FEDERAL UNIVERSITY OYE EKITI

DEPARTMENT OF ECONOMICS AND DEVELOPMENT STUDIES

AN EMPIRICAL INVESTIGATION INTO THE NEXUS BETWEEN INFLATION AND UNEMPLOYMENT AND THE EFFECTS ON ECONOMIC GROWTH IN NIGERIA (1970-2013)

BY

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SUPERVISOR: MR. EPHRAIM UGWU

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TITLE PAGE

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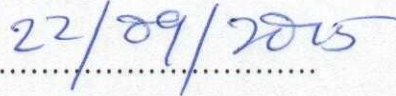
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CERTIFICATION

I hereby certify that this research work was carried out by ONYEAKU, Onyemaechi Vivian, with matriculation number EDS/11/0190 in the Department of Economics and Development Studies, Faculty of Social Science under my supervision.
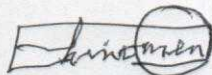
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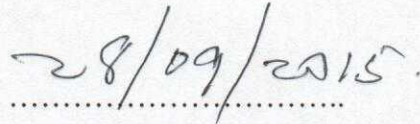
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DEDICATION

This project is dedicated to God Almighty who was, who is and who is to come, the Alpha and the Omega for sparing my life all through my university education. And to Christ Jesus my lord and personal saviour, my brother, my king and my friend and to the Holy Spirit who has been my source of inspiration and my guide. To the three adorable persons of the Holy Trinity be glory, honour, power, majesty and adoration forever and ever, Amen. And also to my Blessed Mother Mary who is my life, my love, my sweetness, my hope, my queen and my role model for her constant motherly intercession as well as my patron saint and my guardian angel.

ACKNOWLEDGEMENT

ABSTRACT

This study investigates the nexus between inflation and unemployment in Nigeria using time series data for the period 1970-2013. Using Ordinary Least Square (OLS) regression techniques, the unit root test result indicates that the variables under consideration are stationary at the order one at 5% level of significance. The OLS result shows that the coefficient of the variables, UNE, LABFORCE, GEXP, and INTRES are positive to the dependent variable (GDP) while INF and FPI are negative. Statistically, the t-statistic of the result shows that four variables, LABFORCE, INTRES, FPI and GEXP are statistically significant. The F-statistic test result indicates that the overall estimate of the regression is statistically adequate. The R^2 result shows that the independent variables explain the dependent variable to the tune of 94% (percent). The Durbin Watson statistics result shows that the entire regression is statistically significant. The co-integration result shows that there are at most five co-integrating equations. The granger causality result obtained shows that there is no direction of causality between UNE and GDP and also there is no direction of causality between INF and GDP, there is a bidirectional causality between LABFORCE and GDP. The normality test result shows that the variables under consideration are not normally distributed. The multi-colinearity test result shows that there is no evidence of multi-colinearity among the variables under consideration. The heteroskedasticity test result obtained shows that the variables under consideration are homoscedastic. Descriptively, the mean values of all the variables under consideration are positive. The highest standard deviation is recorded by GDP while the least standard deviation is recorded by UNE. Based on the findings, this study therefore recommends that the government should adopt policies that will increase Gross Domestic Product because it has the tendency to maintain a stable rise in the rate of employment which is one of the macroeconomic objectives that a government strives to achieve.

KEYWORDS: Economic growth, unemployment and inflation

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CHAPTER ONE

1.0. INTRODUCTION

1.1. BACKGROUND TO THE STUDY

Unemployment and inflation are two intricately linked concepts and the nature of the relationship between these two important economic concepts has been the interest of economists for a long time (Adeyi, 2012). Unemployment has been seen as one of the most serious impediments to social progress (Aminu, Manu and Salihu, 2013). Apart from representing an enormous waste of a country's manpower resources, it generates welfare loss in terms of lower output leading to lower income and wellbeing (Raheem, 1993). The macroeconomic performance of any government can be attributed to its unemployment rate, inflation rate and the growth rate of output (Ugwuanyi, 2004). The maintenance of price stability continues to be the overriding objective of most countries in the world and one of the most crucial economic maladies that confronted Nigeria in the early 1980s is macroeconomic instability, as well as stagnating incomes, hyperinflation, declining consumption and increasing poverty (Bakare, 2012).

The relationship between inflation and unemployment is known as the Phillips curve. In the short run, the Phillips curve happens to decline and so the short run Phillips curve and the long run Phillips curve are different. Many economists have observed that in the long run, the concepts of unemployment and inflation are not related (Aminu et al, 2013). Inflation as a concept according to Aminu and Anono (2012) has been linked to money, as captured by the popular maxim 'inflation is too much money chasing too few goods'. Hamilton (2001) described inflation as an economic

situation where the increase in money supply is faster than the new production of goods and services in the same economy. Economists usually try to differentiate inflation from an economic phenomenon of a "onetime" increase in prices or when there are price increases in a narrow group of economic goods and services (Piana, 2001). Unemployment and inflation are issues that are central to the social and economic life of every country. The existing literature refers to inflation and unemployment as the twin problems that explains the endemic nature of poverty in developing countries. The current argument is that continuous improvement in productivity is the best way to combat inflation (Aminu et al, 2013).

According to the Classical economists, inflation is caused by alterations in the supply of money. When money supply goes up, the price level of commodities also increases. This increase is known as inflation. The Classicals believe that there is a natural rate of unemployment, which may also be referred to as the equilibrium rate of unemployment in a particular economy (Aminu et al, 2013). The Keynesians have a different view from the Classicals, they regard inflation to be an aftermath of money supply that keeps rising. The Keynesian view deals primarily with the institutional crisis that are encountered by people when firms increase the prices of their goods and services that is, when firms increase prices, they make huge profits from the sale of their products. The government also increases money supply so that the economy will continue to function (Aminu et al, 2013).

Both Philips and Okun postulated that there is a positive link between inflation and output while there is a negative link between unemployment and output that is, inflation growth is followed by

unemployment drop and a growth in output (Aminu et al, 2014). This hypothesis is the basis for Okun's law which represents the addition to the Philips regularity and particularly, the segment that defines the output-unemployment ratio (Popovic and Popovic, 2009). Therefore, if inflation and unemployment are negatively linked as postulated by the Okun's law, it follows that inflation will affect the level of output positively and this provides the basis for the link between unemployment, inflation and output through the modification of the Okun's growth model to incorporate inflation (Aminu et al, 2014).

In the 1960s and 1980s, the Nigerian economy provided employment for almost all job seekers and also absorbed considerable imported labour while inflation rates were low (Aminu et al, 2013). According to the authors, the wage rate competed favourably with international standards and there was relative industrial peace for most of the years. As a result of the oil boom in the 1970s, there was mass migration of people, especially the youths, to the urban areas seeking employment. Following the downturn in the economy in the early 1980s, the problems of unemployment and inflation increased, and caused the introduction of the Structural Adjustment Programme (SAP). The depreciation of the naira exchange rate since 1986 and the inability of many industries to import the raw materials required to sustain their output led to inflation (Aminu et al, 2013). A major consequence of the rapid depreciation of the naira is the sharp increase in the general price level which led to a significant decrease in real wages and increase the rate of poverty in the economy (Aminu, Manu and Salihu, 2014).

1.2. STATEMENT OF THE PROBLEM

The Nigerian economy is currently undergoing its worst and most severe economic crisis since the Nigeria-Biafra civil war of the 1960s (Nwaobi, 2009). The inflation and unemployment situation in Nigeria has become very critical and the labour absorption ratio has been problematic (Bakare, 2012). In the words of Nwaobi (2009), as global economic meltdown has continued to ravage the economies of the world and threatens the lives of families worldwide, its negative implications for the Nigerian economy now seems to be incontestable. This inflation and unemployment problem has been identified as the major socio-economic problems facing Nigerians today (Bakare, 2012). In spite of the enormous human and natural resources that the country is endowed with, it has remained largely underdeveloped, the per capita income is low, inflation and unemployment rates are higher than before and there are many other socio-economic challenges (Aminu et al, 2013).

Statistical information reveals that Nigeria is currently experiencing a staggering or running rate of inflation well into double digits (Nwaobi, 2009). Compared to other African countries, Nigeria has had the largest segment of youth unemployment, in absolute terms, it is estimated that there are presently about 22 million Nigerian youths who are unemployed (Bakare, 2012). Furthermore, economic performance has been unimpressive, there is recurrent economic crisis, with the associated problems of high inflation rates, high exchange rates, debt and its servicing, unfavourable balance of payment in Nigeria (Aminu et al, 2013). Also, underemployment and unemployment are prominent features of the informal labour market; as a result, the full potentials of labour-surplus economy have not been fully exploited (Aminu et al, 2013). To this effect, the current inflationary trends in Nigeria have been classified by economists as both "demand-pull"

inflation where consumer demand exceeds supply, and "cost-push" inflation where the rising costs of labour wages push prices even higher (Nwaobi, 2009). The author further states that, it is the general consensus of scholars, that the current inflation is a long range phenomenon that is not likely to recede in the nearest future. The history of inflation has a lot to reveal, given the instance of the mid-1970s when there was oil boom in the economy, there was high inflation rate yet, there were no efforts made to reduce the rate of inflation; rather, the government imposed the inflationary policies such as the Udoji awards that unnecessarily left money in the pockets of civil servants (Orji, Anthony-Orji and Okafor, 2015). According to the authors, the introduction of the Structural Adjustment Programme (SAP) by the Babangida regime despite its much popularized potential benefits left the macroeconomic environment highly destabilized and that is the reason for high inflation in Nigeria till date.

Furthermore, since the early 1980s, unemployment has assumed an alarming dimension and a crisis proportion with millions of able bodied persons who are to accept jobs at the prevailing wage rate but are unable to find jobs, thus, unemployment has been regarded as one of the most challenging economic problems facing Nigerian policymakers (Fatukasi, 2011). In Nigeria, the GDP growth rate, unemployment rate and inflation rate has been on the increase for several years now which shows a likelihood of idle resources and welfare-less growth in the country, this situation calls for concern (Aminu et al, 2014). Based on the assertions made so far, the questions this study aims to answer are stated as follows: What is the relationship among inflation, unemployment and economic growth in Nigeria? What is the direction of causality between inflation, unemployment and economic growth in Nigeria?

1.3. OBJECTIVES OF THE STUDY

The broad objective of this study is: to empirically examine the nexus between inflation, unemployment and economic growth in Nigeria.

The specific objectives are;

(1) To ascertain the direction of causality between inflation, unemployment and economic growth.

(2) To determine the effects of other macroeconomic variables on economic growth in Nigeria.

(3) To proffer policy measures that would enhance economic growth in Nigeria.

1.4. RESEARCH HYPOTHESIS

Ho: There is no relationship between inflation, unemployment and economic growth in Nigeria

H1: There is a relationship between inflation, unemployment and economic growth in Nigeria

Ho: There is no direction of causality between inflation, unemployment and economic growth in Nigeria

H1: There is causality between inflation, unemployment and economic growth in Nigeria

Ho: Other macroeconomic variables have no effect on economic growth in Nigeria

H1: Other macroeconomic variables have an effect on economic growth in Nigeria

1.5. SIGNIFICANCE OF THE STUDY

This study is important because it will proffer policy measures that will assist the Nigerian policymakers whose mandate it is to draft policies that will reduce inflation and unemployment. Other beneficiaries of this study are students, government officials, researchers and economists who will gain from the provision of accurate and reliable information on the trends of inflation and unemployment and its effects on economic growth that this study aims to cover, policymakers can choose the right policy mix that will stabilize prices and also bring unemployment to a natural or minimal rate; and by doing this, the standard of living of the citizens of Nigeria will be improved and the GDP growth rate will also increase. Also, the students and researchers can build up on this study in subsequent years and contribute to the existing literature on the nexus between inflation and unemployment and their effect on economic growth in Nigeria.

