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Implications of Tax Policy on Inflation in Nigeria (1981 - 2012)

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Abstract
This study examined the effect of tax policy on inflation in Nigeria, using aggregate time series data from 1981 to 2012. The Inflation model was estimated with data from Central Bank of Nigeria Statistical Bulletin. Some of the estimation techniques adopted in the study include, Johansen Co-integration test Technique, Ordinary Least Square Technique and Granger Causality/Block Exogeneity Wald Test. The results of the estimates showed that: Tax policy has long run relationship with inflation in Nigeria; Personal income tax rate has negative impact on inflation in the long run, while company income tax rate and consumption and property tax have significant positive relationship with inflation in the long run. In addition, the results of the granger causality/ block exogeneity wald test for the inflation model showed that all the included variables in the model jointly granger cause inflation in Nigeria. Thus government should factor in tax policy when formulating policies that are meant to control inflation.
Keywords: Tax policy, Inflation, Nigeria.

INTRODUCTION

The political, economic and social development of any country depends on the amount of revenue generated for the provision of infrastructures. However, one means of generating the revenue needed for the provision of such infrastructures is through a well structured tax system.

The importance of taxation lies primarily in its ability to raise capital for the public sector, for the development and growth of the economy and also in assisting in the regulation of the consumption pattern, resulting in economic stabilisation and effective redistribution of income.

Attempts at reforming the country's tax system have been made in the past; these include the appointment by the Federal Ministry of Finance in 2002 of a study group to examine the tax system and make appropriate recommendations towards entrenching, a better tax policy and improved tax administration in the country (FRN, 2010). Another Private Sector -driven working group was constituted in 2004 to review the recommendations of the study group. Their recommendations were further reviewed and commented upon by various stakeholders. This resulted in the drafting of the National Tax policy document that addressed both macro and micro issues in tax policy and administration (FRN, 2010). Several reforms have since been carried out including the 2011 amendment of the Personal income Tax Act.

Achieving price stability in Nigeria has remained one of the key objectives of monetary policy since the 1970s. In spite of this target by monetary authorities, a persistent increase in prices has constituted a major macroeconomic challenge. From a single digit level in 1960s, the inflation rate increased to 16% in 1971 only to jump to an all-high level of 33.9% in 1975.The 1975 high level of inflation has been attributed to the oil boom of the early 1970s and the increases in salaries and wages of both government and private workers (Maku and Adelowokan, 2013).

The level of inflation in Nigeria continued to show a random trend. From 20.5% in 1981, it rose to 40.9% in 1984, and fell to 3.2% in 1985. From 1985 it rose again to 49% in 1989, falling to 7.9% in 1990. The upward trend continued in 1990, reaching an all time high of 72.7% in 1995. Ever since 1995, it has continued to show a downward trend. From 29.3% in 1996, it fell to 6.9% in 2000 and slightly rose to 18.8% in 2001. It also slightly fell to 17.8% in 2005 and 5.4% in 2007. It has remained at an annual average of about 11.5% from 2008 to 2012.

Statement of the problem

Tax policy is concerned with the design of a tax system that is capable of financing the necessary level of public spending in the most efficient and equitable way possible. In designing and implementing the tax policies, successive Nigerian governments expected to achieve economic stabilisation as promised by economic theory. In particular they expected to achieve sustained low levels of unemployment and inflation, facilitate economic growth and development, encourage investments, and inflow of foreign direct investments. But the objectives of the government were yet to be achieved. The Nigerian economy exhibited instability in the major economic aggregates unemployment and price level (Inflation). As at 2012, unemployment rate was 25 percent, inflation, 12.2 percent and fiscal deficit stood at -2.42 percent of Gross Domestic Product.

More recently, studies have turned to investigate the effect of tax policy on inflation. For instance, Gelardi (2014) in his study conducted in UK and Canada found no significant relationship between Indirect tax and Inflation rate in the UK, whereas the effect was significant in Canada. Kleiman (1993) in his study using a sample of 51 countries suggested that the overall burden of central government taxation, especially of indirect domestic taxes raises the general price level. Among the studies conducted in Nigeria, Olatunji (2013), found no relationship between Value Added tax and Inflation rate, while Atan (2013), found a negative relationship between taxes and

inflation rate.

