CHAPTER I

INTRODUCTION

1.1   BACKGROUND OF THE STUDY:

Undoubtedly, parts of the macroeconomic goals which the government strives to achieve are the maintenance of stable domestic price level and full-employment. Macroeconomic performance is judged by three broad measures- unemployment rate, inflation rate, and the growth rate of output (Ugwuanyi, 2004).

Unemployment has been categorized as one of the serious impediments to social progress. Apart from representing an enormous waste of a country's manpower resources, it generates welfare loss in terms of lower output thereby leading to lower income and well-being (Raheem, 1993).

Inflation on the other hand, has been a major problem in the country over the years. Inflation is a household word in many market oriented economies. Although several people, producers, consumers, professionals, non-professionals, trade unionists, workers and the likes, talk frequently about inflation particularly if the situation has assumed

a chronic character, yet only selected few know or even bother to know about the mechanics and consequences of inflation.

Prior to the emergence of what became to be known as the unemployment and inflation trade-off or Phillips curve in 1958, unemployment and inflation were considered and treated in economics as distinct subjects. Keynes for instance described inflation as the excess of expenditure over income at full-employment level. He contended that the greater the aggregate expenditure, the larger the inflationary gap and the more rapid the inflation. As for unemployment, the Keynesian economists hold that an increase in unemployment reduces income, which reduces consumption, and reduces aggregate output. As a result, employment can be increased by increasing consumption or investment.

The monetarist on the other hand, explained inflation in terms of excessive growth of the money supply relative to real output. Their view on unemployment, however, is framed within the context of Milton Friedman's permanent income hypothesis. Based on the Permanent Income Hypothesis (PIH), a reduction in employment and current

receipts only affects output to the extent that the anticipated income declines.

Each school of thought offered its own policy solutions. There were however, no major attempts made to examine inflation and unemployment simultaneously.

It was not until 1958, following the introduction of Phillip's curve by A.W. Phillips, that traditional economics began to examine unemployment and inflation simultaneously, thereby postulating a trade-off between inflation and unemployment- a lower inflation rate must be willing to put-up with a higher level of unemployment, and vice-versa. However, economists such as Milton Friedman and Edmund Phelps disapproved Phillips' curve thesis, stating that the trade-off between unemployment and inflation only existed in the short-run and that in the long-run, the Phillips curve is vertical. This led to the introduction of the Natural Rate Hypothesis.

Also, empirical analysis carried out by other economists over the years, have in one way or the other disproved the authenticity of the trade-off thesis as postulated by Phillips. Both high inflation rates and high unemployment rates were discovered to co-exist, giving rise to

what has come to be known as *stagflation*. These twin problems are currently crucial elements of most Less Developed Countries' economic crisis.

Unemployment and inflation are issues that are central to both the social and economic life of every country. The existing literature refers to unemployment and inflation as constituting a vicious circle that explains the endemic nature of poverty in developing countries. And it has been argued that continuous improvement in productivity- which brings about the adequate supply of goods and services - is the surest way to breaking the vicious circle.

The Nigerian experience of the crisis of unemployment and inflation was delayed until the early - and mid- 1980s with the collapse of oil prices on which the economy had become dangerously dependent on. Before the 1980s, previous records showed that the Nigerian economy was able to provide jobs for its increasing population, and was able to absorb considerable imported labour in the scientific sectors. The wage rate compared favourably with international standards, the inflation rate was moderate, and there was relative industrial peace in most industry sub-groups.

The oil boom in the 1970s led to the mass migration of youths into the urban area, seeking to get work. However, following the recession experienced in the 1980s, the available data revealed that, the problem of unemployment started to manifest, precipitating the introduction of the Structural Adjustment Programme (SAP), the rapid depreciation of the naira exchange rate and the inability of most industries to import the raw materials required to sustain their output levels.

A major consequence of the rapid depreciation of the naira was the sharp rise in the general price level (inflation), leading to a significant decline in the real wages. The low wages in turn fuelled a weakening purchasing power of wage earners and a decline in the aggregate demand. Consequently, industries started to accumulate unintended inventories and, as a rational economic agent, the manufacturing firms started to rationalize their market prices. With the simultaneous rapid expansion in the educational sector, new entrants into the labour market increased beyond absorptive capacity of the economy. Thus, the avowed government's objective of achieving "full employment" failed.

The research work is therefore intended to access the applicability of the trade-off thesis in Nigeria.

1.2 STATEMENT OF THE PROBLEM:

Anthony De Mello, in his famous book titled 'Awareness' stated that, "Life is a banquet. And the tragedy is that most people are starving to death". This situation is prevalent in the Nigerian economy. Nigeria is richly blessed with abundant human and natural resources, but still finds itself battling with high unemployment and inflation rates, due to years of neglect of the social infrastructures and general mismanagement of the economy. Previous governments in their own capacities have been embarking on various policies to control inflation and reduce the level of unemployment in the country. However, government efforts have not yielded the desired results as these problems are known to be skyrocketing rather than plummeting.

The problem of inflation in Nigeria was brought about by the oil glut in 1981, which resulted into balance of payment deficits leading to foreign exchange crisis that necessitated various measures of import restrictions. These restrictions reduced raw materials for domestic production and spare parts for machinery operation. The resultant shortage of goods and services for local consumption spurred the inflation rate to rise from 20% in 1981 to 39.1% in 1984 (Itua, 2000).

With the adoption of the Structural Adjustment Programme (SAP) in 1986, there was a temporal reduction in fiscal deficits as government removed subsidies and reduced her involvement in the economy. But as the effects of the Structural Adjustment Programme (SAP) policies gathered momentum, there was a fall in the growth rate of Gross Domestic Product (GDP) in 1990 from 8.3% to 1.2% in 1994, with inflation rising from 7.5% (1990) to 57.0% (1994). In 1995, inflation rate rose to 72.8% due to increased lending rate, the policy of guided deregulation, and the lagged impact of fiscal indiscipline.

The increase in unemployment in Nigeria, on the other hand, has resulted to decrease in consumption, due to low income earned by the citizens, thereby resulting to low production- the inability of firms to sell their goods, forces them to reduce their output. This has led to decrease in the economic growth of the nation.

Unemployment also has social consequences as it increases the rate of crime. Also, being without a job in Nigeria, is as good as losing your self-respect and self-esteem among the people of your age bracket. The proportion of workers who are unemployed shows how well a nation's

human resources are used and serves as an index of economic movement (positive or negative).

In 1999, the unemployment rate was 17.5%, while at the end of President Olusegun Obasanjo's administration in 2007; the rate of unemployment had reduced marginally to 12.7%. From 1999 to 2007, the rate of unemployment averaged at 13.1% – still quite high, since 5% is perceived as the accepted rate. In 2008, the rate of unemployment was almost 14.9% and rose drastically to about 23.9% in 2011. The unemployment rate has been rising from 1980 to 2011. A recent forecast shows that the rate would continue to increase up to the year 2020.

