

# **IMPACT OF CORRUPTION ON ECONOMIC GROWTH IN NIGERIA**

**(1970-2019)**

**BY**

**OGIDAN PRECIOUS OLUWANIFESIMI**

**17020301014**

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## **CERTIFICATION**

I certify that this research project was conducted under my supervision by Ogidan Precious Oluwanifesimi (17020301014) at the Department of Economics, Mountain Top University, Ogun State, Nigeria.

.....  
**Mr. Oluyomi Oluwatosin O.**  
**Supervisor**

.....  
**Date**

.....  
**Dr. OLOGUNDUDU M. M**  
**Ag. Head, Department of Economics**

.....  
**Date**

## **DEDICATION**

The project is dedicated to God Almighty, the I AM that IAM. For his mercy and grace over my life during my stay in Mountain Top University.

## **ACKNOWLEDGEMENTS**

I thank the LORD for his grace over my life and for seeing me through the completion of this research work.

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## ABSTRACT

*Corruption is an ancient practice that has been traced back to pre-biblical time and made it known in the ancient civilizations of developed and developing countries. Previous empirical studies have appraised efforts of the government in fighting corruption in Nigeria. In spite of this, corruption has been identified as one of the hindering factors for attaining the desirable economic growth. This study therefore examines the effect of corruption on economic growth in Nigeria between 1970 and 2019 using secondary time series data sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin and World Development Indicators (WDI). Data were analysed using Ordinary Least Squares (OLS) techniques, ARDL Long run and short run estimates, ARDL Bound Test, as well as the granger causality. The result shows a positive significant relationship between economic corruption and economic growth and negative relationship between institutional corruption and economic growth. The study recommends that the government should strengthen the anti-corruption agencies in order to comprehensively fight corruption in Nigeria.*

**Keywords:** Corruption, Economic Corruption, Institutional Corruption, ARDL Cointegration, Economic Growth.

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## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 Background to the Study**

One of the biggest downsides of economic growth is corruption, which is generally recognized. Corruption has hampered growth and development in all economies across the world, particularly in emerging countries like Nigeria. Corruption has gotten a lot of press in recent years for a variety of reasons, including economic liberalization, rent seeking, and heightened awareness of the negative impact of corruption on economic progress.

Different schools of thought have different interpretations or definitions of corruption. Many scholars have argued and debated that corruption is way broader than that and does not have a static definition as corruption means differently to different people. Most times, it is an illegal practice in which citizens or organizations give out bribes or gifts in return for unmerited favours and due to the nature of the system of organization in Nigeria, to avoid bureaucracy or red-tapism, certain connections have to be made (Sunkanmi & Isola, 2014).

A vaguely defined set of phenomena that includes achieving several advancements through personal networking; paying gratitude money or giving gifts for routine services that are already reimbursed from customers or government resources; and paying gratitude money or giving gifts for routine services that are already reimbursed from customers or government resources (1998).

Corruption, in its broadest sense, is the use of power for improper purposes (Klitgaard 1998, P. 4). Depending on how corruption is seen, it can have both beneficial and negative economic consequences, but the negative consequences outnumber the favorable consequences. Economic corruption, political corruption, judicial corruption, and academic corruption (Mohamad Farida

and FredounAhmadi-Esfahani, 20) are among the few studies that have broken down corruption into these categories.

Corruption has existed in Nigeria since the country's independence. Because of the system's flexibility, the democratic system of governance has offered an opportunity for corruption owing to changes in government policies. Government expenditure causes corruption because government agents inflate budgets, income designated for specific projects is transferred to private pockets, and bribery is commonplace. However, anti-corruption authorities have been established to ensure that corruption is dealt with to the bare minimum, as it appears to be ingrained in Nigeria's fabric.

Although some researchers have suggested that corruption may be desirable (Leff 1964; Huntington 1968; Acemoglu and Verdier 1998), corruption benefits bureaucrats by causing them to provide more efficient government services, and it also allows entrepreneurs to avoid inefficient regulation that slows the importation of goods and services. Looking at corruption from this perspective aids in the smoothing of activities, which increases an economy's efficiency. Corruption, on the other hand, tends to harm the economy by stifling the country's growth in specific areas. Since the introduction of import quotas, taxes have been imposed on specific items in order to prohibit their unlawful importation.

## **1.2 Statement of the Problem**

Because of the discrepancy between the theoretical underpinnings and empirical studies on the relationship between corruption and economic growth in this study, the relationship between

corruption and economic growth has sparked a lot of debate among economists and scholars, and it continues to do so. The degree to which a country's economy grows is determined by the extent to which corruption exists. The role of corruption in stifling economic growth has sparked a slew of debates, as a society that is overly corrupt fails to expand and develop, a problem that is all too common in industrialized countries, despite the fact that there have been several studies on the link between corruption and crime.

### **1.3 Research Questions**

To achieve the objectives of the study, the following research questions to be answered in this study are as follows;

- i. To what extent does economic corruption influence economic growth in Nigeria?
- ii. How does institutional corruption affect economic growth in Nigeria?
- iii. What is the causal direction among economic and institutional corruption?

### **1.4 Research Objectives**

The broad aim of this study is to investigate the effect of corruption on economic growth in Nigeria for the study period, 1970-2019. In specific, the four objectives of this study are to;

- i. examine the impact of economic corruption on economic growth,
- ii. examine the impact of institutional corruption on economic growth,
- iii. Investigate the causal direction among economic, political, institutional corruption.

### **1.5 Statement of Hypotheses**

The following null hypotheses formulated are in line with the research questions and objectives of the study as follows:

**H<sub>01</sub>:** economic corruption has no impact on economic growth.

**H<sub>02</sub>:** institutional corruption has no effect on economic growth.

**H<sub>03</sub>:** There is no causal direction among economic, institutional corruption.

## **1.6 Significance of Study**

Few studies have looked at the direct and indirect effects of corruption on economic growth, as well as the causal direction. This study serves not only academics, but also government and policymakers, as evidenced by the focus attention. First, the breakdown of corruption into economic, political, and institutional components, as well as the empirical impacts of corruption on economic growth in Nigeria, benefits the academic community by resolving the paradox and inconclusiveness of prior studies on the topic. Recent studies in Asian economies (Mo, 2001) reveal, however, that corruption is a contradiction in terms of economic progress. This study will help clear the air in this regard.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

This chapter discusses the concept of corruption and economic growth. More light will be shed on the relationship between corruption and economic growth in Nigeria. It also discusses the concepts of corruption and also the causes and effect of corruption and also the relationship between them. The main focus of this chapter is on the empirical literature on the direct and indirect effect and also the causal direction of corruption on economic growth in Nigeria.

#### **2.1 CONCEPTUAL REVIEW**

##### **2.1.1 Concept of Corruption**

Corruption was first recorded in 1300-50; Middle English as '*corrupcioun*', a Latin word meaning a state of being corrupt. Corruption in Nigeria can be traced back to the time during colonization in Nigeria. (Ezeogidi, 2019) cited in his book that the British colonial governments major interests were economic exploration and exploitation resulting in the introduction of a system of administration called indirect rule. The chiefs that were appointed were extremely powerful and corrupt. This caused corruption to wax stronger and stronger as Nigeria attained independence.

The effect corruption has on the economy has been a matter of great attention and debate and also topic of research in the modern world. There are so many schools of thoughts and there is hardly any country that is corrupt. A definition of corruption is often derived from the principal-agent model. Based on this, corruption is deemed to take place when an agent trespasses on the rules set up by the principle by colluding with the third parties and promoting his own benefit

(Lambsdorff, 2002). Though corruption is known for its negative effect in both the long run and the short run, there are positive effects of corruption. There is a large argument that corruption may be justified economically as it provides opportunities to bypass inefficient regulations and redtapism (bureaucracy) and it also allows the private sector to correct the government failures and inefficiency. As such it could potentially promote economic growth by removing barriers to entry and lowering companies' transaction costs when trying to comply with excessive regulations (Meon and Sekkat 2005). Corruption is strongly associated with the share of private investment which it affects negatively and hence it lowers the rate of economic growth.

### **2.1.1.1 Types of Corruption**

- Economic Corruption:**

It deals with the misuse of public power for private benefit and its economic impact on society. This type of corruption consists of inefficient allocation of resources, poor education, and health care. A country is economically corrupt when there are infrastructures that are being budgeted for are not provided to the public and this causes a reduction in the progress of economic activities. This type of corruption distorts the economy in the country thereby stunting economic growth

- Institutional Corruption**

In 1995, Dennis F. Thompson coined the term “institutional corruption” to explain a phenomenon that he believed the Congressional ethics rules failed to address. Institutional corruption is not the individual corruption exemplified by bribery and similar illegal offenses (Thompson, 2018; Rose-Ackerman & Palifka, 2016) and it is not the simple structural corruption prominent in the work on developing societies. Corruption is distinctively integral to institution. It is equivocal that is, it benefits the institution while undermining it. Also, it is generalizable. It is not just found amongst government institutions but in many other kind of institutions. This is

when organizations tasked with protecting the public interest deviates from their original mission by engaging in activities that endangers the institution, even if the activities are not illegal.

### **2.1.2 Concept of Economic Growth**

The term ‘economic growth’ can be defined as the increase in the inflation-adjusted market value of goods and services produced by an economy over time. It can be measured in nominal or real (adjusted for inflation) terms. Traditionally, aggregate economic growth is measured in terms of gross national product (GNP) or gross domestic product (GDP), although alternative metrics are sometimes used. In the simplest terms, economic growth refers to an increase in aggregate production in an economy. Often but not necessarily, aggregate gains in production correlate with increased average marginal productivity. That ushers the economy into an increase in incomes, raising demand on the part of consumers which means a higher standard of living.

