

IMPACT OF INFLATION ON ECONOMIC GROWTH IN NIGERIA (2000-2009)

¹Chude, Daniel Izuchukwu and ²Chude, Nkiru Patricia

¹Lecturer, Department Of Accountancy
Anambra State University Igbariam Campus P.M.B 6059 Awka Nigeria.

²lecturer, Department Of Banking and Finance, Anambra State University, Igbariam Campus
P.M.B 6059 Awka Nigeria.

ABSTRACT: *The main purpose of this study is to ascertain the existence of a relationship between inflation and economic growth in Nigeria. The methodology employed in this study is the quantitative research design. Consumer price index (CPI) was used as a proxy for inflation and the GDP as proxy for economic growth, to examine the relationship. The scope of the study spanned from 2000 to 2009. Ordinary least square method and t-test was used to test the variables most likely to impact on economic growth in Nigeria due to inflation. The findings also shows that there is strong relationship between inflation and economic growth in Nigeria, that exchange rate has positive impact on economic growth and that high interest rate discourages investment and hence forestalls economic growth. It is therefore, recommended that the monetary policies aimed at exchange rate be strengthened through effective supervision and regulatory framework of financial system by the monetary framework of financial system by the monetary authorities. Continuous monetary policies that will achieve the desired macroeconomic stability, increase in private sector credits and there is also need fro more effective management of interest rate in Nigeria.*

KEYWORDS: *Inflation Rate, Economic Growth, Exchange Rate, Monetary Authorities, Economic Stability.*

INTRODUCTION

The central objective of macro economic policies is o foster economic growth and to keep inflation on a low level. The word inflation rings bell in the market economics of the world. It is a problem that threatens all economics because of its undesirable effects. The problem of inflation surely is not a new phenomenon. It has been major problem of the country over the years. Inflation is a household word in many market oriented economics. Although, several people, producers, consumers, professionals, non-professional, trade unionists, workers and the likes, talk frequently about inflation particularly if the affection has assumed a habitual character yet only selected few mechanisms and consequences of inflation (Omoke, 2010).

There s a high level consensus among many economist, central bankers, policy makers and practitioners that one of the fundamental objective of macroeconomic policies in both the developed and developing economics is to sustain high economic growth together with low, one-digit inflation (meaning that inflation is very low). This is because a high level of inflation disrupts the smooth functioning of a market economy (Kingman, 1998)

At the individual level, inflation exists a heavy fall on those with fixed income, inflation relatively favours debtors at the expense of creditors, at the firm level, the effect of inflation is called the “menu cost” Rotemberg (1982, 1983) Naisk (1986), Dmaziger (1988), Benab and Koricezry (1994), Yab (1996) Valdonizoz (2003) and Guerreso (2004) because it affects output when firms have to incur costs as they adjust to the new price level (eg changing their price list for customers).

However, much less agreement exists about the precise relationship between inflation and economic performance, and the mechanism by which inflation affects economic activity at the macroeconomic level. This has generated a significant debate both theoretically and empirically. A series of studies found no conclusive empirical evidence for either a positive or a negative association between inflation and economic growth, notable among these studies are wai, 1959, Bhatia, 1960, Doirance, 1963, 1966, Johansen (1967).

The second stand of the literature found a negative correlation between inflation and economic growth. Among these studies are Fishers (1993) De Gregorio (1993) Barro (1995, 1996), Brunno and Easterly (1995), Malla (1997), Faria and Carneiro (2001) Dewan and Husein (2001). While the third strand of the literature found a positive relationship between inflation and economic growth.

Recently, intensive research has focused on the non linear relationship between these two variables. That is, at lower rates of inflation, the relationship is positive or not significant, but at higher rate, inflation has a significantly negative effect on growth. In terms of non linearity, explaining why views on the inflation growth relationship have changed dramatically over the past ten years is not difficult. From 1960-1969, 1970-1979, 1980-1989, 1990-1998 and 1999-2009. the inflation rate was only 2.6% per year in the 1960s and rose rapidly to 9.2% per year in the 1970a and then 10.3% per year in the 1980s. in addition, from 1990-1998 the average inflation rate was the 33.31% and from 1999-2009 the average inflation rate was 13.8.

