

## **Inflation and Growth in Developing Countries: The Nigerian Experience**

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**Abstract:** *Inflation is a household word in many market oriented economics. the most complex and serious set of economic problem confronting national government and the international community since the end of World War II, consist of virulent and widespread inflation, a deceleration of economic growth and massive disequilibrium of international payments. In a developing country like Nigeria, inflation has been one of the major macroeconomic problem confronting the nation. Inflation can be described as a rise in the general price level of goods and services in an economy over a period of time. When the general price level rises, each unit of currency buys fewer goods and services. Consequently, inflation reflects a reduction in the purchasing power per unit of money. However, the consensus view of various authors is that a long sustained period of inflation is caused by money supply growing faster than the rate of economic growth. The broad objective of this study is to examine inflation and growth in developing countries especially in Nigeria with the view of ascertaining its effect on the Nigerian economy. It ascertained the relationship between inflation and economic growth as well as the inflationary effect and the means of controlling inflation on the Nigeria economic growth. The study covered the ten year period from 2002 to 2012 and adopted an expos-facto research design. The Ordinary Least Squares (OLS) regression technique were used. The results show that inflation has a negative effect on exchange rate, consumer price index (CPI) and economic growth in Nigeria. But there exist a positive relationship between inflation and gross domestic product (GDP).*

**Keywords:** *Inflation, Economic Growth, GDP, Developing Countries.*

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### **I. Background Of The Study**

Inflation surely is not a new phenomenon in the Nigerian Economy and across the globe. It has been a major problem in the country over the years. However, the phenomenon actually assumed a disturbing dimension since World War I. It was then that inflation for the first time was put at the centre of the global stage.

Today, Inflation is no longer a mere war-time phenomenon or the problem of a specific region or society. Its impact can no longer be ignored by both the developed and developing nations alike. Inflation is defined as a generalized increase in the level of price sustained over a long period in an economy (Lipse and Chrystal, 1995). Inflation is a household word in many market oriented economics. According to IMF (1974) “the most complex and serious set of economic problems to confront national government and the international community since the end of World War II, consist of virulent and widespread inflation, a deceleration of economic growth and massive disequilibrium of international payments.

In Nigeria, inflation has gradually established a firm grip on the economy of the nation since her Independence. However, despite the slightest increase of 1961, 1962 and 1966, the first nine or ten years after independence can be regarded as a period of relative stability in prices when compared with the prices of the 1970s and 1980s as only a single digit inflation was recorded in the 1960s. Nigeria has consistently had double digit inflation for the past decade. Officially, it started experiencing a two- digit inflation rate from the third quarter of 2008 at the rate of 11.5% (IMF 2011 World Economic Outlook). With falling commodity prices, inflationary pressure should subside to some extent as well. Inflation on the economic growth of Nigerian economy will be examined bearing in mind that a country will grow faster in real terms if inflation is reduced to a barest minimum.

### **Statement Of The Problem**

Over the years, the Nigerian Economy has been confronted with problem of controlling inflation to bring a better performance of the economy. Thus, this research is carried out as a result of the instability in price level and the dissatisfying result it has on the growth rate of an economy.

Basically, the price level is determined by interaction of demand and supply. Inflation redistributes income and wealth in a society, creates advantages to some, while to others disadvantages. It also affects production and the society as a whole. During inflation, the traders, industrialists, producers etc, gain immensely, as production is encouraged, because the value of their inventories rises in the same proportion, so they profit more. Unlike the salary and wage earners who lose during inflation. It also hinders foreign capital, as

the rising costs of materials and other input (i.e. price instability) discourages foreign direct investment, which is a factor of economic growth. Inflation also brings about drastic reduction in purchasing power and balance of payment problem in a country.

This research work therefore, attempts to assess the impact of inflation on both the redistribution of income, production and on the Nigerian economy as a whole.

## **II. Objectives Of The Study**

The broad objective of this study is to examine inflation and growth in developing countries especially in Nigeria with the view of ascertaining its effect on the Nigerian economy.

The specific objectives of this study are to:

1. Assess the effect of inflation on Exchange Rate.
2. Examine the influence of inflation on Nigeria Gross Domestic Product (GDP).
3. Investigate the impact of inflation on the consumer price index.
4. Examine the trend of inflation in Nigeria over the years (2002- 2012).

### **Research Questions**

This study would be guided by the following research questions

1. What are the effects of inflation on Exchange Rate?
2. How does inflation affect the Nigeria Gross Domestic Product (GDP)?
3. How does inflation impact on the consumer price index?

### **Statement Of Hypotheses**

The hypotheses to be tested in the course of this study are stated below:-

#### **Hypothesis 1**

**HO:** -There is no significant effect of inflation on Exchange Rate in the Nigerian Economy.

#### **Hypothesis 2**

**HO:** -There is no significant effect of inflation on GDP in the Nigerian Economy.

#### **Hypothesis 3**

**HO:** -There is no significant impact of inflation on consumer price index in the Nigerian Economy.

### **Significance Of The Study**

A vital component of any move towards macroeconomic stability and growth is an integrated effort towards price stability. In order to identify the macroeconomic effect of inflation persistence on the Nigeria economic growth; this study is significant in the following ways:-

- It would have a direct effect on the efficiency and effectiveness of the use of monetary policy instruments in the stabilization of macroeconomic variables to stimulate production and investment.
- It would also provide an explanation for Nigeria's stunted growth.
- This research would also be of relevance to investors, shareholders, bankers, government, producers etc. and the public who need to have knowledge of inflation and economic growth, effects and preventive measures in the Nigeria economy.