In economics, growth is modeled as a function of physical and human capital, labour force and technology. Simply put, increasing the quantity or quality of the working age population, combination of labour, capital and raw materials. Gross domestic product is the best way to measure economic growth. It includes all the goods and services that businesses in the country produce for sale regardless whether they are sold domestically or overseas. GDP measures final production. It includes exports (produced in the country) and subtracts imports from economic growth.

#### **2.1.2.1 Factors affecting Economic Growth**

These are the key factors that trigger growth in any economy. Increasing these components in an economy is very paramount for growth in a country.

1. NATURAL RESOURCES: The finding of more natural resources like crude oil, gas or other mineral deposits like land, water, forest, tin ore, etc. may trigger economic growth positively. In clear sense, it is almost impossible to increase the level of natural resources in a country. A country must sure to balance the supply and demand of scarce resources to avoid running out.

2. POPULATION: A high rising population depicts an increase in the workforce of the country. That is, there is increase in number of people who are capable of working. However, one limitation of having large population is that it could lead to high rate of unemployment.

3. TECHNOLOGY: Improved technology would cause productivity to rise to the same level as labour. This increase means that factories would be more productive at lower cost and thereby leading to sustained long-run growth.

4. PHYSICAL CAPITAL OR INFRASTRUCTURE: Investment in infrastructures like factories, roads, bridges, machineries, etc. will lower the cost of economic activity. When factories are up and running, it hastens economic growth than when the use of physical labour is in place.

5. HUMAN CAPITAL: More investment in human capital can improve the quality of labour force. This improvement of quality would result in an improvement in skills, abilities and training. A labour force that is skilled will have more significant effect on growth since skilled workers are more productive.

## **2.2 THEORETICAL REVIEW**

### **2.2.1 Corruption Theories**

#### **2.2.1.1 Rent-Seeking Theory**

Rent-seeking Theory is a theory that talks about the fact or practice of manipulating public policy or economic conditions as a strategy for increasing profits. The phenomenon of rent-

seeking in connection with monopolies was first formally identified in 1967 by Gordon Tullock. Tullock's (1980) paper on 'Efficient rent-seeking' started a huge literature on rent seeking, the term coined by Anne Krueger(1974) for the activities described by Tullocks. Rent-seeking theory can be defined as the process of disbursing resources that create no social benefits with the aim of influencing public policies outcomes and consequently public resources spent are socially wasted. According to the theory, rent-seeking is the disbursement of resources and efforts in creating or transferring rents. However the theory supports the study by arguing that artificial barriers created by government officials in all sector of the economy through bureaucracy and administrative bottlenecks.

### **2.2.1.2 Extractive Theory**

The Extractive theory means the relationship between state, its agent and the society. The states' agent uses the resources of the state for the benefits of their leader. (Olujobi, 2020) cited Iyanda 1999, (Amundsen 1999), Amundsen opines, (Iyanda, 2012) in his work "Corruption: Definition, Theories and Concepts", that the concept of extractive theory is based on the idea of authoritarianism- the use of force and exploitation of a State's resources by rulers or their agents Adebisi, 2015 revealed that the theory is based on the principle of authoritarian government and neo-patrimonial States.

The theory backs the study up by resisting autocratic regimes and the government's officials who use powers and resources of the State to protect their individual and selfish interest at the detriment of the nation's economic growth. In other words, where excessive power is concentrated absolutely in the hands of a few persons, there is high tendency for corruption, abuse of power, wealth seeking and extraction of resources for personal gain.

#### **2.2.1.3 Public Choice Theory**

The theory was propounded between 1950 and 1960. (Olujobi, 2020; Uadama, 2013) The major advocates of the theory are James Buchanan, Gordon Tullock and Mancur Olson. Public choice theory centers on individuals' interests and preference which model ones' behaviour in taking rational decision. This often exposes predetermined goals for such individuals through optimal maximization of every utility. It allows one to predict the consequences of corruption, since most anti-corruption laws are enacted with sanctions for non-compliance. The theory emphasizes that individual is responsible for both his actions and the consequences of his actions.

#### **2.2.1.4 Public Choice-Extractive Theory**

Having weighed the strengths and weaknesses of the theories discussed above, the researchers opines that the Public Choice-Extractive Theory is the most suitable because it effectively explains the cost of corruption in the economy. The theory was derived from the public choice theory and extractive theory with an underlying aim to curb corruption and to promote transparency in Nigeria's economy.

Public Choice-Extractive Theory defined the damaging impacts of corruption on the Nigeria's economy. The theory emphasizes on the need for strict anti-corruption measures to deter corruption. This is useful through the use of soft law approaches that incentivize anti-corruption laws that will promote efficiency of the anti-corruption laws by making corruption a high-risk crime in the country. The theory helped to understand that one may reasonably opt not to be corrupt if there are severe punishments for corruption. In support of this argument, Jeremy Bentham(Mbaku, 2000) said that pain and pleasure are the two factors that restrain or drive human actions and are the grounds on which the moral sources of utility is derived(Bentham, 2010).

## **2.2.2 Economic Growth Theories**

### **2.2.2.1 Classical Theory of Economic Growth**

This theory was featured from the work of the English classical economists, as represented chiefly by Adam Smith, Thomas Malthus and David Ricardo. Regardless of other economists with various schools of thoughts before them, they must be regarded as the main precursors of modern growth theory. The ideas in this particular school of thoughts reached the highest level of modification in the works of Ricardo. The purpose for the theory is to majorly identify the driving forces in the society that triggered or hindered growth and development and hence provide policies to influence those forces. Ricardo's campaign against the Corn's laws, Malthus's concern with the problem of population growth and Smith's attacks against monopoly privileges associated with mercantilism must obviously be seen in this light (Harris, 2007). However for Adam Smith, his view of growth was seen from the angle of national wealth. Hence, the principle of national advantage was regarded as an essential factor of economic policy. Classical growth theory explains economic growth as a result of capital accumulation and the reinvestment of profits derived from specialization, division of labour, and the pursuit of comparative advantage.

### **2.2.2.2 Keynesian Growth Theory**

The British economist John Maynard Keynes developed this theory in the 1930s. The theory says that the government should increase demand to boost growth. Keynesians believe that consumer demand is the driving force in an economy. As a result, the theory supports the expansionary fiscal policy. The theory promotes government spending on infrastructure, unemployment benefits, and education to increase consumer demand. It argues that government is necessary to maintain full employment.

#### **2.2.2.3 Neo-classical Growth Theory**

Neo-classical growth Theory is an economic theory introduced by Robert Solow and Trevor Swan in 1956. The theory states that economic growth is the result of three factors- labour, capital and technology. The theory states that short-term equilibrium results from varying amounts of labour and capital in the production function. The theory also argues that technological change has a major influence on an economy, and economic growth cannot continue without technological advances.

#### **2.2.2.4 Endogenous Growth Theory**

The theory contrasts with neoclassical theory. It is a theory that argues that economic growth is generated from within a system as a direct result of internal processes. The theory specifically notes the enhancement of nation's human capital will lead to economic growth by the means of development of new forms of technology and efficient and effective means of production. It maintains that economic growth is primarily the result of internal forces, rather than external ones.

### **2.3 EMPIRICAL REVIEW**

The relationship between corruption and economic growth has generated a lot of empirical studies with much controversy. This has therefore led to various studies about the impact of economic growth on corruption. (Leff, 1964, Huntington, 1968) contributes to the research that corruption might be desirable using the case of the Asian countries.

In the study of Lambsdorff (1999), he characterized corruption into; bribery, embezzlement, fraud and extortion. Furthermore, Kaufman(1997) opines that there was an old myth that corruption by its "intrinsic nature" is impossible to measure and this has led to lack of serious

empirical analysis on corruption. Yusuf et al., (2020) cited in Bamidele (2013) that in Africa, the negative effect of economic corruption tends to be skewed to the poor and the middle class. It was found that within the rich, the average and the poor African countries, albeit in different forms and magnitude.

The World Bank and international monetary fund (IMF) maintains that corruption is the single greatest obstacle to social and economic development involving two economic agents who give and take gratification (Nobuo, Yusaku and Masayo, 2005). Available record show that between the military and the democratic era, Nigerian leaders have stolen about \$220 billion (Agba, 2010) and it keeps rising on a daily basis. The fact that this country has been greatly ridiculed by corruption and it is yet not properly looked into as serious issues to the poor economic growth pose a serious threat to the economy and has generated concern among researchers. It was discovered that the GDP of Nigeria in 2014 increased from #42.3 trillion to #80.3 trillion (\$509.9 billion). The increase however has not transformed the lives of Nigerians via low per capita income recorded where there is a high level of terrorism in the North East, Militancy in the South, kidnapping in the South-West, herdsmen attack and other social vices with #1.067 trillion (\$6.8 billion) misappropriated during the subsidy era (Okonjo-Iweala, 2018). Many researchers have tried measuring corruption. The first was identified by Akerlof(1985) as general perception which is regularly used as a sensitive core indicator to measure corruption.

Meon and Sekkat (2005) examined the impact of corruption on growth and found a significant negative impact of corruption on growth in a developing country. Similarly, Egunjobi (2013) examines the impact of corruption on economic growth from 1980-2009 and found that corruption per worker exerts a negative influence on output per worker and capital expenditure per worker.