THE CONCEPT OF INFLATION

Inflation is one of the most frequently used terms in economic discussions, yet the concept is variously misconstrued. There are various schools of thought on inflation, but there is a consensus among economists that inflation is a continuous rise in the prices. Simply put, inflation depicts an economic situation where there is a general rise in the prices of goods and services, continuously. It could be defined as a continuing rise in prices as measured by an index such as the consumer price index (CPI) or by the implicit price deflator for Gross National Product (GNP). Inflation is frequently described as a state where “too much money is chasing too few goods”. When there is inflation, the currency losses purchasing power.

The purchasing power of a given amount of naira will be smaller over time when there is inflation in the economy. For instance, assuming that N10.00 can purchase 10 shirts in the current period, if the price of shirts double in the next period, the some N10.00 can afford 5 shirts. In the definition of inflation, two must be borne in mind. First, is aggregate, which implies that the rise that constitutes inflation must cover the entire basket of goods in the economy as distinct from an isolated rise in the prices of a single commodity or group of commodities?

The implication here is that changes in the individual prices or any combination of prices cannot be considered as the occurrence of inflation. However, a situation may arise such that a change in an individual price could cause the other prices to rise. An example is petroleum product prices in Nigeria. This again does not signal inflation unless the price adjustment in the basket is such that the aggregate price level is induced to rise. Second, the rise in the aggregate level of prices must be continuous for inflation to be said to have occurred. The aggregate price level must show a tendency of a sustained and continuous rise over different time periods. This must be separated from a situation of one off rise in the price level.

TYPES OF INFLATION IN NIGERIA

Broadly speaking, inflation can be grouped into four types according to its magnitude.

1. **Creeping inflation:** This occurs when the rise in price is very slow. A sustained annual rise in prices of less than 3 percent per annum falls under this category. Such an increase in prices is regarded safe and essential for economic growth.
2. **Walking inflation:** This occurs when prices rise moderately and annual inflation rate is a single digit. This happens when the rate of rise in prices is in the intermediate range of 3 to less than 10 percent. Inflation of this rate is a warning signal for the government to control it before it turns into running inflation.
3. **Running inflation:** When prices rise rapidly at the rate of 10 to 20 percent per annum, it is called running inflation. This type of inflation has tremendous adverse effects on the poor and middle class its control required strong monetary and fiscal measures.
4. **Hyper inflation:** Hyper inflation occurs when prices rises very fast at double or triple digit rates. This could get to a situation where the inflation rate can no longer be measurable and absolutely uncontrollable prices could rise many times everyday. Such a situation brings a total collapse of the monetary system because of the continuous fall in the purchasing power of money.

Basically, two causes of inflation have been identified, namely, demand-up and costs push inflation.

- i. Demand-pull inflation is caused by an increase in the conditions of demand; these could either be an increase in the ability to buy goods or an increase in the willingness to do so.
- ii. Cost – push inflation arises from anything that causes the conditions of supply to decrease. Some of these factors include a rise in the cost of production, an increase in government taxation and a decrease in quantity of foods produced.

THE TOBIN EFFECT OF INFLATION ON ECONOMIC GROWTH OF NIGERIA

Tobin, another neoclassical economist, (1965) developed mundell's model further by following Solow (1956) and Swan (1956) in making money a store of value in the economy. Individuals in this model, substitute current consumption for future consumption by either holding money or acquiring capital. Under this setup, individuals maintain precautionary balances, in spite of capital offering a higher rate of return. Quite simply, the Tobin effect suggests that inflation causes individuals to substitute out of money and into interest earning assets, which leads to greater capital intensity and promotes a positive relationship to economic growth.

