

Inflation and Some Unpleasant Fiscal – Monetary Issues in Nigeria: A Reassessment of the Role of Government in the Management of an Economy.

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ABSTRACT

Fiscal and monetary issues are linked through money growth in the form of Seigniorage, which provides revenue to the fiscal authority in the management of an inflationary – prone economy. The relationship between these macroeconomic aggregates are well documented in the literature. This study undertakes an empirical assessment of some (un)pleasant fiscal and monetary issues in Nigeria with the main objective of identifying the role of government in the stabilization of an economy. Using data over 1970 – 2013 periods, this study adopts a modeling approach that incorporate both structural and co-integration analysis and found significant relationships between the macroeconomic variables and inflation in Nigeria. It concludes with some far reaching recommendations including minimization of deficit, adoption of robust fiscal adjustment mechanism that could increase revenue and discouraging deficit financing by the Central Bank.

Key words: Fiscal deficit, inflation, money supply co-integration.

1. Introduction

The fiscal operations of government in the management of an economy is an outcome of the Keynesian macroeconomics which came into existence following the Great Depression of the 1930s. A fundamental recognition of Keynesian orthodoxy is that an economy could converge to a stable equilibrium that may be undesirable, since it might involve some involuntary unemployment such that only the government has the means through which fiscal policy can be applied to move the economy towards an equilibrium position that is both stable and desirable. This all-encompassing role of government is built upon the assumption that, at every point in time, government can control its spending in order to achieve fiscal balance that may be optimal to achieving social goals.

Since the process of economic development particularly for developing countries cannot be entirely achieved without fiscal policy measures, fiscal deficits came to be regarded as an essential element in the development process. As a consequence, government resorts to borrowing to finance most of the development projects and programmes in the phase of dwindling revenue. This deficit financing became a major impediment to fiscal balance in the administration of public finance in Nigeria, at least, within the last fifty years. Beginning from the mid 1980s up until the present, the Federal Government has consistently over spent its actual revenue accruals and even borrowed to finance her projects, thereby failed to balance its budget with serious implications for price, interest rates and other macroeconomic stability.

2.1 Some Conceptual Issues

Conceptually, fiscal deficits could be defined from many perspectives. At the operational level, it is the (negative) difference between total revenue plus grants on the one hand and expenditures on goods and services plus transfer payments plus net lending on the other hand. In macroeconomic term, it is the difference between governments' total expenditure and its total receipts (excluding borrowing). Usually, deficits occurs when a governments' expenditures exceed the revenue that it generates. Contrarily, a surplus occur when revenue exceeds expenditures at a given fiscal year. The fiscal balance is the overall difference between government revenues and her spending.

In discussing fiscal deficits, a distinction is usually made between structural deficits and cyclical deficits. According to Ikhide (1995), a structural deficit is the balance between total government expenditures and ordinary revenues, if, *ceteris paribus*, the economy were neither in a recession nor a boom, but instead was moving along its "normal" trend. That is, the deficit that remains across the business cycle, because the general level of government spending exceeds the prevailing tax levels. The points of emphasis here is that at the lowest level in the business cycle, there is high unemployment such that tax revenues are low while expenditures are high.

On the other hand, cyclical deficits is the deficit that is related to economic cycles usually experienced at the low point of the business cycle when there are lower levels of economic activity and higher levels of unemployment. As a result, government revenues from taxation is reduced so that government expenditure goes into deficit. This cyclical component is affected by government decision and is majorly influenced by national and international economic conditions that are far beyond the control of national government.

The observed total budget deficit is equal to the sum of the structural deficit with the cyclical deficit or surplus. Government budget balance is further differentiated by closely related terms such as primarily balance and structural balance. While the primary budget balance equals the government budget balance before interest payment, the structural balance (also known as cyclically adjusted balance) attempts to adjust for the impact of the real GDP changes in the national economy. The fiscal gap measures the difference between government spending and revenues over the very long term. In other words, the fiscal gap can be interpreted as the percentage increase in revenues or reduction of expenditures that are necessary to balance spending and revenue in the long – run.