1.6. LIMITATIONS OF THE STUDY

This study uses secondary data from 1970 to 2013 sourced from CBN Bulletin and the National Bureau of Statistics which may be subject to some level of irregularities and so the information obtained may not be completely accurate.

1.7. JUSTIFICATION OF THE STUDY

Many scholars like Aminu, Manu and Salihu, (2013); Bakare (2012); Orji, Anthony-Orji have carried out studies on the relationship between inflation and unemployment covering the time period from 1970 to 2010 and from 1980 to 2013. This study intends to cover the time period from

1970 to 2013 which will bring a new wealth of information to the already existing literature on the concept of inflation and unemployment and its effects on economic growth in Nigeria.

1.8. SCOPE OF THE STUDY

This study covers the period from 1970 to 2013 which is a total of forty-three (43) years and this period 1970 to 2013 was chosen because of the long period involved which will give robust information and provide an element of accuracy in data analysis and presentation of findings. This study utilizes secondary data sourced from the National Bureau of Statistics and Central Bank of Nigeria Bulletin and the World Bank data on inflation, unemployment, GDP and other macroeconomic variables.

1.8.1. ORGANIZATION OF THE STUDY

This study is divided into five main chapters and the contents of those chapters are itemized below;

Chapter One: Introduction

Background to the study

Statement of the problem

Objectives of the study

Research hypothesis

Significance of the study

Justification of the study

Summary of findings

Conclusion

Recommendations

1.9. DEFINITION OF TERMS

Inflation

Balami (2006) stated that inflation is a situation of a rise in the general price level of a broad spectrum of goods and services over a long period of time. It is measured as the rate of increase in the general price level over a specific period of time. In the words of Friedman (1976), ''inflation is always and everywhere a monetary phenomenon and can be produced only by a more rapid increase in the quantity of money than output.''

Unemployment

As defined by the Classicals, unemployment is the excess of labour supply over demand for labour and it is caused by adjustment in real wages. Classical or real wage unemployment occurs when real wages for jobs are set above the market clearing level which makes the number of jobs exceed the number of vacancies (Aminu et al, 2013). The International labour organization (2009), stated that unemployment is a state of joblessness which occurs when people are without jobs and they have actively sought employment within the past four weeks. The rate of unemployment is obtained by dividing the number of unemployed individuals by the number of individuals currently in the labour force (Aminu et al, 2013).

Sikirulahi (2008) stated that unemployment can be defined as the number of people who are unemployed in an economy and is often given as a percentage of the labour force.

Economic growth

According to Herrick and Kindleberger (1983) economic growth involves the provisions of inputs that lead to greater outputs and improvements in the quality of life of a people. It can also be defined as a quantitative and sustained increase in a country's per capita output or income accompanied by expansion in its labour force, consumption, capital and volume of trade and welfare (Jhingan, 1985). Todaro (1997) and the World Bank (1997) stated that to determine the growth of an economy, certain indicators are usually taken into consideration. These indicators include:

(i) The country's Gross Domestic Product (GDP)

(ii) The country's per capital income

(iii) The welfare of the citizens; and

(iv)The availability of social services and accessibility of the people to these services.

CHAPTER TWO

LITERATURE REVIEW

2.0. CONCEPTUAL ISSUES

2.1.1. THE CONCEPT OF UNEMPLOYMENT IN NIGERIA

This study investigates the macroeconomic implications of unemployment and inflation which is mostly negative and their effects on economic growth in Nigeria. The consequences of unemployment are psychological problems of frustration, depression, hostility, prostitution, touting, debt, poverty and income inequality as well as poor economic growth (Bakare, 2012).

Adebayo (1999) and Egbuna (2001), stated that unemployment leads to problems like criminal behaviors, aggression and frustration. To corroborate this, Echebiri (2005) affirmed that youth unemployment encourages the development of street youths and "area boys" who are unable to get a legitimate means of livelihood and were brought up in a culture that supports criminal behaviours. This opinion was supported by Chigunta (2002), who postulated that the jobless youths make a livelihood by engaging in various activities which include petty trading, manual labour, stealing, prostitution and many other illegal activities. Bennel (2000) also argued that the urban society has become criminalized, especially with the proliferation of youth gangs.

Igbinovia (1988) opined that a vast majority of prison inmates are people aged 30 years and below who have no job. Delinquency, crime and drug abuse has increased among youths as a result of

the unemployment crisis (Bakare, 2012). Balami (2006) conceptualized unemployment as a situation where workers are involuntarily out of work. This means that the workers are willing and able to work but cannot find a job (Aminu et al, 2013). Unemployment has also been categorized as one of the most serious barricades to economic progress (Bakare, 2012). Apart from fostering the development of street youths and area boys who have a tendency for criminal acts, it represents a substantial waste of a country's manpower resources, generates welfare loss in terms of lower output and leads to lower income and poor wellbeing(Akinboyo,1987 and Raheem, 1993).

2.1.2. TYPES OF UNEMPLOYMENT

Economists differentiate between various types and theories of unemployment. This includes the cyclical or Keynesian unemployment, frictional unemployment, structural unemployment and classical unemployment; others are seasonal unemployment, hardcore unemployment and hidden unemployment (Aminu et al, 2013).

a. Frictional unemployment:

Aminu et al (2013), defined frictional unemployment as the time period between jobs when a worker is searching for a job or is on transition from one job to another. Another name for frictional unemployment is "search unemployment'' and based on the circumstances of the unemployed individual, this type of unemployment can be voluntary or involuntary (Aminu et al, 2013).

b. Cyclical or Keynesian unemployment:

Cyclical unemployment is also known as the "deficient-demand unemployment" and it is a phenomenon where there's insufficient aggregate demand in the economy to provide jobs for

everyone who wants to work (Aminu et al, 2013). It was postulated by John Maynard Keynes and it states that inadequate demand triggers unemployment (Piana, 2001).

c. Structural unemployment:

Structural unemployment occurs when the labour market is unable to provide jobs for all those who are willing and able to work as a result of the mismatch between the skills of the unemployed workers and the skills that are necessary for the jobs that are available (Aminu et al, 2013).

d. Technological unemployment:

Technological unemployment is caused by innovations in technology and it is the replacement of workers by machines and hence may be classified under structural unemployment (Aminu et al, 2013). It can also be viewed as the manner in which steady increases in labour productivity means that fewer workers are needed to produce the same level of output each year (Aminu et al, 2013).

e. Hidden or concealed unemployment:

Hidden or concealed unemployment is the unemployment of potential workers which does not reflect in the official unemployment statistics, due to the way in which statistical data is collected (Aminu et al, 2013). In many parts of the world, only those who are jobless and are actively searching for unemployment qualify for social security benefits and are counted as unemployed (Aminu et al, 2013).

2.1.3. THE CONCEPT OF INFLATION IN NIGERIA

In the words of Balami (2006), inflation can be defined as a situation of a rise in the general price

level of a broad spectrum of goods and services over a long period of time. The neo-classicals and their followers at the University of Chicago claim that inflation is fundamentally a monetary phenomenon. Inflation is measured as the rate of increase in the general price level over a period of time (Balami, 2006), (Aminu et al, 2013). Dernburg and McDougall (2009) wrote that the term inflation refers to a continuous increase in prices and is measured by an index which can either be the consumer price index (CPI) or by implicit price deflator for gross national product (GNP).

2.1.4. CAUSES OF INFLATION

In modern times, there have been two dominant schools of thought that gave reasons for inflation or causes of inflation, they are;

The neo-classical/monetarists, and,

The structuralists (Aminu and Anono, 2012).

a. The neo-classical school of thought:

The neo-classicals posit that inflation is driven mainly by growth in the quantity of money supply otherwise stated as increase in money supply or increase in disposable income (Aminu and Anono, 2012). However, studies on the experience of the Federal reserve of the United States of America disputes this opinion (Aminu and Anono, 2012). To buttress this point, Colander (1995) and Hamilton (2001) stated explicitly that the US money supply growth rates rises faster than prices itself due to the increased demand for the US dollar as a global trade currency.

b. The structuralist school of thought:

The structuralists claim that inflation is caused by the structural factors underlying the characteristics of an economy (Adams, 2000). For example, in developing countries especially those with a strong underground economy where hoarding prevails, individuals will expect future prices of goods and services to increase above current prices and as a result, demand for goods and services are not only transactionary, they are also precautionary and this creates an artificial scarcity of goods and services and reinforces inflationary pressures (Aminu and Anono, 2012).

There are other factors apart from the aforementioned that can influence the level of inflation in an economy and these factors can be grouped into four:

Institutional, fiscal, monetary, and balance of payments factors (Aminu and Anono, 2012)

i. Institutional factors:

Many scholars like Cukierman, Webb and Neypti (1992); Melberg (1992); Posen (1993) and Alesina and Summers (1993) have shown in their works that the level of independence in terms of legal, administration and instruments of the monetary authority of a country is a very important institutional factor that determines inflation, especially in industrialized countries, while the turnover rate of central bank governors in developing economies was seen as a factor that influences inflation.

ii. Fiscal factors:

These factors relate to the deficit financing through the money creation problem (Aminu and Anono 2012). This means that inflation is caused by a large fiscal imbalance resulting from

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inefficient revenue collection procedures and limited development of the financial markets, which tend to increase the reliance on minting of currency otherwise known as seigniorage as a source of deficit financing (Agenor and Hoffmaister, 1997 and Essien, 2005).

iii. Monetary factors:

It is also known as the demand side determinants and considers increases in the level of money supply in excess of domestic demand, monetization of oil receipts, real income and exchange rates as well as interest rates (Moser, 1995). Alesina and Summers (1993) claimed that prudent money management aids the reduction in both the level and variability of inflation.

iv. Balance of payments factor:

It is also known as the supply side factor and it relates to the effects of exchange rate movements on the general price level in an economy (Aminu and Anono, 2012). Other scholars such as Melberg (1992); Odusola and Akinlo (2001) as well as Essien (2005), believed that exchange rate devaluation includes higher import prices and external shocks and also increases inflationary expectations.

2.1.5. TYPES OF INFLATION

Inflation as a concept refers to a sustained increase in general price levels and it is important to know that this increase could be of different magnitudes (Jinghan, 2000).

The types of inflation include;

a. Creeping inflation:

This type of inflation occurs when the increase in general price levels is very low and this sustained increase is less than three (3) percent on an annual basis (Aminu et al, 2013).

b. Walking or trotting inflation:

According to (Aminu et al, 2013), walking or trotting inflation occurs when the increase in price is on a moderate level and the annual inflation is still a single digit. This means that the rate of inflation is still at the intermediate range of about three (3) to seven (7) percent per annum in other words, the inflation rate is less than ten (10) percent (Aminu et al, 2013).

c. Running inflation:

Running inflation occurs when general prices are increasing rapidly like the running of a horse or at a speed of about ten (10) to twenty (20) percent annually (Aminu et al, 2013).

d. Hyper-inflation:

This type of inflation occurs when prices rise very fast at either double or triple digit rates from more than twenty (20) to one hundred (100) percent per annum or more. It can also be called "runaway inflation or galloping inflation". Other types of inflation according to Balami (2006) are cost-push inflation which is caused by a hike in the cost of production leading to a shortage of supply; and demand–pull inflation which is caused by increase in aggregate demands for goods and services unaccompanied by an increase in supply.