In the light of the foregoing analysis, the research work will be guided by the following question:

1. Is there any trade-off relationship between unemployment and inflation in Nigeria?

2. Does government expenditure have any significant impact on unemployment?

3. Do increases in the gross domestic help reduce unemployment?

1.3 OBJECTIVE OF THE STUDY:

The primary objective of this study is to examine if there is any trade-off relationship between unemployment and inflation in Nigeria. Other objectives include;

a. To ascertain the impact of government expenditure on unemployment.

b. To examine the impact of gross domestic product on unemployment.

1.4 THE RESEARCH HYPOTHESIS:

The study will be guided by the following hypothesis;

1. Null hypothesis (H_o): There is no trade-off relationship between unemployment and inflation in Nigeria.

2. Null hypothesis (H_0): Government expenditure has no impact on unemployment in Nigeria.

3. Null hypothesis (H_0): Gross domestic product has no significant impact on unemployment in Nigeria.

1.5 SIGNIFICANCE OF THE STUDY:

Why has unemployment and inflation continued to rise despite the substantial increase in the nation's GDP? Is it that successive governments neglected the issue of unemployment and inflation or has the twin problems defied all economic theories? These are questions that need immediate answers, because unemployment and inflation are current issues that is affecting our country and which is being discussed by both experts and lay-men alike.

Therefore, this study will be of paramount importance to economic decision-makers, as it will equip them with the knowledge and skills needed to tackle the pressing issue of unemployment and inflation in our country. Also, to those who would like to carry out further research on this topic, it would be of valuable help in the course of their research.

1.6 SCOPE OF THE STUDY:

The research work intends to study unemployment and inflation situation within the Nigerian economy. The study will cover the time period 1986-2011 (a period of 25 years); this is to ensure updated information and to follow the trend. The range was chosen based on

data availability and to have adequate observation for a meaningful analysis.

1.7 LIMITATIONS OF THE STUDY:

When carrying out research in social sciences, the data that one generally encounters are non-experimental in nature, that is, not subject to the control of the researcher. Therefore, this lack of control may create special problems for the researcher in pinning down the exact relationship that exists between unemployment and inflation in Nigeria.

In the course of the study, the researcher tried to access the CBN statistical bulletin of 2010, but was unable to get data for the figures of unemployment and inflation in 2011. He therefore resorted to accessing the internet for the missing figure for 2011. The researcher also encountered the challenge of inadequate and incomplete information from the internet and the school library. The researcher was also faced with the problem of unavailability of funds to carry out the research work.

CHAPTER II

REVIEW OF THE RELATED LITERATURE

2.1   THEORITICAL LITERATURE:

2.1.1 UNEMPLOYMENT:

   Unemployment has no precise definition in economics literature. To the layman, unemployment means a state of joblessness, while to economists; it is seen as the percentage of the labour force that is without job but is able, willing, and qualified to work. In other words, no matter how unemployment is defined; the underlying philosophy is that those who are expected to work are indeed not working (Gbosi, 2004).

   The level of unemployment in a nation is measured by calculating the unemployment rate, i.e.

Unemployment Rate (U) = $\frac{\text{Number of people unemployed}}{\text{Labour force}} \times \frac{100}{1}$

2.1.1.1 TYPES OF UNEMPLOYMENT:

- Structural Unemployment: This reflects the time taken to acquire human capital. Workers who find out that their skills and

experience have become obsolete or unneeded, thus find out that they have no marketable talents. They are structurally unemployed until they adapt or develop skills that employers want. Structural unemployment may also occur as a result of changes in production techniques.

- Frictional unemployment: This unemployment occurs because it takes time for workers to move from one job to another. While it may be the case that some workers find new jobs before leaving their old jobs, a lot of workers leave or lose their jobs before they have another work lined up. The retrenched workers most look around for a good job. During this period, they are regarded to be frictionally unemployed.

- Seasonal unemployment: This is due to seasonal variations in the activities of particular industries caused by climatic changes, changes in fashion or by the inherent nature of such industries. For instance, workers that work in construction companies remain unemployed during the raining season.

- Cyclical Unemployment: This type of unemployment (also known as Keynesian unemployment) results from the operation of the

business cycle. If there is a decrease in the quantity of goods demanded or there is over-production which results in fall in prices, industries will be affected, which will lead to lay-off of workers. The workers affected will suffer from cyclical unemployment. Therefore, cyclical unemployment occurs when there is a fall in demand.

2.1.1.2 THEORIES OF UNEMPLOYMENT

In economics literature, there are different theories of unemployment, such as the Keynesian theory, classical theory, the efficiency-wage theory, the insider-outsider theory, etc.

Below, the Classical and the Keynesian theories of unemployment will be briefly discussed.

a. **The Classical Theory of Unemployment:**

The fundamental principle of the classical theory is that the economy is self-regulating. The classicists assume the existence of full employment without inflation. Given wage-price flexibility, there are automatic forces in the economic system that tends to maintain full employment, and produce output at that level.

In the classical model, the equilibrium income and employment are determined largely in the labour market. At lower wage rate more workers will be employed. That is why the demand curve of labour is downward sloping.

The classicists also hold that there is always full employment, so that the existence of unemployed workers is a logical impossibility. Any unemployment which existed at the equilibrium wage rate was due to frictions or restrictive practices in the economy. Thus full employment is regarded by the classicists as a normal situation, while unemployment is abnormal.

b. Keynesian Theory of Unemployment:

Keynes was given the credit of having demolished the theories of 19th century economists who had taught that, if left to its own devices, capitalism would always and of its own accord tend towards full employment. Keynes taught that the economy could settle in equilibrium at any level of unemployment. This meant that classical policies of non-intervention would not work.

In his theory (Keynes), it states that employment depends on effective demand, effective demand results in output, output creates income, and income provides employment. Thus, he regards employment as a function of income. Also, effective demand depends on the aggregate supply and demand function. Since Keynes assumed that aggregate supply was stable, he concentrated on the aggregate demand to fight depression and unemployment.

According to him, employment can be increased by increasing consumption and/or investment. Consumption depends on income C(Y) and when income rises, consumption also rises but not as much as income.

The Keynesian framework, as examined by Thirlwal(1979), Grill and Zanalda(1995) and Hussian and Nadol(1997), postulate that increase in employment, capital stock and technological change are largely endogenous. Thus the growth of employment is demand determined and that the fundamental determinants of long-term growth of output also influence the growth of employment.