**To the investors and shareholders:** It would serve as a guide to know the movement of their investment; to know if returns on investment are expected or not.

**To the producers:** It would enable them to know when to produce in large quantity. As production is encouraged when price starts rising with the anticipation of higher profits in future.

## **III. Review Of Related Literature**

### **Conceptual Framework**

Inflation is a highly controversial term as there has been a lot of controversy among scholars and economists regarding the nature and meaning of inflation. A few definitions are as follows:-

According to Afolabi (1991), "Inflation is used to describe a situation of rapid, persistent and unacceptably high rises in the general price level in an economy, resulting to general loss of purchasing power of the currency".

Friedman (1970) considers that "inflation is a condition where there is general excess demand in which too much money is chasing too few goods".

Iyoha (2003), "inflation is a condition of general and persistent rise in prices".

Dernberg, P. O and Dougal, M. C (2003) are more explicit when they write that "inflation usually refers to a continuing rise in prices as measured by an index such as the consumer price index".

The monetarist essentially believes that the increase in aggregate demand is influenced almost entirely by the amount of money in the economy i.e. the money supply. They argue that inflation in the economy is when the spending power of the population exceeds the capacity of the country to produce goods and services.

From the above numerous definition of inflation, inflation has been properly defined and explained to be the increase in the general price level of goods and services, as a result of too much money chasing fewer goods.

### **Types Of Inflation**

It can be classified on various bases, depending on the rate of rise in prices.

#### **Creeping Inflation**

It is usually referred to as a rate of inflation that is less than 5% annual increase in price. It is a slow but continuous inflation, though it seems tolerable in the short run, nevertheless leads to significant long run price increase. Such increase in prices is regarded safe and essential for economic growth.

#### **Walking Inflation**

This is when prices rise moderately and the annual inflation rate is a single digit i.e. the rate of rise in prices is in the intermediate range of 3% - 7% or less than 10 % per annum. Inflation at this rate is a warning signal for the government to control it, since it may be the prelude of a faster increase in prices.

#### **Running Inflation**

It involves more accelerated movements in prices than in either the creeping or walking inflation. When prices rise rapidly at the rate of 10% - 20% per annum, it is referred to as running inflation.

#### **Hyper Inflation**

In this case, prices rise very fast at double or triple digit rates, from more than 20% - 100% per annum. It is a situation when the rate of inflation becomes immeasurable and absolutely uncontrollable. It results to a fierce and continuous increase in cost of production. Such a situation brings a total collapse of the monetary system because of the continuous fall in the purchasing power of money.

### **Theoretical Framework**

#### **Demand Pull Inflation**

Also known as excess demand inflation is the most common inflation. It occurs when aggregate demand for goods and services is rising or exceeds the available supply of goods in an economy. When the supply of goods is less, the prices begin to rise in response to a situation often described as "too much money chasing too few goods".

#### **Cost – Push Inflation**

It is also known as "supply shock inflation". It is the increase in the cost of production for goods and services due to wage increase. It is caused due to the rise in money wages more rapidly than productivity of labour. Cost push inflation is also caused by profit – push inflation, as oligopolistic and monopolistic firms raise the price of their products to offset the rise in labour and production costs so as to earn higher profits. It is caused by a drop in aggregate supply (potential output).

#### **Monetary Inflation**

It is a sustained increase in the money supply of a country, due to printing of more money by a government to cover its deficits. The monetarist believed the most significant factor influencing inflation is how fast fiscal policy or government spending and taxation are ineffective in controlling inflation.

According to the famous monetarist economist Milton Friedman "Inflation is always and everywhere a monetary phenomenon". Monetarist asserts that the empirical study of monetary history shows that inflation has been a monetary phenomenon (Andrew, 2005).

### **Causes Of Inflation**

Inflation is caused when the aggregate demand exceeds the aggregate supply of goods and services. We analyse the factors which lead to increase in demand and the shortage of supply.

- **Increase in money supply:** Inflation is caused by an increase in the supply of money which leads to increase in aggregate demand. The higher the growth rate of the nominal money supply, the higher is the rate of inflation.
- **Increase in disposable income:** When the disposable income of the people increases, it raises their demand for goods and services. Disposable income may increase with the rise in National income or reduction in taxes.
- **Cheap monetary policy:** The policy of credit expansion also leads to increase in the money supply. When credit expands, it raises the money income of the borrowers which in turn raises aggregate demand relative to supply, thereby leading to inflation.
- **Natural Calamities:** Drought or flood is a factor which adversely affects the supplies of agricultural products. The latter in turn, create shortages of food products and raw materials, thereby helping inflationary pressures.
- **Shortages of factors of production:** one of the causes affecting the supplies of goods is the shortage of such factors as labour, raw materials, power supply, capital etc. they lead to excess capacity and reduction in industrial production.