The results from these studies are mixed and hence, hard to draw policy prescriptions from. The results exhibited significant variations across countries. Even among the studies carried out in Nigeria there still exists differences. Most of the studies carried out, used data for central government instead of general government, which is not appropriate in the Nigeria case. Overall government activity is relevant from an economic point of view, and general government data are more homogeneous than Central government data, which vary with the degree of fiscal centralisation of the country.

Given that intensified tax competition and increased demand for public services have made it more important to raise taxes in efficient ways there is surely a need for more clarity about how different types of taxes influence the different inflation rate in Nigeria.

Objective of the Study

The general objective of the study was to evaluate the impact of tax policy on inflation in Nigeria.

The specific objectives include to:

i Examine the effect of average tax rate on inflation rate in Nigeria.
ii. Examine the relationship between the personal income tax rate and inflation.
iii. Ascertain the effect of company income tax rate on inflation and inflation rate.
iv Determine the impact of indirect tax rate on inflation rate.

Statement of Hypotheses

Ho[1:] There is no significant negative relationship between average tax rate and inflation rate in Nigeria.

H_0^2: There is no significant negative relationship between personal income tax rate and inflation rate in Nigeria.

H_0^3: There is no significant negative relationship between company income tax rate and inflation rate in Nigeria.

H_0^4: There is no significant negative relationship between indirect tax rate and inflation rate in Nigeria.

REVIEW OF RELATED LITERATURE

Theoretical Framework

Keynes General Theory of Employment, Interest and Money

This theory was propounded by John Maynard Keynes, a British economist in 1936. His major work, entitled 'the general theory of employment, interest and money' was first published in 1936.

Keynes advocated the use of fiscal policy by central government to manage the level of aggregate demand to preserve full employment and avoid inflation. This involves the manipulation of government spending and taxation in order to guide the economy's performance. When inflation exists, government spending should be reduced or taxes increased. These policies will reduce aggregate demand and thus reduce inflationary pressures.

Another approach would be to use monetary policy: policy intended to alter the supply of money in order to influence the level of economic activity. Inflation calls for a reduction in the money supply. By making it more difficult to borrow funds, the government can reduce spending and thereby combat inflation.

Review of Previous Studies

Ikpeh and Nteegah (2013), examine the economic impact of Value Added tax on the level of aggregate prices, using partial equilibrium analysis. The analysis was carried out by applying multiple regression analysis in static form to data for the 1994 – 2010 period. The Results reveal that VAT exerts a strong upward pressure on price levels, most likely due to the burden of VAT on intermediate inputs.

Subhani and Ali (2010), Investigate the relationship between tax rates, inflation rates and the balance of trade in Pakistan by utilizing the economic survey and current scenario of increasing tax rates because of increasing inflation rates and decreasing of balance of trade to represent the economic position of Pakistan. The study used annual time series data for the variables of study and the direct and indirect tax rates for the period 1979-2009.The research implement regression model to test the effect of tax rates progression on inflation rates and another 2-stage least square test of tax rate on balance of trade. Results show that there was no significant association between tax rates and inflation rates in Pakistan, while the impact of tax rate on balance of trade was significant.

Kleiman (1993), examines the extent to which international differences in taxation may explain departure of national price levels from Purchasing Power Parity (PPP).Investigating a sample of 51 Countries for which price level data were available from stage IV of the project on the international comparison of purchasing powers and the real products for 1980. The study suggests that the overall burden of central government taxation, especially of indirect domestic taxes raises the general price level. Consistent with the accepted view that direct tax cannot

be shifted forward; no such effect is associated with the direct tax burden. Contrary to expectations, however, the burden of domestic indirect taxes expresses itself in the prices of tradables rather than of non tradables.

Olatunji (2013), determines the impact of VAT on the revenue generation in Nigeria and the perception of the citizen on VAT and Inflation. Primary data were obtained by the use of oral interviews and structured questionnaire and analysed using Pearson and Spearman Rank correlation analysis. Findings showed that VAT has no impact on the inflation rate in Nigeria.

