Fiscal Deficit and Inflationary Trend in Nigeria: A Cross-Causal Analysis

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Abstract: This study explored the causal link between inflation and fiscal deficit for Nigeria within the period 1970-2006. We used the more robust Toda-Yamamoto Granger non-causality test which allows the Granger test in an integrated system for the investigation. Annual time series data covering the period was used. The result showed no clear evidence of causality between fiscal deficit and inflation. This suggest that inflation will be better controlled by looking at its other determinants than fiscal deficit and what should be of paramount concern to policy makers as regards inflation should not so much be the level of fiscal deficits but the sources of its financing.

Key words: Inflation, fiscal deficit, seemingly unrelated regression, Granger causality, Granger non-causality, Nigeria

INTRODUCTION

The fiscal operations of the Nigerian government have been generally unstable. This is considered to be one of the major causes of macroeconomic instability in the country. The unstable fiscal operations arise partly from fiscal imbalances characterized by inadequacy of financial resources relative to ever increasing need for social and economic infrastructural expenditures. There is a mismatch between the availability of financial resources and the increased cost of running the government and the related inadequacy of resources derive from the heavy post civil war reconstructing efforts (Ariyo, 1993).

Budget deficits and external borrowing were resorted to in financing of the resource gaps as the country became increasingly unable to earn enough foreign exchange to sustain imports. The consequence of unsustainable levels of imports and soaring foreign indebtedness was a precariously weak external economic position.

With deteriorating external reserve position, the persistent fiscal deficits and the foreign exchange market depended almost entirely on continuously rising external borrowing for its financing which continued to exert adverse pressure on the balance of payments conditions (Oluba, 2008).

Government budget deficits are also financed through ways and means advances from the Central Bank. This generated an upward movement in the level of domestic debt. The incidence of chronic budget deficits, escalating public debt especially external and general economic decline laid the basis for the adoption of a Structural Adjustment Programme (SAP).

One of the probable consequences of government deficit finances is the problem of inflation or general increases in the level of prices. This study explores causal relationship between fiscal deficit and the inflationary process in Nigeria.

Fiscal deficit and inflation; the theoretical link: One of the basic thrust of the fiscal reforms under SAP was the curtailment of fiscal deficits to the maximum of 3% of the GDP. However, there has been an upward trend in public expenditure coupled with serious shortfalls in the revenue generated thus resulting in continued fiscal deficits. For example, the fiscal deficit rose from ₦12.2 billion in 1988 to ₦15.3 billion in 1989 and ₦35.3 billion in 1991. It further increased to ₦43.8 billion in 1992 against the planned surplus of ₦2.0 billion and stood at ₦101.4 billion in 2006. When a deficit is incurred, the government has the option to either run down its cash reserves or print more currency or borrow domestically or internationally. The public deficit financing identity can therefore be written as follows:

$$\text{Deficit financing} = \text{Cash reserves} + \text{Money financing} + \\ \text{Debt financing} + \text{External debt financing}$$

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The consequences of deficits depend on how they are financed. Each major type of financing can result in macroeconomic imbalance if it is used excessively. The deficit financing option adopted has differential implications for economic development. The implications however, depend on different economic situations. The first means of financing the deficit (running down cash reserves) tends to appreciate the exchange rate relative to the level it would otherwise have had. Use of international reserves to finance the deficit has a clear limit and the private sector anticipation that the limit is about to be reached can provoke capital flight and balance of payment crises. The 2nd means of financing the deficit (money financing) will lead to the public attempting to reduce the excess cash holdings which will eventually drive up the overall price level, until equilibrium is restored (Easterly and Schmids-Hebbel, 1993). Beyond a certain point, an increase in money creation and the rate of inflation may actually decrease money financing if the demand for money falls sharply enough in response. While the domestic borrowing is the most acceptable and is usually thought of as a way to avoiding both inflation and external crisis, it carries it own dangers if used excessively. Increased reliance on it will result in crowding out of private sector, since this normally implies government borrowing from the banking system.

