

# Inflation and economic growth in Nigeria

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Accepted 30<sup>th</sup> July, 2015

**Abstract.** This study is on inflation rate and economic growth in Nigeria between the period 1980 and 2013. The main objective of the study was to investigate the nature of relationship between inflation rate and economic growth rate. The study made use of secondary data sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin and the National Bureau of Statistics (NBS). The Ordinary Least Square (OLS) logged multiple regression was employed with Gross Domestic Product (GDP) as the dependent variable and Inflation Rate (INFR), Exchange Rate (EXCHR), Input of Labour and Input of Capital served as the explanatory variables. Our results showed that inflation rate in line with apriori expectations had a positive relationship but non-significant with the economic growth rate. This suggested that as the GDP rises inflation also rises, suggesting that there has been no effectiveness in the monetary policies aimed at tackling or controlling inflation rate in Nigeria. We recommended that for sustainable economic growth to be achieved in Nigeria, the level of inflation should be stabilized by the monetary authorities.

**Keywords:** Inflation, economic growth, multiple regression model, monetary policy, Nigeria.

## INTRODUCTION

Inflation refers to the persistent and the continuous rise in the general level of prices of goods and services in an economy. It is no gainsaying the fact that different economies in different parts of the world experience inflation. Maybe the differences lie in the timing, causes, duration and in their prevailing economic conditions. Suffice to say then that, be it developed, developing or underdeveloped; economies of countries of the world does witness rise in price. For some economies it could be mere fluctuations, while for some others, it is consistent and continuous rise in price.

In the meantime, amidst this rise in general price level, there are some country's economies that experiences growth. For such country, inflation has a positive effect. On the other hand, there are some economies that witness economic downturn as an aftermath effect of inflation. For this category of countries, inflation has an adverse or negative effect and in such economy, inflation is intolerable. Over the years in Nigeria, the economy has been experiencing rise in price and there has been also

economic growth over time as well. Therefore, it is our aim in this study to test whether rise in price has had positive or negative effect on economic growth in Nigeria.

The issue of inflation has been a matter of concern for economists overtime as it remains a fact that the real income of the citizens are affected during inflation unless with compensatory income via subsidy or outright increase in the workers' salaries. The latter is another economic problem which when not accompanied by increased productivity will lead to more inflationary tendencies in the economy because the value of money would have fallen when the increased incomes fail to bring about more productivity from the wage increases. According to Fatukasi (2012), in Nigeria, notwithstanding the several efforts directed by the government to curb inflation, these efforts have not yielded positive or desired results as high price level continued to cause setbacks in the growth rate of the living standard of the most Nigerians who are either on fixed income or are unemployed. He added that it has adverse effects on

investment productivity, balance of payment and therefore reduced growth rate of the Gross Domestic Product (GDP).

The several impulses of inflation in any economy have made it an issue of concern for policy makers. According to Aminu and Anono (2012), parts of the macroeconomic goals which the government strives to achieve are the maintenance of stable domestic price level and full employment in order to avoid cost of inflation and the associated uncertainties. When inflation is above single digits level and remain spiral, investors are hesitant to invest and this affects the future growth outcome of the country. This may partly explain why domestic producers in Nigeria cry of overhead cost thereby making the foreign imported goods to have competitive advantage in terms of cost and quality over the domestic commodities. According to Adebisi (2009), in the long run, high and variable inflation increases consistently discourages investment and reduces economic growth. Inflation is the consistent and persistent increase in the general price level a given economy. Inflation is inversely related with the value of money. Cost push inflation results from surge in the factor inputs such as labour wages, raw materials which is often passed to the final consumers by the supplier or the producer to final consumers in the form of higher prices of commodities.

The inflation rate in Nigeria jumped from 6.938 in 2000 to 18.869 percent in 2001, 12.883 percent in 2002, 14.033 percent in 2003, 15.001 percent in 2004, 17.856 percent in 2005, and down to 8.218 percent in 2006 and 5.413 percent in 2007. It further rose steadily to 11.581 percent in 2008, 12.543 percent in 2009 and 13.72 percent in 2010. This trend reveals that within a period of two decades, Nigeria only witnessed single digit inflation rates in seven years (1986, 1990, 1989, 1999, 2000, 2006 and 2007) which is indicative of negative signals of Nigeria's investment environment (IMF, 2011).

Inflationary pressure in Nigeria has several negative implications on the economy leading to poor domestic production as the cost of producing domestically discourages the investors at the domestic economy giving rise to more importation at the expense of export with the effect of creating deficit balance of payment especially the non-oil trade balance. This is consistent with Abaukaka (2011) that found out that the non-oil trade balance has never maintained a positive position and he concluded that the overall trade balance of Nigeria is only smoothed by the surplus since 1970 oil trade balance account within the period of his study.

Similarly, Fatukasi (2012) pointed out that upsurge inflationary rates often lead to major economic distortions such as balance of payment deficit, devaluation of naira, reduction in purchasing power of the working class which makes the workers unions to embark on frequent agitations for higher wages. The issue of frequent down tooling by the workers in Nigeria has negative impact on the economy as productivities are cut, services paralysed

especially in the educational and health sectors. When the health and educational sectors are continuously out of service, the human capital function will suffer set back and ultimately affect the pace of economic development of the country. The question this work seeks to answer is: what are the effects of inflation on economic growth in Nigeria? With the objective of examining the effect of inflation on the economic growth in Nigeria, the statement of hypothesis involves testing whether: Inflation does not impact significantly on economic growth in Nigeria.

With regard to the significance of the study, inflation has become of great interest to researchers and policy makers across the countries of the world. This is because of its implication on individual's demand response, businesses' supply response and economic impulse of the nation in question. It is on this premise that the study is aimed at examining inflation as an economic phenomenon and its effects on the overall economic performance of Nigeria economy. So, in the present study attempt has been made to examine the effect of inflation on economic growth in Nigeria. For further discussions, the paper has been divided into five parts beginning with the introduction; literature review; methodology employed in the study; presentation and analysis of results; and conclusions and recommendation of the study.