#### **Effects Of Inflation On Economic Growth**

Inflation is a serious economic problem which threatens any country's economic growth and development. It affects people differently, due to the fall in the value of money. When price rises, or the value of money falls, some groups of the society gain, some lose and some stand in between. The effect of inflation could be on redistribution of income and wealth, production and on the society at large.

- **Effects on the redistribution of income and wealth:** Is based on the change in the real value of such factor incomes as wages, salaries, rents, interest, dividends and profits and on the basis of the size distribution of income overtime as a result of inflation. i.e., if the income of the rich have increased and that of the middle and poor classes declined with inflation. The businessmen, industrialists, traders, real estate holders and others with variable incomes gain during rising prices.  
Unlike the salaried and wage earners, pensioners etc., who suffer loss during inflation due to fixed income payment which are slow to adjust when prices, are rising.
- **Effects on production:** During inflation, production is encouraged as producers earn windfall profits in the future. They invest more in anticipation of higher profits in the future. The effects of inflation on production is on misallocation of resources, as producers divert resources from the production of essential to non-essential goods from which they expect higher profits. It also hinders foreign capital inflow, because the rising costs of material and other inputs makes foreign investment less profitable. Also, results to reduction in production because the expectation of rising prices along with rising costs of inputs bring uncertainty.
- **Effects on the Government and society as a whole:** It helps the government in financing its activities through inflationary finance. As the money income of the people increases, government collects that in the form of taxes on incomes and commodities. As such, government revenues increase during inflation.  
**Balance of payment:** Inflation affects the balance of payment of a country. When prices rise more rapidly in the home country than in foreign countries, domestic products become costlier than the foreign products. This tends to increase imports and reduce exports, thereby making the balance of payment unfavourable for the country.

#### **Measures To Control Inflation**

Inflation can be controlled by increasing the supplies and reducing money income in order to control aggregate demand. Mentioned below are some methods used for an effective control of inflation.

- **Monetary Policies:** These refer to the combination of measures designed to regulate the value, supply and cost of money in an economy in consonance with the level of economic activity. These policies actually control the rise in demand, by increasing the rates of interest and reducing the supply of real money. The central bank adopts a number of methods to control the quantity and quality of credit. Thus, it raises the interest rate to discourage borrowing from both companies and households. With increase in interest rates,

it simultaneously encourages the savings rate, owing to an escalation in the opportunity cost of expenditure. It also decreases the demand for loans, thereby limiting the growth of broad money.

There may also be a fall in the commercial investment due to a rise in the costs of borrowing money. This leads to a fall in the collective demand. Also the Central Bank sells securities in the open market during tight monetary policy in order to curb the rise in money supply. It also raises the reserve ratio and adopts a number of selective credit control measures such as raising margin requirement and regulating consumer credit.

- **Fiscal Policies:** This refers to government actions affecting its receipts and expenditure to produce desirable effects on the national income, production and employment. It is highly effective for controlling government expenditure, personal consumption expenditure and private and public investment.

Government should reduce unnecessary expenditure on non- development activities so as to put a check on private expenditure which is dependent upon government demand for goods and services in order to curb inflation. Also, personal consumption expenditure should be cut by raising the rates of direct taxes, in order to reduce the disposable income, but it does not adversely affect savings, investment and production.

The aim of fiscal policy is not only to arrest the inflationary rise in prices but also to maintain some measure of stability in the general price.

### **Economic Growth**

Economic growth is defined as “the process whereby the real per capita income of a country increases over a long period of time (Jhingan, 2003). Economic growth is measured by the increase in the amount of goods and services produced in a country. A growing economy produces more goods and services in each successive time period. Thus, growth occurs when an economy’s productive capacity increases which in turn, is used to produce more goods and services. A growing economy is a changing economy.

Evermore, growth does not appear to make us any happier once we have reached a certain standard of living (Layard, 2005). As such, economic growth in its wider aspect implies raising the standard of living of the people and reducing inequalities of income distribution.

### **Determinants of Economic Growth**

The four of the most important determinants of growth of total output are as follows:

- Growth in the labour force such as occurs when the population grows or participation rate rises.
- Investment in human capital such as formal education and on the job experience.
- Investment in physical capital such as factories, machines, transportation and communications facilities.
- Technological change brought about by innovation that introduces new products, new ways of producing existing products and new forms of business organisation.

### **Relationship Between Economic Growth And Inflation**

Inflation is a condition, when the cost of services, coupled with goods rise and the entire economy seems to go haywire. Inflation has never done well to the economy, as it affects all sectors of the economy, inflation and economic growth are parallel lines and can never meet, and it reduces the value of money and makes it difficult for the common people.

However, the rise in prices is inherent in the growth process. The demand for goods and services rises as a result of stepping up of investments on a large scale and consequent increase in incomes. This lead to inflationary rise in prices, especially when new resources are developed, and growth leads to the production of more commodities, the inflationary rise in prices will be checked, but the rise in prices will be there with the growth of the economy and it will be moderate and gradual.

Thus, the current inflation in Nigeria is a direct result of the policies of the Nigerian government to stimulate a fast rate of economic growth. These policies – monetary and fiscal policies contribute towards growth by helping to maintain stability of prices. So monetary and fiscal policies should be such as to encourage investment and control economic fluctuations in order to promote growth.