Koutsouvelis and Papastathopoulos (2013), examine the effects of indirect taxes on consumer prices, with evidence for Greece. The empirical investigation, based on simple log linear regression technique with dummy variables showed that although after the imposition of the indirect taxes at the beginning of 2010, the Harmonized index of consumer price with constant taxes (CT HICP) exhibited a downward Kink, this is rather the outcome of the recession during this period than of any absorption of the imposed indirect taxes on the part of the producers. The empirical investigation showed that the contribution of indirect taxes to the inflation represented by HICP is at least 82% in 2010 and 60.7% in 2011.

Gelardi (2014) uses graphs and statistical methods to ascertain whether inflation in the UK and Canada was affected by the introduction or changes in rate of the value Added Tax. Results showed that the introduction of a VAT in the UK showed no significant effect on the rate of change of CPI, whereas the introduction of General Sales Tax (GST) in Canada did have a significant increase in the rate of CPI. It was also found that when the tax rates were changed substantially, inflation was affected; however, modest changes in the rate did not affect inflation.

Atan (2013), examines the attempts by successive government in Nigeria to use Taxation to influence macro economic aggregates, especially inflation and Unemployment. The study used secondary data, covering the period 1970 to 2008. Data gathered was analysed by means of both descriptive and inferential statistical techniques. The Ordinary Least Square (OLS) method was used for the estimations Results indicated that Taxes have a negative effect on the inflation rate in line with theory, but with insignificant coefficient. The effect of tax policy on unemployment was insignificantly negative. The study concluded by stating that Tax policy was not effective in controlling inflation, and lacking unemployment problems in the country over the period covered by the study.

Economic theory presents taxation as a major tool of macroeconomic management. The idea is that taxation, usually in combination with some other policy tools, can be used to steer the economy in the direction that is desired. It is argued that if, for instance, the economy is experiencing a depression, the government could use tax policy to stimulate the system and cause a recovery. If, on the other hand, the economy is experiencing inflationary pressures, tax policy could be used to reduce the pressures and stabilize the system. These arguments make taxation a particularly important management tool of economic management (Atan, 2013).

METHODOLOGY

Data and Variable Description

This study was based on secondary data. A sample of annual observations on time series covering the period from 1981 to 2012 was employed. Series are in current domestic currency. Most series were collected from the central Bank of Nigeria statistical bulletin (various editions) while the others were obtained from the Bureau of National statistics (abstract of statistics), and the World Bank (International Development Indicators).

Model specification

Linear regression model was designed to test the null hypothesis proposed in this study. Therefore, the model for the study is:

Tax Policy and Inflation Model

INF=f(INT,EXR,MS,TTR,PIT,CIT,CPT). (7)

The equation from the model becomes

$$LnINF=a+a_1LnINT_t+a_2LnEXR_t+a_3LnMS_t+a_4LnTTR_t+a_5LnPIT_{t+}a_6LnCIT_t+a_7LnCPT_t+\in_t \quad (8)$$

Where:

INF = Annual inflation rate

INT = Interest rate

EXR = Exchange rate

MS = Money supply

TTR = Total Tax Revenue

PIT = Personal Income Tax

CIT = Company Income Tax

CPT = Consumption and Property Taxes

$\in_t$ = Random error term

a = Constant

$a_1, a_2, a_3, a_4, a_5, a_6$ and a_7 are the coefficients of the regression equation.

The specification of the econometric model adopted in this study, including control variables and the classification of taxes, builds on theoretical propositions.

The final regressors are;

- Inflation rate as the dependent variable.

The explanatory variables include:

- Real interest rate
- Real exchange rate
- The total tax revenue as a share of GDP. The total tax revenue comprises of all tax collected at the federal, state and local government levels.
- Personal income tax expressed as a share of total tax revenue. The personal income tax is collected mainly at the state level, and represents taxes on income or profits of individuals and unincorporated bodies.
- Company income tax expressed as a share of total tax revenue, and represents taxes on profits of incorporated business organizations.
- Indirect or consumption and property tax expressed as a share of total tax revenue. The indirect taxes include the custom and excise duty and the value added tax revenue. Property taxes are collected at the local government level.