2.1.6. EFFECTS OF INFLATION

According to Balami (2006), the effects of fully anticipated inflation on the operations of the financial system are as follows: it will be reflected in the market interest rate that exceeds the real rate of interest by the rate of inflation, the cost of running the financial system that is attributed to expected inflation is not serious for mild inflation, however, with subsequent increase in prices like in the case of hyperinflation, inflation can lead to a complete breakdown of the monetary system and a return to barter. The effect that is anticipated is that it may reduce the demand to hold real money balance and will therefore decrease the net welfare obtained from holding money (Aminu et al, 2013).

Inflation in an economy can prove to be a disadvantage to people with fixed incomes such as students and pensioners, debtors will gain to the detriment of lenders, there will be deterioration of the standard of living of citizens of the affected country due to a fall in savings, real income and thus, discourage capital formation (Buhari, 1987). Also, inflationary situations may discourage efficiency, investment due to rise in prices and can lead to civil and industrial unrest because labour unions and human rights groups will mount pressure on the government for higher wages in order to sustain the existing standard of living citizens which can worsen the state of the balance of payments of a country (Buhari, 1987). Adamson (2000) opines that inflation can retard economic growth and development and the frustrating experience of the populace can become a breeding ground for rancor and acrimony.

2.2. THEORETICAL LITERATURE

2.2.1. THEORIES OF INFLATION

i. The Keynesian theory:

The Keynesian view contradicts the monetarists view of a direct and proportional relationship between the quantity of money and general price level (Aminu and Anono, 2012; Nwaobi, 2009). The Keynesian school of thought posits that the relation between changes in the quantity of money and prices is non-proportional and indirect, through the rate of interest (Aminu and Anono, 2012). This theory examined the nexus between the quantity of money and prices both under unemployment situation and full employment situations; and so as long as there is unemployment, output and employment will change in the same proportion as the quantity of money with no change in prices (Nwaobi, 2009). At full employment, changes in the quantity of money can induce a proportional change in price and as Olofin (2001) stated, this approach has the virtue of emphatically stating that the twin objectives of full employment and price stability may be irreconcilable. Thus, when the quantity of money supply increases, the interest rate falls, which will lead to an increase in the volume of aggregate demand and investment raising both employment and output (Aminu and Anono, 2012). Furthermore, the Keynesians claim that there is a link between the monetary and the real sectors of the economy and this phenomenon describes an equilibrium in the goods and money market known as the IS-LM relation (Aminu and Anono, 2012). The weakness of this theory is that it fails to appreciate the true nature of money and assumes that money can only be exchanged for bonds (Nwaobi, 2009).

ii. The neo-Keynesian theory:

The neo-Keynesian theory is a response to the inherent weaknesses of the Keynesian theory and it

combines both aggregate demand and aggregate supply by assuming the Keynesian short run view and the classical view in the long run (Nwaobi, 2009). A simple approach is to consider the changes in the public expenditure or the nominal money supply and that the expected inflation is zero; and as a result, the aggregate demand increases with real money balances and, therefore decreases with the price level (Aminu and Anono, 2012). In the words of Nwaobi (2009), the neo-Keynesians assert that inflation depends on the level of potential output otherwise known as the natural unemployment or NAIRU (non-accelerating inflation rate of unemployment) (Nwaobi, 2009). The neo-Keynesian theory focuses on productivity, and since diminishing productivity means diminishing returns to scale it induces inflationary pressures resulting mainly from widening the output gap (Aminu and Anono, 2012).

2.2.2. THEORIES OF UNEMPLOYMENT

Unemployment theories are as follows;

- Job Search-matching theory,

- Theory of Real Business Cycles

- Veblen theory of unemployment,

- Theory of low-frequency movement via asymmetric real wage rigidities.

- Theory of effective demand

i. The Search Theory of Unemployment:

This theory was postulated by Terry (1998) who proposed that workers have different skill

requirements and so workers need to find well-paying, desirable jobs, while firms need to find the most productive workers. The author further stated that neither the firms nor workers have all the information they need about the options available to them and as a result, they must embark on a search, since, search is costly and time wasting hence; both firms and workers must use some of their resources to find a good match. It is also assumed that workers only search when they are unemployed and so there is a level of uncertainty as firms do their part (Amassoma and Nwosa, 2013). For instance, when a worker gets a job offer, he/she must decide whether to accept it or continue searching for a better offer because accepting such offer may mean foregoing the chance of a better job offer later; while continuing the search means losing the wages he/she would have earned if she had accepted the offer and started working, the wage at which the worker is indifferent between continuing the search and accepting the current job is called the "reservation wage" as a result, the workers accept all job offers above the wage and turn down all offers below it (Amassoma and Nwosa, 2013). The authors further stated that when a search is successful, that is when there is a match between the needs of the workers and the firm then the worker leaves unemployment. This theory noted that, the wage offered by the firm is directly related to the workers' productivity ceteris paribus and suppose, that there is an economy-wide increase in productivity that the workers are not aware of: then, there is a tendency that such higher productivity can make it more attractive for the firm to increase employment and allowing it to do so by increasing the wage it offers to its workers (Amassoma and Nwosa, 2013). The authors claimed that this in turn increases the likelihood that an average worker will find an acceptable job offer and reduces the time the worker is likely to spend searching for a job: thus, the unemployment rate will decline in response to the increase in productivity. In addition, the search theory of unemployment is also a way in which improvement in technology can have a long lasting effect

on the rate of unemployment if it leads to permanent increase in the rate at which searching firms and workers find the right match (Amassoma and Nwosa, 2013). This theory buttresses the work of Gomme (1998) which states that the internet has made this possible because firms now routinely post vacancies on the internet, so that workers can look for jobs in multiple locations at little or no cost.

ii. The Theory of Real Business Cycles

This theory states that the growth of productivity of input which revolutionizes technology is the main source of employment and unemployment this means that, if the growth of output increases more than the growth of inputs, it makes the total factor productivity or the Solow's residual to receive increasing attention: for example, if total factor productivity is not growing then firms and economies become inefficient (Amassoma and Nwosa, 2013). It then, follows that reallocation of labour and capital cannot be achieved and that labour and capital will be used in less profitable opportunities and so, the rate of unemployment will rise (Chatterjee, 1995 and 1999). According to Amassoma and Nwosa, (2013) there are many factors that are likely to be responsible for the slowdown in the total factor productivity (TFP) hence, technology may not be an improving factor of the production of goods and services and workers' skills are not being enhanced, this happens once there is no invention in a firm and nation at large and there is continuous increase in the prices of imported goods. This pinpoints to a tendency for the TFP to be stagnant, such that, the co-movements in other important variables are likely to be equally slowdown, hence leading to fall in productivity growth.

iii. Veblen's theory of unemployment

Veblen's theory of unemployment is grounded in the theory of the business cycle which he

postulated and can be explained by revenue and cost of production (Amassoma and Nwosa, 2013). Vining (1939-1964) contends that the theory of effective demand is implied in Veblen's statement that the difficulty of over production is a question of prices and earnings which means that the difficulty means that insufficient quantities of a product can be disposed at fair prices to sustain the running of the mills at their full capacity and fair prices.

iv. The Theory of real wage rigidities

This theory explains how the labour market dynamics works for business cycle frequencies as observed by Shimmer (2005), Hall (2005); Gertler and Trigari (2009); Blanchard and Gali (2010) where they show that real wage rigidities are relevant in accounting for a number of facts including; the high volatility of employment and vacancies as well as the low volatility of real wages. The theory also emphasized that, real rigidities can also account for unemployment dynamics at low frequencies and will provide the rationale that there is an empirical relationship between long run unemployment, long run productivity and its vacancies. This conforms to the theory of the low frequency movement proposed by Purpaolo, Luca and Paolo (2010).

v. Theory of effective demand

The theory of effective demand was developed by Malthus, Marx Veblen, and Keynes (1936) where they considered unemployment as an involuntary phenomenon. Keynes believed that unemployment was basically cyclical, generated by a deficiency of aggregate demand: in his opinion, capitalists hire workers and invest such labour to produce output when the expectations about the economy and profits are favourable. To the authors, if the expectations about the future are supported by the economic reality, investments will be increasing such that employment will continue rising until the equilibrium condition is reached. This equilibrium can be obtained by the

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intersection of aggregate demand and aggregate supply, and the point of effective demand will and could be less than the full employment equilibrium; such that if expectations about the future of the economy is unfavourable, the capitalists will reduce investment thereby making unemployment rise (Amassoma and Nwosa, 2013). According to the authors, equilibrium is achieved where unemployment exists and this unemployment is due to the deficiency of aggregate demand particularly investment expenditure.

2.2.3. THEORIES OF ECONOMIC GROWTH

i. Classical growth theory

The classical growth theory was formulated by classical economists like Adam Smith, David Ricardo and Mill and it assigned the rate of investment as the main factor for fostering growth (Aminu et al, 2013). Thus, growth is a function of the share of profits in the national income and there is a positive relationship between higher rates of profit and higher rates of economic growth and this higher growth is achieved via profits through the rate of investment (Aminu et al, 2013). The classical economists believed that an increase in division of labour and specialization made possible by increase in capital growth rate will lead to an increase in profits and wages; however, the main argument is that such an increase may trigger off income and population growth that may lead to diminishing returns given that land is a fixed factor of production (Aminu et al, 2013). According to Balami (2006), the main critic of this theory of growth is its failure to provide for the possibility of the role of technical progress in the growth process.

ii. Rostow's stages of growth theory or linear stages model

Rostow (1990) propounded a theory that all countries must pass through five stages in the growth process. These stages are: -

a. The traditional society where economic decision making is based on culture, traditions and obligations. This society resembles a feudal society, it is not monetized, and so, most income from this society does not enter the national income.

b. The second stage is the pre-condition for take-off where advances in agriculture and abandonment of uneconomic culture as well as the emergence of leading sectors will take place and it will help pull along other sectors of the economy. It has a semblance to a primitive capitalist stage because there is presence of market leading to the achievement of sustained growth.

c. The third stage is the take-off stage where economic activities are taking place, the society can now take-off on the path to economic growth.

d. The fourth stage is the drive to maturity. This stage is characterized by the consolidation of industrial revolution. The leading sectors of the economy would have attained the critical minimum speed to be in the growth process.

e. The fifth stage is the stage of high mass consumption. Here, the economy is deemed to have matured, making it possible for the citizens to enjoy improved levels of standard of living, all the industries in the economy are in full operation and there are enough goods and services, which will enable the society to consume massively.

iii. Great spurt theory

According to Balami (2006), this theory states that for a less developed country to move from the

traditional levels of economic backwardness to a modern industrial economy it requires a sharp break with the past, or a great spurt of industrialization. This theory established that the process of industrialization differs among countries depending on the level of backwardness because according to the theory, all nations were once backward (Aminu et al, 2013).