2.1.1.3 Causes of Unemployment in Nigeria:

The fundamental factor that accounts for the high rate of unemployment in Nigeria includes the following:

➢ Economic Growth Rate: The overall situation in the country in the 80s, 90s and even in this decade has been very hostile to economic growth and development. The high level of corruption, mismanagement of public funds, harsh economic policies and the insecurity of the Nigerian environment among other factors, have dampened the spirit of economic growth for a long time. The situation in the 90s was so terrible that analysts have described the period as a lost decade to Nigeria in terms of economic growth and development.

➢ Our Faulty Development Plans: Our past leaders' plan for the establishment of more schools and colleges without setting up industries that will absorb the upsurge of graduates from these schools and colleges, resulting in high unemployment rate.

➢ Rising Population: Many writers have attributed unemployment in Nigeria to the rising population. Our population increases without a proportional increase in the avenues of employment

opportunities. This has resulted in the inability of the economy to absorb the increase in the labour force, thus, unemployment ensues.

➢ Neglect of the Agricultural Sector: The agricultural sector has been the leading provider of employment in Nigeria especially in the 60s and in the 70s when the sector provided employment for more than 60% of the Nigerian population. However, the discovery of oil brought about the neglect of agriculture in Nigeria, and since the oil industry is capital intensive, it has had no positive impact on unemployment reduction during the past years.

➢ Poor Enabling Environment: Nigeria's poor enabling environment, coupled with its poor security, has reduced the inflow of foreign investment into the economy, which would had helped in boosting employment opportunities in the country, through the setting up of industries that would absorb the increasing labour force. Also, many job seekers who would have embarked on self - employment programs are unable to do so because of the hostile production environment. Others who make are forced to wind up due to absence of infrastructures and the overall heat of the investment environment.

➤ Decrease of government expenditures in the real sector of the economy: One of the aims of government spending is to increase the employment rate in the economy, through the establishment of job-creating industries, thus if government spending is not directed to the real sector economy (such as in the establishment of industries, plants, etc.), investment will reduce and unemployment will increase.

➤ Interest rate: the rate of interest in the economy determines the rate of investment and the level of unemployment in the nation. Low interest rates provides the incentive for investor/businessmen to borrow funds readily and establish job-creating establishments, thus if the interest rate in high in an economy, investors will find it difficult to borrow funds, thus leading to a reduction in investment and the unemployment rate in the country.

2.1.1.4 <u>The Consequences of Unemployment in Nigeria:</u>

One of the adverse consequences of unemployment is that it usually brings about a decline in a nation's total output of goods and services. In fact, Bajoma (1996), also shares the view that unemployment reduces

the Gross National Product (GNP) of a nation and of course contributes to the low living standard of the people.

Whenever those who are expected to work in an economy are gainfully employed, the economy will end up producing enough goods and services for its citizens. To put it another way, the economy will be operating in a higher production possibility curve. A production possibility curve is a curve that shows the maximum output an economy could produce in a given period using its available resources. If an economy is not using its labour resources efficiently, it will end up producing on a lower production possibility curve.

In recent years, Nigeria has been operating on a lower production possibility curve. Rising levels of unemployment might have been responsible for this unpleasant development. If our labour resources are efficiently utilized, we shall be producing enough consumption and investment goods on a higher production possibility curve.

Producing at a lower production possibility curve, has further led to capacity under-utilization in all sectors of the Nigerian economy. The overall result is that the economy will be characterized by sluggish economic growth (Gbosi, 2004).

Another consequence of unemployment is that it may transfer financial resources from the domestic economy to the rest of the world. The point being made here is that whenever a nation's labour resources are not fully utilized, as has been the case in Nigeria in recent years, fewer amount of goods and services will be available to the citizens. Consequently, the average price level will rise substantially.

Unemployment also leads to an increase in crime rate in an economy. Several studies have been carried out by economists and sociologists regarding the relationship between unemployment and crime rate. Their findings show that there is a direct relationship between crime rate and unemployment.

To the individual, the impact of unemployment is the loss of income associated with not working. If the head of a family is unemployed for a long period, this will cause financial hardship for the whole family. Furthermore, the psychological effect of unemployment on the unemployed is a serious one. Specifically, the unemployed individual sees himself as a nuisance to society. This is true in a country like Nigeria where one's status is often associated with the job one holds.

2.1.2 INFLATION:

Inflation can simply be defined as too much money chasing too few goods, or can be alternatively defined as the persistent increase in the general price level of a nation.

Inflation is commonly measured using the Consumer Price Index (CPI). The consumer price index measures the changes in the price level of consumer goods. It is calculated as:

CPI= <u>Current year price index</u> x <u>100</u>
   Base year price index 1

2.1.2.1 THEORIES OF INFLATION

Since it is specifically difficult to identify the factors that contribute to inflation, many theories and concepts have been introduced for this purpose.

a. Demand-Pull Inflation:

Demand-pull inflation is the traditional and most common type of inflation. It takes place when aggregate demand is rising while the available supply of goods is becoming less.

There are two principal theories about the demand-pull, that of the monetarists and the Keynesians.

The monetarists stress the role of money in the demand-pull inflation. They state that when the money supply is increased in order to increase production and employment, it creates an inflationary situation with an economy.

Friedman (a monetarists), held that "inflation is always and everywhere a monetary phenomenon that arises from a more rapid expansion in the quantity of money than in total output."

According to Keynes, an increase in general price levels or inflation is created by an increase in the aggregate demand which is over and above the increase in aggregate supply. If a given economy is at its full employment output level, an increase in government expenditure (G), private consumption (C) and private investment (I) will create an increase in aggregate demand; leading towards an increase in general price.

b. Cost-Push Inflation:

Cost-push inflation basically means that prices have been "pushed up" by increases in costs of any of the four factors of production (labour, capital, land or entrepreneur), when the companies are already running

at full production capacity. The basic cause of cost-push inflation is the rise in money wages more rapidly than the productivity of labour.

Cost-push inflation steams out from the demand for an increase in real wages by trade unions. When wages are increased, firms tend to raise the price of their goods in order to cover the increase in the cost of production. Therefore, increases in price will lead to cost-push inflation.

c. Structural Inflation:

The structuralist theory of inflation, otherwise known as mixed inflation is believed to be a combination of demand-pull and cost-push inflation theories. The structuralists emphasize rigidities in supply as the salient force in the theory.

The argument is that, as the economy develops, rigidities arise, which lead to structural inflation. They hold that inflation will persist as long as the structural limitations are not eliminated. The obstacles are of production, institutional, social and cultural dimensions.

2.1.2.2 The Impact of Inflation on the Nigerian Economy:

Inflation affects different people in different ways. This is because of the fall in the value of money.

✓ Social effect: Inflation widens the gulf between the rich and the poor. The rich become richer and the poor, poorer. Since majority of the masses are poor in Nigeria, rising prices brings about discontentment among the masses.

✓ Businesses: All types of businesses gain during inflation, due to the increase in the price of goods and services.