Estimation Procedures

The characteristics of the time series data used in the analysis are first evaluated. The summary statistics of the various tax policy variables and inflation in Nigeria are estimated. The correlation analysis that shows the extent of linear relationship that exist among variables is employed to estimate the nature of linear association among tax policy variables and inflation in Nigeria.

- Thereafter, the stationarity properties of the employed data are examined. Two types of unit root tests are carried out, namely, Augmented Dickey-Fuller test and Phillips-Perron test.
- Trace and Maximum Eigen value test of Johansen Co-integration test are carried out based on the assumption of linear deterministic trend.
- Thereafter, long run impact analysis and granger causality test are estimated. The long run analysis is estimated using Ordinary Least Square (OLS) estimation technique, while the causality test is carried out using Vector Autoregressive (VAR) Causality/Block Exogeneity Wald Tests.

DATA PRESENTATION AND ANALYSIS

Statistical Properties of the Variables

The characteristics of the time series data used in the analysis is presented in Table 4.1. The table provides clues about the mean, median, standard deviation, skewness as well as the Jarque-Bera statistics of each variable. The variables considered here are Inflation Rate (INF), Log of Total Tax Revenue (LTTR), Log of Personal Income Tax (LPIT), Log of Company Income Tax (LCIT), Log of Consumption and Property Tax (LCPT), Interest Rate (INT), Log of Exchange Rate (LEXR) and Log of Money Supply (LMS). The variables are systematically distributed.

The outcomes of each variable's mean, median as well as values for their maximum and minimum suggest that the variables are well behaved. The mean values of all the variables employed are not too different from their respective median values. This is an indication of absence of excessive outliers and stability of the variables employed, which are essential for the analyses carried out in this study. The value of the standard deviation of each of the variables is a further proof of the fact that the distribution of the variables is approaching normal distribution. In addition, the skewness, kurtosis and standard deviation statistics show that the variances of the variables are not unnecessarily large. All the employed variables have 32 data point observations.

Table 4. 1. Summary Statistics of the Variables Employed

	INF	LTTR	LPIT	LCIT	LCPT	INT	LEXR	LMS
Mean	20.64	-0.84	-1.21	-1.05	-0.59	-0.04	2.12	1.30
Median	12.71	-0.83	-1.05	-1.05	-0.52	-1.40	2.02	1.30
Maximum	72.73	-0.63	-0.78	-0.69	-0.27	25.13	2.81	1.81
Minimum	3.23	-1.09	-2.39	-1.44	-1.18	-32.06	1.76	0.30
Std. Dev.	17.99	0.13	0.40	0.16	0.26	13.80	0.28	0.32
Skewness	1.44	-0.39	-1.85	-0.04	-0.70	-0.25	1.29	-0.76
Kurtosis	4.00	2.43	5.47	2.71	2.36	2.62	3.48	4.27
Jarque-Bera	12.33	1.26	26.44	0.13	3.17	0.53	9.13	5.21
Probability	0.00	0.53	0.00	0.94	0.21	0.77	0.01	0.07
Sum	660.54	-26.8	-38.6	-33.6	-18.9	-1.42	67.74	41.71
SSq. Dev.	10031.18	0.52	4.99	0.83	2.14	5902.80	2.43	3.20
Observations	32	32	32	32	32	32	32	32

Source: Author's Computation

Correlation Analysis

Correlation indicates the degree of association between variables; it assesses the extent and strength of the association between two variables. The correlation matrix of the variables employed in this study is presented in Table 4.2. The table presented all possible bivariate combinations of all the employed variables. The correlation analysis also gives insight into understanding the econometric results and other analyses that are later carried out in this study. The result as presented in Table 4.2 showed that most of the variables employed are highly correlated. The directions of the correlation for some are positive, while negative for some variables.