This theory classified nations into three – advanced, moderate backward and very backward and claimed that the factory, banks and government will start the development in each of the nations respectively; this theory also contended the application of capital intensive technique in the production process in order to ensure the great spurt. The major problem with this theory is that it cannot be applied to a country with labour endowment because it will increase the army of unemployment, and is likely to reduce the living standards of the people (Aminu et al, 2013).

v. The big push theory

According to Balami (2006), this theory states that all that LDCs require to take off into a period of self-sustaining economic growth is a massive investment programme, in technically interdependent industries, designed to promote rapid industrialization and the building up of economic infrastructure. The theory further contended that proceeding bit-by-bit will not launch the economy successfully on the development path. The big push theory is based on the assumptions of indivisibilities and non-appropriabilities in the production functions (Amassoma and Nwosa, 2013).

vi. The new growth theory (Romer, 1990)

The new growth theory is based on a view of the economy that incorporates two important points. The first point is that, it views technological progress as a product of economic activity. Existing theories treated technology as a given, or a product of non-market forces (Aminu et al, 2013). The

new growth theory is also known as the "endogenous" growth theory, because it internalizes technology into a model of how markets should function. The second point is that, this theory holds that unlike physical objects, knowledge and technology are characterized by increasing returns, and these increasing returns drive the process of growth (Balami, 2006). This theory addresses the fundamental questions about what makes economies grow and the essential point of this theory is that knowledge drives growth and because ideas can be infinitely shared and reused, they can be accumulated without limit and they are immune to "Diminishing Returns" (Aminu et al, 2013). Finally, it underscores the point that the economic processes which create and diffuse new knowledge are crucial to shaping the growth of nations, communities and individual firms.

2.3. THEORETICAL FRAMEWORK

2.3.1. THE PHILLIPS CURVE

Phillips Curve Showing Tradeoff between unemployment and inflation

www.economicshelp.org
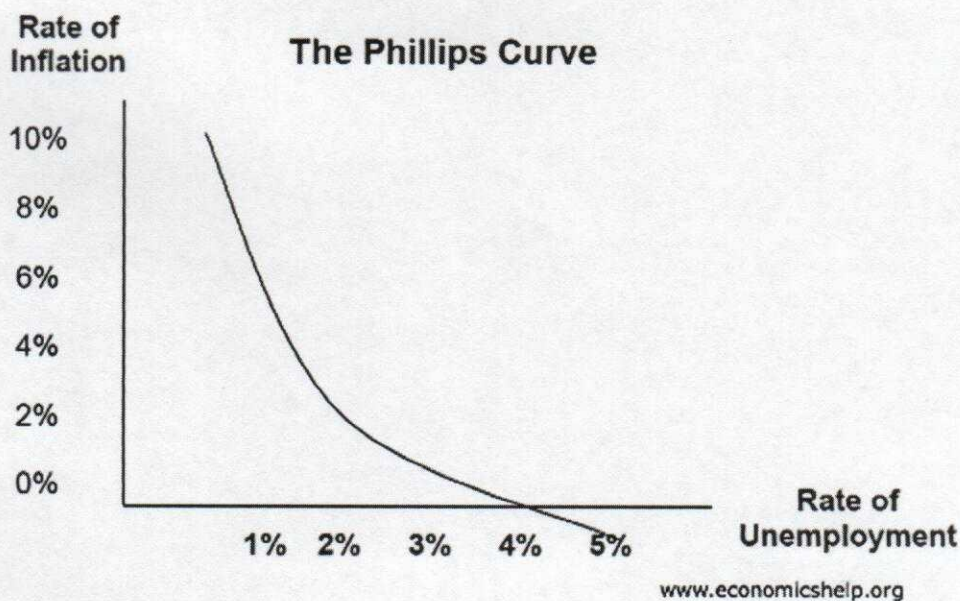
This graph illustrates the Friedman (1976) hypothesis which followed the standard practice of relating unemployment directly to change in price through the wage rate pattern. Philips (1958) argued that there was a stable negative relation between the level of unemployment and the rate at which wages change. This means that high levels of unemployment are usually accompanied by falling wages, while low levels of unemployment is followed by rising wages. And the wage change is linked to price change by allowing a secular increase in the level of productivity and treating the excess of price over wage cost as is given by a roughly constant mark-up factor (Aminu et al, 2013). There are divergent opinions on the inflation-unemployment relationship; for example, the Traditional Philips curve postulates that there is a stable negative relationship between the level of unemployment and the rate of change in wage rate inflation, that is, high levels of unemployment is followed by lower wages (Adeyi, 2012).

As earlier stated, two major goals of interest to policymakers are low inflation and full employment, but more often than not, these goals conflict (Aminu and Anono, 2012). The adoption of the monetary policy or the fiscal policy moves the economy along the short run aggregate supply curve to a point of a higher price level (Aminu and Anono, 2012). As higher output is recorded, lower unemployment follows and more workers are needed to produce more, this increase in productivity also triggers inflation (Aminu and Anono, 2012).

The trade-off between inflation and unemployment is known as the "Philips curve" and it posits that there is an inverse relationship between wage rates and the rate of unemployment using the United Kingdom data plotted over the period 1862-1957 (Aminu and Anono, 2012). Philips (1958)

argued that there is a stable negative relation between the level of unemployment and the rate of change of wages. An argument in favour of the Philips curve is the extension that establishes a relationship between prices and unemployment and it rests on the assumption that wages and prices move in the same direction (Aminu and Anono, 2012). This relationship was interpreted as a causal relation that offered a stable trade-off to policymakers of that time: they could choose a low unemployment target at the cost of an inflation rate (Aminu et al, 2013). As an alternative, the policymakers could choose a low inflation rate or make deflation their target in this case, they would have to adjust to higher unemployment rate for zero inflation and for deflation (Friedman, 1976). Economists therefore settled themselves to the task of trying to extract the relation shown in Fig. 1 using the evidence of different economies and time periods in order to eliminate the effects of external disturbance in clarifying the relation between wage change and change in price; in summary, they explored the social losses and gains from inflation on unemployment so as to ascertain their choice of the appropriate trade-off between the two (Aminu et al, 2013).

2.3.2. The Harrod-Domar growth model or capital only model

Harrod and Domar (1948) postulated a growth model that is an improvement on the Rostow theory. This model states that savings is a certain proportion of national income and net investment can be defined as the change in capital stock (K). The model further assumes that there is a direct relationship between the size of the capital stock, (K), and total GNP, (Y). This follows that any addition to the capital stock in the form of new investment will bring about corresponding increase in the flow of national output, GNP (Aminu et al, 2013). According to Balami (2006), this relationship is known as the capital-output ratio and if the capital-output ratio is defined as k and

assume further that the national savings ratio, s, is a fixed proportion of national output (e.g. 6%) and that total new investment is determined by the level of total savings, a simple model of economic growth can be constructed:

Savings (S) is some proportion, s, of national income (Y) such that we have the simple equation

$$S = SY \text{ -- -------- (1)}$$

Net investment (I) is defined as the change in the capital stock, K, and can be represented by ΔK such that

$$I = \Delta K \text{ --- (2)}$$

Because the total capital stock, K, bears a direct relationship to total national income or output, Y, as expressed by the capital-output ratio, k, it follows that $K/Y = k$ or $\Delta K / \Delta Y = k$, therefore

$$\Delta K = k\Delta Y \text{ ------------------------------- ------------------------------ (3)}$$

Finally, because net national savings, S, must equal net national investment, I, this equality a can be written as

$$S = I \text{ --- (4)}$$

But from equation (1) we know that $S = sY$ and from equation (2) and (3) we also know that

$I = \Delta K = k\Delta Y$ it therefore follows that we can write the 'identity' of savings equal to investment shown in equation (4) as

$$S = sY = k\Delta Y = \Delta K = I \text{ -- (5)}$$

Which can further be simplified as

$$sY = k\Delta Y \text{ --- -----(6)}$$

Then dividing both sides of equation (6) first by Y and then by k, the following expression is obtained:

$$\Delta Y/Y = s/k \text{ --- (7)}$$

The left hand side of equation (7), $\Delta Y/Y$, represents the rate of change or rate of growth of GNP that is, the percentage change in GNP. Equation (7) is the simplified version of the famous equation in Harrod -Domar theory of economic growth, and states that the rate of growth of GNP ($\Delta Y/Y$) is determined jointly by the national savings ratio, s, and the national capital -output ratio, k and therefore, in order for growth to take place, economies must save and invest a certain proportion of their GNP because the more an economy can save and invest, the faster it can grow (Aminu et al, 2013).

2.3.3. Small country monetarists' model

According to Aminu and Anono (2012), monetarists propounded a theory following the quantity theory of money (QTM) and opine that the quantity of money is the main determinant of the price level or the time value of money, such that any alteration in the quantity of money supply produces a direct and proportionate change in general price level.

This quantity theory of money (QTM) is related to Irving Fisher's equation of exchange depicted as MV=PQ

Here M is the stock of money, V is the velocity for the circulation of money Q is the amount of transaction during a given time period P is the general price level in the economy (Aminu and

Anono, 2012). When another variable Y (which is the total amount of goods and services exchanged for money) is used to replace Q, the equation becomes MV=PY;

This replacement of Q by Y is the linkage between the monetary side and the real side of the economy and in this model, P, V and Y are determined by the system while M is determined by the monetary authorities (Aminu and Anono, 2012). Monetarists emphasize that change in the quantity of money affects only the price level of the economy without affecting the real sector of the economy: this means that changes in the supply of money does not affect output but affects the value at which it is exchanged, this focus on the long run supply side of the economy is an essential phenomenon of the monetarists model as opposed to short run dynamics (Aminu and Anono, 2012; Dornbush et al, 1996). Furthermore, according to Nwaobi (2009), monetarist models predict that under a fixed exchange rate, changes in the money supply will be completely offset by variations in foreign reserve which will restore the original money supply of an economy.

2.3.4. The Solow growth model

The Solow growth model is an economic growth model in which the growth of total GDP is explained by population increase, investment and technical progress. There is full employment, with an aggregate production showing constant returns to scale. In analyzing the process of economic growth, Balami (2006), and Solow (2002) combined the supply and demand sides of the economy to generate economic growth. They argued that economic growth can best be understood from neo-classical point of view (supply side) which is stated below::

$Q = f(AK\alpha L1-\alpha)$.

Therefore, the Solow growth model can also be referred to as the neo-classical growth model. Solow further assumed that savings is a linear function of income, that capital does not depreciate

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so that investment is simply the rate of increase of capital stock, that savings is equal to investment, and that labour grows at an exogenous constant proportion, the rate of growth or level of technology is exogenously given.

2.4. EMPIRICAL ISSUES

Orji et al, (2015) with the aid of the Original Philips curve proposition and a distributed time lag model, examines the inflation and unemployment nexus in Nigeria between 1980-2010 and found out that unemployment is a significant determinant of inflation and that there is a positive relationship between inflation and unemployment rate in Nigeria.

Aminu et al, (2014) investigates the growth effect of human resource unemployment, natural resource unemployment and inflation in Nigeria between 1986 to 2010 through the application of the Ordinary Least Square technique (OLS) and the Augmented Dickey-Fuller technique. The result of the study is that there is an existence of a long-run relationship between economic growth, unemployment and inflation and that unemployment, total inflation and core inflation impacted positively on economic growth while headline and food inflation impacted negatively on economic growth. Muhammad (2014) examines the impact of inflation and unemployment on economic growth in Pakistan using the time series data for the period 1980 to 2010 and found out that there is a long- run relationship among all three variables.