Not only will the government borrowing from the public reduce credit which would otherwise be available to the private sector, it would also put pressure on domestic interests rates. The fourth method of financing fiscal deficit is direct foreign borrowing. As in the case of reserve use, excessive external borrowing tends to appreciate the exchange rate, damage exports and encourage imports.

The demand pull theory states that a rise in price level is initiated by the emergence of excess demand over existing supply, assuming the existence of full employment in the economy (Auerbach, 1976). Demand pull inflation could be approached through either the quantity theory of money (Neo-Classical) or Fiscalist/Keynesian theory. The quantity theory emphasizes the causal influence of money supply in the inflationary process but the fiscalist theory emphasizes non-monetary influence such as government expenditure and credit. It is important to note that an increase in aggregate demand can either be stimulated or accompanied by increases in money supply or government deficit expenditure financed by the Central Bank.

Cost push inflation can be initiated by increase in the cost of production following a rise in input cost. Symbolically, given functional relation between price and input cost if cost increase, it implies that price will also increase. This occurs in imperfect market condition in the product market (administered prices) or in the labour market (wage push). Generally, cost push inflation has been associated with increases in wage and salaries and depreciation of the exchange rate. If the growth of wages outstrips the growth of labour productivity, entrepreneurs raise the prices of their products to prevent a decline in employment and output (Nwankwo, 1982).

The structuralists emphasize that inflation results from manifestation of basic structural factors which create supply shortages which could be as a result of inadequate government revenue to pay for imports to augment inadequate domestic supply. Thus, structural inflation result from supply shocks including insufficient foreign exchange supply for financing importation.

Internationally transmitted inflation, otherwise called imported inflation, derives from the openness of economies. This approach identifies a number of channels whereby inflation may be transmitted from one country to another, especially under a regime of fixed exchange rates. The channels include price, demand and liquidity effects. Price effects are transmitted by internationally traded goods and services while demand effect is by the spillover of excess demand across countries. Changes in foreign reserves occasioned by balance of payments adjustment, affect money supply, incomes and prices, thereby creating liquidity effect (Asogu, 1992). Monetarists hypothesize that inflation is always everywhere a monetary phenomenon and maintain that a policy of monetary and financial stability is a necessary prerequisite for rapid economic development (Friedman, 1966). But if the output does not expand as much as money supply, there would be inflation. Symbolically:

$$MV = PY$$

Where:
M = Money supply
V = Velocity of circulation
P = Price
Y = Output

The central implication of this theory is that a given proportionate change in money supply induces an equal change in the rate of price inflation. The inflation rate is expected to vary positively in relation to the rate of change in money supply. Y and V are assumed constant which means that the equation can be re-written as:

$$M = \left(\frac{Y}{V}\right)P$$

Impact of fiscal deficit on inflation in Nigeria: Since the end of oil boom years, public expenditure has grown

beyond the revenue resources available to government. That is the government has been expending more money than it has been generating. This led to the fiscal crisis of the 1980s. Despite the policy of government to contain fiscal deficit to a maximum of 3% of GDP over the years however, the extra budgetary expenditures have been rising thus resulting in ever bigger deficits. In Nigeria, lack of fiscal discipline is the bane of the economy.

Despite the fact that realized revenue are often above budgetary estimates, extra budgetary expenditure has been rising too fast and resulting is ever bigger fiscal deficit. The overall fiscal deficit (which is the difference between the sum of both current and capital expenditure and the sum of both the capital and recurrent revenue) with net lending ranges from 2% of nominal GDP in 1975 to 12.5% of GDP in 1992. This is attributed to the huge debt service obligations, expenditure in respect of the transition programmes and other extra budgetary