Tobin (1972) also argued that because of the downward rigidity of prices (including wages), the adjustment in relative prices during economic growth could be better achieved by the upward price movement of some individual prices. At this juncture, it is important to discuss the role of money in the neoclassical economy to appropriately understand subsequent literature. Sidrauski (1967) proposed the next major development, which his seminal work on the context of an infinitely lived representative agent model where money is supernatural super neutrality, as mentioned earlier, holds when real variables, including the growth rate of output, are independent of the growth rate in the money supply in the long-run. The main result in Sidrauski's economy is that an increase in the inflation rate does not affect the steady state capital stock. As such, neither output nor economic growth is affected.

Stockman (1981) developed a model in which an increase in the inflation rate results in a lower steady state level of output and people's welfare declines. In Stockman's model, money is a complement to capital, accounting for a negative relationship between the steady-state level of output and the inflation rate. Stockman's insight is prompted by the fact that firms put up some cash in financing their investment projects. Sometimes, the cash is directly part of the financing package, whereas other times, banks require compensating balances. Stockman models this cash investment as a cash-in-advance restriction on both consumption and capital purchases. Since inflation erodes the purchasing power of money balances, people reduce their purchases of both cash goods and capital when the inflation rate rises. Correspondingly, the steady-state level of output falls in response to an increase in the inflation rate. This theoretical review demonstrates that models in the Neo-classical framework can yield very different results with regards to inflation and growth. An increase in inflation can result in higher output (Tobin Effect) or lower output (Stockman effect or no change in output (Sidrauski)).

IMPLICATION OF INFLATION ON ECONOMIC GROWTH

The traditional Keynesian model comprises of the Aggregate demand (AD) and Aggregate Supply (AS) curves, which aptly illustrates the inflation growth relationship. According to this model, in the short run, the (AS) curve is upward sloping rather than vertical, which is its critical feature. If the AS curve is vertical, changes on the demand side of the economy affect only prices. However, if it is upward sloping, changes in AD affect both prices, and output, Dornbusch, et al, (1991). This holds with the fact that many factors drive the inflation rate and the level of output in the short-run. These include changes in expectations, labour force, prices of other factors of production, fiscal and /or monetary policy.

In moving from the short-run to the hypothetical long-run, the above mentioned factors and its shock on the steady state of the economy are assumed to balance out. In this steady state situation, nothing is changing, as the name suggests. The dynamic adjustment of the short-run AD and AS curve yields an adjustment path which exhibits an initial positive relationship between inflation and growth, however, turns negative towards the later part of the adjustment path.

Therefore, even if the prices of goods in the economy have increased, output would not decline, as the producer has to fulfill the demand of the consumer with whom the agreement was made. The aggregate supply-aggregate demand (AS_AD) framework also postulated a positive relationship between inflation growth whereas growth increased, so did inflation. In

the 1970's however, the concept of stag inflation gained permanence, and the validity of the positive relationship was questioned. Widely accepted at that time, the Philips curve relationship had appeared to not hold. This was evidenced by periods of low or negative output growth, and inflation rates that were historically high. During this period, prices rose sharply, while the economics around the world experienced massive unemployment.

MODEL SPECIFICATION

The work examines the impacts of inflation on economic growth in Nigeria. We have reviewed models used by various authors in the empirical literature sector. This work therefore should adopt the model used by Ayanwale (2007) and Omoke (2010). In this model GDP per capita is the dependent variables while the independent variables include. Inflation (INFL), exchange rate (EXR) and interest rate (INRATE). The model is a stated below;

$$Y = b_0 + b_1 x a_t$$

$$b_1 = \frac{N\sum xy - (\sum x)(\sum y)}{n\sum y^2 - (\sum y)^2}$$

$$GDP_{pc} = + (INFL)$$

i.e

$$GDP_{pc} = B_0 + B_1 Infl + U_t$$

Where

$$Inf = \text{Inflation}$$

$$GDP_{pc} = \text{Gross Domestic Product Per Capita}$$

$$U = \text{Stochastic error term}$$

METHODOLOGY

This describes the techniques and procedures used by the researcher in conducting the study. It comprises of the research design, area of study, population of the study, sources of data, method of data collection, description of research variables, model specification, techniques for data analysis and test reliability and viability.