Aminu et al, (2013) investigates the effects of unemployment and inflation on economic growth in Nigeria between 1970-2010 through the application of Augmented Dickey-Fuller technique and

unit root test and discovered that there is no causation between inflation and unemployment in Nigeria, they also discovered that unemployment and inflation have a positive impact on economic growth. Osuala et al, (2013) evaluates the impact of inflation on economic growth from the period 1970 to 2011 using time series data. The result of the study is that there is a statistically significant positive relationship between inflation and economic growth in Nigeria. Amassoma and Nwosa (2013) examines the relationship between unemployment rate and economic growth in Nigeria for the period 1986 to 2010 using co-integration and error correction model. They found out that unemployment rate has an insignificant effect on productivity growth in Nigeria.

Aminu and Anono (2012) investigates on the effect of inflation on economic growth and development in Nigeria between1970-2010. They employed OLS, ADF and Granger causality and found out that there is a positive correlation between inflation and economic growth in Nigeria, though the results revealed that the coefficient of inflation is not statistically significant, but it is consist with the theoretical expectation, causation runs from GDP to inflation implying that inflation does not Granger-cause GDP but GDP does. Aminu and Anono (2012) examines the relationship between unemployment and inflation between 1970-2010. They used OLS, ADF for unit root, Granger causality, Johansen co-integration, ARCH and GARCH techniques. The study revealed that there is a negative relationship between unemployment and inflation and no causation between unemployment and inflation; though they found that there is long-run relationship between the two phenomena in Nigeria. Also, Bakare (2012) investigates stabilization policy, unemployment crisis and economic growth in Nigeria using OLS. He found out that the nexus between inflation, unemployment and economic growth in Nigeria is negative. Rafindadi (2012) examines the relationship between output and unemployment dynamics in Nigeria using the OLS

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and Threshold model and found a negative nonlinear relationship between output and unemployment. Chang-Shuai Li and ZI-Juan Liu (2012) studies the relationship among Chinese unemployment rate, economic growth and inflation; they employed Granger causality test, unit root, co-integration, VAR and VEC model. The study revealed that unemployment impacted negatively on growth while inflation impacted positively on growth in China. The study also revealed no causation between unemployment and inflation, but there is causation between unemployment and growth, while a two-way causality existed between inflation and growth. Adewale (2012) investigates the relationship between unemployment and economic growth in Nigeria using the OLS regression model for the period 1980 to 2006. The result of the study is that there is a significant but negative relationship between unemployment an economic growth in Nigeria. Also, Ojapinwa and Oluyori (2011) investigates the existence of the Philips curve in Nigeria from 1970 to 2010 using OLS and error correction model. They found out that there is a negative short-run relationship between inflation and unemployment and a positive relationship between these variables in the short run.

Sodipe and Ogunrinola (2011) empirically investigates the unemployment and economic growth relationship for the period 1981 to 2006. The result of the study shows a positive and significant relationship between employment level and economic growth in Nigeria and there is a negative relationship between unemployment rate and GDP growth rate. Taiwo (2011) evaluates the Philips curve relationship between inflation and economic growth in Nigeria from 1981 to 2006 using the OLS technique. The result reveals a negative relationship between inflation and economic performance (RGDP) and a positive relationship between investment and economic performance (RGDP).

Popovic and Popovic (2009) studies inflation and unemployment in the EU: comparative analysis of Phillips regularity through correlation analysis of unemployment and inflation in EU for the 1998 -2007 periods. They found that the simple linear correlation coefficient between them is negative and concluded that the relation between unemployment and inflation is moderate and inverse (negative).

Olubusoye and Oyaromade (2008) analyzes the main sources of fluctuations in inflation in Nigeria using the framework of error correction mechanism, they found that lagged consumer price index (CPI), expected inflation, petroleum prices and real exchange rate significantly propagates the dynamics of inflationary process in Nigeria. Their study concluded that the efforts of the monetary regulating authorities to stabilize domestic prices would continuously be disrupted by volatility in the international price of crude oil.

Khan and Schimmelpfeining (2006) show that monetary factors were the main drivers of inflation in Pakistan while "Wheat support price" affects inflation in the short run. Here, their conclusion is that Wheat support price mattered for inflation over the medium term; and that a long run relationship existed between the consumer price index and private sector credit.

Williams and Adedeji (2004) examines price dynamics in the Dominican Republic by exploring the joint effects of distortions in the money and traded-goods markets on inflation, holding other potential influences constant. They captured the macroeconomic stability and growth for period

1991 to 2002. Using an empirically stable error-correction model, they found out that the major determinants of inflation are changes in monetary aggregates, foreign inflation, real output, and the exchange rate. However, they discovered that there is an incomplete pass-through of depreciation from the exchange rate to inflation. They also established a long-run relationship in the money and traded-goods markets, observing that inflation was influenced only by disequilibrium in the money market.

Stock and Watson (1999) using the conventional Phillips curve (unemployment rate) attempts to investigate the forecasts of U.S. inflation during a 12-month period. They focused on three questions. First, has the U.S. Phillips curve been stable? If not, what are the implications of the instability for forecasting future inflation? Second, would an alternative Phillips curve provide better forecasts of inflation than unemployment rate Phillips curve? Third, how do inflation forecasts from Phillips curve stack up against time series forecasts made using interest rate, money, and other series? They found that inflation forecasts produced by Phillips curve generally had been more accurate than forecasts based on other macroeconomic variables, including interest rates, commodity prices and money but relying on it and excluding other forecasts is an error. Similarly Duravell and Ndung'U (1999) analyzes the dynamics of inflation in Kenya and found exchange rate, foreign prices and terms of trade as having long- run effects on inflation, while money supply and interest rate only had shortrun effects.

Abachi (1998) examines the inflation-unemployment trade-off in less developed countries (LDCs); a case study of Nigeria, he used the OLS model and found out that there is no trade-off between inflation and unemployment; the results revealed stagflation in Nigeria. He also found

that there is causation between inflation and unemployment in Nigeria.

Lim and Papi (1997) studies the determinants of inflation in Turkey by analyzing price determination within the framework of a multi-sector macroeconomic model (1970 -1995). By incorporating both long and shortrun dynamics comprising the goods, money, labour and external sectors, they concluded that policymakers' commitment to active exchange rate depreciation on several occasions of the past fifteen years has also contributed to the inflationary process.

Egwaikhide et al (1994) using co-integration and error correction Mechanism, observes that the Nigerian inflation seems to find explanation in both monetary and structural factors and that both the official and the parallel market exchange rates exert upward pressure on the general price level. Furthermore, Ajakaiye and Ojowu (1994) using an input–output price-model, simulated and empirically analyzes the impact of exchange rate depreciation under different make up regimes. They found out that although exchange rate depreciation under the universal flexible mark - up pricing regime with rational expectation will contribute reasonably to the changes in the structure of sectoral prices, the associated inflationary consequences are the highest.

CHAPTER THREE

3.0. METHODOLOGY

3.1. Sources of data

This study uses the time series data for the period 1970-2013 sourced from the Central Bank of Nigeria (CBN) Bulletin, the World Bank data, and the National Bureau of Statistics (NBS) Bulletin.

3.2. Model Specification

This study will employ the Granger-causality test to validate the direction of causality between inflation, unemployment and economic growth in Nigeria from the period 1970 to 2013. Thus to study any relationship between variables, it is essential to express it in various forms. The variables to be studied are GDP, UNE, FPI, LABFORCE, INF, GEXP and INTRES and the relation between them is expressed as follows:

MODEL 1

The Mathematical Form

$$GDP = f(UNE, FPI, GEXP, LABFORCE, INTRES, INF) \dots\dots\dots\dots\dots\dots (1)$$

The Econometric Form of the model is specified below:

$$GDP = \beta_0 + \beta_1 UNE + \beta_2 FPI + \beta_3 GEXP + \beta_4 INF + \beta_5 INTRES + \beta_6 LABFORCE + U_t \dots\dots (2)$$

In order to capture the relationship between the dependent and independent variables, the study adopted a time variance and thus the equation was linearized to become:

$$GDP_t = \beta_0 + \beta_1 UNE_t + \beta_2 FPI_t + \beta_3 GEXP_t + \beta_4 INF_t + \beta_5 INTRES_t + \beta_6 LABFORCE_t + U_t \ldots\ldots (3)$$

Where;

GDP= Gross domestic product

UNE =Unemployment rate

FPI = Foreign private investment

GEXP = Government expenditure

INF = Inflation rate

INTRES = Interest rate

LABFORCE = Labour force

3.2.2. Model II (Granger causality model)

In order to ascertain the significance of the first objective which is to determine the direction of causality between the health and labour productivity in Nigeria, a granger causality test is carried out. The procedure adopted in this study for testing statistical causality is the "Granger-causality" test developed by C.W.J. Granger in 1969. The Granger causality tests determine the predictive content of one variable beyond that inherent in the explanatory variable itself.

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The study uses two most common choices of information criteria: Akaike Information Criterion (AIC) and Schwarz Information Criterion (SIC) to ascertain significance of the results estimates.

Granger causality test rely on two basic equations:

$$X_t = \Upsilon_0 + \sum_{i=1}^{k_3} \Upsilon_i H_{t=1} + \sum_{i=1}^{k_4} \lambda_i X_{t=1} + \omega_t \quad \text{...} \quad (4)$$

$$H_t = \alpha_0 + \sum_{i=1}^{k_1} \alpha_i H_{t-1} + \sum_{i=1}^{k_2} \beta_i X_{t=1} + \sum_t \quad \text{...} \quad (5)$$

where :

X = an indicator of growth

H = an indicator of other variables

t = current values

t-1 lagged values

Decision rules

The decision rule for equations (4) and (5) under causality models is a test of null hypothesis that the estimated coefficients are equal to zero at an appropriate level of significance or using the rule of thumb that if t -statistic is at least 2 the null hypothesis is rejected otherwise accepted. However, if the estimates of the parameter turn up with signs that do not conform to economic theory, they should be rejected, unless there is a good reason to believe that in the particular instance, the principles of economic theory do not hold.

3.3. Diagnostic Test

The diagnostic tests which this study employed are Augmented Dickey Fuller test and Johansen co-integration test.

3.3.1 Augmented Dickey Fuller

The Augmented Dickey Fuller test is used to test for the existence of unit root in a given time series data. The basis for this test is when the assumption of non-autocorrelation between the disturbance terms is violated.

Decision Rule: The null hypothesis $\delta = 0$ or $P = 1$, i.e. a unit root exist in Y (Y is non-stationary). The decision rule to accept the null hypothesis is that ADF statistics should be less than critical t-value at certain percent level, and hence unit root exist; but if ADF statistics is greater than the critical t-value at certain percent, then the null hypothesis is rejected, hence, there is no unit root and Y is stationary.

3.3.2 Johansen co-integration test

Co-integration is a diagnostic test in order to determine whether there is a long run relationship between two or more variables in a model. When time series variables are non-stationary, it is interesting to see if there is a certain common trend between those non-stationary series. If two non-stationary series $X_t I(1)$ has a linear relationship such that $Z_t = m + \alpha X_t + \beta Y_t$ and $Z_t I(0)$, (Z_t is stationary), then the two series X_t and Y_t are co-integrated. It is always employed when simple causality test fails to establish such relationship in the short run.

Whenever the variables are found to be related in the long run, it then follows that the variables can affect each other in the long run.

There are two broad approaches to test for the co-integration, Engel and Granger (1987) and Johansen (1988). Broadly speaking, co-integration test is used to determine if the residuals of regression between two non-stationary series are stationary. This paper employed a simple test of co-integration: the Johansen Test. Johansen develops maximum likelihood estimators of co-integrating vectors.

