:

The Revenue Adjustment model:

$$\Delta logOPT_t = \alpha_0 + \sum_{j=1}^{K} \alpha_{1j}\, \Delta logOPT_{t-j} + \sum_{j=1}^{K} \alpha_{2j}\, \Delta logTX_{t-j} + \sum_{j=1}^{K} \alpha_{3j}\, \Delta logLC_{t-j} + \sum_{j=1}^{K} \alpha_{4j}\, \Delta logFF_{t-j} + \sum_{j=1}^{K} \alpha_{5j}\, \Delta logRGP_{t-j} + \sum_{j=1}^{K} \alpha_{6j}\, \Delta logSA_{t-j} + \varepsilon_{1t} \quad \text{.....3.8}$$

$$\Delta logTX_t = \beta_0 + \sum_{j=1}^{K} \beta_{1j}\, \Delta logOPT_{t-j} + \sum_{j=1}^{K} \beta_{2j}\, \Delta logTX_{t-j} + \sum_{j=1}^{K} \beta_{3j}\, \Delta logLC_{t-j} + \sum_{j=1}^{K} \beta_{4j}\, \Delta logFF_{t-j} + \sum_{j=1}^{K} \beta_{5j}\, \Delta logRGP_{t-j} + \sum_{j=1}^{K} \beta_{6j}\, \Delta logSA_{t-j} + \varepsilon_{2t} \quad \text{..... 3.9}$$

$$\Delta logLC_t = \phi_0 + \sum_{j=1}^{K} \phi_{1j}\, \Delta logOPT_{t-j} + \sum_{j=1}^{K} \phi_{2j}\, \Delta logTX_{t-j} + \sum_{j=1}^{K} \phi_{3j}\, \Delta logLC_{t-j} + \sum_{j=1}^{K} \phi_{4j}\, \Delta logFF_{t-j} + \sum_{j=1}^{K} \phi_{5j}\, \Delta logRGP_{t-j} + \sum_{j=1}^{K} \phi_{6j}\, \Delta logSA_{t-j} + \varepsilon_{3j} \quad \text{.....3.10}$$

$$\Delta logFF_t = \gamma_0 + \sum_{j=1}^{K} \gamma_{1j}\, \Delta logOPT_{t-j} + \sum_{j=1}^{K} \gamma_{2j}\, \Delta logTX_{t-j} + \sum_{j=1}^{K} \gamma_{3j}\, \Delta logLC_{t-j} +$$

$$\sum_{j=1}^{K} \gamma_{4j}\, \Delta logFF_{t-j} + \sum_{j=1}^{K} \gamma_{5j}\, \Delta logRGP_{t-j} + \sum_{j=1}^{K} \gamma_{6j}\, \Delta logSA_{t-j} + \varepsilon_{4j} \quad \ldots\ldots\ldots 3.11$$

$$\Delta logRGP_t = \omega_0 + \sum_{j=1}^{K} \omega_{1j}\, \Delta logOPT_{t-j} + \sum_{j=1}^{K} \omega_{2j}\, \Delta logTX_{t-j} + \sum_{j=1}^{K} \omega_{3j}\, \Delta logLC_{t-j} +$$

$$\sum_{j=1}^{K} \omega_{4j}\, \Delta logFF_{t-j} + \sum_{j=1}^{K} \omega_{5j}\, \Delta logRGP_{t-j} + \sum_{j=1}^{K} \omega_{6j}\, \Delta logSA_{t-j} + \varepsilon_{5t} \quad \ldots\ldots\ldots 3.12$$

$$\Delta logSA_t = \pi_0 + \sum_{j=1}^{K} \pi_{1j}\, \Delta logOPT_{t-j} + \sum_{j=1}^{K} \pi_{2j}\, \Delta logTX_{t-j} + \sum_{j=1}^{K} \pi_{3j}\, \Delta logLC_{t-j} +$$

$$\sum_{j=1}^{K} \pi_{4j}\, \Delta logFF_{t-j} + \sum_{j=1}^{K} \pi_{5j}\, \Delta logRGP_{t-j} + \sum_{j=1}^{K} \pi_{6j}\, \Delta logSA_{t-j} + \varepsilon_{6t} \quad \ldots\ldots\ldots\ldots 3.13$$

Where:

Δ denotes the first difference operator; αo is the drift component, μt is the error term residuals

The first until fifth expressions ($\beta 1$–$\beta 5$) on the right-hand side correspond to the long-run relationship.

The Fiscal Revenue – Expenditure gap model:

The estimation technique used in this study is the Autoregressive Distributed Lag (ARDL) bounds testing. The ARDL bounds testing co -integration technique is used to determine the long-run relationship between series with different order of integration (Pesaran and Shin, 1999). The technique gives both short-run dynamics and long-run relationship of the considered variables and it yields consistent estimates of the long-run co-efficient that are asymptotically normal irrespective of whether the underlying regressors are integrated of order one I(1) or of

order zero I(0) or fractionally integrated (Pesaran and Shin, 1999). In its basic form ARDL bounds testing regression model is specified as follows:

$Y_t = \alpha_0 + \alpha_1 y_{t-1} + \alpha_p y_{t-p} + \beta_0 x_t + \beta_1 x_{t-1} + \beta_2 x_{t-2} + \beta_3 x_{t-3} + \beta_4 x_{t-4} + e_t$ 3.14

The ARDL representation of equations:

$$\Delta logOPT_t = \alpha_0 + \sum_{j=1}^{K} \alpha_{1j} \Delta logOPT_{t-j} + \sum_{j=1}^{K} \alpha_{2j} \Delta logGAP_{t-j} + \sum_{j=1}^{K} \alpha_{3j} \Delta INF_{t-j} + \sum_{j=1}^{K} \alpha_{4j} \Delta INF_{t-j} + \varepsilon_{1t} \quad \text{.....3.15}$$

$$\Delta logGAP_t = \alpha_0 + \sum_{j=1}^{K} \alpha_{1j} \Delta logOPT_{t-j} + \sum_{j=1}^{K} \alpha_{2j} \Delta logGAP_{t-j} + \sum_{j=1}^{K} \alpha_{3j} \Delta INF_{t-j} + \sum_{j=1}^{K} \alpha_{4j} \Delta INF_{t-j} + \varepsilon_{2t} \quad \text{.....3.16}$$

$$\Delta INF_t = \alpha_0 + \sum_{j=1}^{K} \alpha_{1j} \Delta logOPT_{t-j} + \sum_{j=1}^{K} \alpha_{2j} \Delta logGAP_{t-j} + \sum_{j=1}^{K} \alpha_{3j} \Delta INF_{t-j} + \sum_{j=1}^{K} \alpha_{4j} \Delta INF_{t-j} + \varepsilon_{3t} \quad \text{.....3.17}$$

$$\Delta INT_t = \alpha_0 + \sum_{j=1}^{K} \alpha_{1j} \Delta logOPT_{t-j} + \sum_{j=1}^{K} \alpha_{2j} \Delta logGAP_{t-j} + \sum_{j=1}^{K} \alpha_{3j} \Delta INF_{t-j} + \sum_{j=1}^{K} \alpha_{4j} \Delta INT_{t-j} + \varepsilon_{4t} \quad \text{.....3.18}$$

The study first conducted pre-estimation statistical test using Augmented Dickey Fuller to test for stationary of series. Based on the outcome of the pre-estimation tests, Johansen co integration test was then carried out to determine the level of long run relationship among the variables. Therefore, the study adopts line plots which was used to show the trend of the series (ARDL), impulse response function and finally, variance decomposition.

3.6Preliminary Test

Time series data have been generated by a stochastic process and such data can either be stationary or non-stationary. Before we used it for analysis its properties will be scrutinized. This is to show whether the variables are stationary or not. By definition, a stationary process is one whose joint and uncertain distribution are invariant with respect to displacement in time Pindyck and RubinFeld (1988, pp493). Stationary is important because if time series data are not non stationary, the classical T- and F- test are inappropriate. The problem of spurious regression will arise when non stationary data are used, (Granger and Newbold, 1974).

3.7. Unit Root Test

The unit root test comprises testing the order of integration of the individual series under consideration. Testing for unit root is a key concept in the study of time series model and co-integration. By definition a stochastic process Yt, is known as a unit root if it's difference Yt-Yt-1 is stationary 1(1). This suggests that testing for unit root is comparable to testing whether a stochastic process is stationary or not. To test for unit root, several procedures for the test of integration have been developed. The two most popular ones are the Augmented Dickey Fuller (ADF) unit root test due to Dickey and Fuller (1988) and Philips and perron (PP) unit root test due to Philips and perron (1988).

In this study the ADF approach for unit root wasadopted because it control for higher order serial correlation by adding lagged difference terms on the right side of the regression and is also widely used. The null hypothesis of this test is that there is at least one unit root (that is the time series data are non-stationary). In performing the ADF test we addressed two important issues. First we determined whether to include deterministic terms into the regression; we have the choice of including a constant, a constant and a linear trend or neither of them in the regression.

The second issue is to choose the lag length, which is to specify the number of a lagged difference terms to be added to the test regression.

3.8Co-integration Test

A substantial part of economic theory generally deals with long run equilibrium relationship generated by market forces and behavioral rules. Corresponding, most econometric studies involving time series can be interpreted as attempts to evaluate such relationship in a dynamic framework. The aim of the co-integration analysis is to establish if there exists a long run equilibrium relationship between economic variables. According to Granger 1988, a co integration test can be thought of as a pre-test to avoiding spurious regression given a group of non-stationary series. Variables are said to be co integrated if they have the same wave length or if they are integrated of the same order over the sample period. Co integration also implies that the long run movements in the variables are related to one another in a long run equilibrium relationship.

3.9Impulse Response Function

The study employed the impulse response function analysis using the moving average representation of VAR equation to examine the dynamic relationship of the variables under investigation. The impulse response function traces the effect of one standard deviation shocks to one of the innovations on current and future values of the endogenous variables.

3.10Variance Decomposition

The variance decomposition method was employed to assess the relative contribution and importance of each of the variables in the system. The variance decomposition decomposes variation in an endogenous variable into the component shocks to the endogenous variable in the VAR; it also measures the proposition of forecast error in the current and future values of the

innovation to each endogenous variable in the VAR. the percent of the forecast variable due to each innovation with row add to 100%

3.11Sources of Data

The data source depends on secondary sources obtained from the audited and published annual reports for the period under review. The variables for which data was collected included internally generated revenue (IGR), from Ministry of Finance Kwara State,State output (OPT) in (billion Naira) from Ministry of planning and Economic Development and other various sources of revenue such as: taxes, licenses, fines and fees, earning and sales, rent on government property, interest payment and dividend, re-imbursement, retained revenue from parastatal organization, other incomes, in (million Naira) inflation rate and interest rate collected from CBN statistical bulletin, in (percentage) the data set used for analysis is the time series data the data covered the period under review (1988-2017)

3.12Apriori Expectation

$\beta_0, \beta_1, \beta_2, \beta_3, \beta_4$, and $\beta_5 > 0$: The expectation is that when there is an increase in all the variables. Hence, the coefficient is expected to be greater than zero.

CHAPTER FOUR

4.0 DATA PRESENTATION, ANALYSIS AND DISCUSSION OF RESULTS

4.1 Introduction

This chapter reports the result of the approaches employed in the study. This is aimed at attaining the objectives and testing the hypothesis stated in chapter one.

4.2Trend Analysis

Figure 4.1 below present the trend of the series, behavior of the series. This shows that the trend of all the variables were moving both upward and downward sloping in all the series. It appears that the behaviors of the series are unstable for the period under review.

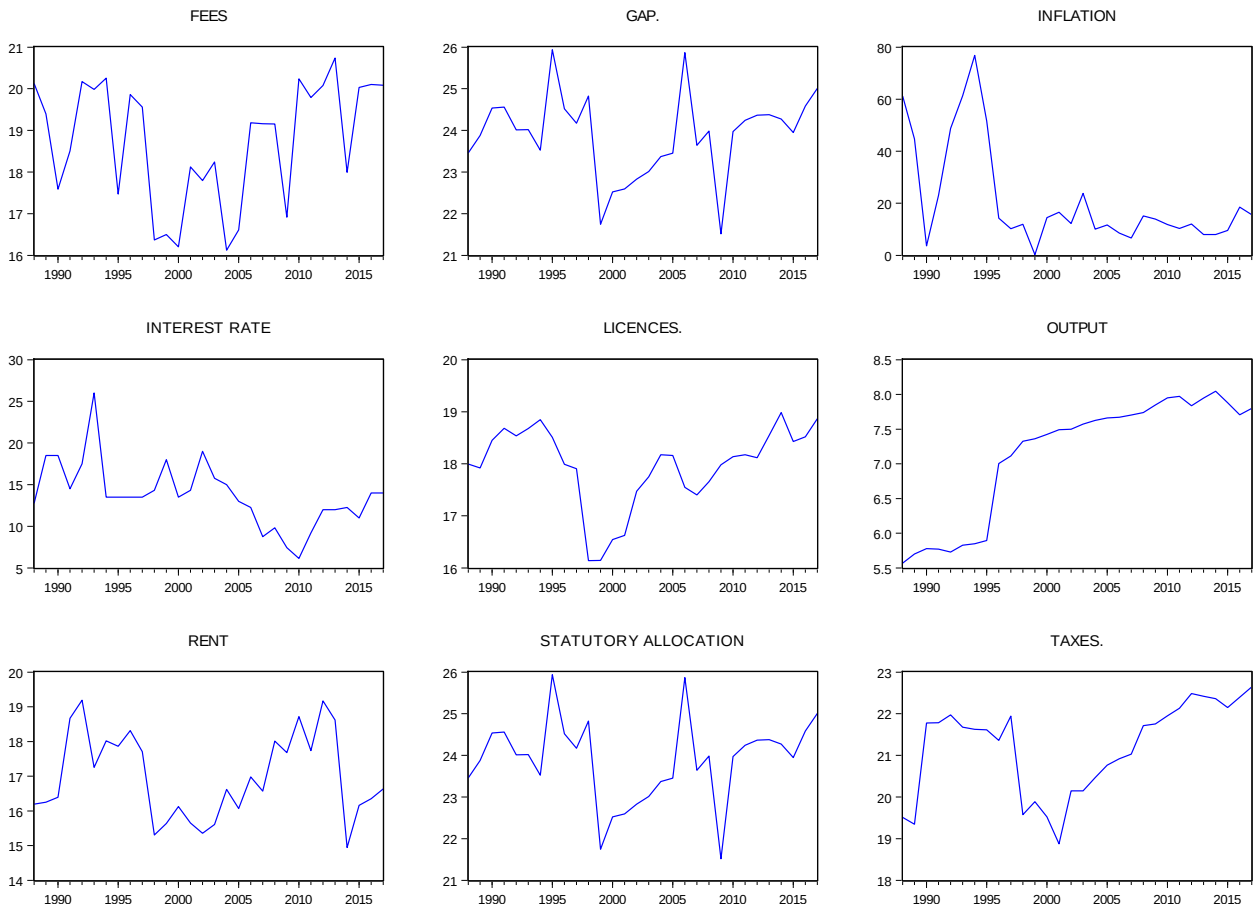


Figure 4.1

A carefully look from the above graph shows the trends of all the variables. That there is a decrease in revenue from 1988 and in 1989increase in revenue to1997, decrease in revenue from 1998 to 2000, in 2002 increase in revenue up till 2017, the trend of fees and fines decrease in revenue from 1988 to 1989 but increase in revenue 1990, decrease again 1995 and continue fluctuate up till 2017, the trend for output from 1988 increasing in revenue gradually but continue to be increase again in revenue up till 2015 and decreasing in revenue 2016 pick again in 2017, the trend for license in 1988 decreasing in revenue through 1999 and began to increasing revenue in 2000 up till 2017, the trend for the interest rate from 1988 shows increasing revenue to 1994 and began to decreasing in revenue from 1995 continuously to 20009 and increasing revenue again from 2010 till 2017,the trend for inflation from 1988 shows decreasing in revenue to 1989 but again increasing revenue from 1990 to 1994 began to decreasing in revenue from1995 to 2000 and increasing revenue from 2001 till 2017.