A number of factors can influence the growth or shrinkage of fiscal deficits. Such factors include increased level of tax revenues; changes in tax rates or tax enforcement policies and levels of social benefits; high rates of inflation which reduces the real value of accumulated debt among others.

2.2 Theoretical Consideration

Governments' fiscal balance is one of the three major financial sectoral balances in the management of a national economy, the others being the foreign financial sector and the private financial sector (Wolf, 2012). The sum of the surpluses or deficits across these three sectors must be zero. The sectoral balance philosophy is a macro economic analysis that was developed by British economist Wynne Godley to analyzing an expost accounting identify that results from rearranging the components of aggregate demand showing how the flow of funds affects the financial balances of the private sector, government sector and foreign sector. According to Brett (2013), the sectoral balance analysis is used by modern monetary theorists to justify the theoretical claims about the relationship between government budget deficits and private savings. Accordingly, the sectoral balances equation is that in which total private saving(s) less private investment (I) has to be equal to the public deficit spending (G, minus net taxes, T) plus net exports (exports, X minus import, M) where net exports represents the net spending of non – resident on the country's production. Within the context of sectoral balances framework, budget surpluses minus net saving (in a period of high effective demand) may lead to a private sector reliance on credit to finance consumption patterns. Hence, continued budget deficits are necessary for a growing economy that wants to avoid deflation. In this way, budget surpluses are only required when the economy has excessive aggregate demand, and is in danger of inflation.

While the theoretical debate about the impact of fiscal deficits on the economy continues, its link with other macroeconomic variable became paramount in the literature. However, what constitute the major determinants of policies to be adopted in removing fiscal deficit are the nature of the deficit and the resilience of the economy particularly the financing aspect of the deficit. As Sergent and Wallace (1981) pointed out, fiscally dominant government running persistent deficits have the proclivity to seigniorage to finance the deficits, which consequently or ultimately cause inflation. In their submission, Khundrakpan and Pattanaik (2010) believed that this risk to the inflation from high fiscal deficits arises when fiscal stimulus is used to prop up consumption demand, rather than to create income yielding assets through appropriate investment, which could have serviced the repayment obligations arising from larger debt.

In another development, the inflationary potential of fiscal deficits can be analysed through its direct impact on reserve money, which through the money multiplier tradition, leads to increase in money supply, that in turn leads to inflation via the demand for money function. The increase in demand that is financed by fiscal deficit would automatically lead to higher money supply through higher demand for money. Thus, in a Liquidity Adjustment Facility (LAF) framework, Khundrakpan and Pattanaik (2010) opined that increase in money demand associated with higher government demand has to be accommodated, in order to keep the short-term interest rates in the system, in particular the overnight call rate, with LAF (repo-reverse-repo) corridor of interest rates. Consequently, in a LAF – based operating procedure of monetary policy, money supply is demand driven, and hence endogenous. This fiscal deficit leading to expansion in money supply, associated with inflation risk should be seen essentially as a fiscal, rather than monetary phenomenon.

From the foregoing theoretical argument, two main versions of the fiscal theory of inflation are visible. The first is based on the seminar work of Sergent and Wallace (1981), an unpleasant monetarist arithmetic with the argument that the rate of inflation is dependent upon the coordination between monetary and fiscal authorities. They argue that, under the coordination scheme, inflation is completely under the control of the monetary authority. Contrarily, when the fiscal authority is dominant in the coordination, it sets the current and future budget balance and determines the amount of Seigniorage income that is required from the monetary authority. In the second coordination scheme, the monetary authority may not only create extra money but also

additional inflation, which in turn, weakens its control over price stability.

In the second version of fiscal theory of inflation, Cartstrom and Fuerst (2000), Leaper (1991), Sims (1994) and Woodford (1995, 1994) were of the opinion that the price level is determined merely by fiscal variables such as government debt, present and future revenue and spending plans, and monetary factors play no role in price determination. In consequence, price levels adjust to ensure the government's inter-temporal budget constraint. This adjustment, driven by individuals' wealth effect argues for non-Ricardian equivalence hypothesis, and as a result, when there is fiscal deficits, individuals see it to be increasing their wealth, which in turn, raises aggregate demand, thus creating inflation and leaves no room for monetary authority coordination of fiscal deficit. On the contrary, the Ricardian equivalence hypothesis proposed by Barro (1989) posits that an increase in budget deficit does not affect aggregate demand, interest rate or price level.