Table 1: Fiscal deficit, inflation rate and money supply in Nigeria

Years	Fiscal deficit ₦ million	Inflation rate	Money supply (M1) ₦ million	Money supply growth rate
1970	-455.1	13.8	641.5	-
1971	171.6	15.6	670.0	4.4
1972	-58.8	3.2	747.4	11.6
1973	166.1	5.4	925.8	23.9
1974	1796.4	13.4	1357.2	46.6
1975	-427.9	33.9	2605.4	92.0
1976	-1090.8	21.2	3864.1	48.3
1977	-781.4	15.4	5557.8	43.8
1978	-2821.9	16.6	5260.7	-5.3
1979	1461.7	11.8	6351.5	20.7
1980	-1975.2	9.9	5449.3	-14.2
1981	-3902.1	20.9	6246.4	14.6
1982	-6104.1	7.7	7801.8	24.9
1983	-3364.5	23.2	9361.3	20.0
1984	-2660.4	39.6	10872.9	16.1
1985	-3039.7	5.5	13829.4	27.2
1986	-8254.3	5.4	18471.7	33.6
1987	-5889.7	10.2	22214.8	20.3
1988	-12160.9	38.2	20786.2	-6.4
1989	-15134.7	40.9	25697.6	23.6
1990	-22116.1	7.5	39156.2	52.4
1991	-35755.2	13.0	50071.7	27.9
1992	-39532.5	44.5	75970.3	51.7
1993	-65157.7	57.2	118753.4	56.3
1994	-70270.6	57.0	169391.5	42.6
1995	1000.0	72.8	201414.5	18.9
1996	32049.4	29.3	227454.4	12.9
1997	-5000.0	8.5	258622.9	13.7
1998	-133389.3	10.0	318576.0	23.2
1999	-285104.7	6.6	393078.8	23.4
2000	-103777.3	6.9	637731.1	62.2
2001	-221048.9	18.9	816707.6	28.1
2002	-301401.6	12.9	946253.4	15.9
2003	-202724.7	14.0	1222559.3	29.2
2004	-172601.3	15.0	1330657.8	8.8
2005	-161406.3	17.9	1725395.8	29.7
2006	-101397.5	8.2	2280648.9	32.2

CBN statistical bulletin, December, 2007; CBN statistical bulletin, 2008, Golden jubilee edition

expenditures including the financing of ECOMOG in Liberia, donations, etc. Such fiscal deficits have become unsustainable. There is an increasing concern about the unfavorable effects on the productive capital stock, increased government debt as a ratio of the GDP and total private wealth. Thus, it is feared that the increase in public debt will continue to feed upon itself as the government borrows to finance the interest payments debt it previously incurred and debt eventually becomes excessively large relative to other macroeconomic variables. For example, the overall fiscal deficit rose from about ₦2 billion in 1980 to ₦3.9 billion in 1981 and has ever been increasing except the observed fall from ₦8.2 billion in 1986 to ₦5.8 billion in 1987 and stood at N101 billion in 2006 (Table 1).

Table 1 showed that deficit financing was a permanent feature of government finances in most part of the period between 1970 and 1992. This is probably due to the inadequacy of financial resources relative to the ever increasing need for social and infrastructural expenditures, increased cost of providing government services, rehabilitation programme that followed the civil war of 1967-1970, external shock, increased debt service obligation among others.

Between 1992 and 2006, the story is not largely different with large and growing fiscal deficit recorded for all the years except for 1995 and 1996. This experience is rather not expected in view of the major policy intervention via structural adjustment programme. The use of monetary financing instead of domestic borrowing with uncontrolled interest rates raises the rate of inflation and real interest rate.

For instance, money creation leads to a credit squeeze through higher interest rate or when interest rate is fixed through credit allocation and ever more stringent financial repression. On the other hand, external borrowing leads to a current account deficit and sometimes to a balance of payment crisis (if foreign reserves are run down) or an external debt crisis if debt is too high. Between 1989 and 1991, an average of 77% of the overall fiscal deficit was financed by the Central Bank of Nigeria while in 1992, the deficit had been largely financed by Central Bank of Nigeria. As a result, money supply increased by an average of 35.2% against the average annual target of 14.3% (Table 2). As the deficit was increasing, the money supply growth was increasing. For example, deficit was ₦39.5 billion in 1992, ₦107.7 billion in 1993 and money supply growth increased from 51.7% in 1992 to 56.3% in 1993. It fell to 42.6 in 1994, fell further to 28.1 in 2001 and increased to 32.2% in 2006.

