The Impact of Fiscal Deficits on Inflation in Nigeria between 1980 and 2010

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Abstract

This study examined fiscal deficits and inflation in Nigeria for the period of 30 years starting from 1980 to 2010. The aim was to establish which among inflation rate and interest rate impact on fiscal deficit. It goes beyond existing studies on this subject by employing econometric technique, particularly, the Ordinary Least Square (OLS) estimation method of multiple regressions. The analyses showed that both inflation rates and interest rates were rightly signed with fiscal deficits. Despite this theoretical congruence, inflation rates impacted on fiscal deficits while interest rate does not. The inability of interest rates to impact on fiscal deficits perhaps could be blamed on unstable macroeconomic policy environment, corruption, and more. Thus, it is suggested that there is need to re-order our fiscal policy priorities based on sincerity so as to rebuild confidence in the economy. Also, the current inflation targeting policy regime should be implemented based on fiscal discipline, financial sector stability as well as a reliable model for data computation of inflation.

Keywords: *Fiscal deficit, Inflation, economy, Nigeria*

INTRODUCTION

At the theoretical level, it has been argued that the central government would be in a better position to perform the distribution and stabilization functions as well as provide national public goods (Oates, 1972; Musgrave R. and Musgrave P., 1989, Cremer *et al*, 1994; Taiwo, 1999). All these functions will be inefficiently performed if the fiscal policy framework is sick. Fiscal policy now serves as a great macroeconomic policy tool in the hand of economic managers. Fiscal policy can be defined as the deliberate change of levels of government expenditures, taxes and borrowing to achieve such national economic goals like full employment, price stability, growth in gross domestic product and balance of payments equilibrium. The instruments of fiscal policy are government taxes, expenditures and borrowing. It is important to know that borrowing is a supplementary instrument of fiscal policy, when fiscal operations results in a deficit.

Deficit financing implies that the taxes that are generated compulsorily from the citizens are insufficient to meet the expenditure programmes of the government (Gbosi, 2005 and Oke, 2000). Like Nenbee (2009) succinctly puts it, in a bid to overcome the rising level of macroeconomic instability, governments in various countries have resorted to fiscal deficits in their spending. Catáo and Terrones (2001) posit that it should therefore come as no surprise that much of contemporary macroeconomic literature has focused on fiscal behaviour when trying to explain why inflation has varied so widely, both across countries and overtime, in recent decades. Accordingly, the objective of this study is to analyze the impact of fiscal deficits on inflation in Nigeria between 1980 and 2010.

Fiscal Deficit: Nigeria's development profile leaves very much to be desired in spite of the massive capital inflow that accrue to her from the crude oil sector in the 1970s and early 1980s. Rural communities remain undeveloped, basic infrastructure are unavailable and where they are present, they paralyse all other activities of the economy through non-performance. The human development Index Worldwide ranks Nigeria as among the least developed countries of the world with high infant mortality rate, low literacy level and low calorie intake, among other things. These economic indicators present the picture of a country with slow economy, deteriorating agricultural sector, rapid population growth and increasing poverty. Balance of payments problems and fiscal crisis have also persisted for nearly two decades (Olaniyi, 1999).

Apparently, the issue of fiscal crises is a byproduct of poor fiscal operations of government. According to Bello (2003), in a country like Nigeria where fiscal operation of the government is characterized by persistent fiscal dominance, which is translated in form of fiscal deficit, has bearing impact on macroeconomic indicators such as inflation, real interest rate, exchange rate and output. Reacting *in tandem* to this, Umo (2007) opines that most modern economies are virtually floating on credit. This situation arises not so much because Keynesian economies have endorsed deficit budgets for stabilization, but because wide and heavy governmental expenditure in development programmes has made borrowing a necessity. Gbosi (2005) reasons that borrowing is a supplementary instrument of fiscal policy. If fiscal expenditures are directed to the growth sector of the economy, they would be capable of increasing output to the desired direction.