Table 4.2. Correlation Matrices of the Variables Employed

Correlation	INF	LTTR	LPIT	LCIT	LCPT	INT	LEXR	LMS
INF	1.00							
LTTR	-0.10	1.00						
LPIT	-0.40	-0.42	1.00					
LCIT	-0.17	-0.78	0.59	1.00				
LCPT	0.29	0.35	-0.44	-0.44	1.00			
INT	-0.43	-0.12	0.26	0.46	-0.11	1.00		
LEXR	0.14	0.58	-0.64	-0.45	0.58	0.01	1.00	
LMS	-0.18	-0.40	0.20	0.30	-0.56	0.00	-0.64	1.00

Source: Author's Computation

Unit Root/ Stationarity Test

The variables employed in the analysis are tested for stationarity using two unit root tests, namely, Augmented Dickey-Fuller test and Phillips-Perron test, to determine whether they are stationary or non-stationary series. The two tests are employed to reinforce one another, to ensure their robustness and boost confidence in their reliability. The tested null hypothesis for both unit root tests is the presence of a unit root. The results of the unit root tests as presented in Table 4.3 indicated that LEXR, LPIT and LCPT are stationary at after first difference. This implies that they are integrated of order one. The other variables, namely, INF, INT, LCIT, LMS, and LTTR are stationary at level, indicating that they are integrated of order zero

Table 4.3. The Unit Root Test Results for the Selected Variables

Variables		Augmented Dickey-Fuller test	Phillips-Perron test	Conclusion
INF	Level	-2.8257***	-2.8062***	I(0)
INT	Level	-4.7460*	-4.7460*	I(0)
LCIT	Level	-2.8837***	-2.8837***	I(0)
LCPT	Level	-1.2906***	-1.1575***	I(0)
LEXR	Level	-1.9063	-1.9659	I(1)
	1st Difference	-4.1837*	-4.0739*	
	1st Difference	-3.4620**	-3.4456**	
LMS	Level	-3.1589**	-3.2308**	I(0)
LPIT	Level	-2.484637	-2.3462	I(1)
	1st Difference	-5.6651*	-5.6651**	
	1st Difference	-8.1589*	-8.9969 *	
LTTR	Level	-2.7008***	-2.7062***	I(0)
	1st Difference	-5.0478*	-5.0478*	
	1st Difference	-6.6527*	-6.6527*	
LCPT	Level	-1.2906	-1.1575	I(1)
	1st Difference	-5.5572*	-8.2208*	

Source: Author's Computation

Note: The critical values are -3.64, -2.95 and -2.61 at 1%, 5% and 10% significance levels respectively; Significance of coefficients are reported using p-value. * denotes significant at 1%, ** denotes significant at 5%; *** denote significant at 10%.

Tests for Co-integration

The INF model, which is specified to determine the impact of tax policy on inflation in Nigeria, is tested for the null hypothesis of no co-integration assuming quadratic deterministic trend. Comprised in the INF model are INF, INT, LEXR, LMS, LTTR, LPIT, LCIT and LCPT. Table 4.4 illustrates the outcome of the co-integration test for the INF model. There are three co-integrating relations among the variables in the INF model as indicated by the Trace and Max-Eigen Statistic. This implies that there are long run relations among the variables employed in the INF model.

Table 4.4 Test of Co-integration among INF, INT, LEXR, LMS, LTTR, LPIT, LCIT and LCPT

Hypothesized		Trace	0.05		Max-Eigen	0.05	
No. of CE(s)	Eig-value	Statistic	C. Value	Prob.**	Statistic	C. Value	Prob.**
None	0.936765	256.7634	159.53*	0.0000	82.82703	52.3626*	0.0000
At most 1	0.897096	173.9364	125.615*	0.0000	68.21866	46.2314*	0.0001
At most 2	0.806555	105.7177	95.7537*	0.0087	49.28282	40.0776*	0.0035
At most 3	0.487601	56.43492	69.81889	0.3607	20.05953	33.87687	0.7525
At most 4	0.419012	36.37540	47.85613	0.3777	16.29074	27.58434	0.6410
At most 5	0.319696	20.08466	29.79707	0.4171	11.55645	21.13162	0.5918
At most 6	0.237092	8.528213	15.49471	0.4108	8.118545	14.26460	0.3668
At most 7	0.013563	0.409668	3.841466	0.5221	0.409668	3.841466	0.5221