Decision Rule: The decision rules upon which to accept or not that there exist a long run relationship between variables is thus; The TRACE-statistics and the critical value at an appropriate level of significance determine whether to accept or to reject the null hypothesis. If TRACE-statistics value is greater than the critical value, the null hypothesis is rejected; on the other hand, if TRACE-statistics is less than the critical value, the null hypothesis is accepted. The hypothesis indicates the number of co-integrating equation(s) and the usual levels of significance are 1 and 5percents.

3.4 Expected result of the paper

This study captured economic growth as increase in output, unemployment as miss-match between unemployed and the available jobs due to lack of skill, while inflation is captured as both cost-push i.e. increase in cost of production and demand-pull caused by full employment. The dominant manifestation of unemployment in Nigeria is structural/technological, advancement in technology tends to increase output, therefore, is expected that increase in structural/technological unemployment would increase output. The dominant manifestation of inflation in Nigeria is cost-push, when cost of production increases, prices would also increase and producers will be encourage to increase production, hence output will increase; therefore, is expected that, rise in inflation rate would raise output and as demand-pull where increase in employment triggers

inflation due to increased aggregate demand, thereby encouraging producers to produce more. This

implies that, the relationship between unemployment, inflation and economic growth is positive.

CHAPTER FOUR

4.0. PRESENTATION OF FINDINGS

4.1. DESCRIPTIVE STATISTICS

The descriptive statistics of the variables used in this study are shown in Table below. The probabilities of Jarque-Bera test of normality for variables are not greater than 5% level of significance.

TABLE 1

	GDP	INF	UNE	LABFORCE	INTRES	FPI	GEXP
Mean	5655181.	17.88979	4.317045	53701136	10.58386	160461.3	504766.4
Median	422376.8	12.56469	3.862500	50650000	8.650000	17142.15	18086.59
Maximum	24700000	72.80000	10.40000	82000000	27.89000	1091928.	5727972.
Minimum	5281.100	0.220000	1.800000	29500000	2.500000	-404.1000	522.2042
Std. Dev.	8711254.	15.42312	1.660319	17426529	6.558963	292293.8	1174793.
Skewness	1.322277	1.911178	1.425883	0.288991	0.916640	2.170042	2.956117
Kurtosis	3.068294	6.261726	5.805110	1.721455	3.263850	6.429139	11.71574
Jarque-Bera	12.83028	46.29031	29.33556	3.609360	6.289314	56.09144	203.3509
Probability	0.001637	0.000000	0.000000	0.164527	0.043082	0.000000	0.000000
Observati ons	44	44	44	44	44	44	44

SOURCE: AUTHOR'S COMPUTATION

The table above shows the descriptive statistics for the dependent and independent variables, GDP, INF, FPI, UNE, GEXP, LABFORCE and INTRES all have a positive mean value. The positive mean value of other variables ranges from 4.317025 to 5655181 with 44 observations. The highest standard deviation of 8711254 is recorded by GDP while the least standard deviation of 1.660319 is recorded by UNE. The Jarque –Bera test values are not greater than 5 percent level of significance which indicates that all the variables under consideration are not normally distributed.

4.2. REGRESSION RESULT

In the analysis of the regression result, it is expected that the coefficients of the variables under consideration will exhibit various characteristics in signs and sizes that conforms to the a priori expectations of the economic theory. The result of the effect of the Macroeconomic fundamentals on economic growth is obtained below.

TABLE 2

Dependent Variable	GDP			
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-8633275.	2582039.	-3.343588	0.0019
INF	-1534.121	23626.68	-0.064932	0.9486
UNE	43530.66	253130.7	0.171969	0.8644
LABFORCE	0.271250	0.043858	6.184756	0.0000
INTRES	-304073.9	73331.71	-4.146555	0.0002
FPI	6.635260	1.955264	3.393536	0.0017
GEXP	3.397837	0.394082	8.622168	0.0000

R-squared 0.946933
Adjusted R-squared 0.938328

Durbin-Watson stat 1.674851

F-statistic110.0395

SOURCE: AUTHOR'S COMPUTATION

The regression result obtained shows that the coefficient of the variables, UNE, LABFORCE, GEXP, and INTRES is positive while INF and FPI is negative. The positive coefficient of unemployment variable could be attributed to the works of Laudmann (2004) which stipulated that the nature of the mechanism that links unemployment and growth should be taken into account. He noted that it is important to also take account of the usefulness of changes in productivity growth because their effect on productivity growth may be contradictory with respect to their time frame which among others includes; short, medium and long run as a function of the accompanying

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effects of changes in productivity growth. The result equally conforms to the findings of Uhlig (2006) who noted that the correlation between productivity growth and unemployment are positive, less volatile and more persistent such that this correlation varies with the span of time under consideration. The author buttressed that technical progress and growth in gross domestic production (GDP) are certainly not harming employment and over most periods creates and kept employment. The coefficient of the variable, INF is negative. This implies that during the period under review, inflation impacted negatively on the country's economic growth. This is however with an adjustment lag in the system. By way of illustration, a 1% increase in inflation is capable of dampening national income by about -0.001%.

4.3. STATISTICAL CRITERION

Statistically, the t- statistics of the variables under consideration would be interpreted based on the following underlined assumptions: If the t-value of the variable under consideration is less than negative two or greater than positive two (< -2 >2) then, it shows that the variable under consideration is significance statistically, otherwise it is not. For the variables under consideration, the following values were statistically significant:

TABLE 3

Variance	t-Statistic	Prob.
INF	-0.064932	0.9486
UNE	0.171969	0.8644
LABFORCE	6.184756	0.0000
INTRES	-4.146555	0.0002
FPI	3.393536	0.0017
GEXP	8.622168	0.0000

SOURCE: AUTHOR'S COMPUTATION

The table shows that four variables, LABFORCE = 6.184756, INTRES = -4.146555, FPI = 3.393536 and GEXP = 8.622168 are statistically significant.

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The F –statistic is interpreted based on the following decision rule and hypothesis as follows:

Ho: $\beta 1 = \beta 2 = \beta 3 = \beta 4 = \beta 5$

Hi: $\beta 1 \neq \beta 2 \neq \beta 3 \neq \beta 4 \neq \beta 5$

V1 = K-1

V2 = N-K

Where K = number of parameters

     N = number of observations

Decision: If the F – calculated is greater than the F – tabulated, we reject Ho and accept Hi, and conclude that the overall estimate of the regression is statistically adequate otherwise it is not.

For the variables under consideration,

K-1 = 6-1 =5

N-K = 44-6 =38

The F- calculated is as follows: $F_{(5.38)} = 110.0395$, while the tabulated F- statistics is $F_{(5.38)} = 2.45$

Decision: Since the F-calculated is greater than the F- tabulated, we conclude that the overall estimate of the regression is statistically adequate.

The R^2 which measures the overall goodness of fit of the entire regression exhibited the following value: $R^2 = 0.946933 = 94\%$. This implies that the independent variables explain the dependent variable to the tune of 94% (percent). The Durbin Watson statistic DW= 1.674851 which is greater than the R^2 indicates that the entire regression is statistically significant.

4.4. *ECONOMETRIC* CRITERION

Under the Econometric criterion, the following tests would be conducted: Unit root/Stationarity test, cointegration test., Multicolinearity test, Normality test and Heteroscedasticity test.

i. UNIT ROOT/STATIONARITY TEST

The unit root test is used to ascertain the stationarity of the variables under consideration. It is conducted with the following decision rule: If the absolute value of the ADF test is greater than the critical value either at 1%, 5%, or 10% level of significance at the order zero, one, or two, we conclude that the variables under consideration are stationary otherwise, they are not. For the variables under consideration, the result is as follows:

TABLE 4

ADF STATISTICS 5% Critical Value -1.9490		
VARIABLE	I(0)	I(1)
GDP	0.935111	-7.868936
UNE	-7.364379	-9.537229
INF	-3.833119	-5.175340
FPI	-1.456354	-3.853718
GEXP	4.860623	-7.491633
INTRES	0.069825	-4.359389
LABFORCE	1.694923	-3.676482

SOURCE: AUTHOR'S COMPUTATION

Decision rule: Since the absolute value of the t- statistic is greater than the critical value of the variables, the conclusion is that the variables under consideration are stationary at the order one at 5% level of significance.

ii.CO-INTEGRATION TEST

When a linear combination of variables that are I (1) produces a stationary series, then the variables may need to be co-integrated. This means that a long-run relationship may exist among them, which connotes that they may wander from one another in the short-run but in the long-run they will move together. To establish whether long-run relationship exists among the variables or not, co-integration tests are conducted by using the multivariate procedure developed by Johansen (1988). Johansen method detects a number of co-integrating vectors in non-stationary time series. It allows for hypothesis testing regarding the elements of co-integrating vectors and loading matrix. The co-integration tests result is as follows:

TABLE 5

Eigenvalue	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE(s)
0.803586	229.7453	109.99	119.80	None **
0.773323	161.3890	82.49	90.45	At most 1 **
0.595919	99.05135	59.46	66.52	At most 2 **
0.532570	60.99347	39.89	45.58	At most 3 **
0.362305	29.05219	24.31	29.75	At most 4 *
0.127207	10.15659	12.53	16.31	At most 5
0.100366	4.442224	3.84	6.51	At most 6 *

SOURCE: AUTHOR'S COMPUTATION
*(**) denotes rejection of the hypothesis at 5% significance level
L.R. test indicates 5 co-integrating equation(s) at 5% significance level

From the table above, the results point out that the null hypothesis of no co-integration among the variables is rejected in favour of the alternative hypothesis up to five co-integrating equations at 5% significant level because their values exceed the critical values. This means there are at most five co-integrating equations, which implies that a unique long-run relationship exists among the variables and the coefficients of estimated regression can be taken as equilibrium values.

iii. GRANGER CAUSALITY TEST

The procedure used in the study for testing statistical causality between the GDP, UNE, INF, FPI, GEXP, LABFORCE and INTRES is the "Granger-causality" test developed by C.W.J. Granger in 1969. The Granger causality tests determine the predictive content of one variable beyond that inherent in the explanatory variable itself. The result of the causality tests obtained are as follows:

TABLE 6

Pairwise Granger Causality Tests
Sample: 1970 2013
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Probability
INF does not Granger Cause GDP	42	0.03770	0.96304
GDP does not Granger Cause INF		0.56599	0.57264
UNE does not Granger Cause GDP	42	0.83088	0.44363
GDP does not Granger Cause UNE		0.79141	0.46073
LABFORCE does not Granger Cause GDP	42	4.84988	0.01347
GDP does not Granger Cause LABFORCE		12.9623	5.4E-05
INTRES does not Granger Cause GDP	42	1.63648	0.20844
GDP does not Granger Cause INTRES		3.90004	0.02905
FPI does not Granger Cause GDP	42	1.89089	0.16524
GDP does not Granger Cause FPI		19.7925	1.4E-06
GEXP does not Granger Cause GDP	42	0.50901	0.60524
GDP does not Granger Cause GEXP		0.64535	0.53028
UNE does not Granger Cause INF	42	0.46737	0.63030
INF does not Granger Cause UNE		0.42254	0.65850
LABFORCE does not Granger Cause INF	42	0.26576	0.76808
INF does not Granger Cause LABFORCE		0.28956	0.75027
INTRES does not Granger Cause INF	42	2.87076	0.06934
INF does not Granger Cause INTRES		0.46200	0.63361
FPI does not Granger Cause INF	42	0.37453	0.69019
INF does not Granger Cause FPI		0.01894	0.98125
GEXP does not Granger Cause INF	42	0.45715	0.63661
INF does not Granger Cause GEXP		0.04538	0.95569
LABFORCE does not Granger Cause UNE	42	3.00995	0.06150
UNE does not Granger Cause LABFORCE		0.70753	0.49941
INTRES does not Granger Cause UNE	42	3.45747	0.04201
UNE does not Granger Cause INTRES		0.17424	0.84078
FPI does not Granger Cause UNE	42	0.54756	0.58297
UNE does not Granger Cause FPI		0.60768	0.54996
GEXP does not Granger Cause UNE	42	0.24674	0.78262