Table 2: Unit root test

Variables	ADF statistics (at levels)	ADF statistics (at 1st difference)	Phillips-Perron statistics (at levels)	Phillips-Perron statistics (at 1st difference)	Order of integration
FISC	-3.06	-5.85**	-2.99	-6.75**	I (1)
INF	-3.00	-5.74**	2.87	-10.73**	I (1)
Critical value @ 1%	-4.23	-4.23	-4.23	-4.23	-
Critical value @ 5%	-3.54	-3.54	-3.54	-3.54	-
Critical value @ 10%	-3.20	-3.20	-3.20	-3.20	-

*Significant at 5%; **Significant at 1%

At the same time the inflation rate which was 13% in 1991 increased to 44.5% in 1992 and 57% in 1993. It increased to 72.8% in 1994, fell to 18.9 in 2001 and stood at 8.2% in 2006. It must be noted however that deficit financing for economic development is not bad if it is channeled to the productive sectors for economic growth.

MATERIALS AND METHODS

Causality and its tests: Hoover (2008) identifies two major divisions in economic thought with regards to the conceptualization and analysis of causality in economics. The 1st is the divide between those who believed that causality in economics could be characterized by relatively simple uniformities (the process approaches) and those who believed that it must be characterized by a rich understanding of the underlying mechanisms of an economic system (the structural approaches). The 2nd divide is between those who believe that economic logic itself gives privileged insight into economic behaviour (apriori approaches) and those who believe that we must learn about economic behaviour principally through observation and induction (the inferential approaches). In recent times, the determination of causal relationship among economic variables has followed predominantly the inferential approach.

The dominant variant of which is the Granger causality test. Granger causality test is a technique for determining whether onetime series is useful in forecasting another. By way of definition, a time series X is said to Granger-cause Y if it can be shown usually through a series of F-test on lagged values of X (and with lagged values of Y also known) that those X values provide statistically significant information about future values of Y.

Although, the traditional pair-wise Granger causality tests is more revealing than simple correlation coefficients, the Granger test abstracts from philosophical issues of causality by merely insisting on temporal precedence and predictive content as the necessary criteria for one variable to Granger cause another. Many tests of Granger-type causality have been derived and implemented to test the direction of causality by Granger (1969), Sims (1972) and Geweke *et al.* (1983). These tests

are based on null hypotheses formulated as zero restrictions on the coefficients of the lags of a subset of the variables. Thus, the tests are grounded in asymptotic theory and therefore critical values are only valid for stationary variables that are not bound together in the long run by a co-integrating relationship (Granger, 1988). This makes the causality test results somewhat weak and conditional on the absence of cointegration between the relevant variables. Other shortcomings of these tests have been discussed in Toda and Phillips (1994). Also, it is well documented that the exclusion of relevant variables induces spurious significance and inefficient estimates (Maddala, 2001; Gujarati, 2006). In this study, the researchers avoid these shortcomings by applying the more robust Toda-Yamamoto (T-Y) procedure developed by Toda and Yamamoto (1995) and extended by Rambaldi and Doran (1996) and Zapata and Rambaldi (1997) to test for the Granger no-causality.

According to Tedds and Werkneh (1999), Toda and Yamamoto (1995) and independently, Dolado and Lutkepohl (1996), the proposed method is simple and gives an asymptotic Chi-square (χ^2) null distribution for the Wald Granger no-causality test statistic in a VAR model, irrespective of the systems integration or cointegration properties. Zapata and Rambaldi (1997) explained that the advantage of using the T-Y procedure is that in order to test Granger causality in the VAR framework (as in this study), it is not necessary to pretest the variables for the integration and cointegration properties, provided the maximal order of integration of the process does not exceed the true lag length of the VAR model.