The trend of gap started increasing revenue from 1988 to 1989 decreasing in revenue from1990 to 1992 and again in 1993 increasing revenue to 1999, butin 2000 decreasing in revenue and increasing revenue in 2001 to 2004 decreasing in revenue from 2005 to 2009 then in 2010up till 2017 increasing revenue,the trend for the statutory allocation has always been around increasing revenue and decreasing in revenue also,1988 increasing revenue but in 1990 decreasing in revenue, increasing revenue in 1993, decreasing in revenue 1995 to 1999 increasing revenue in 2000 to 2004, while decreasing in revenue in 2005 to 2009 and again from 2010 till 2017 it has being an increasing revenue in statutory allocation to Kwara State Government.

4.2 Preliminary Test

The result of unit root test, co-integration, optimal lag selection test, Autoregressive Distributed Lag (ARDL) and regression are summarized in the tables that are presented in this segment. The unit root test is presented in table 4.1, co-integration in table 4.2and optimal lag selection in table 4.3.

4.2.1 Result of Unit Root Test

The unit root test of the variables was carried out to determine the stochastic properties of the variables under consideration. The null hypothesis is that the variables under investigation have a unit root (non stationary) against the alternative hypothesis that it does not have unit root using the Augmented Dickey Fuller (ADF) unit root test to analysis the variables. The test was conducted for both trend and intercept.

The result of the unit root test is presented in table 4.1 below.

Table 4.1 Results of Unit Root Test

Variable	ADF calculated value in level	ADF calculated value at 1st difference	McKinnon 5% critical value	Order of integration
SA	-3.967974 (0.0050)	-	-2.967767	I(0)
OUTPUT	-1.686045 (0.4271)	-4.833774 (0.0006)	-2.971853	I(1)
TX	-1.972735 (0.2965)	-6.413666 (0.0000)	-2.971853	I(1)
LC	-1.487092 (0.5258)	-4.392688 (0.0018)	-2.971853	I(1)
FF	-3.510597 (0.0149)	-	-2.967767	I(0)
INF	-2.782019 (0.0733)	-4.347702 (0.0020)	-2.971853	I(1)
INT	-2.859913 (0.0625)	-7.156186 (0.0000)	-2.971853	I(1)
RGP	-2.902468 (0.0573)	-	-2.967767	1(0)
GAP	-3.967974 (0.0050)	-	-2.967767	I(0)

Source: Authors computation using E-view,version 10.0

The results of the unit root testsAugmented Dickey Fuller (ADF) in Tables 4.1shows that the variables under investigation are stationary at level I(0) and first order difference I(1). Statutory allocation, fines and fees, rent on government property and gap are all I(0) while output, tax, license, inflation and interest rate are I(1). The F-statistic bound test for co-integration was conducted in order to ascertain the existence of a long-run relationship among the variables. The results of critical bound test of co-integration among these variables for the models are shown in Table 4.2 for both f-bound test and t-bound test.

4.2 Co-integration/Long-run Relationship Test

ARDL co-integration technique is preferable when dealing with variables that are integrated of different order, I(0), I(I) or combination of the both and robust when there is a single long run relationship between the underlying variables in a small sample size. The co-integration test is conducted to ascertain whether variables that have been observed to be stationary at first difference have long-run relationship. The result of the co-integration test is summarized in the table 4.2 below.

Table 4.2 Result of Bound Test Co-integration Analysis for the Models

Variable	**F-Statistics**	**Critical Bounds At 5%**		**Decision Rule**
		Lower Bound	**Upper Bound**	
OUTPUT (F)	1.703303	2.62	3.79	Null hypothesis Rejected
OUTPUT (F)	11.87483	3.23	4.35	Null hypothesis Accepted

Source: Authors computation using E-view, version 10.0

Since the value for the first model is less than 1(0) and 1(1) we accept null hypothesis which means there is no (co-integration) long run relationship among the variables As indicated in Table 4.3 the calculated F-statistics of 1.703303,is lower than the respective lower and upper bound critical values of 2.62, 3.79, respectively at 5 percent significance level. This result shows that the null hypotheses of no co-integration among the variables are accepted and the alternative hypotheses of co-integration are rejected at 5 percent level of significance. This therefore, indicates that there is no long-run co-integrating equilibrium relationship among the variables. However, the value for the second model is higher than 1(0) and 1(1) we reject null hypothesis which means there is a (co-integration) long run relationship among the variables As indicated in

Table 4.3 the calculated F-statistics of 11.87483 which is higher than their respective lower and upper bound critical values of 3.23, 4.35 respectively at 5 percent significance level. These result shows that the null hypotheses of no co-integration among the variables are rejected and the alternative hypotheses of co-integration are accept at 5 percent level of significance. This therefore, indicates that there is a long-run co-integrating equilibrium relationship among the variables.

Table 4.3 Optimal lag selection Test

LAG	**LAGL**	**LR**	**FPE**	**AIC**	**SC**	**HQ**
0	-3387.276	NA	2.92e+95	242.5197	242.9004	242.6361
1	-3262.372	169.5136	4.55e+93	238.1694	241.5951	239.2167
2	-3152.681	86.18554*	6.83e+92*	234.9058*	241.3765*	236.8839*

Source: Authors computation using E-view, version 10.0

From the table 4.3 above, it shows that all the lag order selection criteria indicate that lag two should be selected or chosen since the LR = sequential modified LR test statistic (each at 5% level) Akaike information criterion (AIC), Schwarz information criterion(SC), Hannan – Quinn information criterion (HQ) and Final prediction error (FBE) shows the lowest value, it means that the lowest the AIC, SC, and HQ the better the fit or the better the model, except FBE which is differ.Therefore, this study adopts lag two criteria.

Table 4.4 Vector Autoregression Result (VAR)

Dependent Variable: Log output

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Logoutput (-1)	0.910504	0.065170	13.97125	0.0000
LogStatutory	0.051894	0.180978	0.286743	0.7770
LogRent	0.029689	0.129895	0.228562	0.8213
LogTax	0.010263	0.284660	0.036054	0.9716
LogLicense	-0.200518	0.281752	-0.711683	0.4841
LogFees	0.029854	0.110990	0.268981	0.7905
C	0.172888	0.273764	0.631525	0.5342

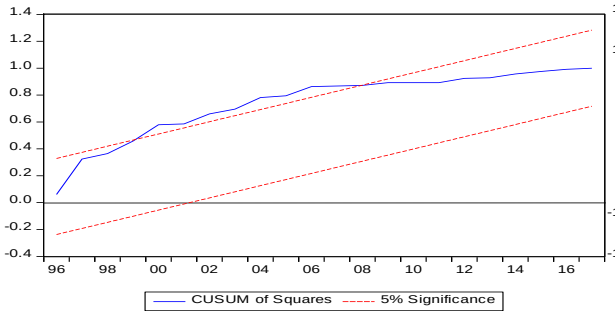
R^2 =0.940638 D.W – Statistics= 2.039799

Adjusted R^2 =0.924448 F-statistics = 58.10105

S.E of Regression = -0.014899Prob (F-statistics)= 0.000000

Source: Author's computation E-views, version 10.0

Diagnostic Test	F-statistics	p-value
Heteroskedasticity Test	0.577611	0.7441
Serial correlation LM test	0.013846	0.9074
Jarque-Bera test	0.473416	0.7892



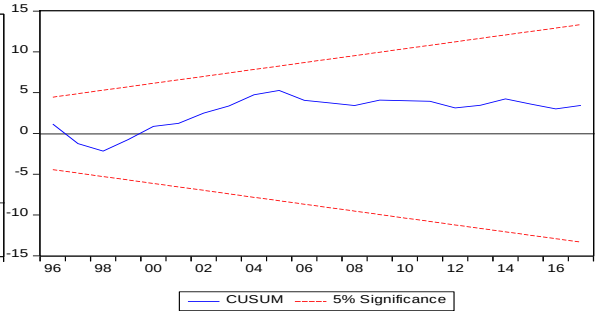
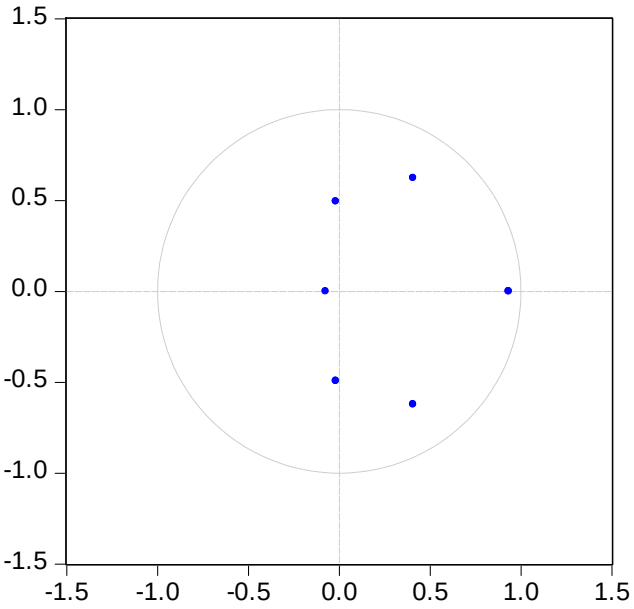


Figure 4.2a Diagnosis test Figure 4.2bDiagnosis test

The stability of the parameters was tested through the CUSUM (cumulative sum of recursive residuals) and the CUSUMSQ (cumulative sum of recursive residuals of square). The following Figures 4.6b and 4.6a show the CUSUM and the CUSUM square test of parameter stability for model. As indicated the CUSUM is stable within the study period while the CUSUM of squares is not stable within the study period.

Figure 4.3: Inverse roots of AR characteristic polynomial



From the figure above, the stability test was employed in order to test the robustness of the model, the inverse roots of characteristics polynomial are all within the unit circles and therefore the model has satisfied the stability condition.

The jarque-Bera normality test is to test whether or not the model is normally distributed. Since the value (0.7892) which is greater than 5% significant level, then the mode is normally distributed. The serial correlation test is to test whether or not the model is serial correlation in nature. Since the value (0.9074) is greater than 5% significant level, then the model has no serial corrolation. Heteroskedasticity test Breush Pagan Godfrey serial with a value of 0.7441 is greater than 5% significant level, and then there is absence of heteroskedasticity in the model. The stability of the model confirmed by the test of inverse roots of AR characteristic polynomial. All the variables have passed through the necessary test which they were good or in order for the model. The R-square 94% of the variation in the model or on output in Kwara State has been explained by independent variable while the remained 6% explained by the error term which

shows the goodness of fit of the model indicate at 5%. The Durbin Watson 2.039799 shows that there is no serial correlation among the variables in the model also f -statistic 58.10105 which show the overrun significant about the variable in model having the p- values of f -statistic 0.000000 which is greater the 5% confident level this implies that all the variable are not jointly significant in determine the level of output in the study period.

The estimated results in Table 4.5 show that the coefficients of output, rent on government property, taxes, license, fees and fines and statutory allocation.The logstatutory allocation coefficient is about 0.052. This implies that a per cent increase in logstatutory allocation will induce or bring about 0.052 percentchanges in output and however it is not statistically significant at 5 per cent confidence level. The logrent coefficient is about 0.030. This implies that a per cent increase in logrent will induce or bring about 0.052 changes in output and however it is not statistically significant at 5 per cent confidence level.

The logtax coefficient is about 0.010. This implies that a per cent increase in logtax will induce or bring about 0.010 changes in output and however it is not statistically significant at 5 per cent confidence level.The loglicense coefficient is about 0.201. This implies that a per cent increase in loglicense will induce or bring about 0.201 changes in output and however it is not statistically significant at 5 per cent confidence level.The logfees and fines coefficient is about 0.030. This implies that a per cent increase in logfees and fines will induce or bring about 0.030 changes in output and however it is not statistically significant at 5 per cent confidence level.

Based on the estimated output all the variables are not statistically significant. Hence, it makes no sense to make them for recommendation. Therefore, their insignificant on output level in Kwara state was due to the following reasons: Taxes- mismanagement of tax collected, lack of

public awareness, human resource problem, bribery and corruption, non-remittance of income collected, licenses- poor internal control measures and lack of accountability, feesand fines-bribery and corruption, non-remittance of income collected and lack of accountability, rent on government property-poor internal control measures,lack of accountability, bribery and corruption and inadequate facilities,statutory allocation- mismanagement of funds,poor internal control measures, lack of accountability and corruption.