However, excess of expenditures over revenue, usually leads to deficits. Fiscal deficits tend to have adverse effect on monetary aggregates and inflation if they are largely financed through the banking system. The Nigeria's experience shows that since in the 1980s, government's fiscal deficits have been mostly financed by the Central Bank of Nigeria (CBN). However, since the adoption of the indirect technique of monetary management, the recent strategy is to finance budget deficits through the capital market (CBN, 2000).

Inflation: Broadly speaking, inflation as an economic concepts commands diverse explanations and definitions depending on theoretical perspective of the scholar. However, it generally entails a sustained rise in the prices of goods and services in an economy. The net effect of inflation on any economy is always negative. According to Orubu (2009), the effects of high inflation on the economy are generally considered to be predominantly harmful; this is why the achievement of price stability has always been one of the fundamental objectives of macroeconomic policy in both developed and less developed countries. Price stability does not mean that an economy must necessarily record zero rise in the general level of prices of goods and services overtime.

Nigeria, as a developing economy is presently battling with inflation, which has sparked off rises in the prices of virtually all purchasable items. Hence, it is defined as the sustained rise in the general price level. This simple definition, as a sustained rise in the average price level of a standard basket of goods and services, conceals a strong debate over the most appropriate measure of the inflation rate. According to Umo (2007), inflation

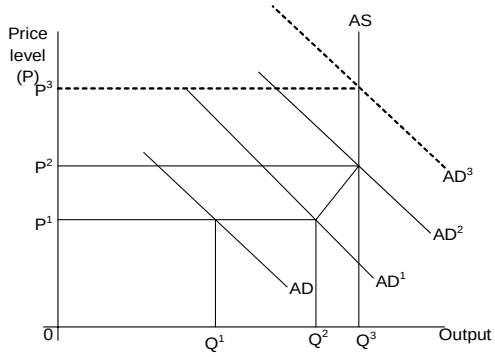
rate is measured as a percentage change in the general price level over a year in a particular economy. Suppose P_t is the price index in year *t*, and P_{t-1} is the price index in the previous year, then the rate of inflation, Π, in year *t* can be computed as follows:

The measured inflation, Π_t, will be a percent increase of the price in year *t*. The higher the inflation rates in an economy, the greater the reasons for concern in such economy. However, in Nigeria, most commonly used measures of inflation rate include average change in the consumers' prices index and the gross domestic product deflator. Inflation can arise because of the existence of excessive aggregate demand, imported demand, as well as an upward pressure on production cost and administered prices, or due to structural constraints such as inefficient production, marketing and distribution systems in the productive sector of the economy. These are commonly known as demand pull, imported, cost-push, as well as structural inflations. In a bid to avert the ugly incident of inflation in an economy, literature replete with theories, and these theories are attempted by economists to trace the root cause of inflation. Basically, some of these theories are: demand-pull, cost-push, structural, monetary and imported inflation. However, our attention in this work centres on demand-pull and cost-push inflation.

Demand-Pull Inflation: The proponents of demand-pull inflation are of the view that when demand persistently exceeds supply of goods and services, such that prices are pulled upward there will be inflation in the economy. Ohale and Onyema (2002) notes that because of the inability of supply to meet the rapidly increasing demand, prices will begin to rise in response to a situation often described as "too much money chasing too few goods". Simply put, demand-pull inflation is akin to a situation whereby aggregate demand exceeds aggregate supply in the economy. This was the famous argument of Keynes (1936) for the Great Depression of the 1930s. Inflation based on demand-pull may originate from either the budgetary or the private sector of the economy, Musgrave R. and Musgrave P. (1989). Umo (2007) adds that two sources of increase in aggregate demand can be identified in the demand-pull analysis.