### **The Concept Of Exchange Rate**

Exchange rate is defined by (Jhingan, 1997:670) as the rate at which one currency is exchanged for another, thus from this definition, Jhingan regards exchange rate as a price of one currency in terms of another currency. Thus the exchange rate between the naira and the dollar refers to the amount of naira required to purchase a dollar.

According to Obaseki (1993:60), the exchange rate of a particular currency measures the worth of a domestic economy in terms of another. The exchange rate measures the external value of a currency. It provides a direct relationship between the domestic and foreign prices of goods and services. With the national and

international prices at a definite level over-valued exchange rates will harm the exports and stimulate imports. This situation can cause a deficit in the balance of payment. On the other hand, if the exchange rate has been under-valued, then exports will be stimulated and imports discouraged, that will tend to cause a surplus in the balance of payments.

**Devaluation:** Devaluation is defined by (Anyanwu, 1995:387) as reducing the value of a currency in terms of other currencies. It is different from depreciation which is the reduction in the value of a currency, which occurs when the supply of a country's currency is large in relation to the demand.

Unlike depreciation, devaluation requires a deliberate action on the part of monetary authorities (Anyanwu 1993:324). The purpose of devaluation is to stimulate exports and discourage imports.

According to Husted, et al (1993:400), devaluation is normally a response to persistent growing balance of trade deficits. Explaining this, Husted et al notes that if the prices of imports rises, fewer imports will be demanded. At the same time, the lower the prices of domestic exports to foreigners, will the combination of a higher demand for domestic export and lower demand for domestic import will bring about an improvement in balance of trade thereby increasing investment and leading to more employment opportunity which is a main factor of growth in an economy.

### **Review Of Inflationary Trend And Gross Domestic Product (Gdp) Growth In Nigeria From 2002 – 2013.**

**Table 2.1: Inflation Rate And Gross Domestic Product Growth Rate (2002-2013)**

YEAR	INFLATION RATE (%)	GDP GROWTH RATE (%)
2002	12.20	4.63
2003	23.80	9.57
2004	10.80	6.58
2005	11.60	6.51
2006	8.50	6.03
2007	6.60	6.45
2008	15.10	5.98
2009	13.90	6.69
2010	11.80	7.98
2011	10.30	7.45
2012	11.30	- 24.9
2013	10.40	7.89

Source: CBN Statistical Bulletin, 2013.

### **Empirical Literature**

Omoke (2010), carried out a study to ascertain the existence (or not) of a relationship between inflation and economic growth in Nigeria. The methodology employed in this study is the co-integration and granger causality test. Consumer price index was used as a proxy for economic inflation and the GDP as a perfect proxy for economic growth to examine the relationship.

Hence, the study through the empirical findings maintain the fact that the causality that run from inflation to economic growth is an indication of relationship showing that inflation indeed has a negative impact on growth. The researcher found out that the Nigerian economy is under siege and as such recommends that adequate measures should be adopted to arrest the negative impact of inflation on the economy.

Aso (2004), carried out an empirical test on "An evaluation of the effect of inflation on the Nigerian economy" covering the period (1980- 2002). She used inflation rate and money supply as explanatory variables using OLS regression techniques. She found out that inflation has significantly affected Nigerian economy.

The study recommends that policy measures aimed at curtaining such impact should include targeting of less than double digit inflation through effective monetary policy and fiscal policy and also increase in output and productivity. Udabah (1998) wrote on "the evaluation of the effectiveness of monetary policy in the Nigerian economy" covering the period (1995 – 1997). The result shows that monetary policy instrument used by Central Bank contributed significantly in achieving some degree of macroeconomic stability. He recommended that for a more effective result, the Central Bank should "fine turn" these instruments.

Iloabachie (2010) carried out a study on deficits and inflation in Nigeria, using the Granger – causality test, spanning from 1970 – 1994. The findings on the hypothesis testing confirmed a direct relationship between fiscal deficit and inflation. The study confirmed that fiscal deficit causes inflation. He concluded that what should be of paramount concern to policy makers as regards inflation should not so much be the level of fiscal deficits, but the sources of its financing as well as the absorptive capacity of the economy. He recommended that policies to control inflation should have in-built ability to increase the productivity capacity of the economy.

#### **IV. Research Methodology**

##### **Research Design**

This study researched on inflation and economic growth in Nigeria and how the former impacted on the latter. The study covered the period from 2002 to 2012 and adopted an expos-facto research design in order to explain the relationship between the independent and dependent variables.

##### **Method Of Data Analysis**

To test the stated hypothesis, the researcher employed regression analysis, correlation analysis and the probability significance value to test the hypothesis. For easy computation, Inflation rate, Exchange rate, Consumer Price Index (CPI) and Gross Domestic Product growth rate in the economy were computed and used as valued computations necessary for testing the stated hypothesis.