## LITERATURE REVIEW

### Conceptual framework

#### *Inflation*

It is the persistent increase in the general price level within the economy which affects the value of the domestic currency (Fatukasi, 2012). It is not once and for all upward price movement but has to be sustained over time and affect all goods and services within the economy. There are several factors that are responsible for inflation in Nigeria. The inflation which results from excess aggregate demand is called the demand fall inflation, the cost push inflation results from upward movement in the cost of production while the structure inflation arises from some constraints such as inefficient production, marketing and distribution systems in the productive sectors of the economy (Fatukasi, 2012). Other forms of inflation in developing country could be imported, open and seasonal inflation. The imported inflation comes as a result of transmission of inflation through internationally traded goods and services. This is when the economy imports goods from countries already, experiencing inflation. The open inflation comes as a result of uninterrupted market mechanisms and seasonal inflation is associated off season in production when supply constraints permeates the economy as a result of fall in production especially farming produce. In Nigeria

other factors can be attributed to inflation such the nature of the economy, its history and fiscal and monetary policy direction.

### ***Economic growth***

According to Dwivedi (2004), economic growth on the other hand is a sustained increase in per capita national output or net national product over a long period of time. It implies that the rate on increase in total output must be greater than the rate of population growth. Another quantification of economic growth is that national output should be composed of such goods and services which satisfy the maximum want of the maximum number of people. Economic growth is the quantitative increase in the monetary value of goods and services produced in an economy within a given year. Economic growth is measured as a percentage change in the Gross Domestic Product or Gross National Product (Dwivedi, 2004).

Other concepts are: exchange rate; which is the value of country's currency when compare with the US dollar. Interest rate, which is the cost of obtaining loanable fund. Inputs of labour; which are the effort of labour in the production process and input of capital refers to the contribution of the various machines and equipment used in production process as well.

### ***The trend between inflation and economic growth in Nigeria***

The facts and figures obtained from the IMF World Economic Outlook Report (2011) revealed that the Nigeria's GDP tends to be low when the inflation rates are high apart from a few years of the 80's. For example, in 1998 GDP growth rate was relatively high amidst the high inflationary levels at the time. This could be positive effect of increased domestic productivities which was the major thrust of SAP in the sense that domestic output increased.

In 1986, the rate of inflation in Nigeria was 6.25 with the GDP growth rate of 8.754; in 1987 the rate of inflation rose to 11.765 percent with GDP growth rate decreasing to -10.752. The inflation rate rose sharply to 34.211 and 49.2 respectively in 1988 and 1989 with the GDP growth rate of 7.543 and 6.467 within these years. In 1990, the rate of inflation was stabilized to 7.895 with the GDP growth rate higher than the rates experienced since the introduction of SAP in 1986.

The rate of inflation continued to Skyrocket above double digit nearing triple digits in some of years where it was above 50 percent in period between 1993 and 1995. This was reflected in abysmal level of the Nigeria's GDP growth rate within the period. The rate of inflation rose from 12.195 percent in 1991 to 44.565 in 1992, 57.416 in

1993, 72.721 in 1994 and 72.81 in 1995 with the corresponding value of the GDP growth rate of -0.618, 0.434, 2.09, 0.91, and 0.307 within those years.

In 1996, the rate of inflation reduced drastically to 29 percent though not healthy for meaningful investment and further reduced to 10.673 in 1997, 7.862 in 1998, and 6.618 in 1999 and remains relatively stable at 6.938 in year 2000. Within this period the value of GDP growth rate was 4.994 in 1996, 2.802 in 1997, 2.716 in 1998, and 0.474 in 1999 and gained slightly to 5.318 in year 2000.

The trend of inflation between 2001 and 2010 in Nigeria at average level is in the double digit rate but the GDP growth seems unimpressive which could be attributed to petroleum export proceeds. The inflation rate was 18.869 in 2001, 12.883 in 2002, 14.037 in 2003, 15.001 in 2004, 17.856 in 2005, 8.218 in 2006, 5.413 in 2007, 11.581 in 2008, 12.543 in 2009 and 13.72 in 2010 with the corresponding GDP growth rates within these years as 8.164, 21.172, 10.335, 10.585, 5.393, 6.211, 6.972, 5.984, 6.96, and 8.724, respectively.

Despite the relatively good annual GDP growth rate, the poverty level and unemployment keep growing. The level of investment does not match with the growth level because the inflation constitutes risk. It therefore shows that the level of inflation in Nigeria is disinvestment and not likely to translate to sustainable development in the long run. This is shown in Figure 1.

### **Theoretical literature review**

Several school of thoughts have tended to associate inflation with factors they consider to affect supply and demand which creates lags that manifest in higher prices of goods and services in an economy for a sustainable period of time. Some the main theories of inflation reviewed in this work are quantity theory of money, Keynesian theory, monetarist theory structural theory of inflation, rational expectations, revolutionary theory, new classical synthesis and new political macroeconomics of inflation

#### ***Theories of inflation***

**The quantity theory of money:** According to Totonchi (2011), the quantity theory of money is the oldest surviving economic doctrine which associated the general level of prices to changes in quantity of money in circulation. This means that the level of money supply determines the inflationary or non-inflationary level of an economy. The classicalists and some neo-classicalists viewed the analysis of inflation on this theory. Those who contributed to this theory include David Hume (1711 - 1776), David Ricardo (1772 - 1823) and Irvin Fisher (1876 - 1947).