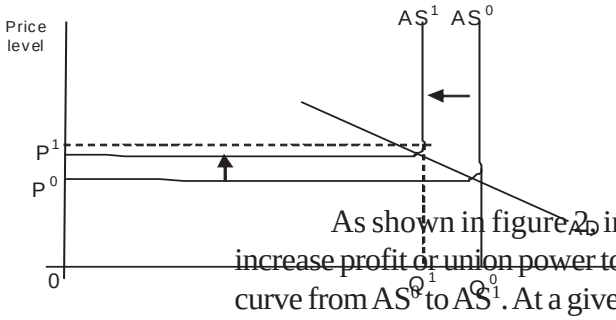
The first is the increase in the quantity of money relative to the stock of available goods and services. The second is a shift in aggregate demand which results in a resource gap that cannot be filled easily. The theories underlying these two sources are theory of money and the Keynesian theory. This is depicted in figure 1. From figure 1, suppose the traditional shape of the aggregate supply curve is (AS) while that of aggregate demand is (AD), then, we can diagrammatically discuss demand-pull inflation. Specifically, an increase in AD from AD^1 to AD^2 is not inflationary at all. However, when the aggregate demand shift from AD^2 to AD^3 while the price level moves from P^1 to P^2 thereby making output level increase from q^2 to q^3. Also, AD rises to AD^4, price increases to P^3 although output remains the same at q^2. The movements from AD^3 to AD^4 constitutes demand-pull inflation because AD has shifted the price level from P^2 to P^3 (see area of rectangle $P^2AD^3AD4P^3$).

Figure 1: Demand - Pull inflation



Cost-Push Inflation: Proponents of the cost push model are of the view that it arises when the costs of factor inputs are higher in the production process. To this end, the rising cost of intermediate products will manifest in the output. Scholars like Cobham (1981), Anyanwu (1995), Angaye (1995) and Gbosi (2007) amongst others have unanimously agreed that cost push inflation is largely caused by the demand for higher wages by trade unions, socio-political instability, the desire by oligopolistic and monopolistic firms to secure higher profits and more. In sum, it is mostly driven by either profit-push of firms or wage-push by employees. This is shown in figure 2 below.

Figure 2: Cost - Push inflation



As shown in figure 2, increase in input costs due to either monopoly power to increase profit or union power to increase wages may result in a shift in aggregate supply curve from AS^0 to AS^1. At a given aggregate demand, D^0 the price level moves from P^0 to P^1 and output in the economy decreases from Q^0 to Q^1. This depicts the cost-push inflation. When increased cost pushes up prices and increased prices provide further justification for increased wages, a wage-price spiral occurs. This type of inflation often accompanies prosperity in business because employers do not want to embark on strike to disrupt their production plans for fear of losing profit. In any case, they can afford to yield to union demands for higher wages since they will recover the cost through increased product prices. It is not often easy to isolate who starts the cost-push process, unions or employers. Nevertheless, the cost-push represents a plausible analysis of an inflationary phenomenon (Umo, 2007).

Based on the types of inflation examined above, this study does not accept either of them exclusively. Like Otu (2006) observes, solutions to the problems of inflation most often suggested, include the use of both monetary and fiscal policies to retrain aggregate

demand, increase employment and thus minimize inflationary pressures, how to maintain an appreciable balance of payment etc. Despite the limitations in the literature, all the explanations of inflation seem to be applicable in Nigeria (Nenbee and Dubon, 2009). Generally, low and stable inflation has become the core mandate for most central banks across the globe for the obvious reason that inflation has costs on the economy (Mordi, 2009). In a developing country like Nigeria, where capital and financial markets are largely underdeveloped, a high rate of inflation results in the movement of portfolio investment from real money balances to real assets (Ukeje, Essien, Yakubu and Akinboyo, 2004). The phenomenon of inflation which attacked the country since 1960 to date has diverse effects on the people and the various sectors of the economy. The effects, respectively, will be discussed as follows:

Marginalization of the Masses: The living standard of Nigerian masses, especially the fixed income group, has fallen over the years, due to a fall in the value of money, to the extent that many families cannot meet up their daily needs. The basic needs of food, clothing and shelter - for human survival - have gone out of the reach for many Nigerians. The cost of medical care is so high that most people die out of not being able to afford its attendant cost.