RESEARCH DESIGN

Since the aim of this study is to ascertain the impact of inflation on the growth of Nigerian economy from 2000 to 2009, it is an empirical study. This study adopted quantitative research design in analyzing the data. The ordinary least square regression analysis shall form the main procedure to be followed in testing our hypotheses in this work.

AREA OF THE STUDY

The researcher is restricted to inflation economic growth (GDP), interest rate and exchange rate from 2000-2009 in Nigeria, exchange rate from 2000-2009 in Nigeria, the period of ten years. Data were collected from Central Bank of Nigerian Statistical Bulletin and National Bureau of Statistics.

POPULATION OF THE STUDY

The population of this study comprises of the real gross domestic product (RGDP) of the country as a whole, it also includes inflation, exchange rate and interest rate. In the light of this, it is human impossible to study

TEST OF RESEARCH HYPOTHESES

The study adopted quantitative design and use ordinary least square (OLS) method as the basic for testing the research hypothesis.

The acceptability of otherwise of the hypothesis was based on the result obtain from the testing.

Ho: There is no significant relationship between inflation and economic growth.

Hi: There is significant relationship between inflation and economic growth.

Statistics Test

The test statistics are of this hypothesis shall includes the size and sign of the ordinary least square regression, coefficient.

The relationship between inflation and economic growth were determined using regression analysis.

$$\text{INFL} = b_0 + b_1 \text{RGDP}$$

$$\text{That is } Y = b_0 + b_1 x$$

The effect of inflation on economic growth

Year	RGDP (X)	INFL (Y)	Y ²	XY
2000	412332	6.9	47.61	2845090.8
2001	431783.2	18.9	357.21	8160702.48
2002	451785.7	12.9	166.41	5828035.53
2003	495007.2	14	196	6930100.8
2004	527576	15	225	7913640
2005	561931.4	17.9	320.41	10058572.6
2006	595821.6	8.2	67.24	4885737.12
2007	634656.6	5.4	29.16	34227145.64
2008	168050.6	15.1	228.01	2537564.06
2009	716946.7	14.5	210.25	10395727.15
TOTAL	ΣX=4995891	ΣY=128.8	ΣY ² = 1847.3	EXY=62982315.64

Source: CBN Statistical Bulletin Volume 18 and 19, 2007 and 2009.

$$b_1 = \frac{N \sum xy - (\sum x)(\sum y)}{N \sum y^2 - (\sum y)^2}$$

$$b_0 = Y - b_1 x$$

Where

$$N = 10$$

$$\sum x = 4995891$$

$$\sum y = 128.8$$

$$\sum y^2 = 1847.3$$

$$\sum xy = 62982315.64$$

$$b_1 = \frac{10 (62982315.64) - (4995891) (128.8)}{10 (1847.3) - 128.8^2}$$

$$\begin{aligned}
 &= \frac{62982315.64 - 643470760.8}{1847.3 - 16589.444} \\
 &= \frac{13647604.4}{1883.56} \\
 &- 7245.643569 \\
 b_0 &= \frac{4995891}{-10} - \frac{-7245.64 (128.8)}{-10} \\
 499589.1 &- (-93323.84) = 592912.94 \\
 \text{Now } X_1 &= B_0 + B_1 Y_1 \\
 X_1 &= 592912.94 + (-7245.644) \\
 \therefore -7245.64y &= 592912.94 \\
 Y &= 592912.94 + 7245.64 = 600158.58 \\
 Y &= 600158.58 \\
 X_1 &= 592912.94 + (7245.64) (600158.58) \\
 &= 592912.94 + 4348533014 \\
 X &= -4347940101
 \end{aligned}$$

DECISION RULE

Based on the positive sign of regression coefficient of 592912.94 and t-statistical of -4347940101. we reject the null hypothesis and agree with alternative hypothesis that there is long run relationship between inflation and economic growth in Nigeria. This means that the regime of high inflation counteracts economic growth in the country.