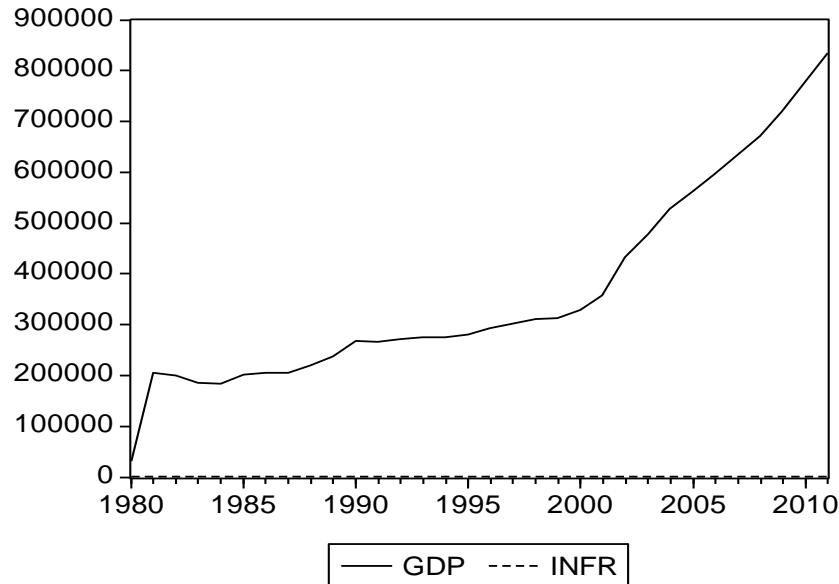


Figure 1. Trend relationship between GDP and inflation rate.

David Hume provided the first dynamic process of how the impact of monetary changes spread from one sector of the economy to another and in the process changing relative prices and quantities. David Ricardo postulates that inflation in Britain was as a result of Bank of England irresponsibility over the issue of money and discouraged the idea on the possibility of output and employment increases that could result from the injection of money in the economy. Fisher brought out the famous equation of exchange ( $MV = PT$ ). Fisher and Author Cecil Pigeon (1877 - 1959) and the neoclassical economists of the Cambridge school demonstrated that monetary control could be achieved in a fractional reserve banking regime through control of exogenously determined stock of high powered money.

**Monetary theory of inflation:** Monetarism refers to the followers of Milton Friedman (1867 – 1960) who hold that only money matters and as such monetary instruments are more potent instruments of price and economic stabilization than fiscal policy. This school is known as modern quantity theory of money which holds that inflation is always and everywhere a monetary phenomenon which comes from rapid expansion in quantity of money than the expansion in the quantity of output. That is, if money supply rises faster than the rate of growth of national income then there will be inflation. According to Totonchi (2011), monetarists employed the familiar identity of exchange equation of Fisher. That is Quantity theory of Money (Fisher version).

$$MV = PT$$

Where: M = money supply; V = velocity of circulation;  
P = price level; T = transactions.

T is believed to measure output and as such is often substituted for Y (national income). The above equation must hold ( $MV = PY$ ), that is, the rate of expenditure must equal the value of output. However, they argue that it is unwarranted increases in the money supply that manifest in inflation.

**Keynesian theory of inflation:** John Maynard Keynes (1883 – 1946) and his followers were of the view that increase in the aggregate demand is the source of demand pull inflation. Demand pull inflation is where the total demand for goods and services is in excess of the aggregate supply and provisions of goods and services in the economy. The aggregate demand in this sense comprises of consumption, investment and government expenditure. According to Totonchi (2011), policy that causes the decrease in each component of total demand is effective in reduction of pressure on demand and invariably inflation. This is basically involves reduction in government expenditures, increase in tax as well as controlling the volume of money.

In Nigeria, where the economy can hardly produce output to meet up with economy's demand and which is highly foreign dependent, may be faced with more inflationary pressures due to excess demand and when taxes are increased as the producers may get involved more in rent seeking economic activities rather getting involved in the real sectors of the economy which can tackle the problem of low productivity and unemployment.

**Cost push theory of inflation:** This type of inflation became more prominent in the 50's and 70's when it became known as "New inflation". This is taken to be associated with increase in the cost of production which results from wage increases or increases in the input

prices. According to Totonchi (2011), when the labour unions demand for more wages from the employers and if granted, the employers in turn will increase the cost of their products which will ultimately result in cost push inflation. He added that the resultant price increase may affect some other companies that use the products whose prices have risen and thereby pushing up their prices. This spiral may be on the national scale and may be sustained over time.

The developing countries especially Nigeria is confronted with deficient input resources especially capital goods and has to resort to importation of such goods from developed countries. This has the tendencies of extra cost of importation which in the long run often make the domestically produced goods to be costly compared to similar finished goods imported to the country and hence has the negative impact of undermining the domestic production and lead ultimately sustained higher prices.

**Structural inflation theory:** This theory considers economic structural factors to be associated with more demand or less demand, supply increase or decrease. According to Totonchi (2011), structural improvement brings about rapid economic growth and when the less developed countries fail to change their deep seated undeveloped structure, they will definitely find themselves in the inflationary situation. He equally attributes structural inflation as emphasized by structuralism to growth in the service sector being brought about by population growth and immigration. This theory is related to the case of Nigeria as the population of the country is constantly growing, the economic and social structure remains unchanged. This can explain the difficulty in tackling the wave of inflation in the country. Fashoyin (1986) in Fatukasi (2012) with respect to the impact of structural phenomenon on inflation in Nigeria identified ten structural variables such as agricultural bottlenecks, industrial production, imports, exports, food import and production, trade union militancy, indirect taxation on companies, wage bill, government expenditure in the form of deficits financing and money supply to be responsible for inflation in Nigeria for the period between 1970 and 1980.

Countries with structural problem especially less developed countries according to Totonchi (2011), common anti-inflation measure such as contractionary monetary policy are in many cases contradiction as such policies prescriptions end up stagnating the economic growth of the less developed economies. This is fundamentally true because less developed countries have several deficiencies that have to be addressed such as infrastructures and social services, attempt to reduce spending and liquidity in the system may result in poor level of economic growth.