4.3Autoregressive Distributed Lag Result (ARDL)

Table 4.5summary of Regression Result

Dependent Variable: Log output

Variable	Coefficient	Prob.
LOGOPT(-1)	0.226925	0.1319
LOGOPT(-2)	0.177876	0.2992
LOGOPT(-3)	-0.057004	0.7285
LOGOPT(-4)	0.211120	0.1182
LOGGAP	0.008945	0.9303
LOGGAP(-1)	-0.116557	0.2143
LOGGAP(-2)	-0.091091	0.3020
LOGGAP(-3)	0.177923	0.0657
INTEREST_RATE	-0.000187	0.7379
INTEREST_RATE(-1)	0.000941	0.1616
INTEREST_RATE(-2)	-0.001605*	0.0149
INFLATION	-0.001164*	0.0006
INFLATION(-1)	-6.79E-06	0.9809
INFLATION(-2)	0.000391	0.1206
C	0.443550	0.0651

R^2 =0.991484 D.W – Statistics = 2.814115

Adjusted R^2 =0.980646 F-statistics = 91.47974

S.E of Regression = -0.006369 Prob (F-statistics) = 0.000000

Source: Author's computation E-views, version 10.0

Diagnostic Test	F-statistics	p-value
Heteroskedasticity Test	1.148389	0.3826
Jarque –bera test	0.381356	0.826399
Serial correlation LM test	5.565073	0.03114

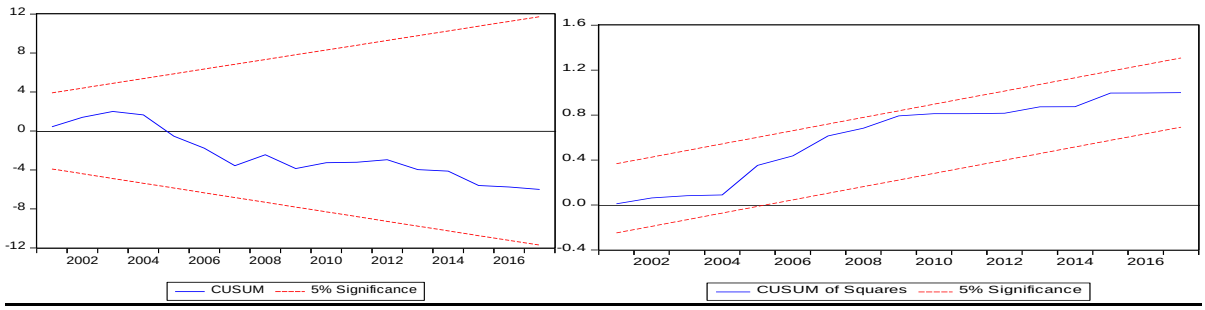
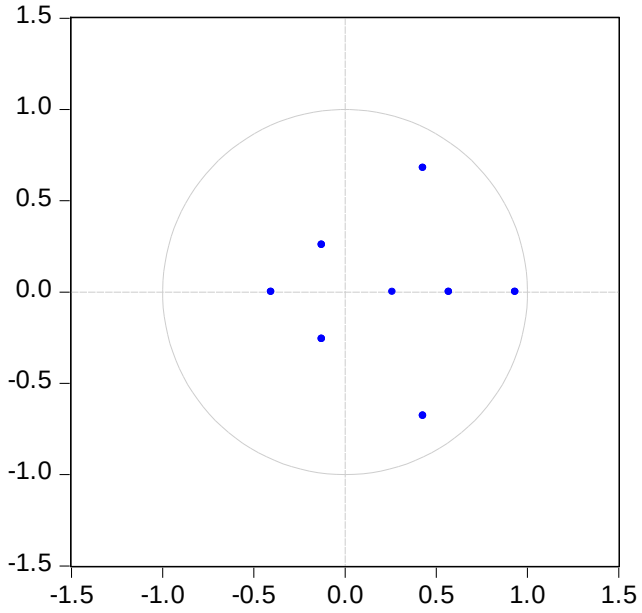


Figure 4.4aDiagnosis testFigure 4.4b Diagnosis test

The stability of the parameters was tested through the CUSUM (cumulative sum of recursive residuals) and the CUSUMSQ (cumulative sum of recursive residuals of square). The following Figures 4.7a and 4.7b show the CUSUM and the CUSUM square test of parameter stability for model. As indicated the CUSUM and the CUSUM of squares are stable within the study period.

Figure 4.5: Inverse Roots of AR Characteristic Polynomial



From the figure above, the stability test was employed in order to test the robustness of the model, the inverse roots of characteristics polynomial are all within the unit circles and therefore the model has satisfied the stability condition.

The jarque-Bera normality test is to test whether or not the model is normally distributed. Since the value (0.826399) which is greater than 5% significant level, then the mode is normally distributed. Heteroskedasticity test Breush Pagan Godfrey serial with a value of 0.3826 is greater than 5% significant level, and then there is absence of heteroskedasticity in the model. The stability of the model confirmed by the test of inverse roots of AR characteristic polynomial and cusum as well as cusum squared. All the variables have passed through the necessary test which they were good or in order for the model.

An efficient regression model associated with one report in table 4 is reported in table 5. This is obtained by dropping from the one reported in table 4 all explanatory variables that are extremely insignificant.

4.4 Efficient Regression

Table 4.6 Efficient Regression Result

Variable	Coefficient	Prob.
LOGOPT(-1)	0.284302*	0.0129
LOGOPT(-4)	0.267315*	0.0002
LOGGAP(-1)	-0.131754	0.0944
LOGGAP(-3)	0.202400*	0.0092
INTEREST_RATE(-1)	0.000901*	0.0432
INTEREST_RATE(-2)	-0.001517*	0.0021
INFLATION	-0.001219*	0.0000
INFLATION(-2)	0.000349*	0.0012
C	0.323162	0.0589

R^2 =0.988512 D.W – Statistics = 2.885924

Adjusted R^2 =0.983106 F-statistics = 182.8511

S.E of Regression = -0.005951Prob (F-statistics) = 0.000000

Source: Author's computation E-views, version 10.0

From table 4.6, 6regressors were found to be statistically significant at 5% confidence level. Since majority of the variables are statistically significant and also conform to the apriori expectation of positive relationship between each of the explanatory variables and the dependent variable with a R-squared of 0.98 together with other good desirable statistical properties of the error terms, then, valid inferences can be made from the estimated.

It must be noted that a $R^2$of 98% shows that the variation in the model or on output in Kwara State has been explained by independent variable while the remained 2% explained by the error term which shows the goodness fit of the model indicate at 5% confidence level. The Durbin Watson 2.885924 also f -statistic 182.8511 which show the overrun significant about the variable in model having the p- values of f -statistic 0.000000, this implies that all the variable are not jointly significant in determine the level of output in the study period.

The estimated results in Table 4.6 show that the coefficients of log gap, interest rate, and inflationhave the expected(negative) signs and statistically significant at 5 percent confidence level, while some were positive and also statistically significant at 5 per cent confidence level. The log gap (-1) coefficient is about -0.132. This implies that a per cent increase in log gap (-1) with one year lag will induce or bring about 0.132 change in output and however it is notstatistically significant at 5 per cent confidence level.The log gap (-3) coefficient is about 0.202. This implies that a per cent increase in log gap (-3) with three years lag, which will bring about 0.202 change in output however it is statistically significant at 5 per cent confidence level. Interest rate (-1) coefficient is about 0.000. This implies that a per cent increase in interest rate(-1) with one year lag, which will bring about 0.000 change in output however it is statistically significant at 5 per cent confidence level, interest rate(-2) coefficient is about -0.001. This implies that a per cent increase in interest rate (-3) with three years lag, which will bring about 0.001 change in output however it is statistically significant at 5 per cent confidence level. Inflation coefficient is about -0.001. This implies that a per cent increase in inflation will bring about 0.001 changes in output however it is statistically significant at 5 per cent confidence level. Inflation (-2) coefficient is about -0.000. This implies that a per cent increase in inflation (-2) with two years lag, will bring about 0.000 change in output however it is statistically significant at 5 per cent confidence level.

4.5 Result of Empirical Model

The Error Correction Model (ECM) analysis seeks to examine the short run effect of internally generated revenue on output in Kwara State. We followed the two steps Engel and Granger model which suggest that any set of cointegrated time series has an error correction representation which reflects the short run adjustment mechanism. The motive of the analysis is

to discover whether the short run dynamic are influenced by the estimated long run equilibrium condition that is the cointegration vector. A crucial parameter in the estimation of the short run dynamic model is the coefficient of the error correction term which measures the speeds of adjustment in the short run to restore long run equilibrium level running from internally generated revenues to output.The estimation of equation six using lag specification of one and incorporating the error correction term (-ecm) yields the result presented in table 4.9.

Table 4.7 Result of Estimated ECM

Variables	Coefficient	Std. Error	t-Statistic	Prob.
ECT	-0.206193	0.031378	-6.571349	0.0000
D(LOGGAP)	0.126990	0.070575	1.799355	0.0908
D(LOGGAP(-1)	-0.157501	0.076886	-2.048507	0.0573
D(LOGGAP(-2)	-0.171757	0.065764	-2.611700	0.0189
D(INT RATE)	-0.000737	0.000406	-1.814190	0.0884
D(INTRATE(-1)	0.000698	0.000494	1.411366	0.1773
D(INTRATE(-2)	-0.001862	0.000444	-4.194713	0.0007
D(INFLATION)	-0.000914	0.000136	-6.729057	0.0000

Source: Author's computation using E-view, version 10.0

R-Squared	0.855573
Adjustment r-squared	0.802362
S.E. 0f regression	0.006604
Durbin Watson Stat	2.356606

From the table 4.7above error correction term (ECT) shows the level of adjustment from short run disequilibrium to long run equilibrium which isabout 2% and it is statistically significant at 5%, confidence level. It is useful when long-run forecast is desired;it shows that there is short run causality running fromgap, interest rate and inflation to output. The stability test of the result shows that the parameter of the ecm-term in the model is correctly signed such that it dynamically stable to restore equilibrium. This confirms that output in Kwara State, has automatic adjustment mechanism and that output responds to deviation from equilibrium in a moderate speed.

The R-square 86% of the variation in the model has been explained by independent variable while the remained 14% explained by the error term which shows the goodness of fit of the model indicate at 5%. The Durbin Watson 2.356606 shows that there is no serial correlation among the variables in the model also S.E of regression 0.006604which show the overrun regression about the variable in model having the adjusted r-squared 0.802362, it implies that all the variable are not jointly significant in determine the level of output in the study period.

4.6 Discussion of Findings

Based on the analysis of the data and reviewed of related literature the data gathered are discussed. This research found that the revenue expenditure gap the series indicating key period evident shows that it has been an upward trend in the revenue expenditure gap in Kwara State. The implication is that the government expenditure has been more than its revenue and later translated into deficit budget, (gap) over time it was also discovered that when government is experienced deficit they resulted to borrowing to balanced up the budget while correlation between the revenue and expenditure is reveal that there is present of direct relationship between the two series with magnitude of The R-square 94% of the variation in the model or on output in Kwara State has been explained by independent variable while the remained 6% explained by the error term which shows the goodness of fit of the model indicate at 5%. The Durbin Watson 2.039799 shows that there is no serial correlation among the variables in the model also f -statistic 58.10105 which show the overrun significant about the variable in model having the p-values of f -statistic 0.000000, this implies that all the variable are not jointly significant in determine the level of output in the study period in the first model. While in the second model it must be noted that$R^2$of 98% shows that the variation in the model or on output in Kwara State has been explained by independent variable while the remained 2% explained by the error term which shows the goodness fit of the model indicate at 5% confidence level. The Durbin Watson 2.885924 also f -statistic 182.8511 which show the overrun significant about the variable in model having the p- values of f -statistic 0.000000, this implies that all the variable are not jointly significant in determine the level of output in the study period.

The result support that work of Adeoti et al (2014) in Oyo State that rent on government property is least negative on output, Hakan, Ali and Hasan (2008) in Turkish, confirmed that there is

negative relationship between inflation rate and output, Oseni (2013) confirmed that statutory allocation as a direction have lower proportion on output that depending on the statutory allocation by states does not necessary translate to good dividend. On the contrary, Nnanseh and Akpan (2013) Oseni and Olushola (213) Ogundayo, Onakoya and Afintini (2017) confirmed that internally generated revenue have positive effect on output, Olubukunola (2011) shows the other ways round confirmed that rent on government property , fines and fees and licenses are significant factors influence internally generated revenue, Mathew (2014) shows that tax revenue significantly affect revenue generation in Nigeria, and contrary to Dagwom (2017) which shows that state internally generated revenue has little and insignificant contribution to output in Nigeria, Faraji and Kenani (2013) in Tanzania confirmed that inflation rate has a negative impact on output, Antonialopez and Valerienignon (2011) confirmed that inflation non linearly impact on output, more specifically, there exist threshold beyond which inflation exert a negative effect on output, Jelilov (2016) on the other way round founds that interest rate has a slight impact on output. The (impulse response) analytical techniques reveal that the growth in taxes revenue and fees and fines is negative that is decreasing in revenue as compared to the growth in statutory allocation, licenses and rent on government property which maintain a steady and gradual variation in term of increasing in revenue..

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summaryof major findings

The study was carried out to examine the impact of internally generated revenue on output in Kwara State using annually time series data for the period (1988-2017). In order to determine the long –run relationship, the study used Augmented Dickey Fuller(ADF)Johansons test approach for co-integration in order to assess the order of integration of the series. It was found that all the series were not stationary at level which necessities for first difference, using the Augmented Dickey Fuller test. Preliminary analysis, the results indicated that there is no evidence of long run relationship among variables for the first model therefore VAR model was used, which is for the impact of internally generated revenue (IGR) on output in Kwara State. Also in the second model there was a long run relationship, and then ARDL was employed. The study was carried out to measure the impact of internally generated revenue on output of Kwara State as well as impact of gap on output. The study offers ARDL techniques of analysis which examine the impact of revenue expenditure gap and the impact of internally generated revenue on output in Kwara State, Nigeria. Thus, there is evidence of adverse effects of IGR on output in Kwara State

The (impulse response) analytical techniques reveal that the growth in taxes revenue and fees and fines is negative that is decreasing in revenue as compared to the growth in statutory allocation, licenses and rent on government property which maintain a steady and gradual variation in term of increasing in revenue. The other procedures offer an econometric model to contribute to better understanding of the gap on output as well as other variable on output in Kwara State a deficiency driven and rent seeking State like Kwara State of Nigeria.

5.2 Conclusion

This research work is carried out to examine the impact of internally generated revenue on output in Kwara state. It was found that the result reveal a negative and statistically significant at 5% confidence level among the entire variable in the model. The study concludes that effort should be made toward improvement on internally generated revenue in Kwara State so as to help State Government to enhance productivity and build better infrastructure for more business to strive.

A key conclusion from this study is that Kwara State appears to have experienced a rise in the expected long–run adverse effect of internally generated revenue on total output. However, this is not withstanding because a good percentage of the funds are gotten from the federation account with the fact that such allocation may drastically decline in the near future. This implies that if care is not taken, all the burden will be on the State internally generated revenue of the state government.

5.3 Policy recommendations

Base on the findings of the study, the following recommendations were made:

i. The state government should imbibe the culture of fiscal discipline as well as huge capital expenditure so as to ensure growth in output level in the state.
ii. The government should ensure that more funds are being expended on developmental project rather than stomach infrastructure couple with adequate and properly monitoring in order to achieve inclusive growth of output.
iii. The rate of interest should be market determined in order to encourage investment inflow into the state.

iv. Price control mechanism should be put in place with the aim of checkmating the undesirable effect of inflation rate on the economic output of the state.