##### **Model Specification**

As mentioned earlier, the models will be derived from the research hypothesis. The researcher in order to ascertain objective number one, will develop her model as follows;

##### **Objective 1**

$$EXCH = f(INF, GDP, CPI) \mu \text{ ----- equation 1}$$

Where

EXCH = Exchange rate in Nigeria;

INF = Annual inflation rate in Nigeria;

GDP = Gross Domestic Product, a proxy for economic growth in Nigeria;

CPI = Consumer Price Index rate in Nigeria; and

$\mu$  = error term.

##### **Objective 2**

The researcher in order to ascertain objective number two will develop her model as follows;

$$GDP = f(INF, EXCH, CPI) \mu \text{ ----- 2}$$

Where

GDP = Gross Domestic Product, a proxy for economic growth in Nigeria;

INF = Annual inflation rate in Nigeria;

EXCH = Exchange rate in Nigeria;

CPI = Consumer Price Index rate in Nigeria; and

$\mu$  = error term.

##### **Objective 3**

The researcher in order to ascertain objective number three will develop her model as follows;

$$CPI = f(INF, EXCH, GDP) \mu \text{ ----- equation 3}$$

Where

CPI = Consumer Price Index rate in Nigeria;

INF = Annual inflation rate in Nigeria;

EXCH = Exchange rate in Nigeria;

GDP = Gross Domestic Product, a proxy for economic growth in Nigeria; and

$\mu$  = error term.

Equations 1-3 when regressed will be used in testing hypothesis 1-3

##### **Estimation Technique**

The Equation will be estimated by Ordinary Least Square (OLS) method using the SPSS package.

The following results will be achieved after the data has been regressed;

- Correlation, which has to do with the relationship between the variables;
- Coefficient of determination ( $R^2$ ), which shows how the dependent variable is being explained by the independent variable(s);
- F\* Statistics test, which is used to test if there is a significant relationship between the dependent and independent variables;
- The coefficients, which is used to explain or interpret the model; and
- P Value (sig), which is the probability value of the variables. It can also be used to test a hypothesis.

### **Decision Rule**

- For correlation, a positive coefficient of the equation indicates that the dependent and independent variable increases at the same pace, vice versa. For the test of hypotheses one and three when the correlation is positive, we accept the alternative hypotheses, vice versa;
- For the coefficient of determination ( $R^2$ ), the higher the  $R^2$ , the better the “goodness of fit” of the regression equation while the closer the  $R^2$  to zero, the “worst the fit”;
- For the F\* Statistics test, if the prob. Value of  $F^* < 0.05$ , we accept that the regression equation is statistically significant; and
- For the test of hypotheses two and four, if prob. (sig.)  $< 0.05$ , we accept the alternative hypothesis then reject the null hypothesis.

### **The Coefficient Of Determination ( $R^2$ )**

In the regression result, the  $R^2$  obtained is 0.707 this implies that 70.7% of Exchange Rate is explained by the changes in the explanatory or independent variables. This indicates that it is a good fit because it tends closer to one. The model is explained properly.

### **The F\* - Statistics Test**

The F- statistics is used to test if there is a significant relationship between the dependent and independent variable in the regression equation.

From table 4.2, the calculated F is 5.633 while its probability value (Sig. F\*) is 0.028. Since 0.028 is less than 0.05, we accept that the regression equation is statistically significant; meaning that there is a significant relationship between the dependent and independent variables in the regression equation.

The Pearson Correlation shows the strength of relationship between variables. Correlation between Exchange Rate and Inflation Rate is -0.123 which implies a negative relationship between the two variables i.e. as exchange rate increases, inflation reduces.

The correlation between exchange rate and GDP is -0.500 which implies a negative relationship between the two variables. This means that as exchange rate increases, GDP decreases.

The correlation between exchange rate and CPI is 0.837 which implies a positive relationship between the two variables. This means that as exchange rate increases, CPI also increases.

**The interpretation:** The constant value of 100.988 implies that without the predictors used, the exchange rate in Nigeria will increase by 100.988 units. A unit increase in inflation rate will lead to a 0.233 increase in exchange rate in Nigeria. Also, a unit increase in GDP will lead to a 0.008 decrease in exchange rate in Nigeria. Finally, a unit increase in CPI will lead to a 0.375 increase in exchange rate in Nigeria.

### **The Coefficient Of Determination ( $R^2$ )**

In the regression result, the  $R^2$  obtained is 0.317 this implies that 31.7% of GDP is explained by the changes in the explanatory or independent variables. This indicates that it is not a good fit.

### **The F\* - Statistics Test**

The F- statistics is used to test if there is a significant relationship between the dependent and independent variable in the regression equation.

From table 4.5, the calculated F is 1.084 while its probability value (Sig. F\*) is 0.416. Since 0.416 is greater than 0.05, we accept that the regression equation is not statistically significant; meaning that there is no significant relationship between the dependent and independent variables in the regression equation.

The Pearson Correlation shows the strength of relationship between variables. Correlation between GDP and Inflation is 0.089 which implies a positive relationship between the two variables i.e. as GDP increases, inflation increases.

The correlation between GDP and Exchange rate is -0.500 which implies a negative relationship between the two variables. This means that as the economy grows, exchange rate decreases.

The correlation between GDP and CPI is -0.559 which implies a negative relationship between the two variables. This means that as the economy grows CPI decreases.