**Rational expectations theory:** The macroeconomic

revolution of 1970's was dominated by the idea of Rational Expectations such as Lucas (1972), McCallum (1987), Sargent and Hasen (1980). Their major assumption is that the economic agents form their macro-economic expectations rationally based on all current, and past relevant information available and not only on past information as in the case of backward-looking or adaptive price expectations. They viewed that if the monetary authority announces a monetary stimulus in advance, people expect that prices would rise. This according to them will make the forward looking rational-expectation adjustments of economic agents will ensure that the policy prescription or pronouncement of the monetary authority fails. Conversely according to the theory, if a policymaker announces anti-inflationary policy in advance, the policy would not achieve its desired goal if people do not believe that the government will really carry it out.

**New neoclassical synthesis of inflation:** The new neoclassical synthesis according to Totonchi (2011) viewed that monetary and demand factors are key determinants of business cycles. He added that the synthesis views expectations as critical to the inflation process but that expectation can be managed by the monetary policy rule. The new IS-LM-PC (PC = Phillips curve) version of the new neoclassical synthesis makes the price level endogenous variable and the model allows the Keynesian and real business cycle mechanism to operate through somewhat different channels (Totonchi, 2011).

**Neo political macro-economics of inflation:** The other theories of inflation focus mainly on economic factors as the determinants of inflation and more other factors such as institutions, political process and culture in process of inflation affect economic policy in the real world. The new political economy provides fresh perspectives on the relations between timing of elections, performance of policymakers, political instability, policy credibility and reputation and the inflation process itself (Totochi, 2011). It considered that the sustained government deficits as a potential cause of inflation may be partially or fully domesticated when the political process is considered as well as possible lobbying activities on government budgets.

### ***Relating inflation to the theories of growth***

**Keynesian Theory:** The traditional Keynesian model illustrates growth and inflationary relationship through the aggregate demand and the aggregate supply curves. The model is such that if the aggregate supply curve is vertical, changes on the demand side of the economy affect prices only if the aggregate supply curve is upwardly sloped changes in aggregate demand will affect

both prices and output. In Gokal and Hamif (2004), moving from short run to hypothetical long run factors that drive inflation rate and output in the short run such as expectation, labour force, price of other factors of production, fiscal or monetary policy are assumed to balance out in the steady state. This is because the dynamic adjustment of short run aggregate demand and aggregate supply curves yields an adjustment path which exhibits an initial positive relationship between inflation and growth which turns negative towards the higher part of the adjustment.

**Monetarism:** The monetarism emphasized several long run properties of the economy such as the quantity theory of money and the availability of money. The proponent is Milton Friedman. According to Gokal and Hamif (2004), the quantity theory of money linked inflation to economic growth by equating the total amount of spending in the economy to the total amount of money in circulation. Friedman looked at inflation being a product of an increase in the money supply and velocity of money at a rate greater than the rate of growth in the economy. Monetarism suggests that in the long run, prices are mainly affected by the growth rate in money while having no real effect in money but if the growth in the money supply is higher than the economic growth or output rate, it will manifest in inflation.

**Neo-classical theory:** The earliest model of the Neo classical theory was formulated by Solow (1956) and Swan (1956) which exhibits diminishing returns to labour and capital separately and constant returns to both factors jointly. Technological change replaced investment as pricing factors explaining long term growth and its level was assumed by Solow and other growth theories to be determined exogenously (independently) of other factors including inflation. Tobin (1965) developed Mundell's model as modification of Solow's and Swan's of 1956 in making money a store of value in the economy. Tobin suggests that inflation causes individuals to substitute out of money and into interest earning assets which leads to greater capital intensity and promotes economic growth. That is inflation exhibits a positive relationship with economic growth.

**The Neo-Keynesian:** It initially emerged from the ideas of Neo-Keynesian and came out with a major development about the concept of potential output which in some cases referred to as natural output. This is a level of output where the economy is at its optimal level of production, given the institutional and natural constraints. This level of output corresponds to natural rate of unemployment. According to the theory, inflation depends on the natural rate of unemployment. The theory postulate that if the GDP falls below its potential level and unemployment is above the natural rate of unemployment, holding other factors constant, inflation

will decelerate suppliers to fill excess capacity, reducing prices and undermining built-in inflation, leading to disinflation.

If the GDP is equal to its potential and unemployment rate is equal to non-accelerating inflation rate of unemployment, then inflation rate will not change as long as there are no supply shocks.

**Endogenous growth theory:** Endogenous growth theories describe economic growth which is generated by factors within the production process such as economies of scale, increasing return or induced technological changes; as opposed to exogenous factors such as increase in population. When endogenous growth models are set within a monetary exchange framework of Lucas (1988), Lucas and Stokey (1987), McCallum and Goodfriend (1987), the inflation rate (tax) lowers both the return on all capital and growth rate. According to Gokal and Hamif (2004), a rise in inflation reduces the marginal values of today; last want of consumption equals marginal product of cost of last unit of work.

### Empirical literature review

The study on the relationship between economic growth and inflation has attracted several scholars to empirically establish the relationship between inflation and economic growth both in the developed and developing countries. Some of the many findings on the study will be reviewed here.

Malla (1997) conducted an empirical research on some Asian countries that belong to the organization for economic cooperation and development (OECD) with the results indicating negative statistically significant relationship between economic growth and inflation. This is in line with the work of Barro (1995) that tried to establish the relationship between inflation and economic growth for a sample of more than 100 countries between 1960 and 1990 which indicated that statistically significant negative relationships exists between inflation and economic growth in all the countries. Barro (1995) found out that an average increase of inflation by 10 percentage points in a year result in reduced growth rate of real perception GDP by 0.2 to 0.3 percentage points per year on the average and came to the conclusion that some reasons exist to suggest that higher inflation on the long term reduces economic growth. This is further supported by the work of Sarel (1996) who maintained that inflation in most countries were modest before the 1970s and became higher afterwards. He disaggregated his findings into two periods of before 1970 and after 1970 and said that the results on relationship between inflation and economic growth exhibited positive results before 1970 while the reverse is the case after 1970s.