Yakuatsava and Dissou (2011) investigated the effect of corruption on growth in China using Barro model of 1990. Their study found that corruption acts as a barrier through the investment channel. Mauro (1995) engaged in an empirical analysis of corruption by investigating the relationship between investment and corruption for 58 countries and he found that corruption has an important negative impact on the ratio of investment to GDP.

Yusuf et al, (2020) employed Johansen co-integration test and Ordinary Least Square. The result shows a negative significant relationship between corruption and economic growth and recommends that the government should strengthen the anti-corruption agencies in order to comprehensively fight corruption in Nigeria.; Mo, (2001) also employed Ordinary Least Square. we find that a 1% increase in the corruption level reduces the growth rate by about 0.72% or, expressed differently, a one-unit increase in the corruption index reduces the growth rate by 0.545 percentage points. The most important channel through which corruption affects economic growth is political instability, which accounts for about 53% of the total effect; (Iseolorunkanmi, 2013) employed Ordinary Least Square and Granger causality test. He finds that corruption impacts negatively on economic growth from analysis. The causal relationship of the variables also shows that corruption impairs economic growth.

## **2.4 Gaps in the Literature**

- Scope of the study (1970-2019)

Most studies did not widen their scopes in their studies. This study covered a broader scope between 1970 to 2019.

- Measurement of corruption

Other studies have regarded corruption from the general view but this study decomposes corruption into various types.

- Methodology

Most study employed OLS but this study employs both OLS and ARDL to measure the long run and short run. Also, post estimation tests such as normality test, serial correlation test and heteroskedacity test were conducted to test the reliability of the models.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter of the study discusses the theoretical framework of the study to portray the relationship between corruption and economic growth in Nigeria and the methodological approach employed to establish the empirical impact of corruption on economic growth. This study explains the model specification, the estimation technique, data sources and description as well as other methodologies.

#### **3.2 Sources of Data and Variable description.**

This study used secondary data. The secondary data are obtained from WDI and CBN Statistical Bulletin.

**Table 3.1: Description and Source of data**

<b>Identifier</b>	<b>Variable</b>	<b>Descriptive</b>	<b>Sources of data</b>
<b>INF</b>	Inflation rate	It is the general increase in prices of goods and services.	CBN
<b>EC</b>	Economic Corruption proxy as Internal Revenue/Total Revenue	It is the abuse of economic resources which hampers economic growth and development.	CBN
<b>FDI</b>	Foreign Direct Investment	It is an investment in the form of a controlling ownership in a business in one country by an entity based in another country	CBN
<b>TREV</b>	Tax Revenue proxy of Total Revenue.	It can be defined as the income that is	CBN

		gained by governments through taxation.	
<b>EDU(proxy of SEC)</b>	Level of Education proxy of Secondary School Enrollment.	It is the academic credential or degree obtained from an institution.	UBE
<b>INC(proxy of REXP)</b>	Income Distribution proxy of Recurrent Expenditure.	It is the smoothness with which income is dealt out among members of a society.	CBN
<b>IC</b>	Institutional Corruption proxy as Total Revenue/GDP	It is the misuse of official power in an institution.	CBN
<b>MCU</b>	Manufacturing Capacity Utilization proxy of Manufacturing Value Added.	It is referred to how much of a factory's manufacturing and production capacity is utilized.	WDI
<b>POLS</b>	Political Stability		0 & 1

### 3.3 Definition and Measurement of Variables

The variables that were used in this study were obtained from the theoretical framework and the existing empirical studies. In this study, economic growth is the dependent variable which is proxy as GDP growth rate and corruption is the independent variable which is measured by economic corruption and institutional corruption. In addition, the following control variables used in this study are Total Revenue, Foreign Direct Investment, Inflation, Level of Education proxy as Secondary School Enrollment, Income Distribution proxy as Recurrent Expenditure, Manufacturing Capacity Utilization.

### 3.4 Theoretical Framework

Rent-seeking Theory is a theory that talks about the practice of manipulating public policy or economic conditions as a strategy for increasing profits. The phenomenon of rent-seeking in connection with monopolies was first formally identified in 1967 by Gordon Tullock. Tullock's

(1980) paper on 'Efficient rent-seeking' started a huge literature on rent seeking, the term coined by Anne Kruger(1974) for the activities described by Tullocks. Rent-seeking theory can be defined as the process of disbursing resources that create no social benefits with the aim of influencing public policies outcomes and consequently public resources spent are socially wasted. According to the theory, rent-seeking is the disbursement of resources and efforts in creating or transferring rents. However the theory supports the study by arguing that artificial barriers created by government officials in all sector of the economy through bureaucracy and administrative bottlenecks.

### **3.5 Methodological Approach**

#### **3.5.1 Estimation Techniques**

This study uses descriptive statistic and time series econometric techniques. First, the descriptive statistical analysis employed univariate and matrix correlation to describe each variable in this study. Second, the time series econometric technique employed OLS time series property tests, such as unit root and co-integration to determine the integrated order of each variable. It also employed the Granger causality test to determine the causal direction between variables in objective three.

#### **3.5.2 Model Specification**

In this study, the models specified are based on the objectives of economic corruption (EC) and economic growth as well as institutional corruption(IC) and economic growth. The broad objective of the study is given as;

$$GDP_g=f(CORR) \quad (1)$$

Where  $GDP_g$  is Economic Growth and CORR is Corruption.

**The model specified for objective one (1) is given as;**

$$GDP_g = f(EC) \quad (2)$$

$$GDP_g = \alpha + \beta_1 EC + \beta_2 INF_t + \beta_3 MCU_t + \beta_4 FDI_t + \mu_t$$

Where GDP is the economic growth rate, EC is economic corruption, INF is inflation, MCU is manufacturing capacity utilization, FDI is Foreign Direct Investment.

**The model specified for objective two (2) is given as;**

$$GDP_g = f(IC) \quad (3)$$

$$GDP_g = \alpha + \beta_1 IC + \beta_2 REXP_t + \beta_3 SEC_t + \beta_4 POLS_t + \mu_t$$

Where IC is Institutional Corruption, REXP is Recurrent Expenditure, SEC is secondary school enrollment and POLS is political stability.

**The model specified for objective three (3) is given as;**

$$\Sigma GDP_t = \beta_0 + \beta_1 \Sigma EC_{t-i} + \beta_2 \Sigma IC_{t-i} \quad (4)$$

$$\Sigma EC_{t-i} = \beta_0 + \beta_1 \Sigma IC_{t-i} + \beta_2 \Sigma GDP_{t-i}$$

$$\Sigma IC_{t-i} = \beta_0 + \beta_1 \Sigma EC_{t-i} + \beta_2 \Sigma GDP_{t-i}$$

### 3.5.3 *A priori* Expectation

The *A priori* expectation for the study variables are presented in Table 3.2 as follows

**Table 3.2: *A priori* Expectation**

Coefficient	Variables	<i>A priori</i> expected sign
$\beta_0$	INTERCEPT	POSITIVE

$\beta_1$	INF	POSITIVE
$\beta_2$	FDI	NEGATIVE
$\beta_3$	MCU	NEGATIVE
$\beta_4$	REXP	POSITIVE
$\beta_5$	SEC	POSITIVE
$\beta_6$	POLS	NEGATIVE

*Source: Researcher's compilation, 2021.*

## CHAPTER FOUR

### DATA ANALYSIS AND INTERPRETATION

#### 4.1 INTRODUCTION

This chapter presents the result of the econometric analysis of the study. This research work employed secondary data from publications such as the CBN Statistical Bulletin and the World Bank Indicator (WDI) and this information were evaluated using E-view.

#### 4.2 Descriptive Statistics

**Table 4.1 Descriptive statistics for each variable in the study (1970-2019)**

	RGDP	EC	FDI	INF	MCU	IC	SEC	REXP	POLS
Mean	28.12859	-1.90971	2.10E+09	21.00595	2.76E+10	-24.021	15.03501	5.735035	0.42
Median	28.48191	-1.73003	8.05E+08	11.95421	2.30E+10	-24.0648	15.38065	6.733497	0
Maximum	32.61215	-0.9276	8.84E+09	219.0028	5.98E+10	-23.3344	15.8699	8.737708	1
Minimum	22.9162	-4.7356	-7.39E+08	0.686099	5.10E+09	-24.544	12.78557	1.52388	0
Std. Dev.	3.147233	0.753327	2.51E+09	32.1664	1.80E+10	0.32949	0.873163	2.587978	0.49857
Skewness	-0.13482	-2.34051	1.331471	4.905954	0.410245	0.384941	-1.19389	-0.47253	0.32418
Kurtosis	1.642248	8.416115	3.636831	30.12873	1.627557	2.160132	3.400741	1.663567	1.10509
Jarque-Bera	3.992075	106.7629	15.61835	1733.837	5.326677	2.704371	12.21269	5.581628	8.35634
Probability	0.135873	0	0.000406	0	0.069715	0.258674	0.002229	0.061371	0.01533
Sum	1406.43	-95.4854	1.05E+11	1050.297	1.38E+12	-1201.05	751.7506	286.7518	21
Sum Sq. Dev.	485.3486	27.8076	3.08E+20	50699.18	1.59E+22	5.31962	37.35824	328.1839	12.18
Observations	50	50	50	50	50	50	50	50	50

*Source: Researcher's computation using EViews 10, 2021*

Table 4.1 above displays the descriptive statistics of this study. In this table, there are nine variables which consist of the real GDP growth rate, foreign direct investment, inflation, manufacturing capacity utilization, economic corruption, secondary school enrollment, recurrent expenditure, political stability and institutional corruption for the study period 1970 to 2019. Each of the descriptive results is discussed below:

**Mean:** the mean is used to measure the average value of a distribution or what is expected to happen the next time a similar statistical research is conducted. We have 50 observations i.e. the data span from 1970-2019. The average value for the variables are as follows; real GDP growth rate is 28.1286, economic corruption is -1.9097, foreign direct investment is 2.10, inflation is 21.005, manufacturing capacity utilization is 2.76, institutional corruption is -24.02, secondary school enrollment is 15.03, recurrent expenditure is 5.7 and political stability is 0.420.