Toda and Yamamoto (1995) reported, however that the T-Y procedure does not substitute for the conventional unit roots and cointegration properties pretesting in time series analysis. They are considered as complementary to each other. The T-Y procedure basically involves the estimation of an augmented VAR ($k+d_{max}$) model where, k is the optimal lag length in the original VAR system and d_{max} is the maximal order of integration of the variables in the VAR system. The Granger no-causality test utilises a Modified Wald (MWald) test for zero restrictions on the parameters of the original VAR (k) model. The remaining d_{max} autoregressive

parameters are regarded as zero and ignored in the VAR (k) model. This test has an asymptotic Chi-square (χ^2) distribution when the augmented VAR (k+d$_{max}$) is estimated. Rambaldi and Doran (1996) have shown that the MWald tests for testing Granger no-causality experience efficiency improvement when Seemingly Unrelated Regression (SUR) models are used in the estimation. Moreover, the MWald test statistic is also easily computed in the SUR system.

The model: Following Frimpong and Oteng-Abayie (2006), the T-Y Granger no-causality test is implemented in this study by estimating the following bivariate VAR system using the SUR technique:

$$FISC_t = \gamma_0 + \sum_{i=1}^{k+d} \alpha_{1i} FISC_{t-1} + \sum_{i=1}^{k+d} \beta_{1i} INF_{t-1} + \varepsilon_{1t} \qquad (1)$$

$$INF_t = \gamma_0 + \sum_{i=1}^{k+d} \alpha_{2i} INF_{t-1} + \sum_{i=1}^{k+d} \beta_{2i} FISC_{t-1} + \varepsilon_{2t} \qquad (2)$$

Where:
FISC = Measured fiscal deficit
INF = Inflation rate
k = The optimal lag order
d = The maximal order of integration of the variables in the system
ε_1 and ε_2 = Error terms which are assumed to be white noise

Each variable is regressed on each other variable lagged from one to the k+d$_{max}$ lags in the SUR system and the restriction that the lagged variables of interest are equal to zero. From Eq. 1, INF does not granger cause FISC if H$_o$:β_{1i} = 0 against H$_1$:β_{1i} ≠ 0 where, i≤k. In the same vein from Eq. 2, FISC does not granger cause INF if H$_o$: β_{2i} = 0 against H$_1$:β_{2i} ≠ 0. Note that the extra (d$_{max}$) lags are not restricted in all cases. Toda and Yamamoto (1995) showed that this will ensure that the asymptotical critical values can be applied when we test for causality between integrated variables.

Data: Data on fiscal deficit (FISC) and inflation (INF) were taken from Central Bank of Nigeria (CBN) statistical bulletin. Annual time series data covering 1970-2006 were used.

RESULTS AND DISCUSSION

The results of the analysis are presented in the following four steps. We begin by establishing the order of integration for both FISC and INF in the model. This is followed by the examination of cointegration relationship among the variables. The final step was the conduct of the T-Y Granger non-causality test and it was preceded by the determination of the optimal lag structure for the VAR model used in the analysis.

The result of the unit root test whereby we used Augmented Dickey-Fuller and Philip-Perron test statistic revealed that the variables (FISC and INF) are non-stationary but the maximal order of integration of the two is one. The variables became stationary after differencing them once (Table 2). Following that the two series are integrated of order one, the cointegration (long-run) relationship was established using the Engel and Granger two step procedure. The result of Table 3 showed that a long run relationship exists between FISC and INF over the period of analysis. The implementation of T-Y non-causality test proper requires we establish the optimal lag length of VAR model first. This was done through the use of various model selection criteria among which are Akaike Information Criterion (AIC) and Schwarz information Criterion (SIC).