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APPENDIX

Appendix A: Unit root result

Null Hypothesis: RENT has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic
Augmented Dickey-Fuller test statistic		-2.902468
Test critical values:	1% level	-3.679322
	5% level	-2.967767
	10% level	-2.622989

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(RENT)
Method: Least Squares
Date: 06/08/18 Time: 04:00
Sample (adjusted): 1989 2017
Included observations: 29 after adjustments

Variable	Coefficient	Std. Error	t-Statistic
RENT(-1)	-0.469516	0.161764	-2.902468
C	7.999342	2.758008	2.900406

R-squared	0.237812	Mean dependent var	0
Adjusted R-squared	0.209583	S.D. dependent var	1
S.E. of regression	1.073865	Akaike info criterion	3
Sum squared resid	31.13600	Schwarz criterion	3
Log likelihood	-42.17972	Hannan-Quinn criter.	3
F-statistic	8.424320	Durbin-Watson stat	1
Prob(F-statistic)	0.007287		

Null Hypothesis: FEES has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic
Augmented Dickey-Fuller test statistic		-3.510597
Test critical values:	1% level	-3.679322
	5% level	-2.967767
	10% level	-2.622989

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(FEES)
Method: Least Squares
Date: 06/07/18 Time: 12:37
Sample (adjusted): 1989 2017
Included observations: 29 after adjustments

Variable	Coefficient	Std. Error	t-Statistic
FEES(-1)	-0.625853	0.178275	-3.510597
C	11.70103	3.343333	3.499811

R-squared	0.313401	Mean dependent var	0
Adjusted R-squared	0.287972	S.D. dependent var	1
S.E. of regression	1.382623	Akaike info criterion	3
Sum squared resid	51.61447	Schwarz criterion	3
Log likelihood	-49.50856	Hannan-Quinn criter.	3
F-statistic	12.32429	Durbin-Watson stat	2
Prob(F-statistic)	0.001590		

Null Hypothesis: STATUTORY_ALLOCATION has a u
Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.967974	0.0050
Test critical values:	1% level	-3.679322	
	5% level	-2.967767	
	10% level	-2.622989	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(STATUTORY_ALLOCATION)
Method: Least Squares
Date: 06/07/18 Time: 12:15
Sample (adjusted): 1989 2017
Included observations: 29 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
STATUTORY_ALLOCATION(-1)	-0.755698	0.190449	-3.967974	0.0005
C	18.07862	4.546516	3.976367	0.0005

R-squared	0.368344	Mean dependent var	0.053486
Adjusted R-squared	0.344950	S.D. dependent var	1.246601
S.E. of regression	1.008939	Akaike info criterion	2.922148
Sum squared resid	27.48486	Schwarz criterion	3.016444
Log likelihood	-40.37114	Hannan-Quinn criter.	2.951680
F-statistic	15.74481	Durbin-Watson stat	2.033792
Prob(F-statistic)	0.000482		

Null Hypothesis: D(TAXES_) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=7)

	t-Statistic

Augmented Dickey-Fuller test statistic		-6.413666	0.0000
Test critical values:	1% level	-3.689194	
	5% level	-2.971853	
	10% level	-2.625121	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(TAXES_,2)
Method: Least Squares
Date: 06/07/18 Time: 12:14
Sample (adjusted): 1990 2017
Included observations: 28 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(TAXES_(-1))	-1.223551	0.190773	-6.413666	0.0000
C	0.140869	0.141276	0.997119	0.3279

R-squared	0.612721	Mean dependent var	0.014879
Adjusted R-squared	0.597826	S.D. dependent var	1.167350
S.E. of regression	0.740300	Akaike info criterion	2.305228
Sum squared resid	14.24917	Schwarz criterion	2.400385
Log likelihood	-30.27319	Hannan-Quinn criter.	2.334319
F-statistic	41.13511	Durbin-Watson stat	1.509499
Prob(F-statistic)	0.000001		

Null Hypothesis: TAXES_ has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic
Augmented Dickey-Fuller test statistic		-1.972735
Test critical values:	1% level	-3.679322
	5% level	-2.967767
	10% level	-2.622989

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(TAXES_)
Method: Least Squares
Date: 06/07/18 Time: 12:13
Sample (adjusted): 1989 2017
Included observations: 29 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TAXES_(-1)	-0.239575	0.121443	-1.972735	0.0588
C	5.174687	2.571603	2.012242	0.0543

R-squared	0.125978	Mean dependent var	0.108057
Adjusted R-squared	0.093607	S.D. dependent var	0.733864
S.E. of regression	0.698673	Akaike info criterion	2.187205
Sum squared resid	13.17989	Schwarz criterion	2.281501
Log likelihood	-29.71447	Hannan-Quinn criter.	2.216737
F-statistic	3.891683	Durbin-Watson stat	2.190672
Prob(F-statistic)	0.058846		

Null Hypothesis: D(OUTPUT) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic
Augmented Dickey-Fuller test statistic		-4.833774
Test critical values:	1% level	-3.689194
	5% level	-2.971853
	10% level	-2.625121

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(OUTPUT,2)
Method: Least Squares
Date: 06/07/18 Time: 12:13
Sample (adjusted): 1990 2017
Included observations: 28 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(OUTPUT(-1))	-0.945502	0.195603	-4.833774	0.0001
C	0.070745	0.044804	1.578995	0.1264

R-squared	0.473315	Mean dependent var	-0.001469
Adjusted R-squared	0.453058	S.D. dependent var	0.302225
S.E. of regression	0.223512	Akaike info criterion	-0.089952
Sum squared resid	1.298900	Schwarz criterion	0.005205
Log likelihood	3.259333	Hannan-Quinn criter.	-0.060862
F-statistic	23.36537	Durbin-Watson stat	2.003617
Prob(F-statistic)	0.000052		

Null Hypothesis: OUTPUT has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=7)

		t-Statistic
Augmented Dickey-Fuller test statistic		-1.686045
Test critical values:	1% level	-3.689194
	5% level	-2.971853
	10% level	-2.625121

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(OUTPUT)
Method: Least Squares
Date: 06/07/18 Time: 12:12
Sample (adjusted): 1990 2017
Included observations: 28 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OUTPUT(-1)	-0.082798	0.049108	-1.686045	0.1042
D(OUTPUT(-1))	0.028138	0.189665	0.148357	0.8833
C	0.666885	0.356214	1.872148	0.0729

R-squared	0.104773	Mean dependent var	0.074907
Adjusted R-squared	0.033155	S.D. dependent var	0.219661
S.E. of regression	0.215989	Akaike info criterion	-0.126221
Sum squared resid	1.166282	Schwarz criterion	0.016516
Log likelihood	4.767087	Hannan-Quinn criter.	-0.082585
F-statistic	1.462938	Durbin-Watson stat	2.001183
Prob(F-statistic)	0.250706		

Null Hypothesis: D(LICENCES_) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic
Augmented Dickey-Fuller test statistic		-4.392688
Test critical values:	1% level	-3.689194
	5% level	-2.971853
	10% level	-2.625121

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

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

Method: Least Squares
Date: 06/07/18 Time: 12:11
Sample (adjusted): 1990 2017
Included observations: 28 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LICENCES_(-1))	-0.859187	0.195595	-4.392688	0.0002
C	0.031100	0.093070	0.334157	0.7409

R-squared	0.425994	Mean dependent var	0.015046
Adjusted R-squared	0.403917	S.D. dependent var	0.637384
S.E. of regression	0.492101	Akaike info criterion	1.488484
Sum squared resid	6.296250	Schwarz criterion	1.583641
Log likelihood	-18.83877	Hannan-Quinn criter.	1.517574
F-statistic	19.29571	Durbin-Watson stat	1.917209
Prob(F-statistic)	0.000167		

Null Hypothesis: LICENCES_ has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic
Augmented Dickey-Fuller test statistic		-1.487092
Test critical values:	1% level	-3.679322
	5% level	-2.967767
	10% level	-2.622989

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LICENCES_)
Method: Least Squares
Date: 06/07/18 Time: 12:10
Sample (adjusted): 1989 2017

Included observations: 29 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LICENCES_(-1)	-0.174210	0.117148	-1.487092	0.1486
C	3.153923	2.102520	1.500068	0.1452

R-squared	0.075705	Mean dependent var	0.029970
Adjusted R-squared	0.041472	S.D. dependent var	0.479332
S.E. of regression	0.469287	Akaike info criterion	1.391268
Sum squared resid	5.946223	Schwarz criterion	1.485565
Log likelihood	-18.17339	Hannan-Quinn criter.	1.420801
F-statistic	2.211443	Durbin-Watson stat	1.559908
Prob(F-statistic)	0.148576		

Null Hypothesis: D(INTEREST_RATE) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic
Augmented Dickey-Fuller test statistic		-7.156186
Test critical values:	1% level	-3.689194
	5% level	-2.971853
	10% level	-2.625121

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(INTEREST_RATE,2)
Method: Least Squares
Date: 06/07/18 Time: 12:09
Sample (adjusted): 1990 2017
Included observations: 28 after adjustments

Variable	Coefficient	Std. Error	t-Statistic

D(INTEREST_RATE(-1))	-1.283806	0.179398	-7.156186	0.0000
C	-0.148044	0.684821	-0.216180	0.8305

R-squared	0.663260	Mean dependent var	-0.205357
Adjusted R-squared	0.650309	S.D. dependent var	6.127511
S.E. of regression	3.623484	Akaike info criterion	5.481498
Sum squared resid	341.3706	Schwarz criterion	5.576656
Log likelihood	-74.74098	Hannan-Quinn criter.	5.510589
F-statistic	51.21100	Durbin-Watson stat	2.290219
Prob(F-statistic)	0.000000		

Null Hypothesis: INTEREST_RATE has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic
Augmented Dickey-Fuller test statistic		-2.859913
Test critical values:	1% level	-3.679322
	5% level	-2.967767
	10% level	-2.622989

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(INTEREST_RATE)
Method: Least Squares
Date: 06/07/18 Time: 12:09
Sample (adjusted): 1989 2017
Included observations: 29 after adjustments

Variable	Coefficient	Std. Error	t-Statistic
INTEREST_RATE(-1)	-0.463803	0.162174	-2.859913
C	6.431432	2.321534	2.770337

		Mean dependent	0.043103
R-squared	0.232499	var	
Adjusted R-squared	0.204073	S.D. dependent var	3.817075
S.E. of regression	3.405394	Akaike info criterion	5.355070
Sum squared resid	313.1111	Schwarz criterion	5.449367
Log likelihood	-75.64852	Hannan-Quinn criter.	5.384603
F-statistic	8.179104	Durbin-Watson stat	1.969394
Prob(F-statistic)	0.008076		

Null Hypothesis: D(INFLATION) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic
Augmented Dickey-Fuller test statistic		-4.347702
Test critical values:	1% level	-3.689194
	5% level	-2.971853
	10% level	-2.625121

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(INFLATION,2)
Method: Least Squares
Date: 06/07/18 Time: 12:08
Sample (adjusted): 1990 2017
Included observations: 28 after adjustments

Variable	Coefficient	Std. Error	t-Statistic
D(INFLATION(-1))	-0.823263	0.189356	-4.347702
C	-0.769363	2.847831	-0.270157

		Mean dependent	0
R-squared	0.420968	var	
Adjusted R-	0.398697	S.D. dependent var	1

squared			7
S.E. of regression	14.99182	Akaike info criterion	8.32163 5
Sum squared resid	5843.618	Schwarz criterion	8.41679 3
Log likelihood	-114.5029	Hannan-Quinn criter.	8.35072 6
F-statistic	18.90251	Durbin-Watson stat	1.85304 3
Prob(F-statistic)	0.000188		

Null Hypothesis: INFLATION has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic
Augmented Dickey-Fuller test statistic		-2.782019
Test critical values:	1% level	-3.679322
	5% level	-2.967767
	10% level	-2.622989

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(INFLATION)
Method: Least Squares
Date: 06/07/18 Time: 12:07
Sample (adjusted): 1989 2017
Included observations: 29 after adjustments

Variable	Coefficient	Std. Error	t-Statistic
INFLATION(-1)	-0.353697	0.127137	-2.782019
C	5.971770	3.684588	1.620743

R-squared	0.222790	Mean dependent var	1
Adjusted R-squared	0.194004	S.D. dependent var	1 8
S.E. of regression	13.43473	Akaike info criterion	

			8.19433
Sum squared resid	4873.286	Schwarz criterion	2
		Hannan-Quinn	8.12956
Log likelihood	-115.4505	criter.	8
			1.48274
F-statistic	7.739632	Durbin-Watson stat	0
Prob(F-statistic)	0.009734		

Null Hypothesis: GAP_ has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic	
Augmented Dickey-Fuller test statistic		-3.967974	
Test critical values:	1% level	-3.679322	
	5% level	-2.967767	
	10% level	-2.622989	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GAP_)
Method: Least Squares
Date: 06/07/18 Time: 12:03
Sample (adjusted): 1989 2017
Included observations: 29 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	
GAP_(-1)	-0.755698	0.190449	-3.967974	
C	18.07862	4.546516	3.976367	
			Mean dependent	0
R-squared	0.368344		var	
Adjusted R-squared	0.344950	S.D. dependent var		1
				2
S.E. of regression	1.008939	Akaike info criterion		
				3
Sum squared resid	27.48486	Schwarz criterion		
		Hannan-Quinn		2
Log likelihood	-40.37114	criter.		

F-statistic	15.74481	Durbin-Watson stat	2.033792
Prob(F-statistic)	0.000482		

Appendix B: ARDL bounds co-integration test

* p-value incompatible with t-Bounds distribution.

F-Bounds Test			Null Hypothesis: No levels relationship	
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	9.091080	10%	2.01	3.1
k	3	5%	2.45	3.63
		2.5%	2.87	4.16
		1%	3.42	4.84

t-Bounds Test			Null Hypothesis: No levels relationship	
Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-6.571349	10%	-1.62	-3
		5%	-1.95	-3.33
		2.5%	-2.24	-3.64
		1%	-2.58	-3.97

Appendix C: VAR result

Dependent Variable: OUTPUT
Method: Least Squares (Gauss-Newton / Marquardt steps)
Date: 06/17/18 Time: 07:27
Sample (adjusted): 1990 2017
Included observations: 28 after adjustments
OUTPUT = C(1)*OUTPUT(-1) + C(2)*OUTPUT(-2) + C(3) + C(4)*FEES +
C(5)*STATUTORY_ALLOCATION + C(6)*TAXES_ + C(7)*LICENCES_ +
C(8)*RENT

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	0.913493	0.241948	3.775571	0.0012
C(2)	0.000345	0.217685	0.001583	0.9988
C(3)	1.314683	1.635238	0.803970	0.4309
C(4)	0.013908	0.044887	0.309845	0.7599
C(5)	0.014178	0.052466	0.270239	0.7897
C(6)	-0.015839	0.112473	-0.140821	0.8894
C(7)	-0.060764	0.122786	-0.494878	0.6261
C(8)	0.012269	0.052623	0.233146	0.8180

R-squared	0.936805	Mean dependent var	7.250564
Adjusted R-squared	0.914687	S.D. dependent var	0.805797
S.E. of regression	0.235360	Akaike info criterion	0.179554
Sum squared resid	1.107886	Schwarz criterion	0.560184
Log likelihood	5.486239	Hannan-Quinn criter.	0.295917
F-statistic	42.35464	Durbin-Watson stat	2.014474
Prob(F-statistic)	0.000000		

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.550566	Prob. F(7,20)	0.7862
Obs*R-squared	4.523815	Prob. Chi-Square(7)	0.7178
Scaled explained SS	15.28534	Prob. Chi-Square(7)	0.0325

Test Equation:

Dependent Variable: RESID^2
Method: Least Squares
Date: 06/17/18 Time: 07:30
Sample: 1990 2017
Included observations: 28

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.511604	1.083958	0.471978	0.6421
OUTPUT(-1)	-0.121820	0.160381	-0.759562	0.4564
OUTPUT(-2)	0.062393	0.144298	0.432389	0.6701
FEES	0.021060	0.029755	0.707785	0.4872
STATUTORY_ALLOCATION	0.002540	0.034779	0.073030	0.9425
TAXES_	0.004680	0.074556	0.062777	0.9506
LICENCES_	-0.040905	0.081391	-0.502570	0.6208
RENT	0.008223	0.034883	0.235744	0.8160