Reduction of Leisure: Most families (bread-winners) forego their leisure in search of extra income, so as to cope with their families' basic needs. For example, most company workers forfeit their weekend for overtime jobs and, in some cases, their moonlight just to generate additional income.

Effect on Savings: Inflation has affected capital formation in Nigeria adversely, as almost all that is earned (income) goes for consumption at high inflationary rates, to the extent that little or none is left for savings. It is obvious that monthly income can no longer take workers home, not to talk of having extra to save.

Effect on Production: Given the persistent depreciation of the Naira, the cost of fund (interest rate) for production has gone up so much that the final products of those firms not crowded out become too expensive in the market. These high prices for their products affect demand and profit, thereby discouraging further production.

Fall in Consumers' Real Income: As indicated earlier, inflation has the capacity of eroding the purchasing power of individuals or the value of money. Due to persistent inflationary pressure in Nigeria over the years, the real income of consumers (fixed income group) has fallen sharply. What they can buy from the market is becoming so small that their pay package can no longer take them home.

Social Dislocation: The increasing poverty and the resultant hardship generated by inflation and unemployment have led to increasing social evils like prostitution, armed robbery, stealing by tricks and other corrupt practices as well as several black market activities (Medee, 1998).

METHODOLOGY

In the course of policy formulation, it is impractical to rely on unassisted intuition. Models provide a logical abstract template to sort out complicated chains of cause and effect, and

influence between the numerous interacting variables in an economy. By virtue of their logically consistent framework, they could provide the analyst and policy maker with a valuable economic representation of the sector and a laboratory for testing ideas and policy proposals (Hazel and Norton, 1986). Though imperfect abstractions, yet economists can experiment, at least logically, the effect of alternative policy options. Models have become a useful devise for formulating plans and investigating trade-offs. They are used mainly for forecasting, consistency checks and optimization, Jerome (2004). Thus, the data sets were sourced from mainly secondary sources on inflation rates, interest rates and fiscal deficits as percentage of GDP for the period 1980 to 2010 using the Ordinary Least Square (OLS) of multiple regressions. The OLS is one of the best in statistical analysis due to its best linear unbiased (BLU) property. Accordingly, the theoretical model for modeling the relationship between fiscal deficit(i.e. expansionary fiscal policy variable) and inflation in Nigeria follows the work of Tom-Ekine (2006) that:

$$FDC_t = b_o + b_1 IFR_t + b_2 IRA_t + U_t \quad \text{----------} \quad 2$$

Where: FCD = Budget deficit as percentage of GDP, IFRt = inflation rate, IRAt =interest rate and U = error term. Apriori, $b_1 > 0$ while $b_2 < 0$. Specifically, since fiscal deficit entails an excess of expenditures over revenue that is generated, there should be a positive relationship with inflation rates. Also, the Keynesians chain of causation between changes in nominal money income and in prices is an indirect one through the rate of interest; hence, there exist a negative relationship between fiscal deficit and interest rates.

RESULTS AND DISCUSSION

Table 1: Nigeria's Fiscal Deficit, Inflation rate and Interest rate, 1980-2010

Year	Fiscal deficit as % of GDP	Inflation Rate (%)	Interest Rate (%)
1980	3.88	9.87	7.5
1981	7.69	20.9	7.75
1982	11.8	7.7	10.25
1983	5.86	23.2	10
1984	4.18	39.6	12.5
1985	4.20	5.5	9.25
1986	11.30	5.4	10.5
1987	5.41	10.2	17.5
1988	18.37	38.3	16.5
1989	6.76	40.9	26.8
Average	7.95	20.16	12.86
1990	8.49	7.5	25.5
1991	11.04	12.86	20.01
1992	10.10	44.58	29.8
1993	15.45	57.17	18.3
1994	7.68	57.03	21
1995	*12.61	72.81	20.18
1996	*13.74	29.29	19.74
1997	*14.56	8.54	13.54
1998	4.63	9.99	18.29
1999	8.50	6.62	21.32
Average	10.68	30.64	20.77
2000	**6.20	6.94	17.98
2001	**7.64	18.87	18.29
2002	**8.29	14.74	24.85
2003	5.46	12.18	20.71
2004	4.23	15.05	19.18
2005	4.00	17.69	17.95
2006	5.12	8.36	17.33
2007	5.67	7.69	16.46
2008	1.04	8.11	15.26
2009	3.28	13.9	19.55
2010	3.80	11.2	15.74
Average	4.98	12.25	16.85