✓ Debtors and Creditors: During inflation debtors (borrowers) gain and creditors (lenders) loss. This is because, when inflation occurs, the debtors pay their creditors with money which has a lesser value.

✓ Fixed income earners: All those who receive fixed incomes loss during inflation. This is because, while their incomes remain fixed, the value of money continues to fall with rising prices.

✓ Reduction in savings: When prices rise, the propensity to save reduces, because people need more money to spend on goods and services. As a result, investment and capital formation reduces, which hinders production, therefore, economic growth.

2.1.3 UNEMPLOYMENT-INFLATION TRADE-OFF:

Even though unemployment is painful to those who have no source of income, reducing unemployment is not costless. In the short-run, a

reduction in unemployment may come at the expense of a higher rate of inflation, especially if the economy is close to full capacity, where resources are almost fully employed.

There are two possible explanations of this relationship- one in the short-run and another in the long-run. In the short-run, there is an inverse relationship between the unemployment and inflation (Phillips curve), while it has been observed by economists that in the long-run the concepts of unemployment and inflation are not related. The relationship has presented regulators with a number of problems.

2.1.3.1 THE PHILLIPS CURVE

Phillips Curve was named after the British economist A.W. Phillips, who first examined the relationship between the rate of unemployment and the rate of money wage changes. His analysis was based on data for the United Kingdom from 1861-1957.

Phillips derived an empirical result that there was an inverse relationship between the rate of unemployment and the rate of increase in money wages. Phillips found a consistent inverse relationship: when

unemployment was high, wages increased slowly; when unemployment was low, wages rose rapidly.
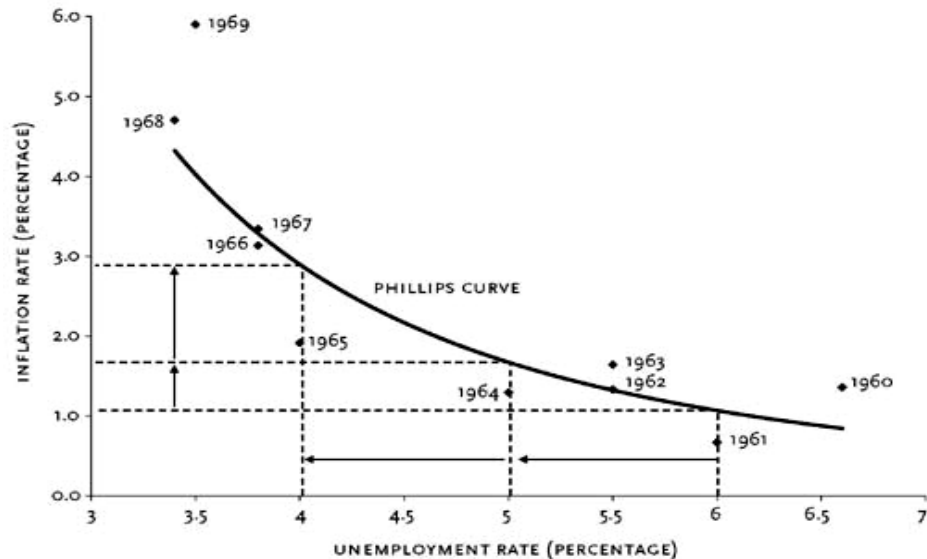

Fig. 1.1: The Phillips Curve

Figure 1.1 shows a typical Phillips curve fitted to data for the United States from 1960-1969. The curve is convex to the origin which shows that a percentage change in money wages rises with decrease in the employment rate. If for instance, the government stimulates the economy and lowers the unemployment rate from 6% to 5%, the figure above indicates that the cost will be in terms of higher inflation, which will increase from 1% to 1.7%. Thus there is a trade-off between the rate of change in money wage and the rate of unemployment.

Phillips' hypothesis gained support from Paul Samuelson and Robert Solow, who were among the first researchers on the trade-off thesis. Samuelson and Solow (1970) examined the relationship between the two macroeconomics variables in the context of the United States. The results led to a conclusion that there existed an inverse relationship between unemployment and inflation rates in the USA.

Furthermore, Solow (1970) and Gordon (1971) confirmed the existence of a negative trade-off relationship between unemployment and inflation using U.S. macroeconomic data. These empirical findings have been known as the "Solow-Gordon affirmation" of the Phillips curve.

2.1.3.2 LONG-RUN PHILLIPS CURVE:

However, the Phillips curve faced strong oppositions from the monetarist school, among them was the American economist Milton Friedman and Edmund .S. Phelps.

Friedman accepted that the Phillips curve existed, but only in the short-run, while in the long-run (i.e. a period long enough for participants in the economy to become fully aware of aggregate prices

and inflation), the Phillips curve is vertical, and that there was no trade-off between unemployment and inflation.

He taught that both the demand for and supply of labour depended on the real wage rather than on the nominal wage. Since the nominal wage was evaluated in terms of the current actual product price by employers and in terms of the expected average consumer price level by workers, employment could increase only as long as price level lagged behind the actual price level.

In equilibrium, the expected and actual price levels are equal, and so in equilibrium only one level of employment and output is possible. Friedman dubbed the associated unemployment rate as the "natural rate of unemployment". The natural rate of unemployment is the rate at which the actual rate of inflation is equal to the expected rate of inflation.

By this argument, the long-run Phillips curve is vertical line at the natural rate of unemployment.
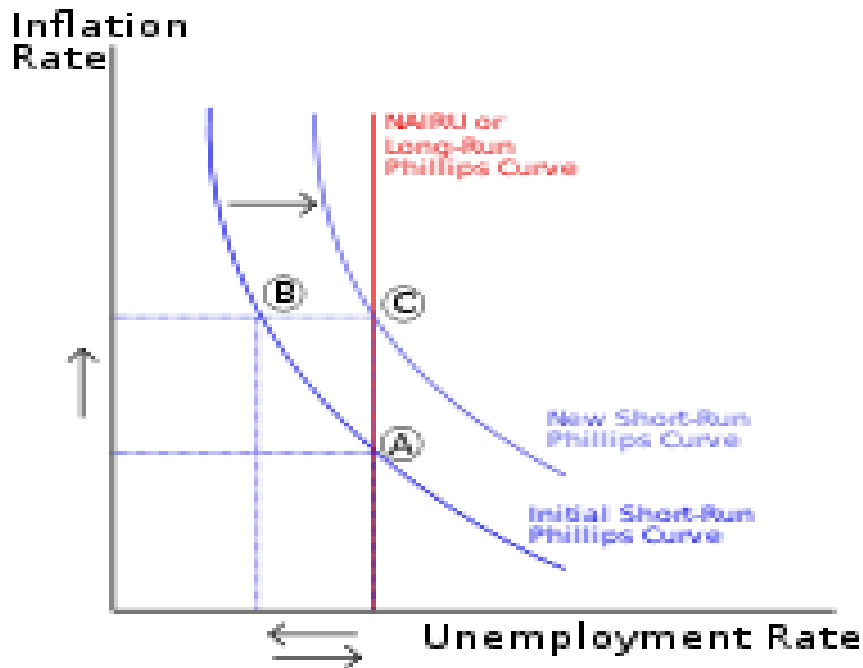
Fig.1.2: Expectations-Adjusted Phillips Curve.