**The interpretation:** The constant value of 167.086 implies that without the predictors used, the GDP in Nigeria will increase by 167.086 units. A unit increase in inflation rate will lead to a 0.622 decrease in GDP in Nigeria. Also, a unit increase in exchange rate will lead to a 0.528 decrease in GDP in Nigeria. Finally, a unit increase in CPI will lead to a 1.198 decrease in GDP in Nigeria



### **The Coefficient Of Determination ( $R^2$ )**

In the regression result, the  $R^2$  obtained is 0.743 this implies that 74.3% of Consumer Price Index is explained by the changes in the explanatory or independent variables. This indicates that it is a good fit because it tends closer to one. The model is explained properly.

### **The F\* - Statistics Test**

The F- statistics is used to test if there is a significant relationship between the dependent and independent variable in the regression equation.

From table 4.8, the calculated F is 6.742 while its probability value (Sig. F\*) is 0.018. Since 0.018 is less than 0.05, we accept that the regression equation is statistically significant; meaning that there is a significant relationship between the dependent and independent variables in the regression equation.

The Pearson Correlation shows the strength of relationship between variables. Correlation between CPI and Inflation is -0.234 which implies a negative relationship between the two variables i.e. as CPI grows, inflation rate decreases.

The correlation between CPI and Exchange rate is 0.837 which implies a positive relationship between the two variables. This means that as CPI increases, exchange rate also increases.

The correlation between CPI and GDP is -0.559 which implies a negative relationship between the two variables. This means that as CPI grows GDP decreases.

**The interpretation:** The constant value of 124.550 implies that without the predictors used, CPI in Nigeria will decrease by 124.550 units. A unit increase in inflation rate will lead to a 0.878 decrease in CPI in Nigeria. Also, a unit increase in exchange rate will lead to a 1.617 increase in CPI in Nigeria. Finally, a unit increase in GDP will lead to a 0.074 decrease in CPI in Nigeria.

### **Test Of Hypotheses**

**Hypothesis I:** Based on the decision rule stated in the previous chapter, since INF prob. (sig) i.e. 0.732 from table 4.4, which is greater than 0.05; we therefore accept the null hypothesis. Therefore, we conclude that inflation has a negative effect on exchange rate in Nigeria.

**Hypothesis II:** Based on the decision rule stated in the previous chapter, since INF prob. (sig) i.e. 0.913 from table 4.7, which is greater than 0.05; we therefore accept the null hypothesis. Therefore, we conclude that inflation has a negative influence on economic growth in Nigeria.

**Hypothesis III:** Since INF prob. (sig) i.e. 0.529 from table 4.10, which is greater than 0.05; we therefore accept the Null hypothesis. Therefore, we conclude that inflation has a negative impact on consumer price index in Nigeria.

## **V. Summary Of Findings**

This research work studied inflation and economic growth; as the Nigerian experience, with respect to its impact and relationship. It also studied the effects of some selected variables (GDP, Exchange rate, CPI) on inflation.

The following findings were made from the research:

- That inflation has a negative effect on exchange rate in Nigeria. Exchange rate is the rate at which one currency will be exchanged for another. Thus, as exchange rate increases, inflation reduces.
- That inflation has a negative impact on consumer price index in Nigeria. As CPI grows, inflation rate decreases.
- Findings also revealed that inflation has a negative influence on economic growth in Nigeria. But that there exist a positive relationship between inflation and GDP, i.e. as inflation increases, GDP increases.
- Also that CPI and GDP has an inverse relationship, so a lower CPI will lead to an increase in GDP, which could suggest to investors that the economy is stronger and healthier than it really is.

## **VI. Recommendations**

Based on the findings made in the course of this study, the following recommendations are hereby made:-

- The inflationary problem in Nigeria could best be reduced to the barest minimum, by restoring equilibrium between demand and supply, by either lowering demand to the level of supply or increase supply to the level of demand. Thus, an effective cure to inflation lies in a judicious management of both demand and supply.
- The government should try and set up a marketing board so as to control the market prices of commodities, since it has in our practices that consumption remained the priority of mankind.

- The nation’s monetary authority should develop and implement measures that will ensure that both inflation and foreign exchange rates are sustained at levels that will ensure increasing level of inflow of foreign direct investment, which is a factor of economic growth.
- Lastly, but importantly, in order to ameliorate the negative effect of economic growth in Nigeria, the monetary authorities should introduce appropriate measures to reduce inflation to the barest minimum in order to sustain economic growth.

## VII. Conclusion

Based on this research, an economy cannot experience growth with a high inflation rate. As such, the monetary authorities should adopt measures to reduce inflationary pressure in order to ameliorate its effect on the GDP of Nigeria. Nigeria’s grip on inflation rate is becoming consistent and with an impressive economic growth rate. So far a significant level and good track record is brewing. But looking at the country’s misery indications intrinsically overwhelming poverty and crushing unemployment, this impressive growth is not making impact to the suffering masses that are without jobs and are etching out a living with less than two dollars per day. As such, these economic experiences cannot correlate with the economic expansion of the country’s GDP. Positive economic growth should fundamentally ameliorate the misery index, least it becomes senseless and insignificant to the majority of Nigerians.