R-squared	0.161565	Mean dependent var	0.039567
Adjusted R-squared	-0.131887	S.D. dependent var	0.146643
S.E. of regression	0.156014	Akaike info criterion	-0.642784
Sum squared resid	0.486808	Schwarz criterion	-0.262155
Log likelihood	16.99898	Hannan-Quinn criter.	-0.526422
F-statistic	0.550566	Durbin-Watson stat	2.010587
Prob(F-statistic)	0.786239		

Breusch-Godfrey Serial Correlation LM Test:

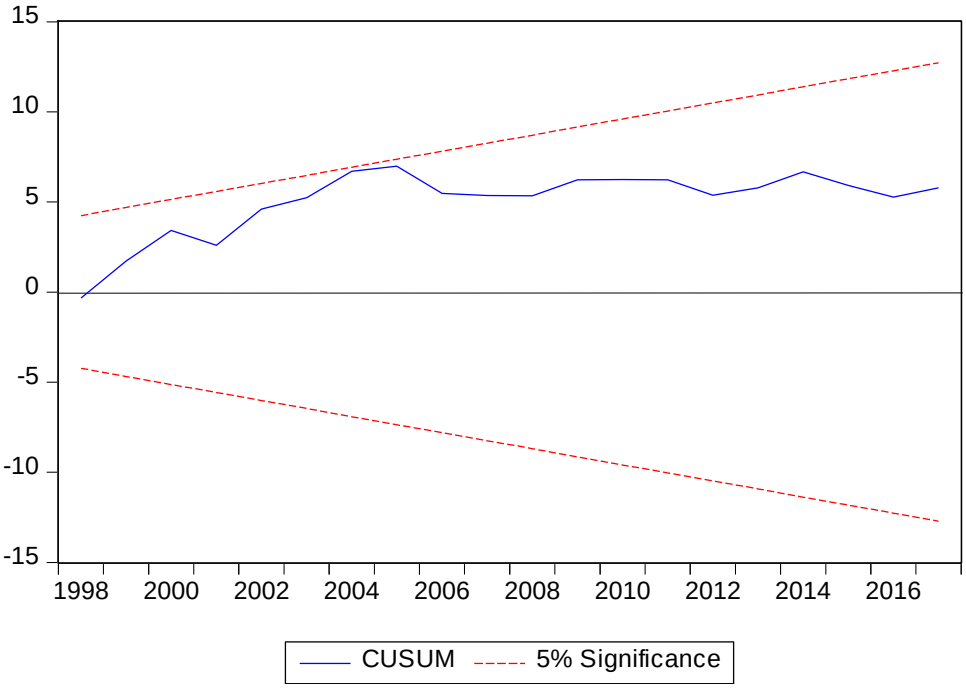
F-statistic	0.285277	Prob. F(2,18)	0.7551
Obs*R-squared	0.860260	Prob. Chi-Square(2)	0.6504

Test Equation:
Dependent Variable: RESID
Method: Least Squares

Date: 06/17/18 Time: 07:31
Sample: 1990 2017
Included observations: 28
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	0.202241	1.480799	0.136576	0.8929
C(2)	-0.177925	1.355036	-0.131306	0.8970
C(3)	-0.191745	2.976391	-0.064422	0.9493
C(4)	-0.009510	0.048349	-0.196702	0.8463
C(5)	0.026592	0.065588	0.405445	0.6899
C(6)	0.022730	0.125040	0.181781	0.8578
C(7)	-0.048070	0.175313	-0.274194	0.7871
C(8)	-0.004470	0.055005	-0.081265	0.9361
RESID(-1)	-0.242331	1.459544	-0.166032	0.8700
RESID(-2)	-0.237908	0.365721	-0.650518	0.5236

R-squared	0.030724	Mean dependent var	-1.24E-16
Adjusted R-squared	-0.453915	S.D. dependent var	0.202566
S.E. of regression	0.244250	Akaike info criterion	0.291206
Sum squared resid	1.073847	Schwarz criterion	0.766993
Log likelihood	5.923115	Hannan-Quinn criter.	0.436659
F-statistic	0.063395	Durbin-Watson stat	2.128608
Prob(F-statistic)	0.999897		

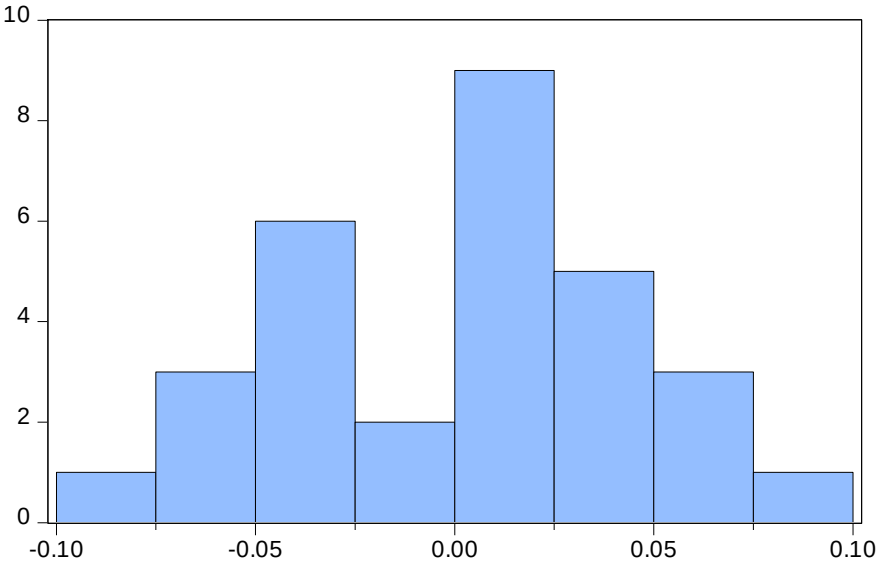


Dependent Variable: LOGOPT
Method: Least Squares
Date: 06/17/18 Time: 08:52
Sample: 1988 2017
Included observations: 30

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOGLICENSE	-2.405866	0.706757	-3.404093	0.0023
LOGFEES	0.099601	0.317916	0.313293	0.7568
LOGRENT	-0.794138	0.351691	-2.258060	0.0333
LOGSA	-0.598832	0.531563	-1.126548	0.2711
LOGTAXES	2.631246	0.624416	4.213932	0.0003
C	2.053643	0.714801	2.873027	0.0084

R-squared	0.468745	Mean dependent var	0.850420
Adjusted R-squared	0.358067	S.D. dependent var	0.056814
S.E. of regression	0.045520	Akaike info criterion	-3.164477
Sum squared resid	0.049730	Schwarz criterion	-2.88423

			8
		Hannan-Quinn	-3.07482
Log likelihood	53.46716	criter.	6
			0.70708
F-statistic	4.235206	Durbin-Watson stat	4
Prob(F-statistic)	0.006681		



Series: Residuals
Sample 1988 2017
Observations 30

Mean	-6.22e-17
Median	0.005217
Maximum	0.077723
Minimum	-0.093921
Std. Dev.	0.041410
Skewness	-0.373041
Kurtosis	2.516047
Jarque-Bera	0.988561
Probability	0.610010

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	22.13108	Prob. F(1,23)	0.0001
Obs*R-squared	14.71120	Prob. Chi-Square(1)	0.0001

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 06/17/18 Time: 08:54
Sample: 1988 2017
Included observations: 30
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOGLICENSE	0.279984	0.518817	0.539658	0.5946
LOGFEES	-0.082433	0.232497	-0.354556	0.7262
LOGRENT	0.506435	0.278143	1.820773	0.0817

LOGSA	0.098965	0.388205	0.254930	0.8010
LOGTAXES	-0.732099	0.481205	-1.521387	0.1418
C	-0.034072	0.521309	-0.065358	0.9485
RESID(-1)	0.775449	0.164836	4.704369	0.0001

R-squared	0.490373	Mean dependent var	-6.22E-17
Adjusted R-squared	0.357427	S.D. dependent var	0.041410
S.E. of regression	0.033195	Akaike info criterion	-3.771888
Sum squared resid	0.025343	Schwarz criterion	-3.444941
Log likelihood	63.57831	Hannan-Quinn criter.	-3.667295
F-statistic	3.688514	Durbin-Watson stat	1.961500
Prob(F-statistic)	0.010285		

Heteroskedasticity Test: Breusch-Pagan-Godfrey

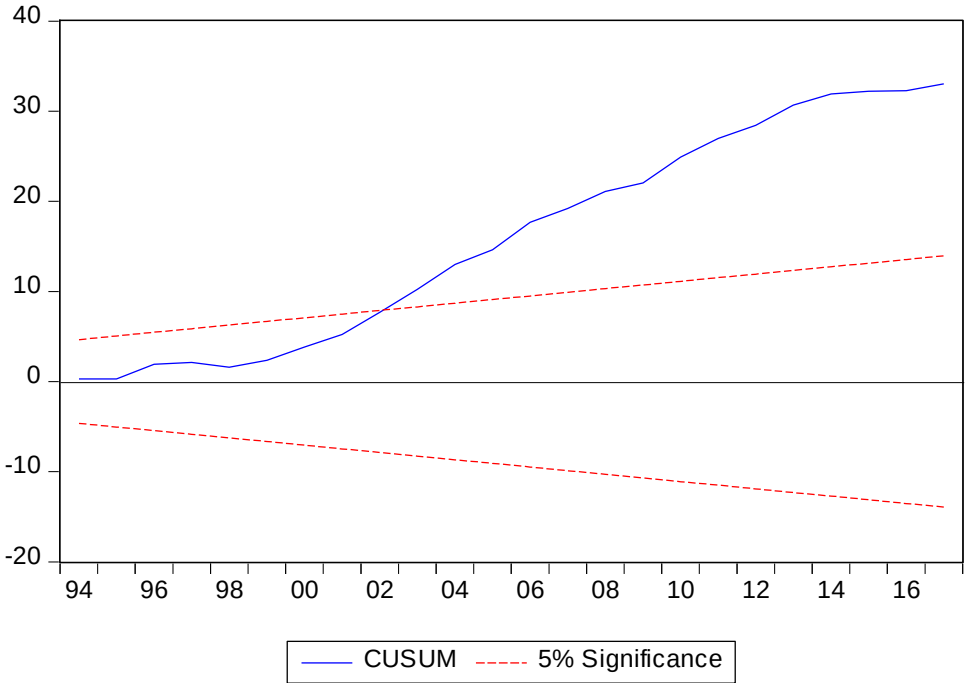
F-statistic	0.755935	Prob. F(5,24)	0.5901
Obs*R-squared	4.081771	Prob. Chi-Square(5)	0.5377
Scaled explained SS	1.980211	Prob. Chi-Square(5)	0.8519

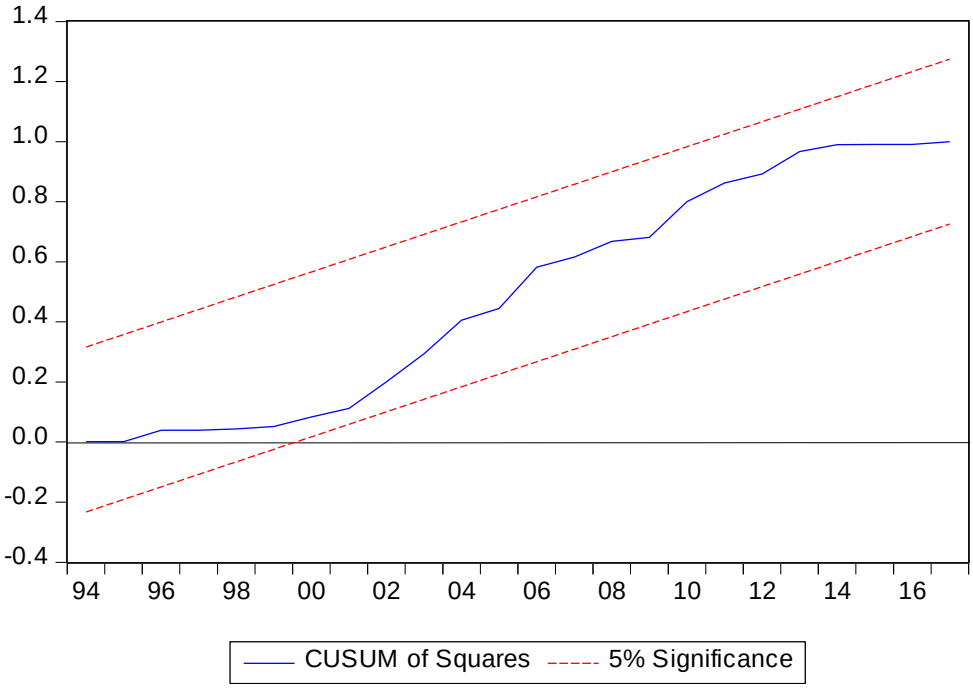
Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 06/17/18 Time: 08:55
Sample: 1988 2017
Included observations: 30

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.013030	0.033307	-0.391216	0.6991
LOGLICENSE	0.036115	0.032932	1.096673	0.2837
LOGFEES	-0.026481	0.014813	-1.787643	0.0865

LOGRENT	0.014570	0.016387	0.889122	0.3828
LOGSA	0.000485	0.024769	0.019582	0.9845
LOGTAXES	-0.011696	0.029095	-0.401997	0.6912

		Mean dependent var	0.001658
R-squared	0.136059		
Adjusted R-squared	-0.043929	S.D. dependent var	0.002076
S.E. of regression	0.002121	Akaike info criterion	-9.296976
Sum squared resid	0.000108	Schwarz criterion	-9.016736
Log likelihood	145.4546	Hannan-Quinn criter.	-9.207325
F-statistic	0.755935	Durbin-Watson stat	2.454262
Prob(F-statistic)	0.590138		





Appendix D: ARDL result

Dependent Variable: LOGOPT
Method: ARDL
Date: 06/17/18 Time: 08:23
Sample (adjusted): 1992 2017
Included observations: 26 after adjustments
Maximum dependent lags: 4 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (4 lags, automatic): LOGGAP INTEREST_RATE
INFLATION
Fixed regressors: C
Number of models evalulated: 500
Selected Model: ARDL(4, 3, 2, 2)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LOGOPT(-1)	0.226925	0.139443	1.627363	0.1319
LOGOPT(-2)	0.177876	0.163270	1.089458	0.2992
LOGOPT(-3)	-0.057004	0.160082	-0.356094	0.7285

LOGOPT(-4)	0.211120	0.124586	1.694569	0.1182
LOGGAP	0.008945	0.099975	0.089475	0.9303
LOGGAP(-1)	-0.116557	0.088439	-1.317934	0.2143
LOGGAP(-2)	-0.091091	0.084112	-1.082970	0.3020
LOGGAP(-3)	0.177923	0.087084	2.043127	0.0657
INTEREST_RATE	-0.000187	0.000543	-0.343193	0.7379
INTEREST_RATE (-1)	0.000941	0.000627	1.500662	0.1616
INTEREST_RATE (-2)	-0.001605	0.000557	-2.884298	0.0149
INFLATION	-0.001164	0.000246	-4.734224	0.0006
INFLATION(-1)	-6.79E-06	0.000277	-0.024473	0.9809
INFLATION(-2)	0.000391	0.000232	1.682332	0.1206
C	0.443550	0.216497	2.048761	0.0651