SUMMARY OF FINDINGS

This study investigates the impact of inflation on economic growth. Based on the empirical analysis made after the data have been collected and presented in a logical and sequential manner with the use of ordinary least (OLS), the following findings were made.

Based on the above analysis the empirical results from number one hypothesis was found, test of hypothesis one indicate that there is a long run relationship between inflation and economic growth in Nigeria. This finding agrees with the finding of Omoke (2010) that inflation has indeed impacted on economic growth and disagree with the finding of Erbarykal and Okuyan (2008) that there is negative relationship between inflation and economic growth.

CONCLUSION

This study contributes to the literature on the impact of inflation on economic growth in Nigeria by using ordinary least square estimate. This study set an objectives to accomplish, actually achieved it. From the research finding, the study concludes that there is a long run relationship between inflation and economic growth in Nigeria. The key problem set to be addressing this study is to ascertain the impact of inflation on economic growth. From the research findings, the results obtained from this study support both theoretical and empirical evidence that inflation impacted on economic growth.

RECOMMENDATIONS

From the findings of this study, following recommendations were made:

1. There is an urgent need for effective monitoring of inflation rate to allow for acceleration of economic growth. This is necessary for its positive effects on the economic growth.
2. This study also recommends that the monetary policies aimed at exchange rate be strengthened through effective supervision and regulatory framework of financial system by the monetary authorities. Hence, continuous monetary policies that will active the desire macro-economic stability increase private sector credits and investments to boost economic growth in Nigeria.
3. Finally, there is need for further management of interest rate in Nigeria, because the more interest rate management, the more the level of economic growth in Nigeria.

REFERENCES

- Ahmed, S., and Mortaza, G. (2005). Inflation and Economic Growth in Bangladesh:1981-2005. *Policy Analysis Unit (PAU) Working Paper* 0604.
- Asogu, J. O. (1991). "An Econometric Analysis of the Nature and Causes of Inflation in Nigeria", *CBN Economic and Financial Review*, 29(3): 69-80.
- Barro, R. J. (1995). Inflation and Economic Growth. *National Bureau of Economic Research (NBER) Working Paper* No. 5326.
- Barro R. J. (1996). Determinants of Economic Growth – A Cross-Country Empirical Study, the *MIT Press*, Massachusetts Institute of Technology.
- Bhatia, R. J. (1960). "Inflation, Deflation, and Economic Development," Staff papers, International Monetary Fund, 8(3): 1011-1014.
- Bruno, M. and Easterly, W. (1995). Inflation Crises and Long-Run Growth, *World Bank Policy Research Working Paper* No.1517
- De-Gregorio, J. (1993). Effects of Inflation on Economic Growth: Lessons from Latin America. *European Economic Review*, 36 (4): 417–425.
- Dewan, E and Hussein, S. (2001). "Determinants of Economic Growth", *Working Paper*, Reserve Bank of Fiji.
- Erbaykal, E. and Okuyan, H.A. (2008). Does Inflation Depress Economic Growth? Evidence from Turkey. *International Research Journal of Finance and Economics*, Issue 17(5): 1450-2887
- Fakiyesi, O.M. (1996). "Further Empirical Analysis of Inflation in Nigeria", *CBN Economic and Financial Review*, 34(1): 35-49.
- Faria, J. R. and Carneiro, F.G. (2001). Does High Inflation Affect Growth in the Long and Short-run? *Journal of Applied Economics*, 4(1): 89-105.
- Fischer, S. (1993). The role of macroeconomic factors in economic growth, *Journal of Monetary Economics*, 32(3): 485-512.
- Gomme, P. (1993). "Money and Growth Revisited: Measuring the Costs of Inflation in an Endogenous Growth Model", *Journal of Monetary Economics*, 32(5): 51-77.
- Haslag, J. H. (1997). "Output, Growth, Welfare and Inflation: A Survey", *Economic Review Second Quarter*, Federal Reserve Bank of Dallas. Retrieved on December 17, 2011.