The result in Table 4 showed that the optimal order of the VAR model should be one as all the test statistics reject the zero lag and consistently picked lag one as being the optimum order. The T-Y Granger causality test was finally conducted using the Modified Wald (MWald) test to verify whether the coefficients and of the lagged variables are significantly different from zero in the respective estimated equations shown as:

$$FISC_t = \gamma_0 + \sum_{i=1}^{2} \alpha_{1i} FISC_{t-1} + \sum_{i=1}^{2} \beta_{1i} INF_{t-1} + \varepsilon_1 \qquad (3)$$

$$INF_t = \gamma_0 + \sum_{i=1}^{2} \alpha_{2i} INF_{t-1} + \sum_{i=1}^{2} \beta_{2i} FISC_{t-1} + \varepsilon_2 \qquad (4)$$

As Eq. 3 and 4 shows, the VAR model is of order 2 since the maximal order of integration (d$_{max}$ = 1) and selected VAR length (k = 1). The VAR (2) model was then estimated using the SUR technique.

The result of the T-Y procedure shown in Table 5 indicate that the null hypothesis of INF does not granger cause FISC and that of FISC does not granger cause INF were not rejected. This gives credence to the claim that inflation rate is not useful for the prediction of the level of fiscal deficit in Nigeria. In the same vain, the prediction of future level of inflation may not benefit from the knowledge of fiscal deficit level in Nigeria, considering data for the period 1970-2006.

Table 3: Engel and Granger cointegration test

Dependent variable	Independent variable	ADF of residual	Critical ADF @ 5%	Cointegration
INF	FISC	-3.16	-2.95	Yes

Table 4: VAR lag order selection criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-578.8182	NA	2.36E+12	34.16578	34.25556	34.19639
1	-556.5411	40.622820*	8.06E+11*	33.09066*	33.36001*	33.182510*
2	-554.9106	2.781447	9.30E+11	33.23004	33.67897	33.38314
3	-551.6014	5.255815	9.76E+11	33.27067	33.89917	33.48501

Endogenous variables: INF FISC; Exogenous variables: C; Included observations: 34; *indicates lag order selected by the criterion; LR: sequential modified LR test statistic (each test at 5% level); FPE: Final Prediction Error; AIC: Akaike Information Criterion; SC: Schwarz information Criterion; HQ: Hannan-Quinn information criterion

Table 5: Toda-Yamamoto non-causality test result

Null hypothesis	(k+d)	Wald statistics	Probability value
FISC does not Granger-cause INF	2	0.156	0.69
INF does not Granger-cause FISC	2	0.64	0.42

*Indicates the rejection of null hypothesis

Overall, the researchers find no clear evidence of causality relationship between fiscal deficit and inflation in Nigeria either way for the period covered by the analysis. This result is generally in consonance with the one of Onwioduokit (1999) where causality was only established from fiscal deficit to inflation using the ordinary Granger causality (with all its short comings) but not from inflation to fiscal deficit. Another study that reported significance of fiscal deficit for the explanation of inflation in Nigeria is Folorunso and Abiola (2000). The researchers however did not go ahead to investigate the causality link.

Apart from these, most other studies on Nigeria failed to establish a robust causal relation between inflation and fiscal deficit (Egwaikhide *et al.*, 1994; Asogu, 1992; Busari, 2007).

CONCLUSION

In this study, an attempt was made to ascertain the existence of bi-causal relationship between fiscal deficits and inflation. In essence, the study sought to answer the questions: Do fiscal deficits cause inflation or is it inflation that causes fiscal deficits? The econometric evidence was obtained through the use of a more robust Granger non-causality test procedure developed by Toda and Yamamoto (1995) and extended by Rambaldi and Doran (1996) and Zapata and Rambaldi (1997). The study could not confirm that fiscal deficit causes inflation. So also, the empirical results did not confirm a feedback effect between inflation and fiscal deficit in absolute terms. Consequently, it could be concluded that what should be of paramount concern to policy makers in Nigeria as regards inflation should not so much be the level of fiscal deficits but the sources of its financing as well as the absorptive capacity of the economy. On the whole, policies to control inflation should have in-built ability to increase the productive capacity of the economy.

REFERENCES

Ariyo, A., 1993. An assessment of sustainability of Nigeria's fiscal deficit: 1970-90. J. Afr. Econ., 2: 262-282.