Tobin (1971), in contrast to Friedman, believed that the Phillips curve existed within limits. But as the economy expands and employment grows, the curve becomes even more fragile and vanishes until it becomes vertical at a critically low rate of unemployment.

Thus Tobin's Phillips curve is kinked-shaped, a part like a normal Phillips curve and the rest vertical.

Similarly, Robert Solow like Tobin did not believe that the Phillips curve is vertical at all rates of inflation. According to him, the curve is vertical at positive rates of inflation and horizontal at negative rate of inflation.

2.1.3.3 <u>STAGFLATION (POSITIVELY SLOPE PHILLIPS   CURVE):</u>

Stagflation is a situation where a country persistently suffers from both high inflation and high unemployment. The existence of high inflation accompanied by high unemployment has given rise to the positively sloped Phillips curve.

In recent years, the apparent positive relation between inflation and unemployment has been a source of great concern to policy-makers. Friedman quoted from a recent speech by Prime Minister Callaghan of Great Britain:

"We used to think that you could just spend your way out of a recession and increase employment by cutting taxes and boosting Government spending. I tell you, in all candour, that the option no longer exists and that insofar as it ever did exist, it only worked by injecting bigger doses of inflation into the economy followed by higher levels of unemployment as the next step. That is the history of the past 20years (speech to Labour Party Conference, 28 September, 1976).

The same view was expressed in a Canadian government white paper: "continuing inflation, particularly in North America, has been accompanied by an increase in measured unemployment rates"

(The Way Ahead: A Framework for Discussion, Government of Canada Working Paper. October, 1976).

These are remarkable statements, running as they do directly counter to the policies adopted by almost every Western government throughout the post-war period.

One of the major causes of stagflation has been restriction in the aggregate supply. When aggregate supply is reduced, there is a fall in output and employment, and the price level will rise. The reduction in aggregate supply may be due to a restriction in labour supply.

The restriction in labour supply, in turn, may be due to a rise in money wages on account of strong unions. When wages rise, firms are forced to reduce production and employment. Consequently, there is a fall in real income and consumer expenditure. Since the decline in consumption will be less than the fall in real income, there will be excess demand in the commodity market, which will push up the price level.

2.2 EMPIRICAL LITERATURE

In recent years, there has been much discussion regarding the applicability of the Phillips curve Ewing and Seyfried (2000). As economic growth accelerated and unemployment fell in the late 1990s, inflation failed to increase, causing many to question the existence of any relationship between economic growth and inflation.

However, there is a good deal of evidence, empirically, that Phillips curve held for most developed countries. In the studies conducted by Lipsy (1960) and Routh (1959) in United Kingdom, Lipsy's conclusion was not inconsistent with that of Phillips'. Routh on the other hand raised questions regarding the validity of the Phillips' data and his method of aggregation, but his conclusions were roughly the same.

Studies using the Phillips hypothesis were extended to other industrial countries. For instance, Klien and Ball (1959) studied the wage-unemployment relationship for Belgium, France, Canada, Australia, Japan, Italy, and West Germany. The results were comparable with those of the United Kingdom and United States for all countries, except France and Italy.

Abachi Phillip (1998) studied the trade-off between unemployment and inflation in Nigeria, using a trade-off model used by Rea (1983). His studies revealed that there is no trade-off between inflation and unemployment. Rather, the estimates established a non-linear curve that slopes upwards. Also, his findings showed that causality existed between inflation and unemployment, which implies that any attempt to control inflation results to the aggravation of unemployment and vice-versa.

Hogan (1998) examined the Phillips curve using the U.S. macroeconomic data from 1960 to 1993. Results of that study revealed that there had been a significant and negative relationship between unemployment and inflation although the Phillips curve appeared to over-predict the rate of inflation.

Turner and Seghezza (1999), employing the panel data method, examined the Phillips curve in 21 OECD (Organization for Economic Cooperation and Development) countries over the period from the early 1970s to 1997. To analyze the pooled data, Turner and Seghezza used the method of Seemingly Unrelated Estimation (SURE) rather than the OLS. The researchers concluded that the overall result provided a

"strong support" for the existence of the "common" Phillips curve among the 21 chosen member countries of OECD.

Hansen and Pancs (2001) examined the existence of the Phillips curve in Lativa. They also found out that there is a significant correlation between the unemployment rate and the actual inflation rates.

Arratibel *et al.* (2002) analyzed the New Keynesian Phillips curve with forward-looking expectations by using panel data. They found that the unemployment rates have significant relationship with non-tradable inflation rates. By contrast, Masso and Staehr (2005) used the dynamic panel data method and failed to identify a significant relationship between unemployment rate and inflation rates.

Furthermore, Faridul Islam *et al.* (2003) examined the hypothesis of Philips curve through US economic data from 1950 to 1999. They found out a weak long-run co-integrating relationship and long-run causality between unemployment and inflation. They argued that "the U.S stabilization policy should still be able to exploit the trade-off relationship between the unemployment rate and the inflation rates".

However, Hart (2003) tested the Phillips hypothesis by employing the hourly wage earning. He concluded that during the inter-war period (1926-66) in Britain, the Phillips curve was "not supported by our data".

Keshab .R. Bhattarai (University of Hull, 2004), carried out a research on OECD economies using a paneled data and found out that the Phillips curve phenomenon is empirically significant in countries such as Britain, Denmark, Italy, Norway, Netherlands, New Zealand and the USA.

Onwioduokit (2006) investigated the relationship between unemployment and inflation in Nigeria and found that there is a negative relationship between unemployment and inflation with the coefficient of -0.412, this validates the Phillips hypotheses; however, the results of the causality test indicated no causality between unemployment and inflation in Nigeria.

Fumitaka Furuoka (2007), applied the Vector Error Correction Model (VECM) analysis to test the existence of the Phillips curve in Malaysia for the period from 1973-2004. The findings confirmed the Phillips' theory. The research showed that there existed the co-

integrating relationship- as well as causal relationship- between unemployment and inflation in Malaysia.

Still on the relationship between unemployment and inflation, Studies by Aminu and Anono (2012), using the Augmented Dickey-Fuller technique, revealed that there is no causation between unemployment and inflation and that a long-term relationship exist between the two. Also, the study revealed a negative relationship between unemployment and inflation and a minimal applicability of various theories of unemployment and inflation in Nigeria.