- Johansen, S. and Juselius, K. (1990). Maximum Likelihood Estimation and Inference on Co-integration with the Application to the Demand for Money. *Oxford Bulletin of Economics and Statistics*, 52, 169-210.
- Johnson, H.G. (1967). "Is Inflation a Retarding Factor in Economic Growth?" *Fiscal and Monetary Problems in Developing States*.
- Koutsoyiannis, A. (2003) *Theory of Econometrics* (Second Edition). New York: Palgrave.
- Lucas, R. E., (1987). "On the Mechanics of Economic Development," *Journal of Monetary Economics*, 22, 3-42.
- Malla, S. (1997). Inflation and Economic Growth: Evidence from a Growth Equation. mimeo, Department of Economics, University of Hawai'i at Monoa, Honolulu. Retrieved on October 17, 2011. Available at www.hawaii.edu/~malla
- Mallik, G. and Chowdhury, A. (2001). Inflation and Economic Growth: Evidence from South Asian Countries," *Asian Pacific Development Journal*, 8(1): 123-135.
- Masha, I. (2000). "New Perspective on Inflation in Nigeria", *CBN Economic and Financial Review*, 38(2): 67-88.
- McCallum, B. T. and Goodfriend, N. (1987). "Nominal income targeting in an open-economy optimizing model", *Journal of Monetary Economics*, 43(9): 553-578.
- Moser, G. (1995). "The Main Determinants of Inflation in Nigeria", *IMF Staff Papers* 42
- Mubarik, Y. A. (2005). Inflation and Growth: An Estimate of the Threshold Level of Inflation in Pakistan," *State Bank of Pakistan – Research Bulletin*, 1(1-2): 35-44.
- Omoke, P. C. (2010). Inflation and Economic Growth in Nigeria. *Journal of Sustainable Development*, 3(2): 159-166.
- Rousseau, P. L. (1987), "*Finance, Investment, and Growth in Meiji-era Japan*," *Japan and the World Economy* 11, 185-198.
- Saaed, A. (2007). Inflation and Economic Growth in Kuwait: 1985-2005 Evidence from Cointegration and Error Correction Model' *Applied Econometrics and International Development*, 7(1): 56-67.
- Sarel, M. (1995). Non-Linear Effects of Inflation on Economic Growth, *IMF Working Paper No. WP/95/56*.
- Shitundu, J. L. and Luvanda, E.G. (2000). The Effect of Inflation on Economic Growth in Tanzania. *African Journal of Finance and Management*, 9(1): 45-67.
- Sidrauski, M. (1967). Inflation and Economic Growth, *Journal of Political Economy*.
- _____ (1993). "Inflation, Taxation and Long-Run Growth", *Journal of Monetary Economics*, 31(3): 217-298.
- Sweidan, O. D. (2004). Does Inflation Harm Economic Growth in Jordan? An Econometric Analysis for the Period 1970-2000. *International Journal of Applied Econometrics and Quantitative Studies*, 1(2): 41-66.
- Tan, E. C. (2008). Inflation and Economic Growth in ASEAN-5, Japan and South Korea. In: 11th International Convention of the East Asian Economic Association, 15-16 November 2008, Manila.
(Unpublished)
- Tobin, J. (1965). "Money and Economic Growth," *Econometrica*, 33, 671-684.
- Todaro, M.P. (2000). *Economic Development*. Addison Wesley Longman, Inc., New York.
- Yap, J.T (1996). 'Inflation and Economic Growth in the Philippines' PIDS. Discussion Papers Series. No. 96-110