Asogu, J.O., 1992. An econometric analysis of the nature and causes of inflation in Nigeria. CBN Econ. Financial Rev., 29: 138-155.

Auerbach, R.D., 1976. A demand-pull theory of deflation and inflation. Manchester School, 44: 99-111.

Busari D.T., 2007. On the determinants of inflation in (Nigeria 1980-2003). CBN Econ. Financial Rev., 45: 35-55.

Dolado, J. and H. Lutkepohl, 1996. Making wald tests work for cointegrated VAR systems. Econ. Rev., 15: 369-386.

Easterly, W. and K. Schmids-Hebbel, 1993. Fiscal deficits and macroeconomic performance in developing countires. World Bank Res. Observer, 8: 211-237.

Egwaikhide, F.O., L.N. Chete and G.O. Falokun, 1994. Exchange Rate Depreciation, Budget Deficit and Inflation-The Nigerian Experience. AERC, Nairobi, Kenya.

Folorunso, B.A. and A.G. Abiola, 2000. The long-run determinants of inflation in Nigeria (1970-1998). The Nig. J. Econ. Social Stud., 42: 37-52.

Friedman, M., 1966. What Price Guide Posts. In: Guidelines, Informal Controls and the Market Place, Shutz, G. and R.Z. Aliber (Eds.). University of Chicago Press, Chicago, pp: 17-39.

Frimpong, J.M. and E.F. Oteng-Abayie, 2006. Bivariate causality analysis between FDI inflows and economic growth in Ghana. MPRA, http://mpra.ub.uni-muenchen.de/351/.

Geweke, J., R. Meese and W. Dent, 1983. Comparing alternative tests of causality in temporal systems: Analytic results and experimental evidence. J. Econ., 21: 161-194.

Granger, C.W.J., 1969. Investigating causal relationships by economic models and cross spectral models. Econometrica, 37: 424-438.

Granger, C.W.J., 1988. Some recent developments in a concept of causality. J. Econ., 39: 199-211.

Gujarati, D.N., 2006. Essential of Econometrics. 3rd Edn., McGraw Hill Companies Inc.,, New York, USA.

Hoover, K., 2008. Causality in Economics. In: The New Palgrave Dictionary of Economics, Durlauf, S.N. and L.E. Blume (Eds.). 2nd Edn., Palgrave Macmillan, America.

Maddala, G.S., 2001. Introduction to Econometrics. 3rd Edn., Wiley and Sons Inc., New York.

Nwankwo, G.O., 1982. Inflation in Nigeria-Causes and Cure. In: Inflaiton in Nigeria, Onitiri, H.M.A. and K. Awosika (Eds.). NISER, Ibadan.

Oluba, M.N., 2008. How years of fiscal deficits emasculated the Nigerian. Economic Reflections, http://www.martinoluba.com/publications/articles/ How%20Years%20of%20Deficit%20Budgeting%20 Emasculated%20the%20Nigerian%20Economy.pdf.

Onwioduokit, E.A., 1999. Fiscal deficits and inflation dynamics in Nigeria: An empirical investigation of causal relationships. CBN Econ. Financial Rev., 37: 1-16.

Rambaldi, A. and H. Doran, 1996. Testing for Granger non-causality in cointegrated systems made easy. Working Papers in Econometrics and Applied Statistics, No. 88. Department of Econometrics, University of New England.

Sims, C.A., 1972. Money, income and causality. Am. Econ. Rev., 62: 540-552.

Tedds, L. and G. Werkneh, 1999. The Canadian Underground and Measured Economies: Granger Causality Results. University of Victoria, Australia.

Toda, H. and P.C.B. Phillips, 1994. Vector autoregressions and causality: A theoretical overview and simulation study. Econ. Rev., 13: 259-285.

Toda, H. and T. Yamamoto, 1995. Statistical inference in vector autoregressions with possibly integrated process. J. Econ., 66: 225-250.

Zapata, H.O. and A.N. Rambaldi, 1997. Monte carlo evidence on cointegration and causation. Oxford Bull. Econ. Statistics, 59: 285-298.