Chukwudi (2012), in his studies on the impact of unemployment on economic growth, found that for GDP to grow, unemployment and inflation must be reduced. This entails employment of material and human resources in the production process. Also, it may not achieve the desired result if government expenditure is not adjusted as well.

2.3 LIMITATION OF THE PREVIOUS STUDIES:

Although a good deal of research work has been carried out on unemployment and inflation worldwide, not much has been carried out using the Nigerian economy as a case study. When the time period is being considered, this work will serve as one of the most recent research works on the topic.

Most researchers have supported the existence of a Phillip curve in their respective countries, while others have stated otherwise. This research work tends to add to the literature covering unemployment and inflation in Nigeria.

CHAPTER III

RESEARCH METHODOLOGY

3.1 MODEL SPECIFICATION:

A model is an abstraction from reality. It is an abstraction from reality because; it is very difficult to carry out a research using all the factors that exist in a real life situation. The usefulness of model building in economics is to simplify the complexities of real life. Koutsoyiannis (1977:12) opines that in attempting to study any relationship between variables, it is very important to express the relationship in mathematical form which is to specify the model with which the economic phenomenon will be explored empirically.

In an attempt to explore empirically on the relationship between unemployment and inflation in Nigeria, a model will be employed. In the model, inflation, Gross Domestic Product (GDP), interest rate, and government expenditure will be regressed on unemployment; in order to ascertain the impact of the explanatory variables on the explained variable.

From the foregoing analysis, the model can be written in its functional form as follows;

UNEMP = f (INF, GEXP, INTR, GDP)

Where:

UNEMP = Unemployment Rate.

INF = Inflation Rate.

GEXP = Government Expenditure.

INTR = Interest Rates.

GDP = Gross Domestic Product

f = Functional relationship

Expanding the model into a linear mathematical relationship, we have;

UNEMP = a_o + a_1INF+ a_2GEXP+ a_3INTR+ a_4GDP

However, our econometric model is yet to complete. We complete the econometric model by including the stochastic term (e_t). Thus our model becomes;

UNEMP = a_o + a_1INF+ a_2GEXP + a_3INTR + a_4GDP + e_t

Where:

a_0 is the intercept depicting unemployment when the explanatory variables are equal to zero.

a_1, a_2, a_3, a_4 are the coefficients or parameters attached to the explanatory variables. The inclusion of the stochastic or error term (e_t) in the above model is to capture the impact of other variables that are not included in the models.

3.2 EVALUATION METHOD

Three criteria are adopted in order to evaluate the result obtained from the regression analysis. They are;

i.   Evaluation based on economic a priori conditions or criteria,

ii.   Evaluation based on statistical criteria.

Evaluation Based on the Economic a priori Criteria

This subsection of this chapter draws inference from economic theory. This is used to examine the economic usefulness of the equation with regards to meeting the a priori expected signs of the parameters. The sign "–" indicates that the explanatory variable has an inverse

relationship with the explained variable, while the sign "+" indicates that the explanatory variable has a positive relationship with the explained variable. The theoretical a priori expected signs of the macroeconomic variables in the model are stated below.

a_1 which is the coefficient of inflation is expected to be negative. This is because a reduction in inflation leads to an increase in unemployment.

a_2 is expected to be negative, because an increase in government expenditure will cause unemployment to reduce, through the establishment of job-creating industries.

a_3 is expected to be positive, because as interest rate increases, so does unemployment increase. This is because an increase in interest rate will reduce job creating investments (i.e. investment in the real sector of the economy), thus leading to an increase in unemployment.

a_4 which is the coefficient of the Gross Domestic Product, is expected to be negative. In that, an increase in a country's GDP will cause unemployment to reduce. This is true because when GDP increases, the economy has enough money to establish job-creating industries.

In this model, the economic a priori criteria can be summarized in the table below.

Table 3.1: Economic a priori expectations for the model

Inflation Rate (INF)	-
Government Expenditure (GEXP)	-
Interest Rate (INTR)	+
Gross Domestic Product (GDP)	-

Evaluation Based on Statistical Criteria (1ST ORDER TEST)

1. The R^2 (coefficient of determination):

The R^2 shows the goodness of fit of the regression. It shows how well or to what extent does the explanatory variables (regressors) explains the explained variable (regressand).

2. The t–test (Student t):

The t–test shows the individual impact of the independent variables and its usefulness to the model. A two–tailed test is conducted at 5% level of significance, under n–k degrees of freedom. Where n is the number of observations and k is the number of samples.

Decision rule:

The null hypothesis:

H_0: β_1: $\alpha_1 \neq 0$

If $t_{cal} > t_{0.025}$

Reject the null hypothesis H_0 on the ground that it is insignificant and accept the alternative hypothesis (H_1). Otherwise accept the null hypothesis (H_0).

From the above, t_{cal} is the computed t–ratio, while $t_{0.025}$ is the tabulated t–ratio.

3. The F–test:

The F–test is used to test the overall significance of the regression model. It will also be carried out at 5% level of significance

Decision rule:

H_0: The regression parameters are equal to zero (wrong model specification).

H_1: The regression parameters are statistically different from zero (correct model specification).

If $F_{cal} > F_{0.05}$,

Reject the null hypothesis (H_0) and accept the alternative (H_1) on the ground that the result is significant. Otherwise, accept the null hypothesis (H_0).

Evaluation Based on Econometric Criteria (2ND ORDER TEST)

1. Autocorrelation Test

Fundamentally, autocorrelation is based principally on the fourth assumption of the ordinary least square regression analysis. The assumption is that the successive values of the random variable 'e_t' are temporally not dependent on their preceding values.

The Durbin–Watson d–statistic will be used to test the randomness of the residuals or more specifically for testing the presence of autocorrelation in the error term (e_t).

Table 3.2: Decision rule

Null hypothesis (H_0)	Decision	If
No positive autocorrelation	Reject	$0 < d^* < d_L$
No positive autocorrelation	No decision	$d_L \leq d^* \leq d_U$
No negative correlation	Reject	$4 - d_L < d^* < 4$
No negative correlation	No decision	$4 - d_U \leq d^* \leq 4 - d_L$
No autocorrelation, positive or negative	Do not reject	$d_U < d^* < 4 - d_U$

Where:

 d^* = Computed Durbin-Watson d–statistics.

d_L = Lower bound

d_U = Upper bound

2. Multicollinearity Test:

Multicollinearity is the situation in which there exists linear relationship or near linear relationship among explanatory variables in a regression model. The correlation matrix will be used to test if the explanatory variable is highly correlated.

Multicollinearity is a problem which arises in multiple regressions, when the explanatory variable is not itself independent.

It makes it impossible to fit significant coefficient to explanatory variables, which are related to one another.

Decision rule:

The correlation matrix is used to test for the presence of multicollinearity in the model. If a pair-wise correlation is in excess of 0.8, then multicollinearity is present.