**Standard Deviation:** Standard deviation measures the distribution of the data set from the mean. It can also be thought of as a measure of variance. The larger value of the standard deviation implies greater variability in the data. The data shown in table 4.1 shows the highest and lowest variability variables are inflation and institutional corruption of 32.166 and 0.3295 respectively.

**Skewness:** This is absence of symmetry. In this context, when the distribution is mound-shaped symmetrical, the value of the mean, median and mode are the same or almost the same. In table 4.1, it shows that all the variable are positively skewed except real GDP growth rate, economic corruption, secondary school enrollment, recurrent expenditure are negatively skewed in this research.

**Kurtosis:** This measures heaviness and lightness in the tails of the data distribution of the variables. A standard normal distribution has a kurtosis of 3. A positive value tells you that you have heavy tails (a lot of data in your tails), while negative value means that you have light-tails (little data in your tails). Generally, table 4.1 shows that all the variables exhibited kurtosis, implying that the kurtosis values are higher than 3 but real GDP growth rate, manufacturing capacity utilization, institutional corruption, recurrent expenditure, political stability kurtosis values are lower than 3 indicating lower kurtosis.

**Table 4.2 Correlations Matrix**

	RGDP	EC	FDI	INF	MCU	IC	SEC	REXP	POLS
RGDP	1	0.42216	0.73696	-0.1794	0.83145	0.20294	0.91683	0.97902	0.85733
EC	0.42216	1	0.27341	-0.0078	0.12761	-0.0959	0.58913	0.3805	0.33004
FDI	0.73696	0.27341	1	-0.1958	0.71324	-0.1408	0.5637	0.664	0.75344
INF	-0.1794	-0.0078	-0.1958	1	-0.2503	0.11676	-0.0996	-0.1793	-0.2448
MCU	0.83145	0.12761	0.71324	-0.2503	1	-0.0123	0.57585	0.75845	0.88348
IC	0.20294	-0.0959	-0.1408	0.11676	-0.0123	1	0.28773	0.34893	-0.0608
SEC	0.91683	0.58913	0.5637	-0.0996	0.57585	0.28773	1	0.93277	0.68462
REXP	0.97902	0.3805	0.664	-0.1793	0.75845	0.34893	0.93277	1	0.78958
POLS	0.85733	0.33004	0.75344	-0.2448	0.88348	-0.0608	0.68462	0.78958	1

**Source: Researcher's Computation using EViews 10, 2021**

Table 4.2 shows the result of the correlation matrix analysis between dependent variables and independent variables. Results showed Economic corruption has a positive relationship ( $r=0.42216$ ) with GDP, Foreign direct investment has a positive relationship ( $r=0.73696$ ) with GDP, Inflation has a negative relationship ( $r=-0.1794$ ) with GDP, Manufacturing capacity utilization has a positive relationship (0.83145) with GDP, Institutional Corruption has a positive relationship ( $r=0.20294$ ) with GDP, secondary school enrollment has a positive relationship ( $r=0.91683$ ) with GDP, Recurrent Expenditure has a positive result ( $r=0.97902$ ) with GDP, Political Stability has a positive relationship ( $r=0.85733$ ) with GDP.

### 4.3 Time Series Econometrics Result

To avoid bogus regression, the time series econometrics results are tested using unit root test and the co-integration test to ascertain individual stationary level and the long run co-movement of the included non-stationary variables respectively. These estimation techniques are performed using Eviews 10 econometric software in this study.

### 4.4 Objective One Result

#### 4.4.1 Pre-Test Estimations

##### 4.4.1.1 Unit Root Test Results

The properties of the unit root test series data for the period of 1970-2019 were analyzed to test its stationary level using Augmented Dickey-Fuller (ADF) test statistics. The reason for the stationary test is avoid spurious regression. This is of much importance because most time series show a non-stationary behavior leading to false result of appropriate measures not taken.

**Table 4.3: Unit Root Test using Augmented Dickey-Fuller**

Variable	Unit root test at Level				Unit root at first difference			
	ADF value	Critical value( $\alpha=0.05$ )	P-value	Order of integration	ADF value	Critical value( $\alpha=0.05$ )	P-value	Order of integration
InRGDP	-1.2063	-2.9224	0.6646	NS	-6.2321	-2.9238	0.0000	I(1)
InEC	-3.1488	-2.9224	0.0294	I(0)	-5.9592	-2.9238	0.0000	I(1)
InFDI	-1.5765	-2.9224	0.4868	NS	-8.7692	-2.9238	0.0000	I(1)
InINF	6.6295	-2.9224	0.0000	I(0)	-8.6647	-2.9411	0.0000	I(1)
InMCU	-0.3985	-2.9224	0.9012	NS	-5.6931	-2.9238	0.0000	I(1)

*Source: Researcher's computation using EViews 10, 2021*

The table 4.3 (ADF test for intercept only) shows that inflation and economic corruption is stationary at level I(0) while all the variables are stationary at first difference I(1). This implies that the variables now stationary are now fit to be used for the policy interpretation and forecasting in the study.

#### 4.4.1.2 Co-integration Test Result

**Table 4.4 Co-integration Test using Engle-Granger Co-integration for Objective One**

Variable	ADF value	Critical value ( $\alpha=0.05$ )	P-value	Order of integration
Residual	-3.2266	-2.9224	0.0243	I(0)

*Source: Author's computation using EViews, 2021*

Table 4.4 shows the Engle-Granger co-integration test to determine the long run relationship among the variables employed in this study. The result found that residual ADF value is lesser than the critical value. Hence, null hypotheses co-integration is rejected thereby accepting the alternative, implying that a co-integration existed among the included variables in this study. Also, the residual variable is stationary at integrated at level in this study

#### 4.4.2 Ordinary Least Square Regression Result

**Table 4.5 OLS Regression Estimated: Long run OLS result**

Dependent Variable: RGDP

Method: Least Squares

Date: 08/30/21 Time: 16:29

Sample: 1970 2019

Included observations: 50

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EC	1.194066	0.284209	4.201368	0.0001
FDI	2.36E-10	1.21E-10	1.950913	0.0573
INF	0.002615	0.006582	0.397368	0.6930
MCU	1.17E-10	1.65E-11	7.067273	0.0000
C	26.64553	0.720100	37.00254	0.0000
R-squared	0.809445	Mean dependent var	28.12859	
Adjusted R-squared	0.792507	S.D. dependent var	3.147233	
S.E. of regression	1.433609	Akaike info criterion	3.652906	
Sum squared resid	92.48553	Schwarz criterion	3.844109	
Log likelihood	-86.32266	Hannan-Quinn criter.	3.725717	
F-statistic	47.78812	Durbin-Watson stat	0.397172	
Prob(F-statistic)	0.000000			

*Source: Researcher's computation using EViews 10, 2021*

Table 4.5 presents the Ordinary Least Square (OLS) result for this model that investigated the impact of corruption on economic growth between the study periods of 1970 to 2019 in Nigeria. The table above presents the result in two dimensions: the parameter estimates and the diagnostic results for forecasting decisions.

Firstly, the regression coefficients revealed that all the variables apart from inflation (INF) have a statistically significant impact on economic performance in the long run period of this study in Nigeria. Specifically, the result revealed that economic corruption (EC) has a positive and significant impact on economic growth, implying that a unit increase in economic corruption leads to 1.19 increase in the real GDP (economic growth) in the long run in Nigeria.

On the other hand, the Durbin-Watson (DW) and F-statistic values are used to determine the reliability and prediction of this model. The R-squared value of 80.9% depicts a very high degree of determination, implying that the change in the real economic growth is explained by 80.9% in explanatory variables in the long run and thus, suggested that other unobserved explanatory variables accounted for about 19.1% changes in the real economic growth of Nigeria in the long run. Furthermore, the Durbin-Watson value of 0.3971 indicated serial autocorrelation in the long run model, which is fulfilment of the OLS assumptions. Lastly, the F-statistics value of 47.78 at  $P<0.10$  indicated that the overall model is statistically significant at 10% level of significance, hence, the long run model estimated is reliable to achieve the real economic growth for Nigeria in the Long run.

**Table 4.6 OLS Regression Estimated: Short-run Parsimonious ECM Result**

Dependent Variable: D(RGDP)

Method: Least Squares

Date: 08/30/21 Time: 16:17

Sample (adjusted): 1972 2019

Included observations: 48 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.058819	0.020145	2.919821	0.0059
D(RGDP(-1))	0.694165	0.089747	7.734685	0.0000
D(MCU)	2.28E-12	2.59E-12	0.881037	0.3840
D(MCU(-1))	-3.04E-12	2.32E-12	-1.312721	0.1974
D(FDI)	-3.21E-12	9.03E-12	-0.355581	0.7242
D(FDI(-1))	1.18E-11	9.17E-12	1.289155	0.2053
D(EC)	0.033588	0.019046	1.763580	0.0861
D(EC(-1))	-0.021457	0.020050	-1.070180	0.2915
D(INF)	0.004323	0.000275	15.74257	0.0000
D(INF(-1))	0.000652	0.000284	2.301008	0.0271
ECM(-1)	0.006622	0.009069	0.730161	0.4699
R-squared	0.881940	Mean dependent var	0.198947	
Adjusted R-squared	0.850032	S.D. dependent var	0.165894	
S.E. of regression	0.064244	Akaike info criterion	-2.454219	

Sum squared resid	0.152708	Schwarz criterion	-2.025402
Log likelihood	69.90126	Hannan-Quinn criter.	-2.292169
F-statistic	27.63994	Durbin-Watson stat	2.700818
Prob(F-statistic)	0.000000		

---

Table 4.6 displayed the OLS parsimonious error correction model (ECM) result from the over-parameterized OLS which represents the short-run regression model in this study. Significantly, the error correction value of economic corruption (EC) is positive and significant in the short run but in a small proportion.