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## Appendix

### Appendix 1: Regression Results For Equation 1

Descriptive Statistics			
	Mean	Std. Deviation	N
EXCH	1.363118E2	13.7714377	11
INF	12.355	4.4446	11
GDP	-15.8355	75.13022	11
CPI	8.619091E1	30.5195169	11

Correlations					
		EXCH	INF	GDP	CPI
Pearson Correlation	EXCH	1.000	-.123	-.500	.837
	INF	-.123	1.000	.089	-.234
	GDP	-.500	.089	1.000	-.559
	CPI	.837	-.234	-.559	1.000
Sig. (1-tailed)	EXCH	.	.360	.059	.001
	INF	.360	.	.398	.245
	GDP	.059	.398	.	.037
	CPI	.001	.245	.037	.
N	EXCH	11	11	11	11
	INF	11	11	11	11
	GDP	11	11	11	11
	CPI	11	11	11	11

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.841 <sup>a</sup>	.707	.582	8.9083247	.707	5.633	3	7	.028
a. Predictors: (Constant), CPI,				INF, GDP					

Anova <sup>b</sup>						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1341.017	3	447.006	5.633	.028 <sup>a</sup>
	Residual	555.508	7	79.358		
	Total	1896.525	10			
a. Predictors: (Constant), CPI, INF, GDP						
b. Dependent Variable: EXCH						

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	100.988	14.020		7.203	.000
	INF	.233	.653	.075	.357	.732
	GDP	-.008	.045	-.042	-.168	.871
	CPI	.375	.114	.831	3.284	.013
a. Dependent Variable: EXCH						

### Appendix 2: Regression Results for Equation 2

Descriptive Statistics			
	Mean	Std. Deviation	N
GDP	-15.8355	75.13022	11
INF	12.355	4.4446	11
EXCH	1.363118E2	13.7714377	11
CPI	8.619091E1	30.5195169	11

Correlations					
		GDP	INF	EXCH	CPI
Pearson Correlation	GDP	1.000	.089	-.500	-.559
	INF	.089	1.000	-.123	-.234
	EXCH	-.500	-.123	1.000	.837
	CPI	-.559	-.234	.837	1.000

Sig. (1-tailed)	GDP	.	.398	.059	.037
	INF	.398	.	.360	.245
	EXCH	.059	.360	.	.001
	CPI	.037	.245	.001	.
N	GDP	11	11	11	11
	INF	11	11	11	11
	EXCH	11	11	11	11
	CPI	11	11	11	11

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.563 <sup>a</sup>	.317	.025	74.20036	.317	1.084	3	7	.416
a. Predictors: (Constant), CPI, INF, EXCH									
ANOVA <sup>b</sup>									
Model		Sum of Squares	Df	Mean Square	F	Sig.			
1	Regression	17905.645	3	5968.548	1.084	.416 <sup>a</sup>			
	Residual	38539.853	7	5505.693					
	Total	56445.498	10						
a. Predictors: (Constant), CPI, INF, EXCH									
b. Dependent Variable: GDP									

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	167.086	332.756		.502	.631
	INF	-.622	5.481	-.037	-.114	.913
	EXCH	-.528	3.142	-.097	-.168	.871
	CPI	-1.198	1.447	-.487	-.828	.435
a. Dependent Variable: GDP						

### Appendix 3: Regression Results for Equation 3

Descriptive Statistics			
	Mean	Std. Deviation	N
CPI	8.619091E1	30.5195169	11
INF	12.355	4.4446	11
EXCH	1.363118E2	13.7714377	11
GDP	-15.8355	75.13022	11

Correlations					
		CPI	INF	EXCH	GDP
Pearson Correlation	CPI	1.000	-.234	.837	-.559
	INF	-.234	1.000	-.123	.089
	EXCH	.837	-.123	1.000	-.500
	GDP	-.559	.089	-.500	1.000
Sig. (1-tailed)	CPI	.	.245	.001	.037
	INF	.245	.	.360	.398
	EXCH	.001	.360	.	.059
	GDP	.037	.398	.059	.
N	CPI	11	11	11	11
	INF	11	11	11	11
	EXCH	11	11	11	11
	GDP	11	11	11	11

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Change	F Change	df1	df2	Sig. Change
1	.862 <sup>a</sup>	.743	.633	18.4964499	.743	6.742	3	7	.018
a. Predictors: (Constant), GDP, INF, EXCH									
ANOVA <sup>b</sup>									
Model			Sum of Squares	Df	Mean Square	F	Sig.		
1	Regression		6919.578	3	2306.526	6.742	.018 <sup>a</sup>		
	Residual		2394.831	7	342.119				
	Total		9314.409	10					
a. Predictors: (Constant), GDP, INF, EXCH									
b. Dependent Variable: CPI									
Coefficients <sup>a</sup>									
Model		Unstandardized Coefficients		Standardized Coefficients		T	Sig.		
		B	Std. Error	Beta					
1	(Constant)	-124.550	70.087			-1.777	.119		
	INF	-.878	1.327	-.128		-.661	.529		
	EXCH	1.617	.492	.730		3.284	.013		
	GDP	-.074	.090	-.183		-.828	.435		
a. Dependent Variable: CPI									