The underline factor in the above argument is that there is no separate fiscal theory but monetary – fiscal policy coordination. As Cochrane (2011) posited, ... we have to recognize that “active money, passive fiscal” or “active fiscal, passive money” are very stylized representation of the policy coordination process. By implication, “fiscal theory” means making a similar examination of today's monetary – fiscal coordination.

2.3 Empirical Review

There are numerous empirical studies in the literature that attempts to provide explanation to the link between fiscal policy and macroeconomic variables, particularly inflation. While some of these studies try to establish long – run relationships between fiscal deficits and inflation, others focus on short – run effect by analyzing the impact of fiscal deficit on inflation. In most cases, empirical evidences has shown that for most developing countries, the method of financing fiscal deficit have resulted in high monetary expansion, high inflation, high public debt, exchange rate depreciation, deterioration in balance of payment, slow growth rate of the economy, high interest rate, corruption, financial sector distress, crowding out of private sector and high unemployment (Onwoduokit, 1999). Some other studies have concluded that fiscal deficit – inflation nexus are purely a developing country phenomenon.

The studies that focus on the developed countries often found mixed results. For instance, Grossman (1982) and Hanburger and Zwick (1981) find a significant link between fiscal deficits and inflation in the USA. On the contrary, McMillan and Beard (1982) find no evidence that fiscal deficit is related to money growth, and hence inflation in USA after re-examining the situation using extended data.

In Greece, Hondroyianms and Paperpetron (1997) find that rising fiscal deficits have no direct impact on inflation while Davrat (2000) find a significant relationship between fiscal deficits and inflation using error correction mechanism for the same data set.

In those studies that are based on developing countries, there exists mixed results. For instance, while Fischer, et al (2002) find a string relationship between fiscal deficit and inflation (when inflation rates are high), De Hann and Zelhoist (1990) could not find much support for the general hypothesis that government deficits influence money growth even though they showed that there is a positive correlation between fiscal deficit and inflation for the 17 developing countries that were studied after the second world war (WWII). Also, using dynamic panel estimation for 107 countries, Catao and Tenrones (2005) find a strong positive relationship between fiscal deficit and inflation.

In some other studies, Roubin (1991) examine the economic and political determinations of budget deficits in developing countries and finds that the co-movement of budget deficits and inflation is underpinned by political instability. The consequence of unstable polity in financial term is borrowing from sources other than the country's income generating potentials which could weaken the independence of monetary policy from fiscal policy, thus creating lack of coordination between the two.

In a panel of 23 emerging market economies for the period 1970 – 2000, Catao and Terrones (2005) investigates the determinants of inflations and found that a one percentage point – reduction in the ratio of fiscal deficit to GDP lowered long – run inflation by 1.5 to 6 percentage points.

In a country – specific study, the nexus between fiscal deficits and inflation are widely discussed, for instance, in India, Sarma (1982), Jhadar (1994) and Rangarajan and Mohanty (1982) in their studies finds a self – perpetuating process of deficit – induced inflation and inflation induced deficit with the overall indication that government deficits represent an important determinant of inflation. Relatedly, Khundrakpan and Goyal (2009) adopted an ARDL approach to co-integration analysis and found that government deficit continues to be a key factor causing incremental reserve money creation and overall expansion in money supply, which leads to inflation.

In Pakistan, a number of studies have categorized the inflation – budget deficit nexus into two basic set. For instance, Haider and Safdar (2007) used government borrowing as a determinant of inflation as well as those that have not incorporated this determinant in their model set up. On the whole, Sachs and Larrain (1993) opined that budget deficit (BD) weekly causes inflationary pressures, but rather impacts strongly on general price level through the impact on money aggregates (M_1 , M_2) and public expectations, which in turn trigger volatility in

prices since government borrows from different sources to finance budget deficits. Still in Pakistan Aslam, Anjum and Waseem (1996) used empirical approach of sustainable deficit and found that, for the period under investigation, fiscal deficits was not sustainable.