Trace test indicates 3 co-integrating eqn(s) at the 0.05 level
Max-eigenvalue test indicates 3 co-integrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Results of the Estimated Models

The estimated INF model, which is specified to determine the impact of tax policy on inflation in Nigeria, is presented in Table 4.5. The result of the model as presented in the table show that INF has inverse relationship with LEXR, INT and LPIT, while LTTR, LCIT and LCPT have positive relationship with INF. Out of all the explanatory variables included in the INF model, only three, namely, INT, LCIT and LCPT are significant. A percentage increase in LMS, LTTR, LCIT and LCPT will lead to percentage increase of about 1.362, 12.385, 65.614 and 29.639 in INF, respectively. Also, a percentage increase in INT, LEXR and LPIT will result in about 0.912, 12.16 and 12.16 decrease in INF. As indicated by the coefficient of Adjusted R^2, only 53 per cent of the variations in the INF are captured by the exogenous variables included in the model. The coefficient of the F-statistic for the INF model suggests that the model is statistically significant. The coefficient of Durbin-Waston also shows that the model is free of auto regression.

Table 4.5 Estimated Results of the INF Model

Variable	Co-eff.	Std. Error	t-Statistic
C	126.704***	72.16164	1.755836
INT	-0.91235*	0.202284	-4.51023
LEXR	-12.1559	15.2795	-0.79557
LMS	1.361756	10.07603	0.135148
LTTR	12.38511	31.45077	0.393794
LPIT	-12.1579	9.052405	-1.34306
LCIT	65.61416**	29.00521	2.262151
LCPT	29.6394**	11.08712	2.673317
Adj. R^2	0.531244		
F-stat.	6.018932		
D-W stat.	1.6548		

Note: * denotes significant at 1%, ** denotes significant at 5%; *** denote significant at 10%

Granger Causality Test

Table 4.6 presents the granger causality test for the INF model. As reported in the table, the variables that granger-cause INF are LMS, LTTR and LCIT as implied by the significance of their respective Chi-Square coefficients. Furthermore, the overall significance of the causal relationship among all the exogenous variables in the INF model and INF, which is the dependent variable, is also affirmed by the significance of the Chi-Square coefficient. This suggests that all the exogenous variables jointly granger causes the dependent variable, INF.

Table 4.6 Results of the Granger Causality/Block Exogeneity Wald Test for INF Model

Variable	Chi-sq	df	Prob.
INT	0.612390	2	0.7362
LEXR	3.547853	2	0.1697
LMS	6.227428**	2	0.0444
LTTR	7.501763**	2	0.0235
LPIT	2.226311	2	0.3285
LCIT	0.383742	2	0.8254
LCPT	8.106158**	2	0.0174
All	27.39545**	14	0.0171

Note: * denotes significant at 1%, ** denotes significant at 5%; *** denote significant at 10%

Validation of Hypotheses

As illustrated in Table 4.5, there are three significant long-run relationships among the variables of tax policy and inflation in Nigeria. The regression result presented in Table 4.5 showed that two tax policy variables, namely, company income tax and consumption and property tax, have significant impact on inflation in Nigeria. In addition, the results of the granger causality/ block exogeneity wald test for the inflation model presented in Table 4.6 showed that all the included variables in the model jointly granger cause inflation in Nigeria.

Discussion of Findings

i The result of the econometric analysis showed that Personal Income Tax is negatively correlated with inflation. This means that an increase in the Personal Income tax rate causes a reduction in inflation rate. According to Keynes theory, when inflation exists government spending should be reduced or taxes increased. These policies will reduce aggregate demand and thus reduce inflationary pressures. Since Personal Income Taxes cannot be shifted forward; it is borne by the taxpayer and this reduces aggregate demand thereby negatively impacting the inflation rate.

ii The result also showed a strong positive relationship between Indirect or Consumption Taxes and Inflation. This means that an increase in Consumption Taxes leads to an increase in Inflation Rate. Consumption or Indirect taxes like Value Added Tax or Custom and Excise Duties are levied on the goods and services and borne by the final consumers. This has the effect if increasing the prices of goods and services affected. Indirect taxes or Consumption Taxes are therefore expected to have a strong impact on the price of goods and services and hence on the rate of Inflation.

iii Findings also indicated Positive relationship between Company Income Tax, Total Tax Burden and Inflation Rate. This result means that an increase in Company Income Tax leads to corresponding increase in Inflation rate. The result suggests that the company Income Tax can be shifted to the final consumer of goods and services in form of higher prices.