*Note: * = Extra budgetary figures while ** = Extra budgetary figures added to the original budget estimates*

Sources: Orubu (2009) and CBN Annual Report (2010)

Table 1 shows that the rate of inflation declined to 9.87 per cent in 1980 from previous higher rate, due to the influx of foreign goods financed by foreign exchange earned from the oil boom period into the Nigerian market. The rate of inflation in Nigeria fluctuated between 1981 and 1986. It rose in 20.9 percent in 1981 and declined to 7.7 percent in 1982 before it jumped up to 23.2 per cent and to 39.6 per cent in 1983 and 1984 respectively. This is as a result of restrictive trade (austerity) measures of the Shagari administration, followed by the outright ban on importation of certain commodities by the Buhari/Idiagbon regime.

The introduction and implementation of price control and rationing of essential commodities brought down the rate to 5.5 percent and it crippled down to 5.4 percent in 1985 and 1986 respectively. The introduction of SAP shot up the rates to 10.2 per cent in 1987, 38.3 per cent in 1988, and 40.9 per cent in 1989. More importantly, the average inflation rate computed for the period 1980/1989 stood at 20.16 percent. The rate declined to 7.5 percent in 1990 due to serious liquidity squeeze during the 1989/1990 period. Also, the inflationary rate increased to 12.86 percent in 1991, 44.58 percent in 1992, and 57.17 percent in 1993, before stepping a little backward to 57.03 percent in 1994. Between 1990 and 1999, the average inflation rate was 30.64 percent. The above analyses seem to suggest that inflationary rate took an upward trend in Nigeria, especially during the SAP era. This was necessitated by the continuous naira crises which Gbosi (1995) blamed on the devaluation of the over-devalued naira; slump in oil prices; proliferation of banks and other financial institutions; distress in the banking industry; influx of foreign currencies into the parallel market; conflict in macroeconomic mix; bottlenecks at banks in obtaining foreign currencies, deficit financing, and political instability. As observed by Orubu (2009), the inflation rate for CCPI recorded single digit rates (though on the relatively high side) during the period 1997-2000. Although inflation resumed its upward trend from 2001 of 18.87 percent, it started a downward trend again as from 2006, falling within the single digit bracket. For instance, it fluctuates between 8.36% in 2006 and 11.2 per cent in 2010. On the average, the inflation rate decline from 30.64 per cent in 1990/1999 to 12.25 percent by 2000/2010. This average shortfall of 18.39 per cent could be attributed to relatively stable macroeconomic environment of the democratic regime.

Table 1 further shows that the level of fiscal deficit as percentage of GDP in 1980 stood at 3.88 per cent. Thereafter, it rose to a very significant height of 11.8 per cent in 1982 before declining to 5.41 percent in 1987. The average fiscal deficit rate stood at 7.95 per cent. Between 1990 and 1993, the fiscal deficit continued upwardly from 8. 49 per cent to about 15.45 per cent (Bell, 2003). We now proceed to estimate the relationship between the variables using E-view computer software version 3.1.

Table 2 shows that the computed R^2 is 0.289. This implies that about 29 percent of the total variation in fiscal deficits is explained by the monetary aggregates. The remaining 71 percent are accorded other factors exogenous to the model but buffered by the error term. The F-Statistic calculated of 5.68 is greater than the critical value of 3.39 meaning that the overall model is statistically significant at 5 percent confidence level. The DW value computed of 1.29 is not too far from 2, depicting lesser serial auto correlation.