In Bruno and Easterly (1995), they established an inconclusive relationship between inflation and economic

growth after considering that inflation rate of 40 percent and above as threshold level for inflation crises. Beyond the threshold, they established a negative relationship between inflation and economic growth. After examining the empirical relationship for the period between 1961 and 1992 they found out that countries recover after successful reduction of high inflation and there is no permanent damage to economic growth due to discrete high inflation crises. This conclusion does not hold for Tanzania as evidenced in the work of Shitundu and Luvanda (2000) that used Least Trimmed Squares (LTS) which generated empirical results that suggest that inflation has been harmful to economic growth in Tanzania.

On the other hand, Faria and Carneiro (2001) investigated the relationship between inflation and economic growth for Brazil for the period between 1980 and 1995 with the result establishing a negative relationship in the short run but that inflation does not affect economic growth in the long run. This could be a situation where the scope of production can change to absorb the lag of excess demand. Omoke (2010) viewed the findings of Faria and Carneiro to support the neutrality concept of money and that inflation affects economic growth in the long run as established by some other researchers.

Sweidan (2004) examined the possibility of the relationship between inflation and economic growth having a structural breakpoint effects for Jordanian economy covering the period of 1970 and 2003. He found out a positive and significant relation of economic growth with the inflation rate of below 2 percent and he established structural breakpoint at 2 percent level of inflation and as such inflation which is higher than 2 percent affect economic growth negatively. This poses a serious policy question for Nigeria which has not recorded the rate of inflation less than 5 percent since 1986 with the lowest in 2007 as 5.4 percent and the highest being 72.72 percent in 1995. Khan and Senhadji (2001) in Vaona (2012) established the threshold of annual inflation increase to be around 1 percent for developed countries while that of developing country which Nigeria belongs at 11%.

Ahmed and Mortaza (2005) empirically established a statistically significant negative relationship between inflation and economic growth using CPI and real GDP as proxy variables for Bangladesh for the period between 1980 and 2005. This reconciles with the work of Saeed (2007) for Kuwait between 1985 and 2005 which indicates long run and strong inverse relationship between CPI and real GDP.

Erbaykal and Okuyan (2008) established relationship between inflation and economic growth for Turkey within the period of 1987 to 2006 and found out that there exists a negative and significant relationship in the short run but no significant relationship was found between the two variables in the long run. They further carried out causal

relationship between the two variables with the results establishing a causality relationship from economic growth to inflation.

Tan (2008) integrated the Philips curve within the framework of Okuns law for some members of ASEAN, specifically, Malaysia, Singapore Thailand, the Philippines, the Indonesia, Japan and South Korea, using quarterly data for the countries from 1991 to 2007. They empirically established a small trade-off between economic growth and inflation in Singapore, South Korea, and Thailand after 1997/98 ASEAN financial crises years while no trade-off relationship was established for Malaysia, Philippines, Indonesia and Japan.

Omoke and Oruta (2010) used the data covering the period of 1970 to 2005 to establish possible relationship between inflation and economic growth in Nigeria. He employed Johansen-Juselius Co-integration technique which is considered superior to Engle and Granger (1987) in assessing co-integration properties of variables in a multivariate context. The results showed a no co-integrating relationship between inflation and economic growth for Nigeria. They further employed VAR-Granger causality at two lag periods and established unidirectional causality running from inflation to economic growth and he therefore concluded that inflation indeed has an impact on growth.

In Nigeria, the pursuits of higher economic growth in most cases have spiral effects on upward price movement. According to Oladipo and Akinbobola (2011), Nigeria's government has greater influence on the nation's economic activities through the use of fiscal instruments such as budget deficit operation. He added that this fiscal policy in most cases has some effect on macroeconomic variables such as interest rate, exchange rate, inflation, consumption, investment etc. which in turn affect economic development. He reasoned further that the major impact of the increase in budget deficit was felt in 1993 with high rate of inflation which shows an evidence of a positive relationship between budget deficit and inflation in Nigeria. He further gave a view that the source of financing the deficit has varying impact of a budget deficit on inflation. This thinking makes Nigeria's fight against high inflationary level difficult in the sense that the economy being almost entirely monotype in nature finances its deficit from the petroleum sector. This hinders the country from generating more investment which could ordinarily bring about more employment and hence economic growth. This negates the postulation of the Philips curve that there is a stable and negative relationship between the level of unemployment and the rate of change of wage which indicate that unemployment being accompanied by falling wages, reduced levels of unemployment by rising wages. The relationship of Philips connotes that as the wage rates are increased, more demands will be stimulated giving rise to more investment of offset the gap in demands and supply and that as the more demands persist, inflation will increase

until equilibrium is further achieved. Aminu and Anono (2012) viewed that unemployment and inflation have two possible relationships; that is, in the short run and in the long. First, inverse relationship exists between inflation and unemployment in the short run while in the long term Philips curve is basically vertical as inflation is not meant to have any relationship with unemployment. They said further that fight against inflation and unemployment are critical to the social and economic life of every country as growth in productivity provides a significant basis for adequate supply of goods and services which enhance welfare of the people as well as promote the progress of the entire system. Developing countries like Nigeria are faced with high level of inflation beyond the single digit and thus undermine the pace of the growth. This explains the position of Aminu and Anono (2012) that inflation and unemployment in Nigeria constitute a vicious circle which is the bane of the endemic nature of poverty in developing countries.