UNE does not Granger Cause GEXP		0.15143	0.86001
INTRES does not Granger Cause LABFORCE	42	2.06003	0.14182
LABFORCE does not Granger Cause INTRES		3.77218	0.03229
FPI does not Granger Cause LABFORCE	42	3.04633	0.05960
LABFORCE does not Granger Cause FPI		1.24024	0.30106
GEXP does not Granger Cause LABFORCE	42	19.1303	2.0E-06
LABFORCE does not Granger Cause GEXP		0.47126	0.62791
FPI does not Granger Cause INTRES	42	0.09925	0.90575
INTRES does not Granger Cause FPI		0.84658	0.43702
GEXP does not Granger Cause INTRES	42	3.63874	0.03609
INTRES does not Granger Cause GEXP		1.35854	0.26956
GEXP does not Granger Cause FPI	42	9.82104	0.00038
FPI does not Granger Cause GEXP		0.16614	0.84756

SOURCE: AUTHOR'S COMPUTATION

From the table above, the result obtained shows that there is no direction of causality between UNE and GDP which corresponds to Amassoma and Nwosa (2013). There is no direction of causality between INF and GDP which means that inflation does not granger cause GDP. There is a bidirectional causality between LABFORCE and GDP showing that increase in labour force granger causes GDP and increase in GDP causes labour force increase. There is a unidirectional causality existing from GDP to INTRES, LABFORCE to UNE, LABFORCE to INTRES, INTRES to UNE, FPI to LABFORCE, GEXP to LABFORCE, GEXP to INTRES, GEXP to FPI and from GDP to FPI. The result shows no direction of causality between GEXP and GDP, UNE and INF, LABFORCE and INF, INTRES and INF, FPI and INF, GEXP and INF, FPI and UNE, GEXP and UNE, and FPI and UNE.

iv. NORMALITY TEST

The normality test procedure is conducted to ascertain the normality distribution of the error term of the variables under consideration. The decision rule that guides the normality test is as follows: If the chi-square calculated is less than the tabulated chi-square, which is given, we conclude that

the error term of the variables under consideration is normally distributed otherwise it is not. The

Jargue Bera test for Normality test is therefore presented as follows:

GRAPH 1

Series: Residuals	
Sample 1970 2013	
Observations 44	
Mean	3.26E-09
Median	-229882.2
Maximum	6412725.
Minimum	-4668281.
Std. Dev.	2006741.
Skewness	0.778709
Kurtosis	4.958077
Jarque-Bera	11.47596
Probability	0.003221
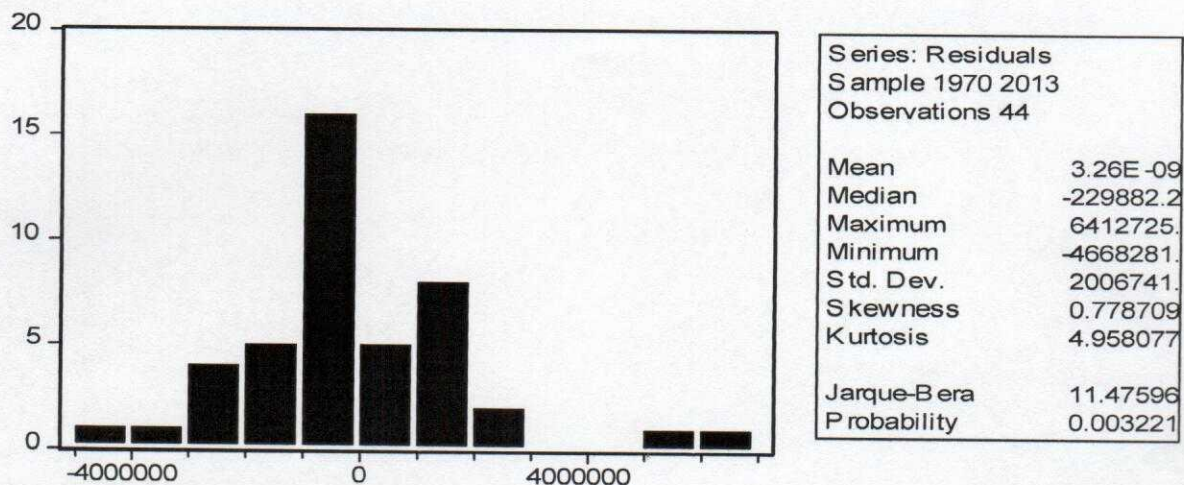
SOURCE: AUTHOR'S COMPUTATION

For the variables under consideration, the normality test conducted is as follows: Jarque-Bera = 11.47596 while the tabulated value is given as follows: chiy = 5.99147. Decision: since the chi-square calculated is greater than the chi-square tabulated, we conclude that the error term of the variables under consideration are not normally distributed.

v. MULTICOLINEARITY TEST

The multicolinearity test is used to ascertain the degree of relationship that exists between the dependent variable and the independent variables. This is done using the correlation matrix as follows;

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TABLE 7

	GDP	INF	UNE	LABFORCE	INTRES	FPI	GEXP
GDP	1.000000	-0.223140	-0.351184	0.875871	0.203030	0.739470	0.776512
INF	-0.223140	1.000000	-0.213786	-0.086218	0.215440	-0.197949	-0.171249
UNE	-0.351184	-0.213786	1.000000	-0.528083	-0.411962	-0.318992	-0.211266
LABFORCE	0.875871	-0.086218	-0.528083	1.000000	0.475454	0.686671	0.640221
INTRES	0.203030	0.215440	-0.411962	0.475454	1.000000	-0.044957	0.410264
FPI	0.739470	-0.197949	-0.318992	0.686671	-0.044957	1.000000	0.296890
GEXP	0.776512	-0.171249	-0.211266	0.640221	0.410264	0.296890	1.000000

SOURCE: AUTHOR'S COMPUTATION

Based on the values obtained from the correlation matrix, the conclusion is that there is no multicolinearity among the variables under consideration.

vi. HETEROSCEDASTICITY TEST

Under the heteroscedasticity test, the following assumptions were made: if the chi-square calculated is less than the chi-square tabulated, we accept Ho otherwise we reject. The hypothesis that guides the test is as follows:

H0: $\beta 1 = \beta 2 = \beta 3 = \beta 4 = \beta 5 = \beta 6$, H1: $\beta 1 \neq \beta 2 \neq \beta 3 \neq \beta 4 \neq \beta 5 \neq \beta 6$

The equation that guides the test is stated as follows: Ut $= \beta 0 + \beta 1$ (UNE) $+ \beta 2$ (INF) $+ \beta 3$ (FPI) $+ \beta 4$ (GEXP) $+ \beta 5$ (INTRES) $+ \beta 6$ (LABFORCE) $+ \beta 7$ (UNE)2 $+ \beta 8$ (INF)2 $+ \beta 9$ (FPI)2 $+ \beta 10$ (GEXP)2 $+ \beta 11$ (INTRES)2 $+ \beta 12$ (LABFORCE) 2 $+ \beta 13$ (UNE), INF, (FPI), (GEXP), INTRES, LABFORCE $+$ Vt

The Heteroscedasticity result obtained is presented below:

TABLE 8

White Heteroskedasticity Test:

F-statistic	2.525298	Probability	0.018847
Obs*R-squared	21.75008	Probability	0.040418

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Sample: 1970 2013
Included observations: 44

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.44E+13	2.85E+13	0.504234	0.6177
INF	-2.84E+10	2.42E+11	-0.117474	0.9072
INF^2	2.27E+09	3.77E+09	0.601685	0.5518
UNE	5.69E+12	3.50E+12	1.625214	0.1142
UNE^2	-4.08E+11	2.82E+11	-1.445381	0.1584
LABFORCE	-1471956.	1123915.	-1.309669	0.1999
LABFORCE^2	0.018052	0.010095	1.788260	0.0835
INTRES	-6.02E+11	1.26E+12	-0.477345	0.6365
INTRES^2	2.01E+10	3.95E+10	0.508853	0.6145
FPI	23604401	27314856	0.864160	0.3941
FPI^2	-28.15957	22.41469	-1.256300	0.2184
GEXP	-7513789.	5252460.	-1.430527	0.1626
GEXP^2	0.573356	0.826771	0.693488	0.4932

R-squared	0.494320	Mean dependent var	3.94E+12
Adjusted R-squared	0.298573	S.D. dependent var	7.92E+12
S.E. of regression	6.63E+12	Akaike info criterion	62.12480
Sum squared resid	1.36E+27	Schwarz criterion	62.65195
Log likelihood	-1353.746	F-statistic	2.525298
Durbin-Watson stat	2.336096	Prob(F-statistic)	0.018847

SOURCE: AUTHOR'S COMPUTATION

For the variables under consideration, chi –square under 12 degrees of freedom chi square (12) = 2.525298, the chi-square (12) tabulated = 21.0261

DECISION: Since the X^2 calculated $< X^2$ tabulated, we conclude that the error term of the variables under consideration are homoscedastic.

CHAPTER FIVE

5.0. SUMMARY, CONCLUSION AND POLICY RECOMMENDATION

5.1. SUMMARY

The existing literature states that unemployment and inflation are detrimental to the economic growth and development of a country and both issues has to be tackled with the use of macroeconomic policies either fiscal or monetary. Nigeria as a developing country has been faced with this inflation-unemployment problem for several decades now and this has led to the poor utilization of its enormous human and natural resources. This situation has brought untold hardships to the thousands of jobless youths who have no means of sustenance and their families who are dependent on them. In order to make ends meet, most of these youths get involved in demeaning, difficult and low wage jobs which are not commensurate to the skills they have acquired. Worse still, they may be forced into criminal activities like kidnapping, armed robbery, prostitution, drug abuse among others and the society will have to bear the burden of increase in criminal activities. Many die in the struggle for subsistence and the hopes for future elevation of their dependents is dashed; thus, the vicious cycle of poverty remains unbroken and the gap between the rich and the poor continues to widen. Others end up in jail and their dreams for success never materialize.

In Nigeria, the resultant effects of youth unemployment and inflation are general welfare loss, hunger and frustration, waste of human resources and stunted economic growth. It also views the impact of other macroeconomic variables like foreign private investment, government expenditure, money supply, and interest rate on the rate of economic growth in Nigeria. From the introductory aspect of the study, it has been established that unemployment has a negative impact

on economic growth in Nigeria and inflation has a positive relationship with economic growth in the sense that inflation causes economic growth and economic growth causes inflation.