R-squared	0.991484	Mean dependent var	0.864927
Adjusted R-squared	0.980646	S.D. dependent var	0.045783
S.E. of regression	0.006369	Akaike info criterion	-6.980998
Sum squared resid	0.000446	Schwarz criterion	-6.255173
Log likelihood	105.7530	Hannan-Quinn criter.	-6.771987
F-statistic	91.47974	Durbin-Watson stat	2.814115
Prob(F-statistic)	0.000000		

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

Dependent Variable: LOGOPT
Method: Least Squares
Date: 06/17/18 Time: 08:31
Sample (adjusted): 1992 2017
Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOGOPT(-1)	0.228108	0.125235	1.821446	0.0935

LOGOPT(-2)	0.176804	0.150593	1.174054	0.2631
LOGOPT(-3)	-0.058272	0.145032	-0.401785	0.6949
LOGOPT(-4)	0.211900	0.115315	1.837572	0.0910
LOGGAP	0.008937	0.095721	0.093363	0.9272
LOGGAP(-1)	-0.116824	0.084030	-1.390260	0.1897
LOGGAP(-2)	-0.090432	0.076293	-1.185325	0.2588
LOGGAP(-3)	0.177390	0.080729	2.197358	0.0484
INTEREST_RATE	-0.000190	0.000504	-0.376206	0.7133
INTEREST_RATE (-1)	0.000948	0.000529	1.792411	0.0983
INTEREST_RATE (-2)	-0.001612	0.000466	-3.456019	0.0048
INFLATION	-0.001168	0.000173	-6.739014	0.0000
INFLATION(-2)	0.000386	0.000131	2.952498	0.0121
C	0.444143	0.205984	2.156197	0.0521

		Mean dependent var	0.864927
R-squared	0.991484		
Adjusted R-squared	0.982258	S.D. dependent var	0.045783
S.E. of regression	0.006098	Akaike info criterion	-7.057867
Sum squared resid	0.000446	Schwarz criterion	-6.380430
Log likelihood	105.7523	Hannan-Quinn criter.	-6.862790
F-statistic	107.4668	Durbin-Watson stat	2.818908
Prob(F-statistic)	0.000000		

Dependent Variable: LOGOPT
Method: Least Squares
Date: 06/17/18 Time: 08:33
Sample (adjusted): 1992 2017
Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOGOPT(-1)	0.239113	0.117681	2.031879	0.0631
LOGOPT(-2)	0.180935	0.145148	1.246551	0.2346
LOGOPT(-3)	-0.070809	0.136411	-0.519083	0.6124

LOGOPT(-4)	0.224777	0.106421	2.112145	0.0546
LOGGAP	0.000594	0.089990	0.006600	0.9948
LOGGAP(-1)	-0.113922	0.080866	-1.408782	0.1824
LOGGAP(-2)	-0.087474	0.073338	-1.192746	0.2543
LOGGAP(-3)	0.185776	0.074985	2.477522	0.0277
INTEREST_RATE (-1)	0.000862	0.000461	1.871287	0.0840
INTEREST_RATE (-2)	-0.001583	0.000444	-3.560948	0.0035
INFLATION	-0.001156	0.000165	-7.021904	0.0000
INFLATION(-2)	0.000409	0.000112	3.666607	0.0028
C	0.420359	0.189459	2.218732	0.0449

		Mean dependent var	0.864927
R-squared	0.991383		
Adjusted R-squared	0.983429	S.D. dependent var	0.045783
S.E. of regression	0.005894	Akaike info criterion	-7.123065
Sum squared resid	0.000452	Schwarz criterion	-6.494017
Log likelihood	105.5998	Hannan-Quinn criter.	-6.941922
F-statistic	124.6414	Durbin-Watson stat	2.854728
Prob(F-statistic)	0.000000		

Dependent Variable: LOGOPT
Method: Least Squares
Date: 06/17/18 Time: 08:36
Sample (adjusted): 1992 2017
Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOGOPT(-1)	0.239028	0.112717	2.120595	0.0523
LOGOPT(-2)	0.181311	0.128615	1.409721	0.1804
LOGOPT(-3)	-0.071223	0.116696	-0.610329	0.5514
LOGOPT(-4)	0.224995	0.097479	2.308146	0.0368
LOGGAP(-1)	-0.113728	0.072605	-1.566391	0.1396
LOGGAP(-2)	-0.087330	0.067463	-1.294478	0.2164

LOGGAP(-3)	0.185618	0.068496	2.709927	0.0169
INTEREST_RATE (-1)	0.000861	0.000400	2.153414	0.0492
INTEREST_RATE (-2)	-0.001582	0.000403	-3.921575	0.0015
INFLATION	-0.001156	0.000155	-7.481044	0.0000
INFLATION(-2)	0.000410	0.000102	4.005465	0.0013
C	0.420843	0.168325	2.500180	0.0255

R-squared	0.991383	Mean dependent var	0.864927
Adjusted R-squared	0.984613	S.D. dependent var	0.045783
S.E. of regression	0.005679	Akaike info criterion	-7.199985
Sum squared resid	0.000452	Schwarz criterion	-6.619325
Log likelihood	105.5998	Hannan-Quinn criter.	-7.032776
F-statistic	146.4314	Durbin-Watson stat	2.857395
Prob(F-statistic)	0.000000		

Dependent Variable: LOGOPT
Method: Least Squares
Date: 06/17/18 Time: 08:38
Sample (adjusted): 1992 2017
Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOGOPT(-1)	0.242570	0.110188	2.201411	0.0438
LOGOPT(-2)	0.152915	0.117370	1.302847	0.2123
LOGOPT(-4)	0.184918	0.070521	2.622181	0.0192
LOGGAP(-1)	-0.121025	0.070100	-1.726447	0.1048
LOGGAP(-2)	-0.084267	0.065854	-1.279598	0.2201
LOGGAP(-3)	0.191799	0.066311	2.892410	0.0112
INTEREST_RATE (-1)	0.000825	0.000387	2.131523	0.0500
INTEREST_RATE (-2)	-0.001572	0.000394	-3.983935	0.0012

INFLATION	-0.001142	0.000150	-7.635057	0.0000
INFLATION(-2)	0.000422	9.80E-05	4.311386	0.0006
C	0.412516	0.164224	2.511902	0.0239

		Mean dependent var	0.864927
R-squared	0.991154		
Adjusted R-squared	0.985257	S.D. dependent var	0.045783
S.E. of regression	0.005559	Akaike info criterion	-7.250648
Sum squared resid	0.000464	Schwarz criterion	-6.718377
Log likelihood	105.2584	Hannan-Quinn criter.	-7.097373
F-statistic	168.0681	Durbin-Watson stat	2.750750
Prob(F-statistic)	0.000000		

Dependent Variable: LOGOPT
Method: Least Squares (Gauss-Newton / Marquardt steps)
Date: 06/17/18 Time: 09:01
Sample (adjusted): 1989 2017
Included observations: 29 after adjustments
LOGOPT = C(1)*LOGOPT(-1) + C(2) + C(3)*LOGLICENSE + C(4)
*LOGFEES + C(5)*LOGRENT + C(6)*LOGSA + C(7)*LOGTAXES

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	0.910504	0.065170	13.97125	0.0000
C(2)	0.172888	0.273764	0.631525	0.5342
C(3)	-0.200518	0.281752	-0.711683	0.4841
C(4)	0.029854	0.110990	0.268981	0.7905
C(5)	0.029689	0.129895	0.228562	0.8213
C(6)	0.051894	0.180978	0.286743	0.7770
C(7)	0.010263	0.284660	0.036054	0.9716

		Mean dependent var	0.854029
R-squared	0.940638		
Adjusted R-	0.924448	S.D. dependent var	0.054209

squared			6
S.E. of regression	0.014899	Akaike info criterion	-5.368481
Sum squared resid	0.004884	Schwarz criterion	-5.038444
Log likelihood	84.84297	Hannan-Quinn criter.	-5.265118
F-statistic	58.10105	Durbin-Watson stat	2.039799
Prob(F-statistic)	0.000000		

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.013846	Prob. F(1,21)	0.9074
Obs*R-squared	0.019108	Prob. Chi-Square(1)	0.8901

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 06/17/18 Time: 09:03
Sample: 1989 2017
Included observations: 29
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	0.000880	0.067100	0.013117	0.9897
C(2)	-0.000417	0.280136	-0.001488	0.9988
C(3)	-0.004115	0.290401	-0.014170	0.9888
C(4)	0.000199	0.113577	0.001754	0.9986
C(5)	-0.000539	0.132987	-0.004052	0.9968
C(6)	0.000427	0.185211	0.002305	0.9982
C(7)	0.003501	0.292778	0.011957	0.9906
RESID(-1)	-0.026622	0.226250	-0.117668	0.9074

R-squared	0.000659	Mean dependent var	1.42E-16
Adjusted R-squared	-0.332455	S.D. dependent var	0.013207
S.E. of regression	0.015245	Akaike info criterion	-5.300175
Sum squared resid	0.004881	Schwarz criterion	-4.922990
Log likelihood	84.85253	Hannan-Quinn criter.	-5.182045
F-statistic	0.001978	Durbin-Watson stat	1.996015
Prob(F-statistic)	1.000000		

Heteroskedasticity Test: Breusch-Pagan-Godfrey

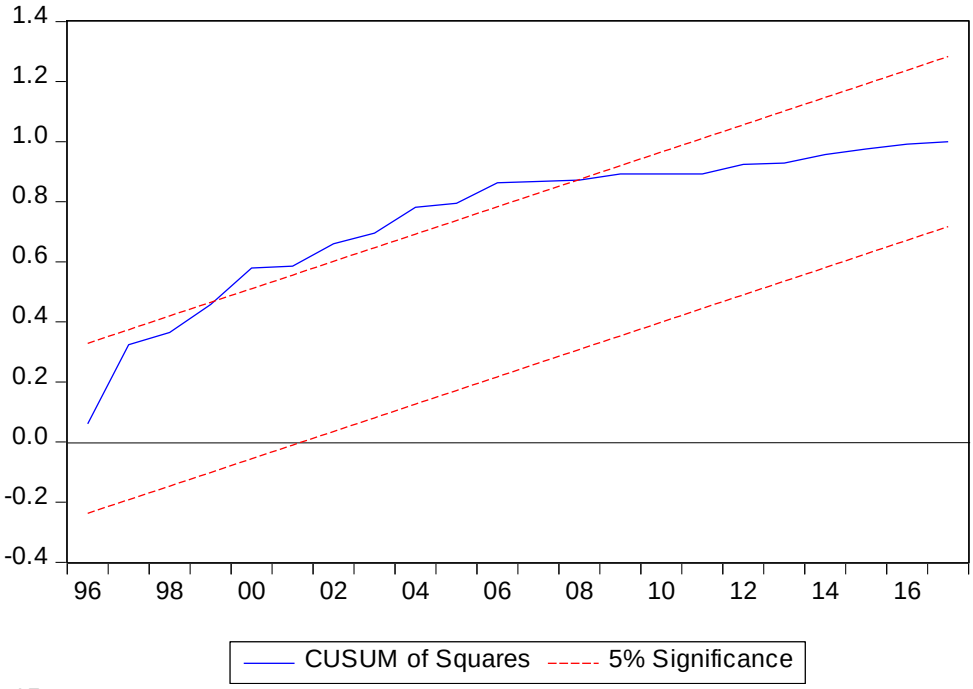
F-statistic	0.577611	Prob. F(6,22)	0.7441
Obs*R-squared	3.946662	Prob. Chi-Square(6)	0.6839
Scaled explained SS	17.71279	Prob. Chi-Square(6)	0.0070

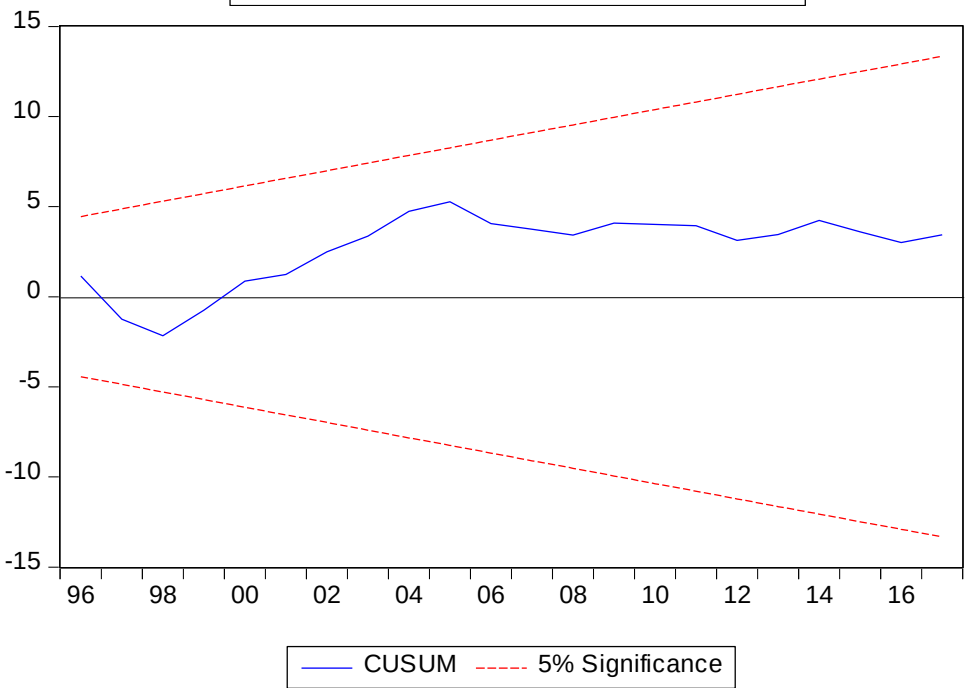
Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 06/17/18 Time: 09:04
Sample: 1989 2017
Included observations: 29

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.002086	0.013041	0.159935	0.8744
LOGOPT(-1)	-0.003723	0.003104	-1.199230	0.2432
LOGLICENSE	-0.009279	0.013422	-0.691380	0.4966
LOGFEES	0.002718	0.005287	0.514047	0.6123
LOGRENT	0.002108	0.006188	0.340756	0.7365
LOGSA	0.000949	0.008621	0.110030	0.9134
LOGTAXES	0.004165	0.013560	0.307118	0.7616

R-squared	0.136092	Mean dependent var	0.000168

Adjusted R-squared	-0.099520	S.D. dependent var	0.000677
S.E. of regression	0.000710	Akaike info criterion	-11.45682
Sum squared resid	1.11E-05	Schwarz criterion	-11.12678
Log likelihood	173.1238	Hannan-Quinn criter.	-11.35345
F-statistic	0.577611	Durbin-Watson stat	2.165980
Prob(F-statistic)	0.744073		