#### 4.4.3 Post-Estimation Test

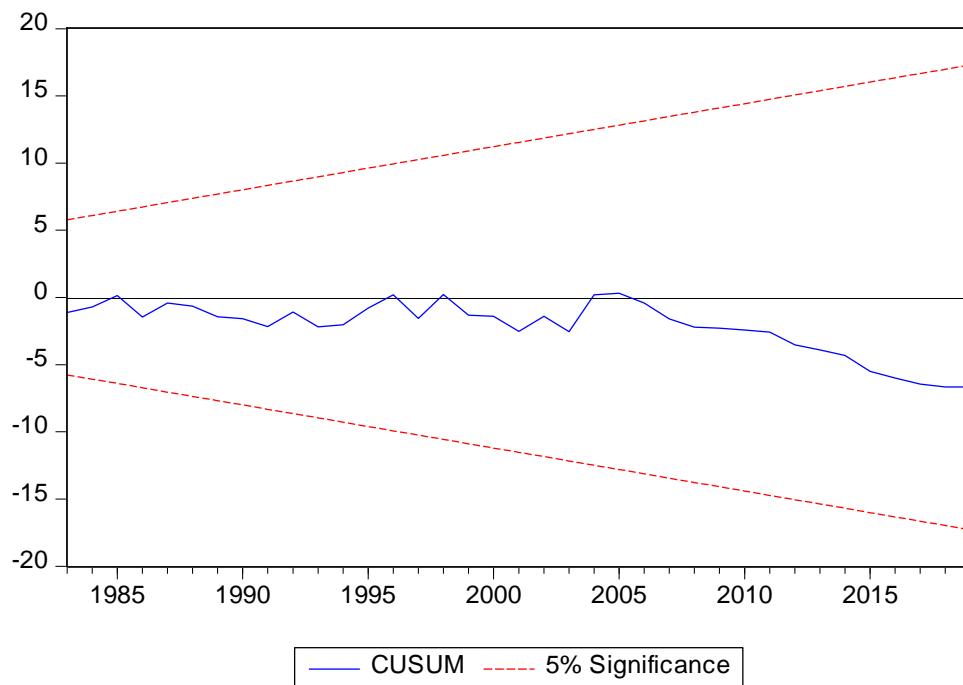
**Table 4.7 Post Estimation Test**

<b>Normality Test</b>	3.5334	0.171	No Normal distribution
<b>Serial Autocorrelation</b>	3.654	0.0362	There is serial autocorrelation

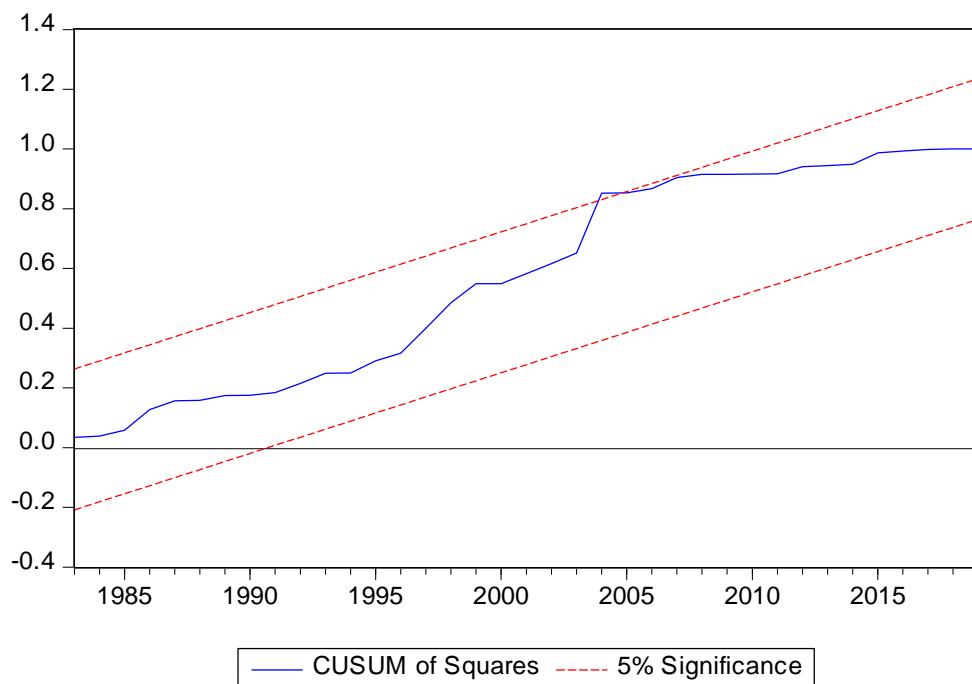
*Source: Researcher's computation from Eviews, 2021*

The above table show the normality, serial autocorrelation and Heteroskedacity Test of Objective one. The data for this variables are not normally distributed with Jacque-Bera test of 35.33 at  $P<0.01$  and probability of 0.0000, also, there is no serial auto correlation as the F-statistics is 1.011 and probability of 0.37

#### Diagram of Stability Test



**Figure 4.1 CUSUM for model 1**



**Figure 4.2 CUSUM of Squares for model 1**  
**Source: Researcher's computation using Eviews, 2021**

Figures 4.1 and 4.2 depict the stability tests for model 1. The Figures depict that the model 1 is reliable because the blue line falls between the two parallel red lines in this study. This inferred that economic corruption and economic growth relationship is reliable in the study.

#### 4.5 Objective Two Result

##### 4.5.1 Pre-Tests Estimations

###### 4.5.1.1 Unit Root Test Result

**Table 4.8 Unit Root Test using Augmented Dickey-Fuller**

Variable	Unit root test at Level				Unit root test at First difference			
	ADF value	Critical value( $\alpha = 0.05$ )	P-value	Order of integration	ADF value	Critical Value( $\alpha = 0.05$ )	P-value	Order of Integration
InRGDP	-1.2063	2.9224	0.6646	NS	-6.2321	2.9238	0.0000	I(1)
InIC	-1.8559	2.9224	0.3499	NS	-6.2825	2.9238	0.0000	I(1)
InSEC	-1.7706	2.9224	0.3904	NS	-4.8979	2.9238	0.0002	I(1)
InREXP	-4.3080	2.9224	0.0012	I(0)	-5.8242	2.9238	0.0000	I(1)
InPOLS	-0.8277	2.9224	0.8022	NS	-6.9282	2.9238	0.0000	I(1)

*Source: Researcher's computation using Eviews, 2021*

In Table 4.8 result shows that only REXP is stationary at Level. After the first differencing, the variables are now stationary and fit to be used for the policy inference and forecasting in this study.

###### 4.5.1.2 ARDL Bound Test

**Table 4.9 ARDL Bound Test**

	Value	I(0)	I(1)
F-statistic	<b>1.676</b>	-	-
K	<b>4</b>	-	-
1%	-	<b>4.306</b>	<b>5.874</b>
5%	-	<b>3.136</b>	<b>4.416</b>
10%	-	<b>2.614</b>	<b>3.746</b>

Table 4.9 includes the value of the bound test result for objective two. The test shows that the variables are not statistically significant in the long run because the F-statistic 1.676 is lesser than the critical values at 1%, 5% and 10% respectively.

#### 4.5.2 ARDL long run and short run test

**Table 4.10 ARDL long run and short run test**

ARDL Long Run Form and Bounds Test

Dependent Variable: D(RGDP)

Selected Model: ARDL(1, 1, 1, 1, 1)

Case 3: Unrestricted Constant and No Trend

Date: 08/30/21 Time: 16:42

Sample: 1970 2019

Included observations: 49

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Conditional Error Correction Regression

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Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.462115	2.523340	0.579436	0.5656
RGDP(-1)*	-0.143893	0.059933	-2.400902	0.0212
IC(-1)	-0.032504	0.126139	-0.257688	0.7980
POLS(-1)	0.154032	0.116485	1.322337	0.1938
SEC(-1)	0.071871	0.089931	0.799177	0.4290
REXP(-1)	0.136223	0.074997	1.816376	0.0770
D(IC)	-0.047686	0.170304	-0.280003	0.7810
D(POLS)	-0.066282	0.162593	-0.407654	0.6858
D(SEC)	0.658776	0.248577	2.650192	0.0116
D(REXP)	0.231803	0.197377	1.174420	0.2473

---

*Source: Researcher's computation from Eviews (2020)*

Table 4.10 displays the variables in both the short run and the long run. Here, result shows that institutional corruption has a negative relationship with real GDP growth at -0.033 in the long run. That is, a decrease in institutional corruption will bring about an increase in real GDP growth. In the short run, a change in the institutional corruption (IC) has a negative relationship with real GDP at -0.05 in the short run.