For Ghana, Sowa (1994) examined fiscal deficits, output growth and inflation targets and found that inflation in Ghana is influenced more by output volatility or supply side factors than by monetary and fiscal factors. For Iran, Alaviraland Athawale (2005) and Agba and Khan (2006) examined the impact of fiscal deficit on inflation by utilizing an Auto Regressive Distributed Lag Model and found that fiscal sector is dominant in explaining price movement in Iran.

The case of Turkey was not different. In their study, Akay, Alpher and Ozmutuc (1996) used annual data and found the existence of a stable long – run relationship between budget deficit money growth and inflation. In Nigeria, a number of studies have found mixed results. For instance, Magbagbeola and Adelokun (2003) examined the macroeconomic analysis of inflation and found that fiscal deficits, money supply, one year lag interest rate and exchange rates contributed to inflation. On the other hand, Asogu (1991) and Fulerton and Ikhide (1997) show that inflation is influenced by several factors including rate of exchange of money supply, growth rate in real income, exchange rate and interest rate. Also, Dogowa and Englama (2000) suggest that fiscal deficit financed by the Central Bank creates monetary expansion which essentially drives the general price level in an economy.

In general, most empirical studies suggest that: first, budget deficits are not inflationary. Second, there is only a weak correlation between fiscal deficit and inflation. Third, there is a strong link between fiscal deficits and inflation only during high inflationary periods, even though the link is well defined by the theory. All these, according to Buffe (1991) is that the public sector wage cycles may underline the weak correlation between fiscal deficit and inflation rate.

3. Model and Methodology

Based on the fiscal approach to the balance of payment, the current account balance is the difference between the money value of the domestic production and the aggregate demand components. consequently, budget balance is the gap between government revenues and expenditures. Therefore, in macroeconomic term:

$$Y = C + I + G + (X - M) \text{-----} 1$$

Where: Y represent GDP; C is private consumption expenditure; I is private investment, G is government expenditure; X is exports and M is imports. Assume that A represent the aggregate demand components (C, I, G); then

$$Y = A + (X - M)$$

or $Y - A = X - M \text{-----} 2$

Equation (2) is a reflection of the external account behaviour of an economy. This is because domestic developments are usually triggered by external imbalances – hence deficit budgeting, Restoration of domestic balances must, as a matter of necessity involve a sort of re-alignment of revenue with expenditure.

When tax and international reserves are added to the equation, disposable income is arrived at. Hence, the national income identity for the economy becomes

$$Y + R - T = C + I + (G - T) + (R + X - M) \text{-----} 3$$

If savings (disposable income that is not consumed) is introduced into the model, we have

$$S = Y + R - T - C \text{-----} 4$$

So that the absorption capacity of private individuals is given by (C+I) and (G-T) which reflect on budget deficit while the current account balance (CAB) of the economy is represented by (R+X-M), with R being international transfer obligations (receipts) and T as taxes. Consequently, substituting S and the current account balance (CAB) into the equation gives

$$(S-I) + (T-G) = (R+X-M) \text{-----} 5$$

The right hand side of the equation (5) is equivalent to an increase in net official asset plus the rate of capital outflow. Hence, CA - Δ NFA. The relationship between net savings of the private sector and deficits in the public sector yield the equation:

$$(S-I) + (T-G) = \Delta \text{NFA} \text{-----} 6$$

To finance public deficit through seigniorage (borrowing form the banking system) makes the balance sheet to be:

$$\Delta \text{NFA} = \Delta M - (\Delta \text{DC}^b + \Delta \text{DC}^{nb}) \text{-----} 7$$

Where ΔDC^b is the domestic credit of the banking sector to the government whereas, ΔDC^{nb} is that of the non bank credit to the government. Since budget deficits are usually financed through domestic and foreign borrowing, the equation becomes

$$G - T = \Delta \text{DC}^b - \Delta \text{NFA} \text{-----} 8$$

To obtain the link between financing of the budget deficit and the banking system, equation 8 is substituted into equation (7) to obtain

$$G - T = \Delta M - \Delta DC^{nb} - (\Delta NFA^b + \Delta NFA) \dots\dots\dots 9$$

Showing the basic sources of financing government deficit namely; increase in money supply (ΔM), borrowing from non-banking system and depletion of international reserves (or external borrowing).