SUMMARY AND CONCLUSION

Summary

The specific objective of this study was to explain the effect of tax policy on inflation in Nigeria. The study used aggregate time series data to examine the effect of tax policy on inflation in Nigeria between 1981 and 2012.

The analysis carried out in the study began with the summary statistics of the variables employed. It also presented the correlation analysis of the employed variable to show the nature of linear relationship that exist among tax policy variables, inflation and the other control explanatory variables.

Thereafter, co-integration relations among the variables were verified using unrestricted co-integration Trace and Maximum Eigen value of Johansen co-integration test. The model was estimated through the ordinary least square estimation technique to ascertain the extent of the impact of the independent variables on the dependent variable. In addition, vector autoregressive granger causality/block exogeneity wald tests was carried out to understand the causal relationship that exist among the variables employed.

The results revealed that Company income tax and consumption and property tax have positive relationship with inflation in Nigeria in the long run while personal income tax rate showed inverse relationship with inflation.

All the tax policy variables, namely, average tax rate, personal income tax rate, company income tax rate and consumption and property tax rate, jointly granger cause inflation in Nigeria.

Conclusion

The findings have shown that the tax policy has mixed effect on inflation in Nigeria. For instance, personal income tax rate has negative impact on inflation while company income tax and consumption and property tax rates have strong positive effect on inflation in Nigeria.

The study thus concludes that it is imperious for the government to factor in tax policy when formulating policies that are meant to control inflation in Nigerian economy.

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APPENDICES

Appendix 1

Annual time series data for Inflation Rate , Real interest rate, Real exchange rate and Money supply growth from 1981 - 2012.

YEAR	INFLATION RATE %	REAL INTEREST RATE	REAL EXCHANGE RATE	MONEY SUPPLY (M^2)GROWTH
1981	20.555	-6.28	381.03	5.9
1982	5.882	6.75	390.15	9.5
1983	22.222	-5.31	462.16	14
1984	40.909	-5.73	638.54	11.6
1985	3.226	5.54	572.54	9
1986	6.25	11.63	312.6	2
1987	11.765	-24.07	99.63	22.4
1988	34.211	-3.92	100.15	32.9
1989	49.02	-16.58	89.17	12.9
1990	7.895	16.93	82.7	32.7
1991	12.195	-0.11	70.11	37.4
1882	44.565	-32.06	58.15	63.3
1993	57.143	-13.75	63.72	53.8
1994	57.416	-5.7	118.33	34.5
1995	72.729	-22.91	100.32	19.4
1996	29.292	-12.46	123.52	16.2
1997	10.673	16.21	143.33	16
1998	7.862	25.13	159.43	22.3
1999	6.618	7.13	80.3	33.1
2000	6.938	-12.23	81.37	48.1
2001	18.869	11.47	90.46	26.4
2002	12.883	-5.1	90.27	18.8
2003	14.033	8.56	85.32	13.5
2004	15.001	-1.28	87.58	20.7
2005	17.856	-1.51	100	22.6
2006	8.218	-2.22	106.95	36.4
2007	5.413	11.57	104.81	64.4
2008	11.581	4.05	116.39	53.4
2009	12.543	23.82	108.97	14.5
2010	13.72	-7.25	117.92	10
2011	10.841	13.36	119.74	13.1
2012	12.217	14.9	135.6	17.4

Source: World Bank National Accounts Data (For the Various Years)

Appendix 2

Annual Time series data for Total Tax Revenue, Personal Income Tax, Company Income Tax and Indirect Tax from 1981 – 2012