#### 4.5.3 Post estimation test

**Table 4.11 Post estimation test**

	Statistical value	P-value	Decision
<b>Normality Test</b>	235.14	0.0000	No normal distribution
<b>Serial Autocorrelation</b>	1.011	0.374	No serial autocorrelation
<b>Heteroskedacity</b>	1.311	0.263	No Heteroskedacity

*Source: Researcher's computation from Eviews (2020)*

Table 4.11 shows the normality, serial autocorrelation and Heteroskedacity Test of objective two. The data for this variables are not normally distributed with Jacque-Bera test of 235.14 and probability of 0.0000, also, there is no serial auto correlation as the F-statistics is 1.011 and probability of 0.374 while there is no Heteroskedacity in the variable used for objective two in this study.

### Diagram of Stability Test

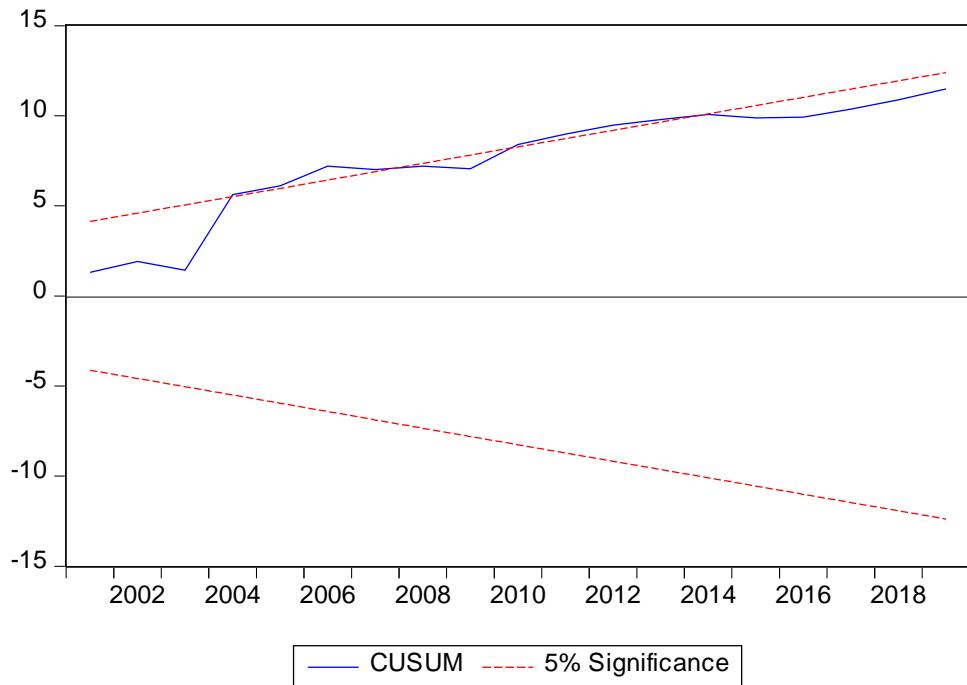


Figure 4.3 Cusum for Model 1

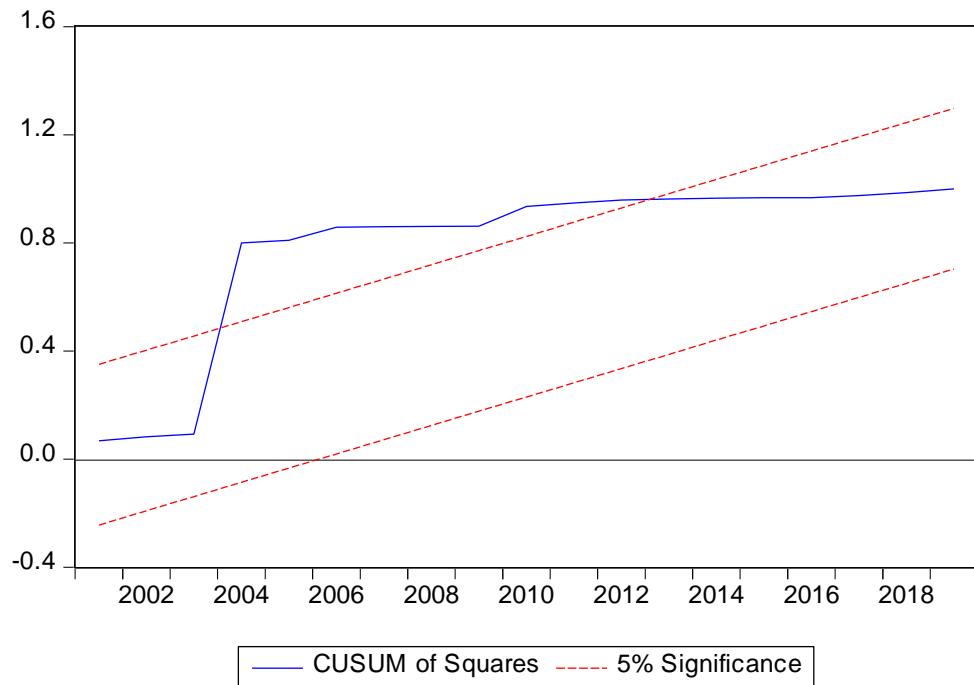


Figure 4.4 Cusum for Model 2

The diagrams above depicts that the data obtained for the variables are reliable because the blue line between the parallel red lines is showing that the variables are slightly stable.

#### 4.6 Objective Three Result

**Table 4.12 Pairwise Granger Causality Test between Real Economic growth and Corruption.**

Pairwise Granger Causality Tests

Date: 08/30/21 Time: 16:56

Sample: 1970 2019

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
EC does not Granger Cause RGDP	48	0.15480	0.8571
RGDP does not Granger Cause EC		0.75659	0.4754
IC does not Granger Cause RGDP	48	2.19040	0.1242
RGDP does not Granger Cause IC		0.00329	0.9967
IC does not Granger Cause EC	48	0.17443	0.8405
EC does not Granger Cause IC		0.52913	0.5929

**Source: Researcher's computation from EViews, 2021**

Table 4.12 showed the pairwise granger causality test between real economic growth and corruption within the study period of 1970 to 2019. Most importantly, the result revealed that all the three pairs variables does not cause each other within the study period. In this table, it is shown that economic corruption does not cause real economic growth with 15.48 at P>0.10, as

well as, institutional corruption does not cause real economic growth of 21.9 at  $P<0.01$  and lastly, institutional corruption does not cause economic corruption of 17.4 at  $P<0.10$ . It depicted the univariate causality does not exist between real economic growth and corruption within the scope of the study.

#### **4.7 Discussion of Findings**

The findings from the three hypotheses are discussed below as follows;

First, the hypotheses one of this study revealed that economic corruption is statistically significant at long run and it is positive impact on real economic growth in the long run and short run respectively in Nigeria. In the same vein, the short run was statistically significant but in small proportion over the study period 1970 to 2019 in Nigeria.

Second, the hypotheses two of this study revealed that institutional corruption is negative impact and not statistically significant at long run and short run in the study over the period 1970 to 2019 in Nigeria.

Third and the final hypotheses of this study found that a univariate causal relationship does not exist between real economic growth, economic corruption and institutional corruption over the study periods 1970 to 2019 in Nigeria. In specific, economic corruption did not real economic growth of 85.71 at  $P<0.10$  as well as institutional corruption did not cause real economic growth of 12.42 at  $P<0.10$  and lastly, institutional corruption did not cause economic corruption of 84.05 at  $P<0.10$  respectively.

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSION AND RECOMMENDATIONS**

#### **5.1 Summary of the Findings**

The results of this study are summarized in four hypotheses are follows:

Hypothesis one investigated the impact of economic corruption on economic growth in Nigeria from 1970-2019. It employed both descriptive statistics and econometric methodology. The descriptive statistics result reviewed that all variable are not normally distributed. On the other hand, the econometric time series methodology employed unit root test, co-integration test, long run and short run OLS model respectively. The result found that economic corruption has positive and negative impact on economic growth in the long run and short run respectively in Nigeria over the study periods 1970 to 2019. This model was statistically significant at long run and short run in this study. The study employed the post estimation test such as normality test, serial autocorrelation test and stability test to test the reliability of the data.

Hypothesis two investigated the impact of institutional corruption on economic growth in Nigeria using descriptive and economic methodology also. The descriptive statistics result reviewed that all variables are not normally distributed. On the other hand, the econometric time series methodology employed unit root, ARDL long run and short run test, ARDL bound test. It showed that institutional corruption is not statistically significant in the long run and short run. That is, institutional corruption is not statistically significant. Also this study employed post

estimation test such as normality test, serial autocorrelation test, and heteroskedacity and stability test.

Finally, the third hypothesis tested the causal relationship between real economic growth, economic corruption and institutional corruption. This study employed pairwise granger causality. The result revealed that a univariate causal relationship existed between economic growth, economic corruption and institutional corruption within the study period 1970 to 2019 in Nigeria.

## **5.2 Conclusion of the study**

Based on the empirical results from the three hypotheses and research objective, In general, the study concluded that corruption has impact on economic growth within the study period 1970-2019 in Nigeria. In specific objectives, the study concluded that economic and institutional corruption has a positive and negative and significant impact on real economic growth in the long run over the study period in Nigeria respectively. In addition, the study concluded that economic has a positive and significant impact on real economic growth and institutional corruption has a negative and insignificant impact on economic growth in the short run. Lastly, the study concluded that a univariate causal relationship does not exist between real economic growth, economic corruption and institutional corruption within the study period 1970 to 2019 in Nigeria.