**Table 4.1: Exchange Rate, Inflation Rate, Gross Domestic Product Growth Rate And Consumer Price Index In Nigeria (2002-2012)**

YEARS	EXCHANGE RATE	INFLATION RATE	GDP GROWTH RATE	CPI
2002	120.97	12.20	4.63	44.30
2003	129.36	23.80	9.57	54.90
2004	133.50	10.80	6.58	60.40
2005	132.15	11.60	6.51	67.40
2006	128.65	8.50	6.03	73.10
2007	125.83	6.60	6.45	77.90
2008	118.57	15.10	5.98	89.70
2009	148.90	13.90	6.96	102.20
2010	150.30	11.80	7.98	114.20
2011	153.86	10.30	7.45	126.00
2012	157.34	11.30	-24.9	138.00

Source: CBN Statistical Bulletin, 2012

**Data Analysis**

**Objective 1**

**Table 4.2: The Values Of F\* Statistics And Coefficient Of Determination (R<sup>2</sup>)**

Model	R <sup>2</sup>	F*	Sig. F*
EXCH	0.707	5.633	0.028

**Table 4.3: The Correlation Between The Variables**

		EXCH	INF	GDP	CPI
<b>Pearson Correlation</b>	EXCH	1.000	-.123	-.500	.837
	INF	-.123	1.000	.089	-.234
	GDP	-.500	.089	1.000	-.559
	CPI	.837	-.234	-.559	1.000
<b>Sig. (1-tailed)</b>	EXCH	.	.360	.059	.001
	INF	.360	.	.398	.245
	GDP	.059	.398	.	.037
	CPI	.001	.245	.037	.
<b>N</b>	EXCH	11	11	11	11
	INF	11	11	11	11

	<b>GDP</b>	11	11	11	11
	<b>CPI</b>	11	11	11	11

**Table 4.4: The Coefficients, T Value And Probability Significance Value**

Model		Unstandardized Coefficients		T	Sig.
		B	Std. Error		
<b>1</b>	<b>(Constant)</b>	100.988	14.020	7.203	.000
	<b>INF</b>	.233	.653	.357	.732
	<b>GDP</b>	-.008	.045	-.168	.871
	<b>CPI</b>	.375	.114	3.284	.013
<b>a. Dependent Variable: EXCH</b>					

**Objective 2**

**Table 4.5: The Values Of F\* Statistics And Coefficient Of Determination (R<sup>2</sup>)**

Model	R <sup>2</sup>	F*	Sig. F*
<b>GDP</b>	0.317	1.084	0.416

**Table 4.6: The Correlation Between The Variables**

		GDP	INF	EXCH	CPI
Pearson Correlation	GDP	1.000	.089	-.500	-.559
	INF	.089	1.000	-.123	-.234
	EXCH	-.500	-.123	1.000	.837
	CPI	-.559	-.234	.837	1.000
Sig. (1-tailed)	GDP	.	.398	.059	.037
	INF	.398	.	.360	.245
	EXCH	.059	.360	.	.001
	CPI	.037	.245	.001	.
N	GDP	11	11	11	11
	INF	11	11	11	11
	EXCH	11	11	11	11
	CPI	11	11	11	11

**Table 4.7: The Coefficients, T Value And Probability Significance Value**

Model		Unstandardized Coefficients		t	Sig.
		B	Std. Error		
<b>1</b>	<b>(Constant)</b>	167.086	332.756	.502	.631
	<b>INF</b>	-.622	5.481	-.114	.913
	<b>EXCH</b>	-.528	3.142	-.168	.871
	<b>CPI</b>	-1.198	1.447	-.828	.435
<b>a. Dependent Variable: GDP</b>					

**Objective 3**

**Table 4.8: The Values Of F\* Statistics And Coefficient Of Determination (R<sup>2</sup>)**

Model	R <sup>2</sup>	F*	Sig. F*
<b>CPI</b>	0.743	6.742	0.018

**Table 4.9: The Correlation Between The Variables**

		CPI	INF	EXCH	GDP
Pearson Correlation	CPI	1.000	-.234	.837	-.559
	INF	-.234	1.000	-.123	.089
	EXCH	.837	-.123	1.000	-.500
	GDP	-.559	.089	-.500	1.000
Sig. (1-tailed)	CPI	.	.245	.001	.037
	INF	.245	.	.360	.398
	EXCH	.001	.360	.	.059
	GDP	.037	.398	.059	.

<b>N</b>	<b>CPI</b>	11	11	11	11
	<b>INF</b>	11	11	11	11
	<b>EXCH</b>	11	11	11	11
	<b>GDP</b>	11	11	11	11

**Table 4.10: The Coefficients, T Value And Probability Significance Value**

<b>Model</b>		<b>Unstandardized Coefficients</b>		<b>T</b>	<b>Sig.</b>
		<b>B</b>	<b>Std. Error</b>		
<b>1</b>	<b>(Constant)</b>	-124.550	70.087	-1.777	.119
	<b>INF</b>	-.878	1.327	-.661	.529
	<b>EXCH</b>	1.617	.492	3.284	.013
	<b>GDP</b>	-.074	.090	-.828	.435
<b>a. Dependent Variable: CPI</b>					