Appendix E: Efficient regression result

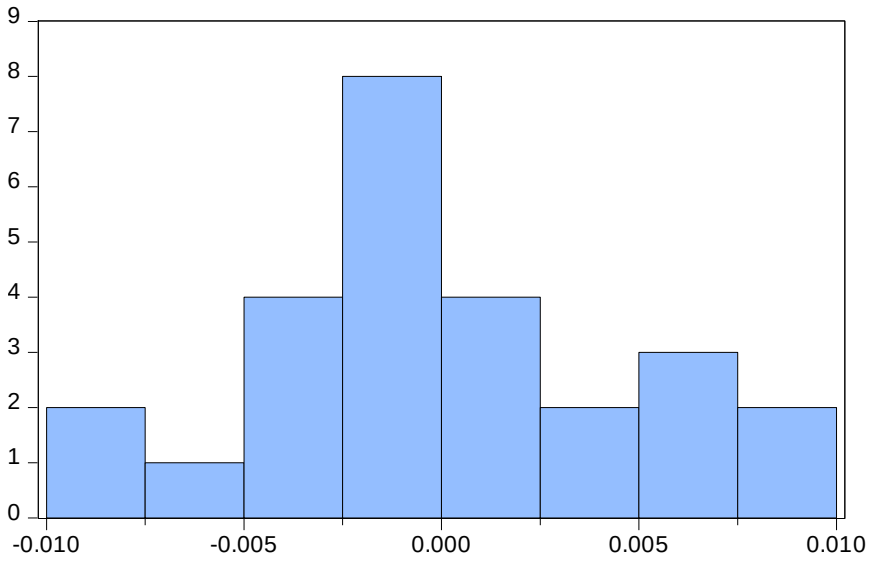
Dependent Variable: LOGOPT
Method: Least Squares
Date: 06/17/18 Time: 08:42

Sample (adjusted): 1992 2017
Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOGOPT(-1)	0.284302	0.102373	2.777126	0.0129
LOGOPT(-4)	0.267315	0.056005	4.773058	0.0002
LOGGAP(-1)	-0.131754	0.074380	-1.771361	0.0944
LOGGAP(-3)	0.202400	0.068867	2.939014	0.0092
INTEREST_RATE(-1)	0.000901	0.000412	2.184507	0.0432
INTEREST_RATE(-2)	-0.001517	0.000419	-3.618691	0.0021
INFLATION	-0.001219	0.000155	-7.868526	0.0000
INFLATION(-2)	0.000349	8.96E-05	3.890232	0.0012
C	0.323162	0.159602	2.024799	0.0589

R-squared	0.988512	Mean dependent var	0.864927
Adjusted R-squared	0.983106	S.D. dependent var	0.045783
S.E. of regression	0.005951	Akaike info criterion	-7.143160
Sum squared resid	0.000602	Schwarz criterion	-6.707665
Log likelihood	101.8611	Hannan-Quinn criter.	-7.017753
F-statistic	182.8511	Durbin-Watson stat	2.885924
Prob(F-statistic)	0.000000		

Appendix F: Diagnostic test



Series: Residuals	
Sample 1992 2017	
Observations 26	
Mean	-1.24e-16
Median	-0.000967
Maximum	0.008613
Minimum	-0.009710
Std. Dev.	0.004907
Skewness	0.113103
Kurtosis	2.451500
Jarque-Bera	0.381356
Probability	0.826399

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	5.565073	Prob. F(1,16)	0.0314
Obs*R-squared	6.709549	Prob. Chi-Square(1)	0.0096

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 06/17/18 Time: 08:45
Sample: 1992 2017
Included observations: 26
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOGOPT(-1)	0.037620	0.092282	0.407661	0.6889
LOGOPT(-4)	-0.025053	0.050846	-0.492725	0.6289
LOGGAP(-1)	0.018052	0.066482	0.271541	0.7894
LOGGAP(-3)	-0.055922	0.065579	-0.852742	0.4064
INTEREST_RATE(-1)	-1.11E-05	0.000366	-0.030320	0.9762
INTEREST_RATE(-2)	8.15E-05	0.000374	0.218087	0.8301
INFLATION	5.74E-06	0.000138	0.041698	0.9673

INFLATION(-2)	1.41E-05	7.98E-05	0.176885	0.8618
C	0.039610	0.142697	0.277583	0.7849
RESID(-1)	-0.568166	0.240846	-2.359041	0.0314

R-squared	0.258060	Mean dependent var	-1.24E-16
Adjusted R-squared	-0.159282	S.D. dependent var	0.004907
S.E. of regression	0.005284	Akaike info criterion	-7.364723
Sum squared resid	0.000447	Schwarz criterion	-6.880840
Log likelihood	105.7414	Hannan-Quinn criter.	-7.225382
F-statistic	0.618341	Durbin-Watson stat	2.065419
Prob(F-statistic)	0.765151		

Heteroskedasticity Test: Breusch-Pagan-Godfrey

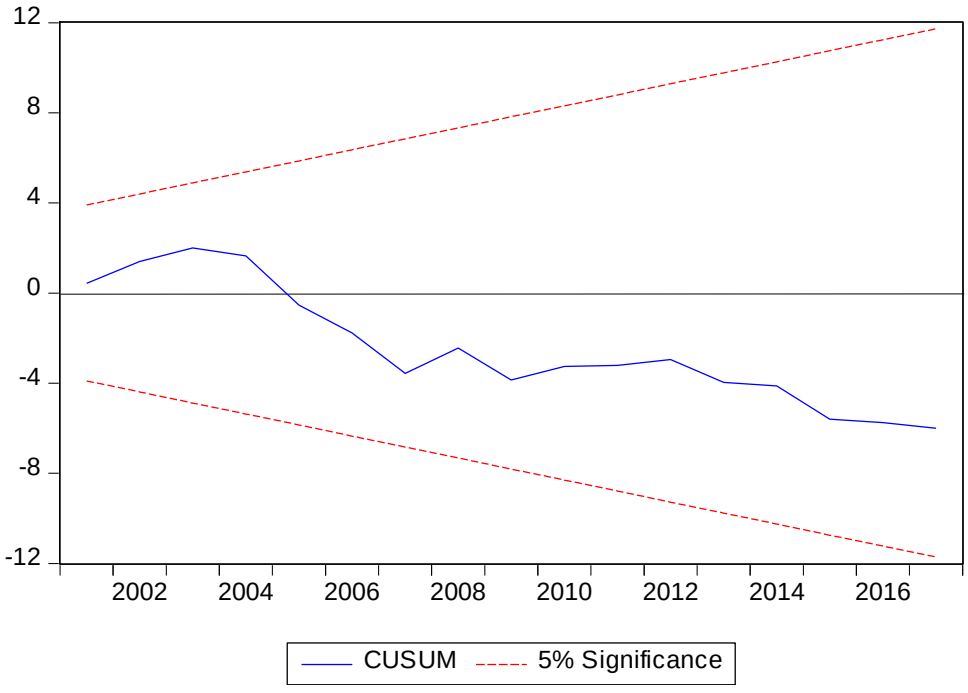
F-statistic	1.148389	Prob. F(8,17)	0.3826
Obs*R-squared	9.121470	Prob. Chi-Square(8)	0.3322
Scaled explained SS	2.830108	Prob. Chi-Square(8)	0.9446

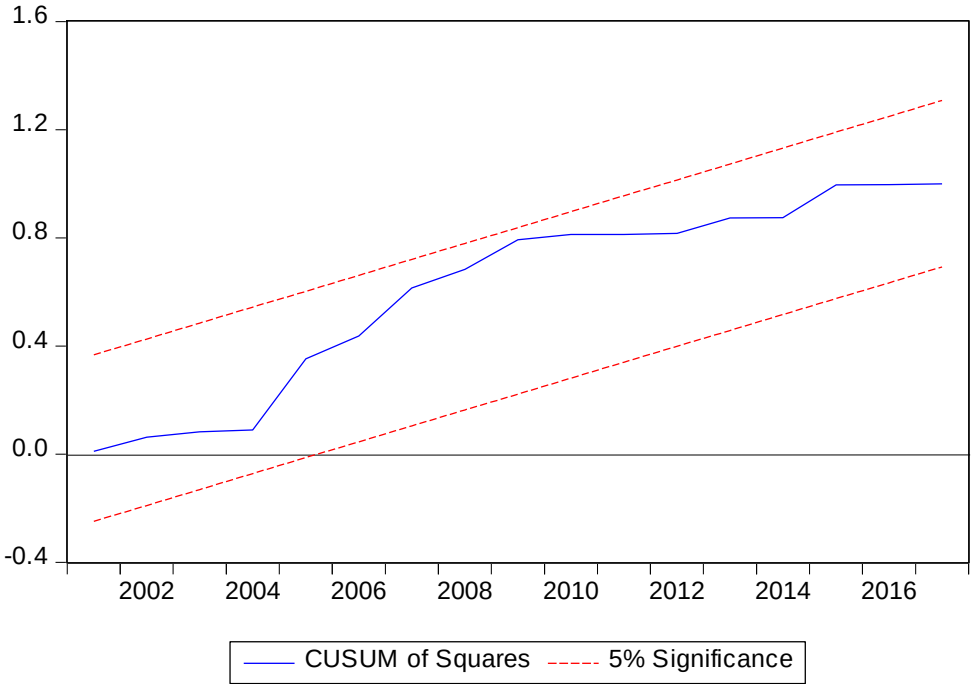
Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 06/17/18 Time: 08:46
Sample: 1992 2017
Included observations: 26

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000493	0.000745	0.661256	0.5173
LOGOPT(-1)	2.22E-05	0.000478	0.046386	0.9635
LOGOPT(-4)	-0.000159	0.000262	-0.607289	0.5517
LOGGAP(-1)	-0.000600	0.000347	-1.727869	0.1021
LOGGAP(-3)	0.000327	0.000322	1.016730	0.3235
INTEREST_RATE	2.74E-06	1.93E-06	1.420635	0.1735

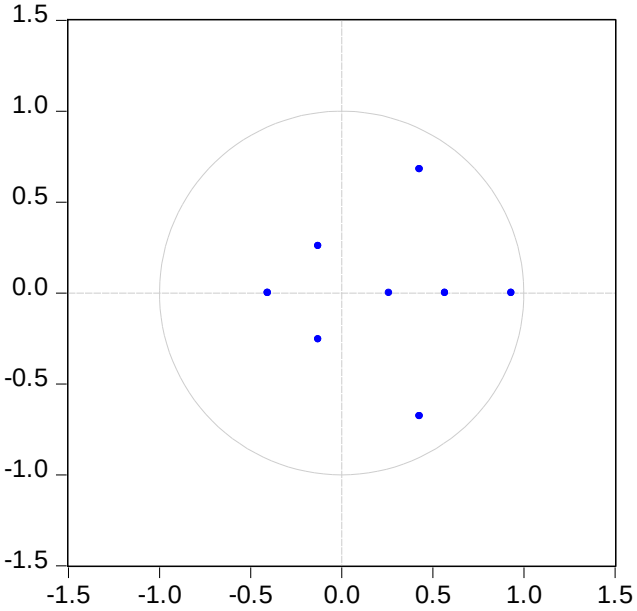
(-1) INTEREST_RATE				
(-2)	-2.37E-07	1.96E-06	-0.120931	0.9052
INFLATION	-8.78E-07	7.24E-07	-1.212673	0.2418
INFLATION(-2)	2.50E-07	4.19E-07	0.597141	0.5583

R-squared	0.350826	Mean dependent var	2.32E-05
Adjusted R-squared	0.045332	S.D. dependent var	2.84E-05
S.E. of regression	2.78E-05	Akaike info criterion	-17.87596
Sum squared resid	1.31E-08	Schwarz criterion	-17.44047
Log likelihood	241.3875	Hannan-Quinn criter.	-17.75055
F-statistic	1.148389	Durbin-Watson stat	2.409756
Prob(F-statistic)	0.382557		





Inverse Roots of AR Characteristic Polynomial

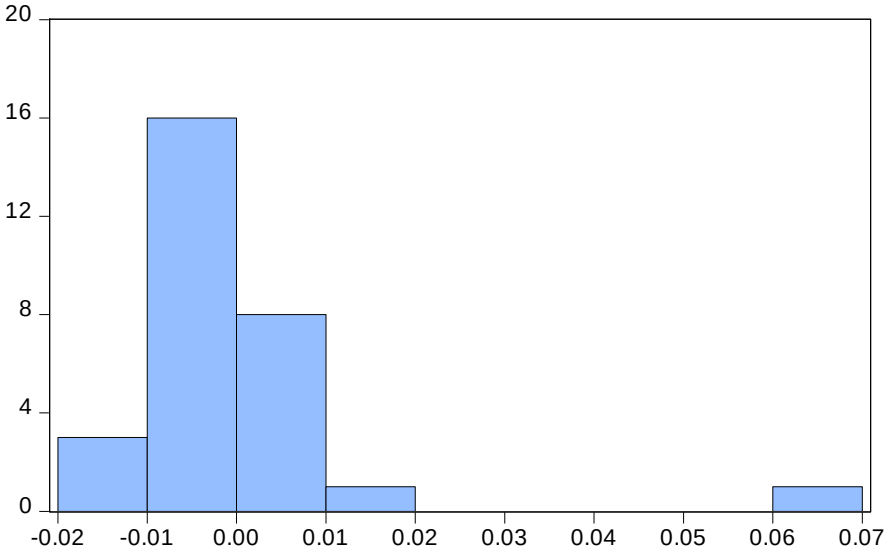


Dependent Variable: LOGOPT
Method: Least Squares (Gauss-Newton / Marquardt steps)
Date: 06/18/18 Time: 13:43
Sample (adjusted): 1989 2017
Included observations: 29 after adjustments
LOGOPT = C(1)*LOGOPT(-1) + C(2) + C(3)*LOGSA +

C(4)*LOGRENT +
C(5)*LOGTAXES + C(6)*LOGLICENSE +
C(7)*LOGFEES

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	0.910504	0.065170	13.97125	0.0000
C(2)	0.172888	0.273764	0.631525	0.5342
C(3)	0.051894	0.180978	0.286743	0.7770
C(4)	0.029689	0.129895	0.228562	0.8213
C(5)	0.010263	0.284660	0.036054	0.9716
C(6)	-0.200518	0.281752	-0.711683	0.4841
C(7)	0.029854	0.110990	0.268981	0.7905

		Mean dependent var	0.854029
R-squared	0.940638		
Adjusted R-squared	0.924448	S.D. dependent var	0.054206
S.E. of regression	0.014899	Akaike info criterion	-5.368481
Sum squared resid	0.004884	Schwarz criterion	-5.038444
Log likelihood	84.84297	Hannan-Quinn criter.	-5.265118
F-statistic	58.10105	Durbin-Watson stat	2.039799
Prob(F-statistic)	0.000000		



Series: Residuals	
Sample 1989 2017	
Observations 29	
Mean	-1.14e-17
Median	-0.002547
Maximum	0.060626
Minimum	-0.016087
Std. Dev.	0.013207
Skewness	3.401069
Kurtosis	16.59688
Jarque-Bera	279.2992
Probability	0.000000