3.   Normality Test:

The normality test adopted is the Jarque–Bera (JB) Test of normality. Thus JB test for normality is an asymptotic or large samples and it is based on the OLS residuals. This test computes the skewness of the OLS residuals and it follows the chi-square distribution.

Hypothesis:

H_0: $\sigma1 = 0$ (the error term are normally distributed).

H_1: $\sigma1 \neq 0$ (the error term are not normally distributed).

The decision rule is to reject H_o if x^2_{cal} > it's critical value at 2 degrees of freedom and accept H_1 and reject if H_o otherwise.

4. Heteroscedasticity Test:

This test is geared towards ascertaining the nature of variance of the error term. That is, it helps to detect if the variance error term is constant. Homoscedasticity shows equal spread or equal variance, while Heteroscedasticity shows an unequal spread or an unequal variance.

H_0: Homoscedasticity

H_1: Heteroscedasticity

The decision rule is to reject H_0 if $x^2_{cal} > x^2_{0.05}$ and accept if otherwise.

3.3 JUSTIFICATION OF THE MODEL:

The procedure for estimation adopted for this study is the Classical Linear Regression Model and using Ordinary Least Square (OLS) as an estimator. The method of the ordinary least square method is attributed to Carl Friedrich Gauss, a German mathematician. The method is most preferred because it is easy to understand, simple in its computational procedure and parameter estimation. It also possesses the properties of Best Linear Unbiased Estimator (BLUE), which are consistent and

sufficient. The regression will be carried out using the P.C give 8.0 regression package.

3.4 SOURCES OF DATA:

The data employed in this research are secondary data obtained from the central bank of Nigeria's statistical bulletin of 2010. The figures for 2011 were gotten from the internet and other viable sources. The data used in this study are mainly nominal. The period covered is from 1986-2011, a period of twenty-five years (25 years).

CHAPTER IV

PRESENTATION OF RESULT AND DATA ANALYSIS

4.1 PRESENTATION OF REGRESSION RESULT:

The regression result of the data used in the analysis is presented below, which is in accordance with the model specified in the previous chapter.

Table 4.1: Regression result for the model (Modeling UMP by OLS)

Variable	Coefficient	Std. Error	t-value	t-prob	partR²
Constant	4.0175	3.7689	1.066	0.2985	0.0513
INTR	0.16628	0.18713	0.889	0.3843	0.0362
GDP	-3.2956e-008	1.6856e-007	-0.196	0.8469	0.0018
INF	-0.091820	0.042007	-2.186	0.0403	0.1853
GEXP	4.3061e-006	1.3917e-006	3.094	0.0055	0.3131

R^2 = 0.771086 $F_{(4, 21)}$ = 17.684 [0.0000]   DW = 0.955

4.2 RESULT INTERPRETATION

4.2.1 ANALYSIS OF THE REGRESSION COEFFICIENTS:

The intercept of unemployment when all explanatory variables are held constant is 4.0175.

The coefficient of interest rate shows that, with a unit increase in the interest rate, unemployment will increase by 0.16628.

The coefficient of Gross Domestic Product, tells us that when there is a unit increase in the GDP, unemployment will decrease by 3.2956.

The coefficient of inflation shows that, with a unit increase in the explanatory variable INF, unemployment will decrease by 0.091820.

Also, the coefficient of Government Expenditure helps us to understand that, a unit increase in GEXP will result to an increase in unemployment by 4.3061.

4.2.2 ECONOMIC A PRIORI CONDITION:

This section compares the regression results with the a priori expectation, to see if the results gotten conform to economic theory.

Table 4.2: Economic a priori test for the model:

Independent variables	Expected signs	Observed signs	Remark.
Interest rate (INTR)	+	+	Conforms
Gross Domestic Product (GDP)	-	-	Conforms
Government Expenditure (GEXP)	-	+	Does not conform
Inflation Rate (INF)	-	-	Conforms

From table 4.2 above, government expenditure did not conform to economic theory- which states that an increase in government expenditure will increase employment, thereby decreasing the unemployment rate in the country. This variation from economic theory occurred because, in Nigeria must of the expenditures made by the government are not directed towards the real sector of the economy. Expenditure in the sector of the economy expands the industrial sector, increasing its capacity to absorb more labour, thereby increasing employment.

Thus, this result shows that government expenditure has no reducing effect on the unemployment rate in Nigeria.

4.2.3 STATISTICAL CRITERIA

1. **The R² (Coefficient of determination):**

The R^2 of the model is 0.771086, showing that the explanatory variables (or independent variables) explains about 77.1% of the explained variable (dependent variable).

2. **The t-test (Student t):**

To recall, the t–test is used to test if the independent variables are individually statistically significant to the dependent variable. Under n – k degrees of freedom at 5% level of significance, the critical value is ±2.080. Thus we reject H_0 that the variable is statistically significant if $t_{cal} > t_{tab}$ in absolute values (that is, ignoring negative values) and accept it if otherwise.

Table 4.3: T–test for the model

Variables	t-value	5% critical value	Decision
Constant	1.066	±2.080	Not statistically significant
INTR	0.889	±2.080	Not statistically significant
GDP	-0.196	±2.080	Not statistically significant
INF	-2.186	±2.080	Statistically significant
GEXP	3.094	±2.080	Statistically significant

HYPOTHESIS TESTING:

1. H_0: There is no trade-off relationship between unemployment and inflation in Nigeria.

2. H_0: Government expenditure has no impact on unemployment in Nigeria.

3. H_0: Gross domestic product has no significant impact on unemployment in Nigeria.

CONCLUSION: From the regression result, the coefficient of inflation is negative, thus, showing that a trade-off relationship exists between unemployment and inflation. Also, inflation and government expenditure was found to be statistically significant, while gross domestic product was found to be statistically insignificant. Therefore, we conclude by saying;

- There is a trade-off relationship between unemployment and inflation in Nigeria.

- Government expenditure has a significant impact on unemployment in Nigeria.

- Gross domestic product has no significant impact on unemployment in Nigeria.

3. **F-test:**

This shows the overall performance of the regression model. The decision rule as stated previously is to reject H_0 that the model is well specified and adequate for forecasting and policy analysis if $F_{cal} > F_{0.05}$ and accept it if otherwise.

Table 4.4: F–test for the model:

F_{cal}	F_{tab} at 0.05 significant level	Decision
17.684	2.8401	Reject H_0 and accept H_1

From table 4.4 above, the result shows that the model is well specified and considered as being good and adequate for forecasting and policy analysis.   It further states that the overall regression is significant and statistically different from zero.

4.2.4 ECONOMETRIC CRITERIA (SECOND-ORDER TEST):

1. **Autocorrelation Test:**

The Durbin-Watson d-statistic will be used to test if autocorrelation is present in the error term (e_i).