## **5.3 Recommendation of the study**

Based on the conclusion, the study recommended the following as following as follows:

- i. The government should ensure that accurate figures are recorded during budgeting so as to preventing excessing rent-seeking.
- ii. Adequate standard of living and salary should be provided for individuals who are active in the labour market so as to reduce corruption.
- iii. More resources should be used to improve the educational system of the country because people who are educated are less corrupt.
- iv. The government should strengthen the anti-corruption agencies so they are able to fight corruption to the barest minimum.

#### **5.4 Recommendations for Further studies**

This study can be further extended considering other measures of corruption. In addition, the scope of the study can be expanded from the country study to cross-sectional study. Lastly, the study can be improved from time series econometrics to a panel econometrics method.

#### **5.5 Limitation of the study**

This study was constrained due to the following factors:

- i. Scope of the study
- ii. Use of a single country study
- iii. Use of time series econometrics
- iv. Use of OLS and Pairwise Granger Causality
- v. Financial and Time constraints of the project completion.

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## APPENDIX

### Descriptive Statistics

	RGDP	EC	FDI	INF	MCU	IC	SEC	REXP	POLS
Mean	28.12859	-1.90971	2.10E+09	21.00595	2.76E+10	-24.021	15.03501	5.735035	0.42
Median	28.48191	-1.73003	8.05E+08	11.95421	2.30E+10	-24.0648	15.38065	6.733497	0
Maximum	32.61215	-0.9276	8.84E+09	219.0028	5.98E+10	-23.3344	15.8699	8.737708	1
Minimum	22.9162	-4.7356	-7.39E+08	0.686099	5.10E+09	-24.544	12.78557	1.52388	0
Std. Dev.	3.147233	0.753327	2.51E+09	32.1664	1.80E+10	0.32949	0.873163	2.587978	0.49857
Skewness	-0.13482	-2.34051	1.331471	4.905954	0.410245	0.384941	-1.19389	-0.47253	0.32418
Kurtosis	1.642248	8.416115	3.636831	30.12873	1.627557	2.160132	3.400741	1.663567	1.10509
Jarque-Bera	3.992075	106.7629	15.61835	1733.837	5.326677	2.704371	12.21269	5.581628	8.35634
Probability	0.135873	0	0.000406	0	0.069715	0.258674	0.002229	0.061371	0.01533
Sum	1406.43	-95.4854	1.05E+11	1050.297	1.38E+12	-1201.05	751.7506	286.7518	21
Sum Sq. Dev.	485.3486	27.8076	3.08E+20	50699.18	1.59E+22	5.31962	37.35824	328.1839	12.18
Observations	50	50	50	50	50	50	50	50	50

### Correlation Matrix

	RGDP	EC	FDI	INF	MCU	IC	SEC	REXP	POLS
RGDP	1	0.42216	0.73696	-0.1794	0.83145	0.20294	0.91683	0.97902	0.85733
EC	0.42216	1	0.27341	-0.0078	0.12761	-0.0959	0.58913	0.3805	0.33004
FDI	0.73696	0.27341	1	-0.1958	0.71324	-0.1408	0.5637	0.664	0.75344
INF	-0.1794	-0.0078	-0.1958	1	-0.2503	0.11676	-0.0996	-0.1793	-0.2448
MCU	0.83145	0.12761	0.71324	-0.2503	1	-0.0123	0.57585	0.75845	0.88348
IC	0.20294	-0.0959	-0.1408	0.11676	-0.0123	1	0.28773	0.34893	-0.0608
SEC	0.91683	0.58913	0.5637	-0.0996	0.57585	0.28773	1	0.93277	0.68462
REXP	0.97902	0.3805	0.664	-0.1793	0.75845	0.34893	0.93277	1	0.78958
POLS	0.85733	0.33004	0.75344	-0.2448	0.88348	-0.0608	0.68462	0.78958	1#

### Unit Root For Objective One and Two

Variable	Unit root test at Level				Unit root at first difference			
	ADF value	Critical value( $\alpha=0.05$ )	P-value	Order of integration	ADF value	Critical value( $\alpha=0.05$ )	P-value	Order of integration
InRGDP	-1.2063	-2.9224	0.6646	NS	-6.2321	-2.9238	0.0000	I(1)
InEC	-3.1488	-2.9224	0.0294	I(0)	-5.9592	-2.9238	0.0000	I(1)
InFDI	-1.5765	-2.9224	0.4868	NS	-8.7692	-2.9238	0.0000	I(1)
InINF	6.6295	-2.9224	0.0000	I(0)	-8.6647	-2.9411	0.0000	I(1)
InMCU	-0.3985	-2.9224	0.9012	NS	-5.6931	-2.9238	0.0000	I(1)

Variable	Unit root test at Level				Unit root test at First difference			
	ADF value	Critical value( $\alpha =0.05$ )	P-value	Order of integration	ADF value	Critical Value( $\alpha =0.05$ )	P-value	Order of Integration
InRGDP	-1.2063	2.9224	0.6646	NS	-6.2321	2.9238	0.0000	I(1)
InIC	-1.8559	2.9224	0.3499	NS	-6.2825	2.9238	0.0000	I(1)
InSEC	-1.7706	2.9224	0.3904	NS	-4.8979	2.9238	0.0002	I(1)
InREXP	-4.3080	2.9224	0.0012	I(0)	-5.8242	2.9238	0.0000	I(1)
InPOLS	-0.8277	2.9224	0.8022	NS	-6.9282	2.9238	0.0000	I(1)

### Co-integration for objective 1

Variable	ADF value	Critical value ( $\alpha=0.05$ )	P-value	Order of integration
Residual	-3.2266	-2.9224	0.0243	I(0)

### OLS Regression Estimated: Long run OLS result

Dependent Variable: RGDP

Method: Least Squares

Date: 08/30/21 Time: 16:29

Sample: 1970 2019

Included observations: 50

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EC	1.194066	0.284209	4.201368	0.0001
FDI	2.36E-10	1.21E-10	1.950913	0.0573
INF	0.002615	0.006582	0.397368	0.6930
MCU	1.17E-10	1.65E-11	7.067273	0.0000
C	26.64553	0.720100	37.00254	0.0000
R-squared	0.809445	Mean dependent var	28.12859	
Adjusted R-squared	0.792507	S.D. dependent var	3.147233	
S.E. of regression	1.433609	Akaike info criterion	3.652906	

Sum squared resid	92.48553	Schwarz criterion	3.844109
Log likelihood	-86.32266	Hannan-Quinn criter.	3.725717
F-statistic	47.78812	Durbin-Watson stat	0.397172
Prob(F-statistic)	0.000000		

**Source: Researcher's computation using Eview 10(2020)**

### **OLS Regression Estimated: Short-run Parsimonious ECM Result**

Dependent Variable: D(RGDP)

Method: Least Squares

Date: 08/30/21 Time: 16:17

Sample (adjusted): 1972 2019

Included observations: 48 after adjustments

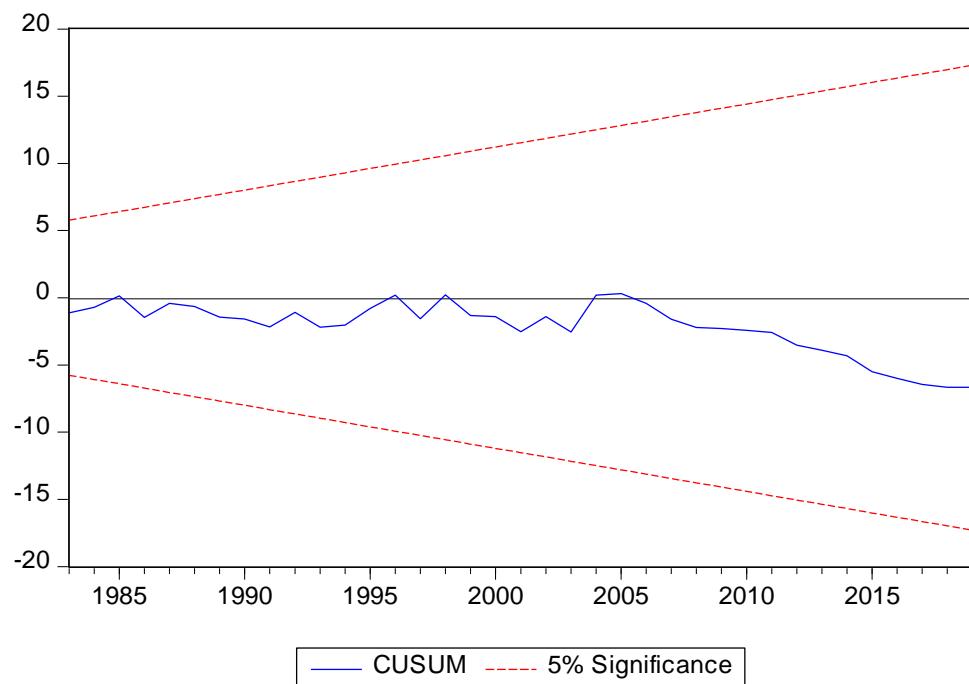
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.058819	0.020145	2.919821	0.0059
D(RGDP(-1))	0.694165	0.089747	7.734685	0.0000
D(MCU)	2.28E-12	2.59E-12	0.881037	0.3840
D(MCU(-1))	-3.04E-12	2.32E-12	-1.312721	0.1974
D(FDI)	-3.21E-12	9.03E-12	-0.355581	0.7242
D(FDI(-1))	1.18E-11	9.17E-12	1.289155	0.2053
D(EC)	0.033588	0.019046	1.763580	0.0861
D(EC(-1))	-0.021457	0.020050	-1.070180	0.2915
D(INF)	0.004323	0.000275	15.74257	0.0000
D(INF(-1))	0.000652	0.000284	2.301008	0.0271
ECM(-1)	0.006622	0.009069	0.730161	0.4699
R-squared	0.881940	Mean dependent var	0.198947	