Following several studies, the relationship between inflation and fiscal deficit can then be specified as:

$$CPI = \beta_0 + \beta_1 BDGDEF + \beta_2 MS + \beta_3 EXR + \beta_4 INTR + \mu \dots\dots\dots 10$$

Taking the logarithm of the variables yield:

$$\log CPI = \beta_0 + \beta_1 \log BDGDEF + \beta_2 \log MS + \beta_3 \log EXR + \beta_4 \log INTR + \mu \dots\dots\dots 11$$

Where : BDGDEF represents budget deficits; MS is money supply; CPI is consumer price Index; EXR is exchange rate and INTR is interest rate on a prio, $\beta_1, \beta_2, \beta_3 > 0$ while $\beta_4 < 0$

3.2 Estimation Technique – Cointegration and Causality

For a guide to an appropriate specification of equation (10), the characteristics of the time series data were examined in other to avoid spurious regression that can result from the regression of two or more non-stationary series. While stationarity is usually performed on the levels of the variables, cointegration is performed on the error term of the static regression as specified in levels. The purpose is to ensure that long-run relationships among the conditioning variables are preserved.

To test for stationarity, the Augmented Dickey-Fuller (ADF) test is used. Consequently, the model is specified as follows:

$$ADF: dCPI_t = \alpha_0 + \alpha_1 CPI_{t-1} + \sum_{k=1}^k \alpha_k dCPI_{t-k} + \epsilon_t \dots\dots\dots 11$$

To test for cointegration and error correction mechanism (ECM), the granger-causality model used. Hence, for the causality relationship;

$$CPF_t = \lambda_0 + \lambda_1 CPI_{t-1} + \lambda_2 X_{st-1}$$

$$X_{st}^1 = \phi_0 + \phi_1 CPI_{t-1} + \phi_2 X_{st-1}^1 \dots\dots\dots 12$$

Where X_s are vector of major conditioning variables. For both equations (11) and (12), the following holds:

- i. The null hypothesis is that $\alpha_1 = 1$, implying that the variable (CPI) has unit root or is non-stationary.
- ii. The alternative hypothesis is that $\alpha_1 = 0$, meaning that the variable is stationery or integrated of the order 0 – 1 (0).
- iii. A large negative value for the coefficient x_1 leads to the rejection of the null hypothesis.
- iv. The direction of causality is determined by the variable with the highest F-test.

3.3 Results and Discussion

The characteristics of the data series used in the regression analysis are presented in table 3.3.1 below. The data were obtained from Annual abstract of statistics, the Statistical Bulletin of the Central Bank of Nigeria and from Federal Ministry of Finance. The time frame is 1970 – 2013.

The statistical package used in analyzing the data is e-view 7.0

3.3.1 Regression results of the relationship between consumer price index and other macroeconomic variables.

Dependent variables: Log CPI
 Method: Least squares
 Date : 06/15/15: Time: 10:19am
 Sample (adjusted) 1971, 1996
 Included observations: 6
 Excluded observations: 20 after adjusting end points.