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.013846	Prob. F(1,21)	0.9074
Obs*R-squared	0.019108	Prob. Chi-Square(1)	0.8901

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 06/18/18 Time: 13:46
Sample: 1989 2017
Included observations: 29
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	0.000880	0.067100	0.013117	0.9897
C(2)	-0.000417	0.280136	-0.001488	0.9988
C(3)	0.000427	0.185211	0.002305	0.9982
C(4)	-0.000539	0.132987	-0.004052	0.9968
C(5)	0.003501	0.292778	0.011957	0.9906
C(6)	-0.004115	0.290401	-0.014170	0.9888
C(7)	0.000199	0.113577	0.001754	0.9986
RESID(-1)	-0.026622	0.226250	-0.117668	0.9074

R-squared	0.000659	Mean dependent var	-1.14E-17

Adjusted R-squared	-0.332455	S.D. dependent var	0.013207
S.E. of regression	0.015245	Akaike info criterion	-5.300175
Sum squared resid	0.004881	Schwarz criterion	-4.922990
Log likelihood	84.85253	Hannan-Quinn criter.	-5.182045
F-statistic	0.001978	Durbin-Watson stat	1.996015
Prob(F-statistic)	1.000000		

Heteroskedasticity Test: Breusch-Pagan-Godfrey

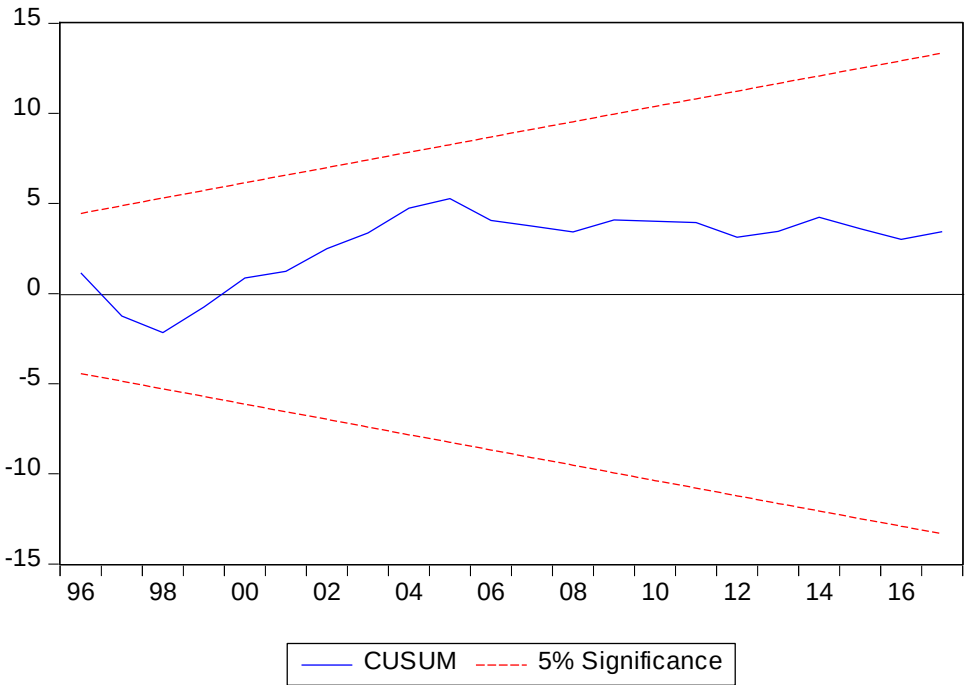
F-statistic	0.577611	Prob. F(6,22)	0.7441
Obs*R-squared	3.946662	Prob. Chi-Square(6)	0.6839
Scaled explained SS	17.71279	Prob. Chi-Square(6)	0.0070

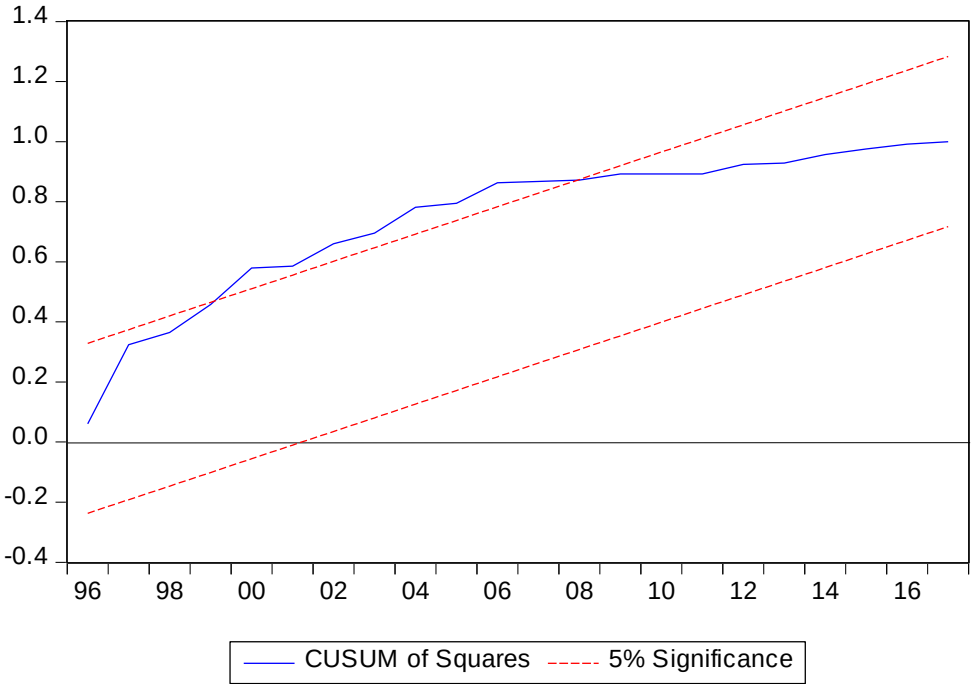
Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 06/18/18 Time: 13:47
Sample: 1989 2017
Included observations: 29

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.002086	0.013041	0.159935	0.8744
LOGOPT(-1)	-0.003723	0.003104	-1.199230	0.2432
LOGSA	0.000949	0.008621	0.110030	0.9134
LOGRENT	0.002108	0.006188	0.340756	0.7365
LOGTAXES	0.004165	0.013560	0.307118	0.7616
LOGLICENSE	-0.009279	0.013422	-0.691380	0.4966
LOGFEES	0.002718	0.005287	0.514047	0.6123

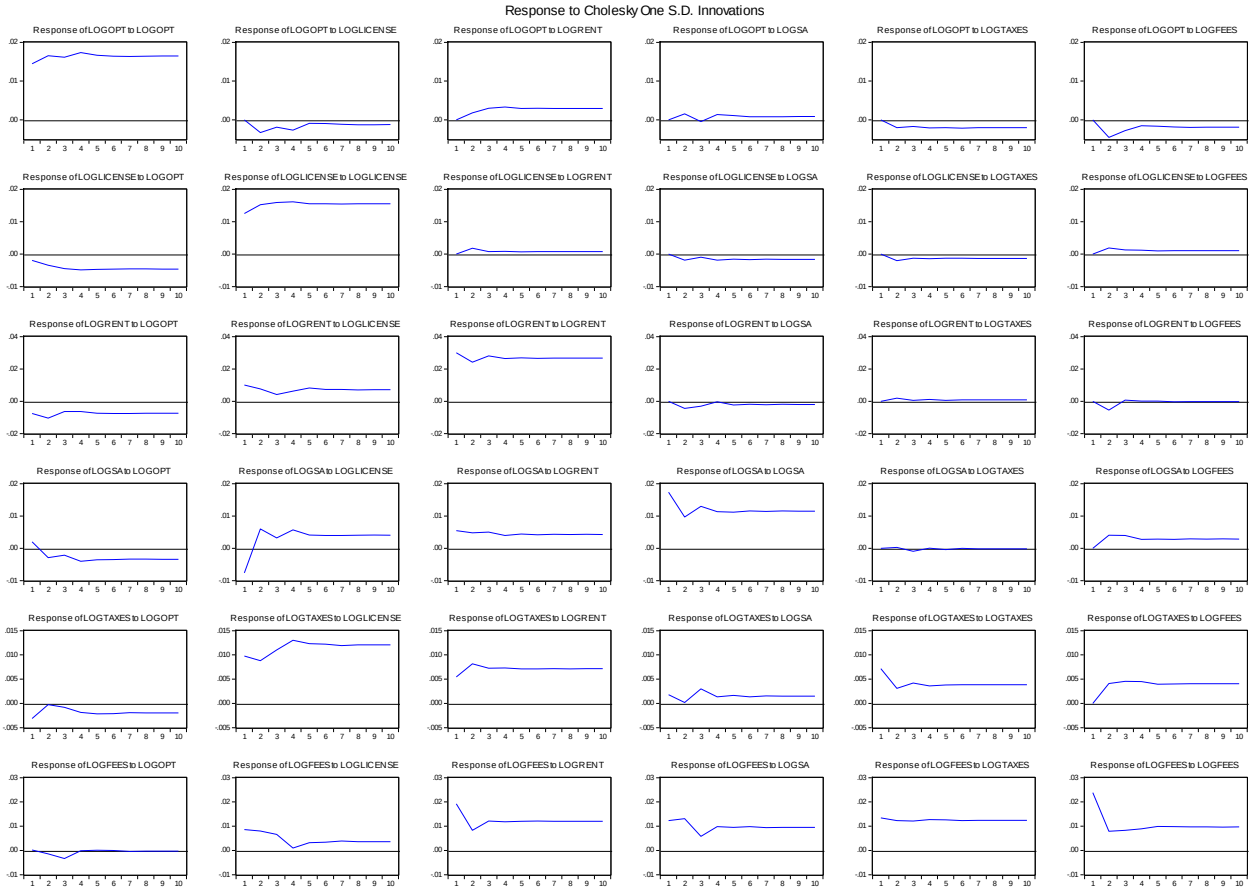
R-squared	0.136092	Mean dependent var	0.000168
Adjusted R-	-0.099520	S.D. dependent var	0.00067

squared			7
S.E. of regression	0.000710	Akaike info criterion	-11.45682
Sum squared resid	1.11E-05	Schwarz criterion	-11.12678
Log likelihood	173.1238	Hannan-Quinn criter.	-11.35345
F-statistic	0.577611	Durbin-Watson stat	2.165980
Prob(F-statistic)	0.744073		

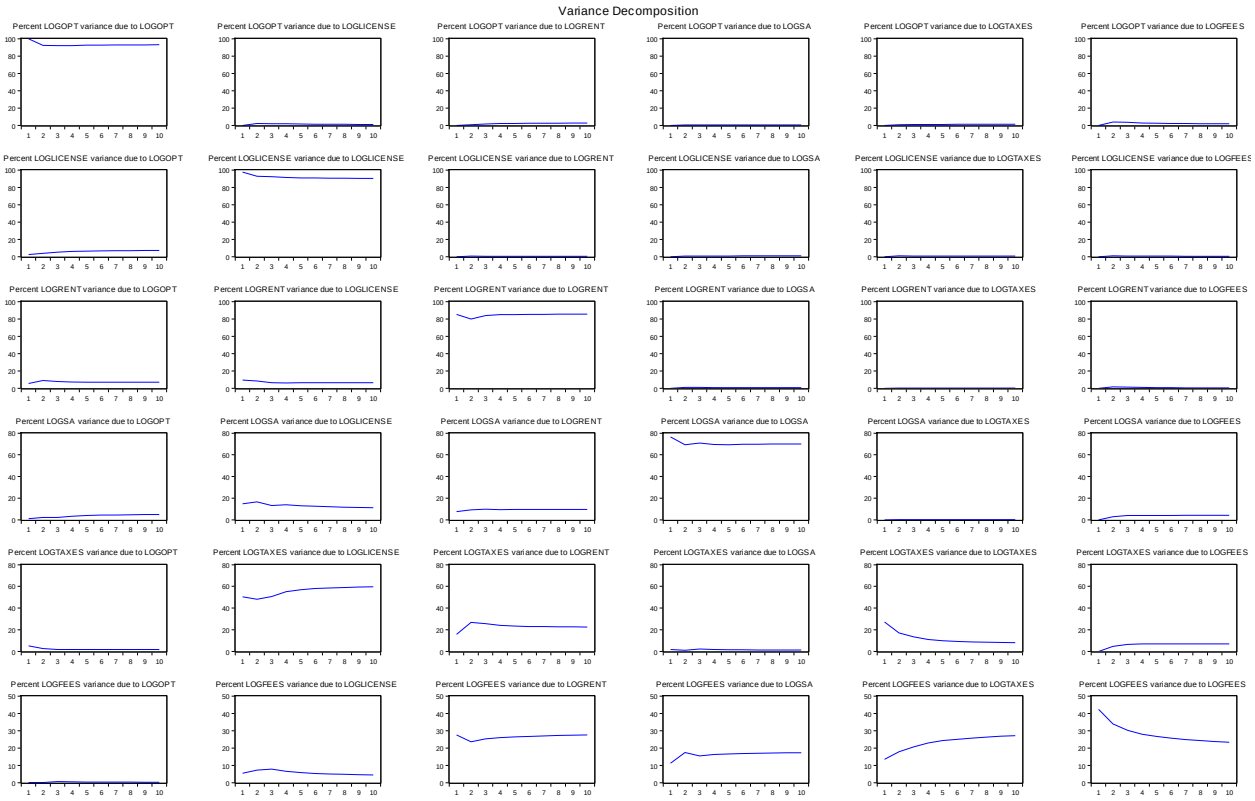



1.4
1.2
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98
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12
14
16
CUSUM of Squares
5% Significance

Appendix G: Impulse Response



Appendix H:Variance Decomposition



ARDL Error Correction Regression
Dependent Variable: D(LOGOPT)
Selected Model: ARDL(1, 3, 3, 1)
Case 1: No Constant and No Trend
Date: 06/26/18 Time: 14:19
Sample: 1988 2017
Included observations: 27

ECM Regression
Case 1: No Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LOGGAP)	0.126990	0.070575	1.799355	0.0908
D(LOGGAP(-1))	-0.157501	0.076886	-2.048507	0.0573
D(LOGGAP(-2))	-0.171757	0.065764	-2.611700	0.0189
D(INTEREST_RATE)	-0.000737	0.000406	-1.814190	0.0884
D(INTEREST_RATE	0.000698	0.000494	1.411366	0.1773

(-1))				
D(INTEREST_RATE (-2))	-0.001862	0.000444	-4.194713	0.0007
D(INFLATION)	-0.000914	0.000136	-6.729057	0.0000
CointEq(-1)*	-0.206193	0.031378	-6.571349	0.0000

		Mean dependent var	0.004823
R-squared	0.855573		
Adjusted R-squared	0.802362	S.D. dependent var	0.014856
S.E. of regression	0.006604	Akaike info criterion	-6.960961
Sum squared resid	0.000829	Schwarz criterion	-6.577010
Log likelihood	101.9730	Hannan-Quinn criter.	-6.846792
Durbin-Watson stat	2.356606		