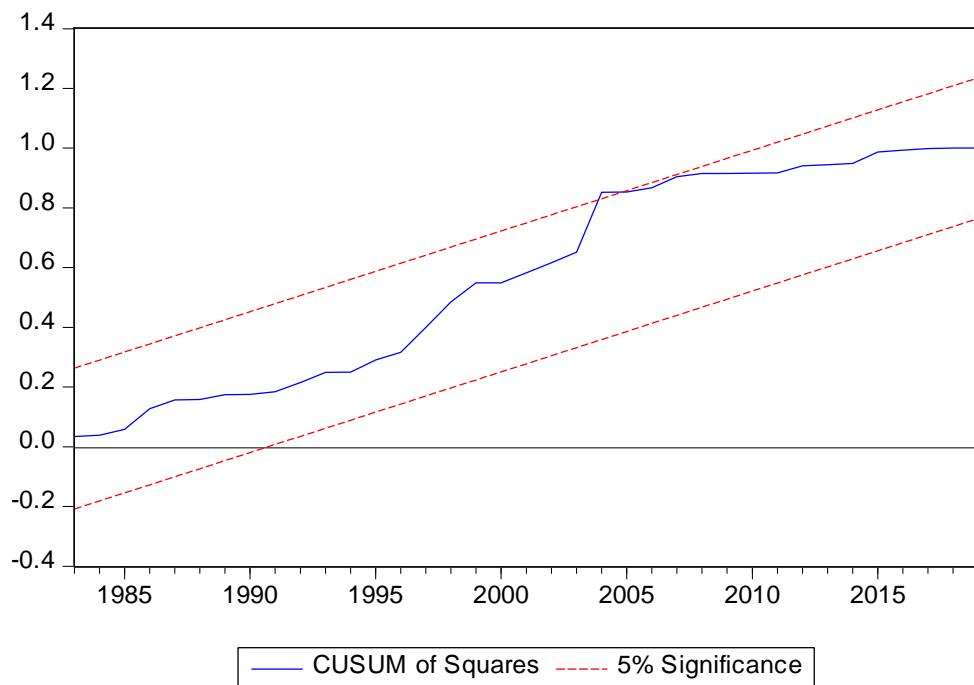
Adjusted R-squared	0.850032	S.D. dependent var	0.165894
S.E. of regression	0.064244	Akaike info criterion	-2.454219
Sum squared resid	0.152708	Schwarz criterion	-2.025402
Log likelihood	69.90126	Hannan-Quinn criter.	-2.292169
F-statistic	27.63994	Durbin-Watson stat	2.700818
Prob(F-statistic)	0.000000		

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**Source: Researcher's computation from Eviews(2020)**

### Diagram of Stability Test





### ARDL long run and short run test

ARDL Long Run Form and Bounds Test

Dependent Variable: D(RGDP)

Selected Model: ARDL(1, 1, 1, 1, 1)

Case 3: Unrestricted Constant and No Trend

Date: 08/30/21 Time: 16:42

Sample: 1970 2019

Included observations: 49

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### Conditional Error Correction Regression

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Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.462115	2.523340	0.579436	0.5656
RGDP(-1)*	-0.143893	0.059933	-2.400902	0.0212
IC(-1)	-0.032504	0.126139	-0.257688	0.7980
POLS(-1)	0.154032	0.116485	1.322337	0.1938
SEC(-1)	0.071871	0.089931	0.799177	0.4290
REXP(-1)	0.136223	0.074997	1.816376	0.0770
D(IC)	-0.047686	0.170304	-0.280003	0.7810
D(POLS)	-0.066282	0.162593	-0.407654	0.6858
D(SEC)	0.658776	0.248577	2.650192	0.0116
D(REXP)	0.231803	0.197377	1.174420	0.2473

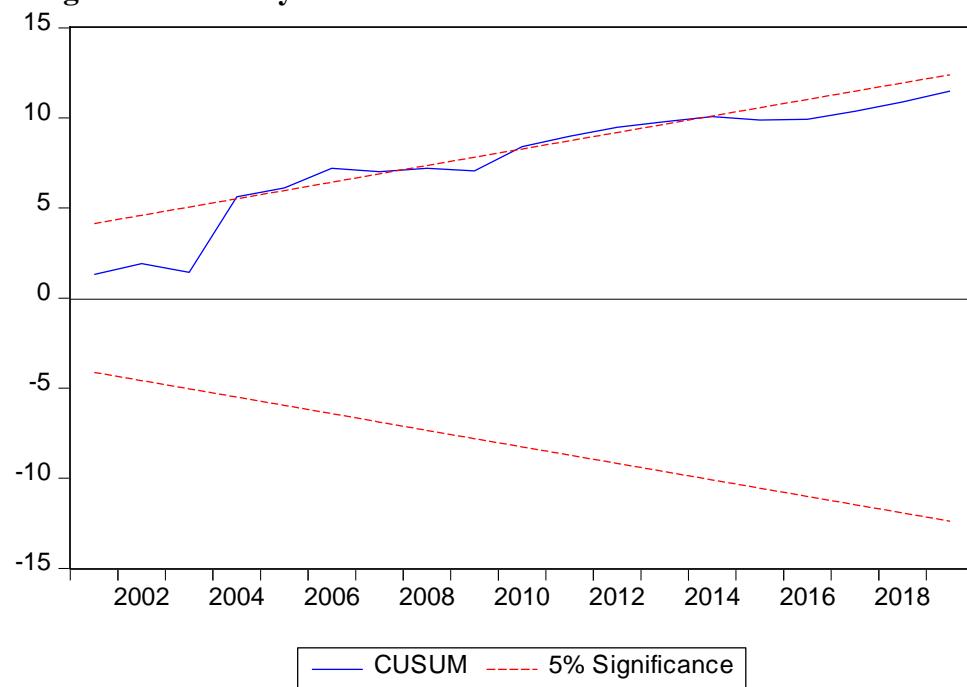
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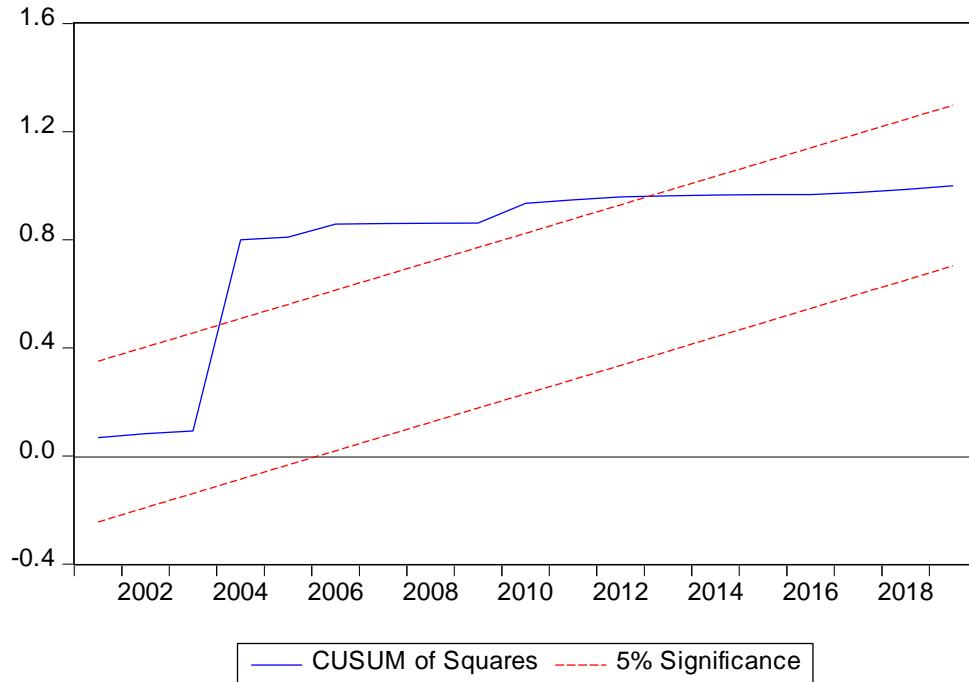
*Source: Researcher's computation from Eviews (2020)*

### ARDL Bound Test

	Value	I(0)	I(1)
<b>F-statistic</b>	<b>1.676</b>	-	-
<b>K</b>	<b>4</b>	-	-
<b>1%</b>	-	<b>4.306</b>	<b>5.874</b>
<b>5%</b>	-	<b>3.136</b>	<b>4.416</b>
<b>10%</b>	-	<b>2.614</b>	<b>3.746</b>

### Diagram of Stability Test





### Pairwise Granger Causality Test between Real Economic growth and Corruption.

Pairwise Granger Causality Tests

Date: 08/30/21 Time: 16:56

Sample: 1970 2019

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
EC does not Granger Cause RGDP	48	0.15480	0.8571
RGDP does not Granger Cause EC		0.75659	0.4754
IC does not Granger Cause RGDP	48	2.19040	0.1242
RGDP does not Granger Cause IC		0.00329	0.9967
IC does not Granger Cause EC	48	0.17443	0.8405
EC does not Granger Cause IC		0.52913	0.5929

*Source: Researcher's computation from Eviews (2020)*