In addition, Ogwu (2010) maintained that inflation hurt the poorest the most as they have least ability to protect themselves from the rising commodity prices. He added that the cost push inflation comes as a result of depreciation of naira which raises the prices of essential commodity prices as well as other imported commodities. With the passage of time more wages increased will be demanded to offset the price hike and the real wages will continue to depreciate as the price will keep on rising after wages might have been increase to meet workers demand. This phenomenon is seen to impact negatively on the non-working population as well as the low and medium income workers' who may have not benefited from the compensatory income increase or have little income increase that may not match up with the wage increase within the economy.

Nembee and Madume (2011) looked at inflation as one of the factors that create uncertain business environment in Nigeria and other LDC (Less Developed Countries) which makes foreign investors to choose a wait option for investment. They added that macroeconomic reform policies or measures often adopted to address the shocks at times induce uncertainty in the domestic economy. This can explain why the volume of FDI into Nigeria cannot adequately address the problem of unemployment as well as serving as growth propeller as it is mostly adjudged to be. Caves (1996) observes that the rationale to attract more FDI stem from the fact it has positive effects on productivity, technology transfers, the introduction of new processes, managerial skills and technical know-how in the domestic economy, employee training, international production networks and access to markets. But empirical evidence from Nigeria in a study by Ariyo (1998) on investment trend and its impact on Nigeria's economic growth between 1970 and 1997 shows no reliable evidence on the influence of the Nigeria's economy while Chinery and Stout (1966) established a negative effect of FDI on the Nigeria's

economic development. In furtherance on this study, Ekpo (1995) reported that the political regime, real income per capital, rate of inflation, world interest rate, credit rating and debt service were the key factors that accounts for the variability of FDI into Nigeria. This shows that if the level of inflation is beyond the threshold foreign direct investment will not be discouraged especially if other factors identified by Ekpo are not favourable.

This is why Nembee and Madume (2011) after investigating empirically on the impact of monetary policy on Nigeria's macroeconomic stability between 1970 and 2009 concluded that Nigeria should adopt the macroeconomic policy mix of monetary, fiscal and exchange rate in managing inflation with the aim of achieving price stability required for achieving sustainable growth and development.

The over-dependence on petroleum economy is a major factor responsible for the bottlenecks of the supply side in Nigeria. According to Fatukasi (2012), factors such as agricultural bottlenecks, industrial production, imports and exports, militancy, wage bill, government deficit financing and money supply are responsible for inflation in Nigeria.

According to Kogid et al. (2012), inflation is a major macroeconomic problem which needs to be curbed in the sense that low level of inflation indicates a positive effect on the economy whereas high inflation gives negative signals to the economy. This explains why Emeka (2009) reasoned that the pursuit of price stability invariably implies an indirect pursuance of other economic objectives such as economic growth. He added that economic growth can only be achieved under the condition of price stability and allocative efficiency of financial markets.

## METHODOLOGY

### Model specification

Following the aggregate demand and aggregate supply model, the model for this study adapts the work of Ahmed and Mortaza (2005).

Therefore, the model for this study is specified as follows:

$$\text{GDPGR} = b_0 + b_1\text{INFR}_1 + b_2\text{EXCHR}_2 + b_3\text{INPL}_3 + b_4\text{INPC}_4 + U$$

Where:

GDPGR = Gross Domestic Product Growth Rate

INFR = Inflation rate

EXCHR = Naira Exchange rate to the Dollar

INPL = Inputs of labour [Federal Government recurrent (salaries and wages) expenditure]

INPC = Inputs of Capital (Federal Government capital expenditure)

U = the Stochastic Error term



**Table 1.** Regression result.

	<b>Intercept</b>	<b>INFR</b>	<b>EXCHR</b>	<b>INPL</b>	<b>INPC</b>
Coefficient	9.84	-0.01	-0.05	0.49	-0.24
Std Error.	0.98	0.08	0.12	0.16	0.12
t-stat	10.06	-0.11	-0.37	2.99	-1.93
$R^2 = 0.77$	F-stat = 22.62	d.w = 1.40	N = 32		

Source: e-views software computation

b0 = Intercept

b1, b2, b3 and b4 are parameters to be estimated

### Estimation procedures

The Ordinary Least Square: The t-values for the various explanatory variables that will be obtained after estimation will be used to interpret the Ordinary Least Square estimates result. That is, the t-values that shall be obtained shall be compared with the table value at critical region to determine their statistical significance and/or otherwise.

### Expected result

On a priori ground, it is expected that increase in GDP should stem from the rise in the contribution of inflation rate (INFR), exchange rate (ExchR), input of labour and input of capital, this implies a positive relationship. The expectation as regard the sign of the model; all of the independent variables should have a positive sign.

### Data sources

The data for this study are secondary in nature. They were obtained from the Central Bank of Nigeria (CBN) Statistical bulletin and National Bureau of Statistics (NBS) Annual Abstract of Statistics.

## PRESENTATION AND ANALYSIS OF DATA

The Ordinary Least Square (OLS) logged multiple regression result is as presented in Table 1.

$$GDP = B_0 + B_1INFR + B_2EXCHR + B_4INPL + B_5INPC$$

The OLS results showed that the intercept was positive and highly significant, such that when all other variables are at the zero level the intercept coefficient value is at a positive unit of 9.84. The inflation rate coefficient was negatively related to the GDP, it is such that a unit change in GDP is caused by -0.01 unit fall in inflation rate. The negative relationship between inflation and

economic growth is consistent with findings of Saeed (2007) for Kuwait between the periods of 1985 to 2005.

Similarly, inverse relationship was established for Bangladesh by Ahmed and Mortaza (2005) where they used data on real GDP growth rate and CPI though the result was significant for the long run period of between 1980 and 2005. The exchange rate was negatively related to the GDP as well, such that a unit change in the GDP is caused by 0.05 unit fall in the naira exchange rate. However, the labour input coefficient was positively related to the GDP, such that a unit change in the GDP is caused by 0.49 unit rise in the input of labour. However, the coefficient of capital input was negatively related to the GDP, such that a unit change in the GDP is caused by 0.24 unit fall in the inputs of capital. Based on statistical significance and using the rule of thumb of 2; only the input of labour was found to be statistically significant, while other variables were not statistically significant.