5.2. CONCLUSION

The result of the descriptive statistics shows that the dependent and independent variables, GDP, INF, FPI, UNE, GEXP, LABFORCE and INTRES all have a positive mean value. The positive mean value of other variables ranges from 4.317025 to 5655181 with 44 observations. The highest standard deviation of 8711254 is recorded by GDP while the least standard deviation of 1.660319 is recorded by UNE. The result of the Jarque –Bera test shows that the values are not greater than 5 percent level of significance which indicates that all the variables under consideration are not normally distributed.

The regression result obtained shows that the coefficients of the variables, UNE, LABFORCE, GEXP, and INTRES are positive. The R^2 which measures the overall goodness of fit of the entire regression exhibited the following value: $R^2 = 0.946933 = 94\%$. This implies that the independent variables explain the dependent variable to the tune of 94% (percent). The Durbin Watson statistic DW= 1.674851 is greater than the R^2 indicates that the entire regression is statistically significant and there is no autocorrelation. The result of the unit root test shows that the absolute value of the t- statistic is greater than the critical value of the variables, and it follows that the variables under consideration are stationary at the order one at 5% level of significance. The results of the co-integration test show that the null hypothesis of no co-integration among the variables is rejected in favour of the alternative hypothesis up to five co-integrating equations at 5% significant level. The causality test result obtained indicates that there is no direction of causality between INF and

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GDP which means that inflation does not granger cause GDP. There is a bidirectional causality between LABFORCE and GDP showing that increase in labour force granger causes GDP and increase in GDP causes labour force increase. The result of the normality test conducted shows that the variables under consideration are not normally distributed. The multicolinearity test indicates that there is no evidence of multicolinearity among the variables under consideration. The Heteroscedasticity test result conducted shows that the variables under consideration are homoscedastic.

5.3. POLICY RECOMMENDATION

1. Based on the findings of the study which used the data for the period 1970-2013, this study recommends further studies to validate this work using data that will cover from 1970-2015 so as to present more accurate results and contribute to knowledge.

2. Based on the findings of the study, the government as a matter of fact and urgency should adopt policies that will increase Gross Domestic Product because it has the tendency to maintain a stable rise in the rate of employment which is one of the macroeconomic objectives that governments strive to achieve.

3. Based on the findings of the study, the government should also increase its capital base because it leads to an increase in resources for production of goods and services which propels economic growth.

4. Based on the findings of this study, the government should also regulate the interest rate which will make the economy more attractive to foreign investors, so that GDP will rise.

5. In conclusion, the government should increase its expenditure on capital goods that will increase the employment opportunities of the citizens of Nigeria. However, the government should adopt anti-inflationary measures so that increase in government expenditure and high rate of employment does not increase the rate of inflation in Nigeria.

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APPENDIX

APPENDIX I: DATA

YEAR	UNE	INTRES	INF	GDP	GEXP	FPI	LABFORCE
1970	4.8	4	13.8	5281.1	522.2042	128.6	2.95E+07
1971	5.3	4	16	6650.9	526.0088	142.8	3.02E+07
1972	5.2	4	3.2	7187.5	578.2032	297.8	3.09E+07
1973	4.8	4	5.4	8630.5	606.1504	186.3	3.15E+07
1974	5.4	4	13.4	18823.1	763.4291	181.6	3.23E+07
1975	4.8	3.5	33.9	21475.2	812.2807	253	3.30E+07
1976	5.2	2.5	21.2	26655.8	659.9408	212.5	3.39E+07
1977	4.7	3	15.4	31520.3	593.1978	245.5	3.49E+07
1978	4.8	4	16.6	34540.1	818.4285	134.4	3.59E+07
1979	10.4	4	11.8	41974.7	1133.702	184.3	3.70E+07
1980	7.8	5	9.9	49632.3	1738.238	-404.1	3.81E+07
1981	3.2	5	7.7	47619.7	2028.936	334.7	3.91E+07
1982	5.4	7	7.7	49069.3	3008.96	290	4.00E+07
1983	3.4	7	23.2	53107.4	7149.03	264.3	4.09E+07
1984	7.8	8.5	39.6	59622.5	7985.596	360.4	4.18E+07
1985	6.1	8.5	5.5	67908.6	11409.53	434.1	4.27E+07
1986	5.3	8.5	5.4	69147	13971.48	887.4	4.37E+07
1987	7	11.75	10.2	105222.8	10279.15	6805.4	4.48E+07
1988	5.3	11.75	38.3	139085.3	15179.99	4330	4.60E+07
1989	4.5	17.5	40.9	216797.5	21421.25	12258.6	4.72E+07
1990	3.5	17.5	7.5	267550	22015.08	4250.8	4.86E+07
1991	3.1	15	13	312139.7	18887.79	6321.2	4.99E+07
1992	3.4	21	14.5	532613.8	18594.29	51314.9	5.14E+07
1993	2.7	26.9	57.2	683869.8	16153.79	29283.3	5.28E+07
1994	2	12.5	57	899863.2	17578.89	22025.7	5.44E+07
1995	1.8	12.5	72.8	1933212	14697.41	70155.6	5.60E+07
1996	3.4	12.25	29.3	2702719	38628.29	99235.7	5.76E+07
1997	3.2	12	8.5	2801973	41975.99	105666.9	5.93E+07
1998	3.2	12.95	10	2708431	70953.43	80111.5	6.10E+07
1999	3.1	17	0.22	3194015	129943.6	93808.2	6.28E+07
2000	4.7	12	14.53	4582128	148569.3	167031.3	6.45E+07
2001	4.2	12.95	16.49	4725086	242689.9	224952.6	6.64E+07
2002	3	18.88	12.14	6912382	262973.1	250014	6.82E+07
2003	2.3	15.02	23.84	8487032	261997.5	281944.1	7.01E+07
2004	4.45	14.21	10.01	11400000	1028579	271765.6	7.20E+07
2005	3.6	7	11.57	14600000	1393553	770228.2	7.39E+07

2006	2.65	8.8	8.57	18600000	217371.1	984812.3	7.59E+07
2007	3.375	6.91	6.56	20700000	900011.7	1091928	7.79E+07
2008	4.025	7.03	15.1	23800000	286858.9	807588.7	7.99E+07
2009	3.125	3.72	10.83	24700000	2305496	969473.8	8.20E+07
2010	3.0125	6.6	12.965	22250000	2465023	86959.85	80950000
2011	3.7	12.78	11.8975	24250000	2468836	130419.8	81475000
2012	3.575	24.8	11.36375	23475000	4009176	195992	81212500
2013	3.6375	27.89	12.16438	23250000	5727972	237483.3	81212500

APPENDIX II: UNIT ROOT RESULT

ADF Test Statistic	-3.853718	1% Critical Value*	-2.6196
		5% Critical Value	-1.9490
		10% Critical Value	-1.6200

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(FPI,2)
Method: Least Squares
Date: 09/07/15   Time: 16:28
Sample(adjusted): 1973 2013
Included observations: 41 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(FPI(-1))	-0.902977	0.234313	-3.853718	0.0004
D(FPI(-1),2)	-0.177943	0.158018	-1.126099	0.2670
R-squared	0.563299	Mean dependent var		1008.204
Adjusted R-squared	0.552102	S.D. dependent var		258492.5
S.E. of regression	172996.7	Akaike info criterion		27.00748
Sum squared resid	1.17E+12	Schwarz criterion		27.09107
Log likelihood	-551.6534	Durbin-Watson stat		1.944128

ADF Test Statistic	-1.456354	1% Critical Value*	-2.6182
		5% Critical Value	-1.9488
		10% Critical Value	-1.6199

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(FPI)
Method: Least Squares
Date: 09/07/15   Time: 16:28
Sample(adjusted): 1972 2013

Included observations: 42 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FPI(-1)	-0.117081	0.080393	-1.456354	0.1531
D(FPI(-1))	-0.038530	0.158940	-0.242420	0.8097
R-squared	0.058596	Mean dependent var		5650.964
Adjusted R-squared	0.035061	S.D. dependent var		172194.5
S.E. of regression	169148.9	Akaike info criterion		26.96139
Sum squared resid	1.14E+12	Schwarz criterion		27.04414
Log likelihood	-564.1893	Durbin-Watson stat		1.977350

ADF Test Statistic	-7.491633	1%	Critical Value*	-2.6211
		5%	Critical Value	-1.9492
		10%	Critical Value	-1.6201

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GEXP,3)
Method: Least Squares
Date: 09/07/15   Time: 16:27
Sample(adjusted): 1974 2013
Included observations: 40 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GEXP(-1),2)	-2.266014	0.302473	-7.491633	0.0000
D(GEXP(-1),3)	0.398880	0.170527	2.339101	0.0247
R-squared	0.831904	Mean dependent var		4462.006
Adjusted R-squared	0.827480	S.D. dependent var		1320951.
S.E. of regression	548663.9	Akaike info criterion		29.31707
Sum squared resid	1.14E+13	Schwarz criterion		29.40151
Log likelihood	-584.3413	Durbin-Watson stat		2.039448

ADF Test Statistic	4.860623	1%	Critical Value*	-2.6182
		5%	Critical Value	-1.9488
		10%	Critical Value	-1.6199

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GEXP)
Method: Least Squares
Date: 09/07/15   Time: 16:25
Sample(adjusted): 1972 2013
Included observations: 42 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GEXP(-1)	0.473355	0.097386	4.860623	0.0000
D(GEXP(-1))	-0.600374	0.194801	-3.081985	0.0037
R-squared	0.329819	Mean dependent var		136367.8

Adjusted R-squared	0.313064	S.D. dependent var	532071.4
S.E. of regression	440989.3	Akaike info criterion	28.87788
Sum squared resid	7.78E+12	Schwarz criterion	28.96062
Log likelihood	-604.4354	Durbin-Watson stat	2.201925

ADF Test Statistic	-3.676482	1% Critical Value*	-2.6227
		5% Critical Value	-1.9495
		10% Critical Value	-1.6202

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LABFORCE,3)
Method: Least Squares
Date: 09/07/15   Time: 16:24
Sample(adjusted): 1975 2013
Included observations: 39 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LABFORCE(-1),2)	-1.444579	0.392924	-3.676482	0.0008
D(LABFORCE(-1),3)	-0.072574	0.313494	-0.231502	0.8182
D(LABFORCE(-2),3)	-0.060643	0.185194	-0.327460	0.7452
R-squared	0.755320	Mean dependent var		1602.564
Adjusted R-squared	0.741727	S.D. dependent var		1033669.
S.E. of regression	525316.9	Akaike info criterion		29.25519
Sum squared resid	9.93E+12	Schwarz criterion		29.38316
Log likelihood	-567.4763	Durbin-Watson stat		1.996752

ADF Test Statistic	1.694923	1% Critical Value*	-2.6182
		5% Critical Value	-1.9488
		10% Critical Value	-1.6199

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LABFORCE)
Method: Least Squares
Date: 09/07/15   Time: 16:22
Sample(adjusted): 1972 2013
Included observations: 42 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LABFORCE(-1)	0.005638	0.003327	1.694923	0.0979
D(LABFORCE(-1))	0.707970	0.135361	5.230223	0.0000
R-squared	0.314936	Mean dependent var		1214583.
Adjusted R-squared	0.297810	S.D. dependent var		654591.6
S.E. of regression	548526.8	Akaike info criterion		29.31431
Sum squared resid	1.20E+13	Schwarz criterion		29.39705
Log likelihood	-613.6005	Durbin-Watson stat		2.502302

APPENDIX III: THE RESIDUAL

GDP Residuals

INF Residuals

UNE Residuals

LABFORCE Residuals

INTRES Residuals

FR Residuals

G EXP Residuals