Table 2: Static Regression Results

Dependent Variable: IFR; Method: Least Squares

Sample: 1980 2010

Included observations: 31

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	-10.32705	11.19553	-0.922426	0.3642
FDC	2.028745	0.745252	2.722228	0.0110
IRA	0.929774	0.564182	1.648006	0.1105

R-squared	0.288570	Mean dependent var	21.61677
Adjusted R-squared	0.237753	S.D. dependent var	19.15355
S.E. of regression	16.72234	Akaike info criterion	8.563134
Sum squared resid	7829.828	Schwarz criterion	8.701907
Log likelihood	-129.7286	F-statistic	5.678666
Durbin-Watson stat	1.277355	Prob(F-statistic)	0.008509

Source: Authors' Computation

Also, table 2 further shows that fiscal deficit is rightly signed with fiscal deficits while interest rates do not. By extension, it implies that there exist a positive relationship between inflation rates and fiscal deficits while interest rates showed positive relationship with it too. More importantly, the t-value computed for fiscal deficit is greater than the table value of 1.70 while that of interest rates do not. This supports Tom-Ekine's (2006) view that expansionary fiscal policy puts inflationary pressure on the economy. The inability of interest rates to impact on inflation rate is not surprisingly in an unstable macroeconomic policy environment like Nigeria. These mix results point to the nature of unstable macroeconomic policy management in Nigeria in recent years.

For instance, in an expansionary fiscal policy regime, that when a budget deficit is financed by borrowing from the Central Bank, it constitutes the injection of new money into the economy. This generates inflation. Reflecting on the Nigerian fiscal policy, Ukeje (1999) opines that one reason behind the dominance of the Central Bank as a lender to the Federal Government is that the rates of interest offered by the government on its debt instruments are not comparable to the rates of interest offered in similar securities issued by the private sector. Aside the issue of how debts are financed in fiscal management, there exist the problem of budget coverage in Nigeria. Alluding to this, Tom-Ekine (2006) writes that the Nigerian experience, particularly under the military, shows that a large share of government revenues and expenditures are not included in the budget, which violates the integrity and universality of principles of government finance.

CONCLUSION AND RECOMMENDATIONS

The effects of high inflation on the economy are generally considered to be predominantly harmful; this is why the achievement of price stability has always been one of the fundamental objectives of macroeconomic policy in both developed and less developed countries. Thus, to avert the ugly incident of inflation in an economy, literature is replete with diverse theories by economists to trace the root cause of inflation. The Nigerian economy is one of such economies experiencing diverse types of inflation. However, our attention in this study centred on demand-pull and cost-push. Specifically, demand-pull type of inflation formed the basis of our analytical framework. It is akin to a situation whereby aggregate demand exceeds aggregate supply in the economy. This was the famous argument of

Keynes (1936) for the Great Depression of the 1930s. Inflation based on demand-pull may originate from either the budgetary or the private sector of the economy through an increase in the quantity of money relative to the stock of available goods and services. This explanation is predicated on a short-run analysis in which prices are assumed to be constant; hence, the output is believed to be the main vain variable which is determined largely by changes in investment spending. Accordingly, the main objective of this paper was to examine the impact of fiscal deficits on inflation in Nigeria between 1980 and 2010. Based on time series data sourced from secondary sources, the fiscal deficit model was examined using the method of econometric technique, particularly, the Ordinary Least Square (OLS) estimation method of multiple regressions. The analyses showed that fiscal deficit is rightly signed with inflation rates while interest rates do not. By extension, it implies that there exist a positive relationship between inflation rates and fiscal deficits while interest rates showed positive relationship with it too. The inability of interest rates to impact on inflation rates perhaps could be blamed on unstable macroeconomic policy environment, corruption, and more. Thus, there is the need to re-order our fiscal policy priorities based on sincerity so as to rebuild confidence in the economy. Also, the current inflation targeting policy regime should be implemented based on the sincerity of economic managers especially in terms of fiscal discipline, financial sector stability as well as a reliable model for data computation of inflation.

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