Variable	coefficient	Std Error	t-stal	prob
C	3.376104	0.805675	4.190404	0.1491
Log BDGDEF	0.024951	0.004293	5.811782	0.1055
Log MS	0.193964	0.051134	3.793274	0.1541
Log EXR	1.177253	0.236797	4.971568	0.1264
Log INTR	-3.388456	1.068436	-3.171417	0.1945
R-squared	0.999964	Mean dep.variable		1.175000
Adjusted R ²	0.999822	S.D dep. Variable		0.391752
S.E of Regression	0.005226	Akaike info. Criterion		-7.795374
Sum squared resid.	2.73E-05	Schwarz criterion		-7.968908
Log likelihood	28.38612	F-Statistics		7023.497
Durbin-watson	0.828156	Prob (F-Statistic)		0.008949

Sources: own computation using E-views 7.0

The above regression results are plausible because the estimated t-ratios corresponding to the coefficients are statistically high while the R^2 which measures the goodness of fit are equally high. As a matter of fact, the results shows that the explanatory powers of the regression explain over 99 percent of the total variations of the regressors accounting for the regressand. All the variables are correctly signed in line with the apriori expectations. This reveals that the major variables influencing the rate of inflation was exchange rate (external imbalances), followed by money supply. The links between exchange rate pass through to domestic inflation (CPI) are well documented in the literature. Most studies revealed that CPI reacts to changes in import price due to change in world prices or exchange rate and money supply. This imply that fiscal deficits in Nigeria are mostly financed either by external borrowing or by printing more money, making the two well-known variables as major factors that influence domestic inflation with their consequences on depletion of reserves. This result is in line with the balance of payment school which identifies external balance problems and the resulting depreciation of exchange rate as the primary cause of inflation as against the quantity theory school which believe more on the budget deficit and their financing by money creation as the reason for inflation. The reality is that even though exchange rate crisis may cause inflationary outburst, the phenomenon, according to Dornbusch (1992) is basically a fiscal issue as balance of payments crisis are traceable to the deficit.

The above analysis is further argued that an increase in fiscal deficit results in an equal increase in base money so that the supply of money builds up inflationary pressures and as the inflation rate rises, government expenditure rises faster than revenues, thereby compelling the Central Bank to increase the issuance of money further than planned.

3.3.2 The Causality Test

The table below shows the result of cointegration test depicting the existence of a long-run relationship between the non-stationary dependent and independent variables.

Tables 3.3.2 Granger-Causality Test Based on F-Statistic					
BDGDEF	CPI	210.5899	CPI	BDGDEF	2.86E + 30
MS	CPI	511.8766	CPI	MS	248.9231
EXR	CPI	522.9584	CPI	EXR	100.7501
INTR	CPI	522.9584	CPI	INTR	40.51887

Source: Own computation using E-Views 7.0

The results above shows that causality runs from financial sector variables to consumer price index with the implication that inflation in Nigeria is determined principally by monetary factors and that fiscal policy can only be applied to ensure long-run price stability. This result is in line with the Ricardian equivalent hypothesis of Barro (1989) that an increase in budget deficit does not affect aggregate demand, interest rate or price level.

4.0 Conclusion

This study has analysed the fiscal based theory of inflation in the light of the Nigerian experience from 1970 - 2013 with the main objective of quantifying the link between fiscal deficit and other macroeconomic variables on inflation. Even though fiscal policy in Nigeria may be pro-cyclical, there exist, a strong tendency for monetary factors influencing inflation in the short-run, while in the long-run, fiscal measures are necessary to restore the economy to the path of equilibrium. The result reveals that budget deficit, money supply and exchange rate exerts positive influence on the price level while the supposed positive relationship between price level and interest rate is not upheld by this study due to fiscal intervention by the government. This implies that inflation is not completely a monetary phenomenon in Nigeria as persistent fiscal deficits are needed to be financed by seignior age income. This is to say that high fiscal deficit in Nigeria may not only exert pressure on actual inflation but also conditions inflation expectation.

This paper concludes that the potential inflation risk should be an important motivating factor to ensure a faster return to fiscal consolidation path in Nigeria that is driven by adjustment or rationalization of public expenditure, rather than waiting for revenue buoyancy to act as automatic stabilizer. To achieve this, there is the need for government to minimize the level of deficit by borrowing less for an effective control of inflation, adoption off a robust fiscal adjustment mechanism that increase revenue through improved taxes and economic diversification as well as discouraging deficit financing the central bank.

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