$R^2$  value of 0.77 implies that the model has explained about 77% variations between the dependent and independent variables in our model. This is a strong relationship and highly significant. The F-stat of 22.62 also explained in the overall the significance of our model as well while the Durbin Watson value of 1.40 suggests the presence of positive autocorrelation.

### Policy implications of results

The Ordinary Least Square (OLS) regression result implies that inflation rate in line with a priori expectation was negatively related but was not statistically significant and cannot be said to be having significant impact on economic growth in Nigeria. This is suggesting that there has been no effectiveness in terms of monetary policies aimed at tackling or controlling the inflation rate in Nigeria. Furthermore, it also implies that the level of inflation when averaged within the period of study was too high to the point that it created disincentive to investment and as it can imply that overall level of inflation within the study period seems to be above the threshold where investment can be motivated, rather it scares away investment. This is a negation of Phillips curves which postulates that when prices increase, unemployment will reduce as businesses will tend to invest to produce to meet the current market demand. It

could equally imply that the monetary policy combined with fiscal policy has not been properly directed to overcome the problem of deficient productivity as well as employment in Nigeria.

Likewise, the naira exchange rate in line with apriori was negatively related to the GDP, implying that the exchange rate has been falling over time and this is expected to boost export product alongside. The labour input was positively related to the GDP, implying that it has been contributing significantly to the economic growth rate, so also that of capital input was positive and statistically significant given the period of study.

## CONCLUSION

This study has attempted to examine the impact of inflation rate on economic growth in Nigeria over the period of 32 years (1980 to 2011). Variables like the inflation rate, the exchange rate, inputs of labour and capital that have direct bearing on the study were incorporated into our model, given their inter-relationships with the dependent variable; the Gross Domestic Product (GDP). With the time series properties of the variables, the previous 1 year interest rate regime and the inflation level affect the current year variation in the economic growth (GDP) while the present exchange rate affect the economic growth in Nigeria. From the empirical results of the study, inflation is inversely related with economic growth in Nigeria within the period of study. Similarly, the interest rate exhibits inverse relationship with the economic growth while exchange rate has negative relationship with the economic growth in Nigeria. We found out that some of these results were in line with apriori and at the same time corroborated with some related previous studies.

## RECOMMENDATIONS

Based on the findings we made the following recommendations:

There should be fiscal discipline in such a manner that expenditures of the government should yield desired results and not just about making too much money flow without it being channelled to productive purposes. In doing this, efforts should be made by the relevant agencies of the government to fight leakages, embezzlement and diversion of funds as all these leads to inflation.

In a bid to control the naira exchange rate since it does have bearing on inflation, the government should put in place an enduring framework to buffet the risk of the domestic producers for them to take innovative roles of developing and manufacturing products that will have competitive advantage in the international markets. This is critical to the realization of a stable inflation rate, self-reliance for Nigeria, stable naira exchange rate and also

checking the problem of transmission of higher prices from the international traded goods.

## REFERENCES

- Abaukaka TO (2011).** Fluctuations in Non–Oil Export Earnings and the Economic Growth Pattern of Nigeria, 1970-2009. Being a M.Sc. Dissertation submitted to Department of Economics, University of Abuja, Abuja FCT.
- Adebiyi MA (2009).** Inflation on targeting: Can we establish a stable and predictable relation between inflation and monetary policy instruments in Nigeria and Ghana? In applied macro-econometric modelling in Nigeria, edited by Adeola Adenikinju, Dipo B. Olofin S, part 3, Chapter II. (Bayoadebiyi.com/adebiyi). Retrieved on the 31<sup>st</sup> 31/12/2012. pp. 211-239.
- Ahmed S, Mortaza MG (2005).** Inflation and Economic Growth in Bangladesh: 1981-2005, Working Paper Series: WP 0604, Research Department, Bangladesh Bank, Dhaka, Bangladesh.
- Aminu U, Anono AZ (2012).** An empirical analysis of the relationship between unemployment and inflation in Nigeria, (1977-2009). *Econ. Finan. Rev.* 1(12):42-61.
- Ariyo A (1998).** Investment and Nigeria's economic growth. In Investment in the Growth Process Proceedings of Nigerian Economic Society Annual Conference, Ibadan, Nigeria. pp. 389-415.
- Barro RJ (1995).** Inflation and economic growth. *National Bureau of Economic Research (NBER) working paper* No. 5326, October. Retrieved from [www.sba.muohio.edu/..3pdf](http://www.sba.muohio.edu/..3pdf). Retrieved on February 16<sup>th</sup>, 2013.
- Bruno W, Easterly W (1995).** Inflation Crises and long run growth, World Bank Policy Research Working Paper. No. 1517.
- Caves RE (1996).** Multinational enterprises and economic analysis 2nd ed. Cambridge, Cambridge University Press.
- Chenery HB, Stout A (1966).** Foreign Assistance and Economic Development. *Am. Econ. Rev.* 55: 679-733.
- Dwivedi DN (2004).** *Managerial Economics*. 6<sup>th</sup> Edn., Vikas Publishing House PVT Ltd., New Delhi.
- Ekpo AH (1995).** Foreign direct investment in Nigeria: Evidence from time series data. *CBN Economic and Financial Review*, 35(1): 59-78.
- Emeka JO (2009).** Financial deepening and economic development of Nigeria: An empirical investigation. *Afr. J. Account. Econ. Finan. Bank Res.* 5(5):1-5.
- Engle RF, Granger CWJ (1987).** Cointegration and error correction: Representation, estimation and testing. *Econometrical* 55(2) 251-276. Retrieved from [www.huzov.com/..Ela-1987.pdf](http://www.huzov.com/..Ela-1987.pdf).
- Erbaykal E, Okuyan HA (2008).** Does inflation depress economic growth? Evidence from Turkey. *Int. Res. J. Finan. Econ.* 17:40. ([www.Ccenet.org/..5083](http://www.Ccenet.org/..5083)). Retrieved on 20/01/2013.
- Faria JR, Carnerio FG (2001).** Does High Inflation affect growth in the long run and short-run). *J. Appl. Econ.* 4(1):89-105.
- Fashoyin T (1986).** *Incomes and inflation in Nigeria*. New York: Longman Publishers Ltd.
- Fatukasi B (2012).** Determinants of inflation in Nigeria: An empirical Analysis. *Int. J. Humanit. Soc. Sci. Special issue Bus. Soc. Sci.* pp. 262- 271. [www.ijhssnet.com](http://www.ijhssnet.com). downloaded on 20/02/2013.
- Gokal V, Hamif S (2004).** Relationships between inflation and economic growth. [www.ccsenet.org/..5083](http://www.ccsenet.org/..5083) Retrieved on December 6, 2012.
- International Monetary Fund, IMF (2011).** International monetary fund-world economic outlook (Nigeria GDP Growth rate) accessed from [www.indexmundi.com/factbook/countries/Nigeria/economy](http://www.indexmundi.com/factbook/countries/Nigeria/economy) in February, 2013.
- International Monetary Fund, IMF (2011).** International monetary fund-world economic outlook (Nigeria Inflation rate) accessed from [www.indexmundi.com/factbook/countries/Nigeria/economy](http://www.indexmundi.com/factbook/countries/Nigeria/economy) in February, 2013.
- Keynes JM (1936).** *The general theory of employment, interest and money*. London. Macmillan publication.
- Khan M, Senhadji S (2001).** Threshold effects in the relationship between inflation and growth. *IMF Staff Papers* 48(1): 54-63.
- Kogid M, Asid R, Mulok D, Lily F, Nanthakumar L (2012).** Inflation