Decision rule:

Null hypothesis (H₀)	Decision	If
No positive autocorrelation	Reject	$0 < d^* < d_L$
No positive autocorrelation	No decision	$d_L \leq d^* \leq d_U$
No negative correlation	Reject	$4 - d_L < d^* < 4$
No negative correlation	No decision	$4 - d_U \leq d^* \leq 4 - d_L$
No autocorrelation, positive or negative	Do not reject	$d_U < d^* < 4 - d_U$

In this model, the Durbin–Watson d–statistics calculated value and critical values at the 0.05 level of significance are given below.

$d^* = 0.955$ $d_L = 1.062$ $d_U = 1.759$

Therefore, $0 \leq d^* \leq d_L$ i.e. $0 \leq 0.955 \leq 1.062$, we conclude that there is positive serial correlation in the residuals, and thus, rejecting the null hypothesis.

2. **Multicollinearity Test:**

The correlation matrix will be used to test for the presence of multicollinearity in the model.

Table 4.5: Correlation Matrix

	UMP	INTR	GDP	INF	GEXP
UMP	1.000				
INTR	-0.2106	1.000			
GDP	0.7679	-0.2274	1.000		
INF	-0.5192	0.3479	-0.3411	1.000	
GEXP	0.8471	-0.2836	0.9151	-0.3823	1.000

From the correlation matrix in table 4.5 above, 0.8471 is the correlation between UMP and GEXP, while 0.9151 is the correlation between GEXP and GDP. As we can see, the two pair-wise correlations are above 0.8, thus suggesting the presence of multicollinearity between them.

3. **Normality Test:**

The normality test adopted is the Jarque – Bera (JB) Test of normality. This test computes the skewness of the OLS residuals and it follows the chi-square distribution.

Hypothesis

H_0: $\sigma1 = 0$ (the residuals in the error term are normally distributed).

H_1: $\sigma1 \neq 0$ (the residuals in the error term are not normally distributed).

Decision rule: reject H_o if χ^2_{cal} > it's critical value, (at 2df) and accept H_1 and reject if otherwise.

The X^2_{cal} = 4.3289, while the X^2_{tab} = 5.99

Since, X^2_{cal} < X^2_{tab} under 0.05 significant level, we therefore accept the null hypothesis and conclude that the residuals in the error term are normally distributed.

4. **Heteroscedasticity Test:**

This test is geared towards ascertaining the nature of variance of the error term. That is, it helps to detect if the variance error term is constant. Homoscedasticity shows equal spread or equal variance, while heteroscedasticity shows an unequal spread or an unequal variance.

H_0: Homoscedasticity

H_1: Heteroscedasticity

The decision rule is to reject H_0 if χ^2_{cal} > $\chi^2_{0.05}$ and accept if otherwise.

X^2_{cal} = 10.344 @ 8 degrees of freedom.

X^2_{tab} = 15.5 @ 0.05 significance level.

Since $X^2_{cal} < X^2_{tab}$, we accept the null hypothesis concluding that the conditional variance of the error term is equal.

4.3 Policy implication:

The findings of this research work confirm the existence of the trade-off relationship between unemployment and inflation in Nigeria. Therefore, policy makers should exercise caution when implementing policies that will reduce unemployment Nigeria, because a decrease in unemployment rate could make inflation to rise.

CHAPTER V

SUMMARY OF FINDINGS, CONCLUSION, AND

POLICY RECOMMENDATIONS

5.1 SUMMARY OF FINDINGS:

The research work is centered on unemployment and inflation in Nigeria. Its main objective was to ascertain if the trade-off thesis holds in Nigeria. To achieve this, various data on unemployment and inflation were collected from 1986-2011, also other variables such as government expenditure, interest rates, and the gross domestic product were included. These variables were then subjected to multiple regression analysis, using OLS estimator, with unemployment as its dependent variable. The summary of the findings are given below;

➢ Inflation was found to conform to the a priori expectation, by having a negative sign. Its significance test revealed that inflation has a significant impact on unemployment in Nigeria.

➢ Interest rate and gross domestic product conformed to the a priori expectation, by having positive and negative signs, respectively. Furthermore, the result also revealed that both variables have no

significant impact on unemployment, when they were subjected to the individual significance test.

➢ Government expenditure on the other hand, did not conform to the a priori expected sign. When subjected to the individual significance test, it was found that it has a significant impact on unemployment.

➢ The goodness of fit test revealed that inflation, government expenditure, interest rate, and gross domestic product explain 77.1% of the dependent variable (unemployment), which is a good sign.

➢ Also, the general significance of the model, using the F-test, showed that the model is good and could be used for forecasting.

5.2 CONCLUSION:

Unemployment and inflation poses a serious problem in any economy. Studies carried out by most economists revealed that in the quest to reduce unemployment, rising inflation may be risked. A. W. Phillips' research work (1958) attested to this fact of trade-off relationship. However, some other economists led by Milton Friedman challenged the trade-off relationship thesis, saying that it existed only

in the short-run, that in the long-run, the Phillips curve is vertical without any sign of trade-off relationship. Friedman used the term 'natural rate of unemployment' in his analysis to denote the rate at which the actual rate of inflation equals the expected rate of inflation.

The researcher in other to validate the existence of a Phillips curve carried out various tests, using the Nigerian economy as a case study. The result of the test revealed that unemployment and inflation are inversely related, thus confirming the existence of the Phillips curve in Nigeria, with inflation having a significant impact on unemployment in Nigeria.

5.3 POLICY RECOMMENDATIONS:

The trade-off relationship between unemployment and in inflation poses a dilemma for our policy formulators, since in order to reduce unemployment, the inflation rate in the economy tends to rise. Thus, of great importance is the need for constructive and well-specified policy recommendations that will help to ameliorate the situation of unemployment and inflation in Nigeria. Below are some policy prescriptions, which will help alleviate the current problems of unemployment and inflation in Nigeria.

1. Government should strive to develop the agricultural sector which has great potentials to increase the supply of farm products and other basic necessities of life. The increased supply will reduce prices and increase in employment generation. To achieve this, various specific agricultural policy measures should be promoted and pursued vigorously.

2. Massive investments should be carried out in the real sector of the economy, by establishing job-creating industries, which will help to reduce the level of unemployment in the country, increase output, reduce prices of goods and services, and thus, reducing the level of inflation in the economy.

3. The free flow of information between employers and employees should be enhanced, through the reduction in the cost of job or employee search by means of job data banks, thus resulting to increased efficiency in the labour market. Similarly, training and educational programmes should be increased and geared towards innovations and productivity, thereby, reducing the rate of unemployment in the economy.

4. It is also recommended strongly that special attention be given to policy implementation. In this regard, the government should set up a policy implementation body or committee in the presidency for the purpose of monitoring government policies and ensuring that they are implemented according to prescriptions.

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