- unemployment trade-off relationship in Malaysia. *Asian J. Bus. Manage. Sci.* 1(1):100-108.
- Lucas RE (1972).** Expectation and the neutrality of money. *J. Econ. Theory* (4):103-124.
- Lucas RE (1988).** On the mechanics of economic development. *J. Monet. Econ.* (22):3-42.
- Lucas RE Jr., Stokey NL (1987).** "Money and Interest in a Cash – in-Advance Economy", *Econometrica*, 55: 491- 513.
- Malla S (1997).** Inflation and economic growth: Evidence from a growth equation. <http://www.palgrave.journals.com>. Retrieved on 3/02/2013.
- McCallum BT, Goodfriend MS (1987).** "Demand for Money: Theoretical Studies", in *New Palgrave Money, J. Eatwell, M. Millgate and P. Newman, eds., Macmillan Press, New York.*
- McCallum BY (1987).** Inflation: Theory and Evidence. New York. The American National Bureau of Economic Working Paper No. 2312.
- Nembee SG, Madume JV (2011).** The impact of monetary policy on Nigeria's macroeconomic stability (1970 – 2009). *Int. J. Econ. Dev. Res. Invest.* 2(2):174-183.
- Ogwu A (2010).** Getting inflation regulated in Nigeria. *Business and Economy.* [www.nigeriansinamerican.com](http://www.nigeriansinamerican.com). Retrieved on 11/02/2013.
- Oladipo SO, Akinbobola TO (2011).** Budget deficit and inflation in Nigeria: A causal relationship. *J. Emerg. Trends Econ. Manage. Sci.* 2(1):1-8.
- Omoke PC (2010).** Inflation and economic growth in Nigeria. *J. Sustain. Dev.* 3(2):159-166.
- Omoke PC, Oruta LI (2010).** Budget Deficit, Money supply and inflation in Nigeria. *Eur. J. Econ. Finan. Admin. Sci.* 19:52-60.
- Saeed A (2007).** Inflation and economic growth in Kuwait (1985–2005). Evidence from cointegration and error correction model. *J. Appl. Econom. Int. Dev.* 1(1):40-45.
- Sarel M (1996).** Non-linear effects of inflation on economic growth IMF working paper/staff papers. <http://www.palgrave.journals.com> February 13.
- Sargent TJ, Hasen LP (1980).** Formulation and Estimating dynamic Linear rational expectations models, Amsterdam, Elsevier Sciences. *J. Econ. Dyn. Control* 2(11):7-46.
- Shitundu JL, Luvanda EG (2000).** The effect of inflation on economic growth in Tanzania. *Afr. J. Finan.* 9(1): 33-42.
- Solow M (1956).** "A contribution to the theory of economic growth". *Quarterly J. Econ. (Oxford Journals)* 70(1): 65-94.
- Swan TW (1956).** "Economic growth and capital accumulation". *Economic Record (Wiley)* 32(2): 334-361.
- Sweidan OD (2004).** Does inflation harm economic growth in Jordan? An econometric analysis for the period, 1970 – 2000. *Int. J. Appl. Econom. Quant. Stud.* 1(2):41- 66.
- Tan EC (2008).** Inflation and economic growth in ASEAN-5. Being a paper presented at the international convention of the Asian Economic association held at Manila, November, 15 – 16, 2008.
- Tobin J (1965).** Money and economic growth. *Econometrical.* 33(4):671-684. [www.econ.ucdavis.edu/faculty/economics.htm](http://www.econ.ucdavis.edu/faculty/economics.htm). on Retrieved on 2/02/2013.
- Totonchi J (2011).** Macroeconomic theories of inflation. *Int. Conf. Econ. Finan.* 4:459-462.
- Vaona A (2012).** Inflation and Growth in the long run: A new Keynesian theory and further semiparametric evidence. Unites States of America. Cambridge University press.