YEAR	INDIRECT TAX (₦ MILLION)	PERSONAL INCOME TAX (₦ MILLION)	PROPERTY TAX (₦ MILLION)	COMPANY INCOME TAX (₦ MILLION)	TOTALTAX REVENUE (₦ MILLION)
1981	4297.82	142.6	-	403	11169.22
1982	4799.7	74.9	-	550	10271
1983	5068.77	38	-	561.5	9415.17
1984	4914	58.8	-	787.2	10521.4
1985	5862.44	1584.1	-	1004.3	15161.84
1986	6004.37	1860.6	-	1102.5	13778.47
1987	6912.19	1954.5	-	1235.2	22605.89
1988	9100.8	2178.8	-	1550.8	19644.8
1989	11901.63	1602.3	-	1914.3	26016.33
1990	14279.8	2761.7	-	2997.3	46947.8
1991	17242.88	3181.2	-	3827.9	62867.88
1992	23204.69	5244.7	-	5417.2	85343.29
1993	31910.45	5726.2	1035.6	9554.1	107433.95
1994	46323.45	10929.8	1205.9	12274.8	113536.65
1995	76294.72	16993	2110.8	21878.3	160134.72
1996	97513.33	19467	2211.1	22000	217858.43
1997	106000	27368.2	2506.9	26000	230449.2
1998	109444.5	29213.9	3331.6	33300	233290
1999	119798.2	34109	4683.8	46200	369091.02
2000	136890	37788.5	7152.9	51100	758031.36
2001	186605.9	59416	6020.4	88700	979942.28
2002	219139.5	89606.9	10420.8	89100	800467.24
2003	259232.2	118753.5	20175.5	114800	1151461.2
2004	268120	134195.3	22407.8	130100	1738323.1
2005	169675.5	122737.8	24042.5	162200	2383555.76
2006	173174	125228.9	23225.1	244900	2604828.01
2007	314545.5	305706.3	21300	327000	2469151.76
2008	404530	353063.7	22731.4	416800	4009425.1
2009	479308.4	461224.5	26064.2	568100	2791197.1
2010	549258.3	420454.8	26150	600000	4595863.17
2011	649621.6	509290.9	27329.5	659596	4961655.99
2012	672150.8	548120.3	26615.5	816520	5278710.61

Source: CBN Statistical Bulletin (2012 Edition)

Appendix 3

Average Tax Rates, for Total Tax Revenue, Personal Income Tax, Company Income Tax and Indirect Tax from 1981 – 2012

YEAR	Total Tax Rev/GDP	Indirect Tax Rev/Total Tax Rev	Personal Income Tax/ Tax Rev	Company Income Tax/ Tax Rev
1981	0.234550604	0.384791418	0.01276723	0.0360813
1982	0.209316297	0.467306007	0.007292377	0.05354883
1983	0.17728553	0.538362026	0.00403604	0.0596378
1984	0.176466849	0.467048111	0.00558861	0.07481894
1985	0.223268499	0.386657556	0.104479404	0.06623866
1986	0.199263482	0.435779154	0.135036764	0.08001614
1987	0.214838242	0.305769426	0.086459768	0.05464063
1988	0.14124282	0.463267633	0.110909757	0.07894201
1989	0.120002884	0.457467675	0.061588241	0.07358071
1990	0.175473002	0.304163347	0.058824908	0.06384325
1991	0.201409407	0.274271695	0.050601356	0.06088801
1882	0.160234834	0.271898236	0.061454158	0.06347541
1993	0.157097084	0.297023892	0.053299725	0.08892999
1994	0.126171011	0.408004376	0.096266712	0.10811311
1995	0.082833521	0.476440837	0.1061169	0.13662434
1996	0.080607129	0.447599526	0.089356193	0.10098301
1997	0.082245344	0.459971221	0.11876023	0.11282313
1998	0.086134744	0.469134982	0.125225685	0.1427408
1999	0.115557073	0.324576361	0.092413519	0.12517238
2000	0.165432192	0.180586144	0.04985084	0.06741146
2001	0.207391417	0.190425379	0.060632143	0.09051554
2002	0.115801952	0.273764533	0.111943245	0.11130999
2003	0.13567302	0.225133248	0.103132872	0.09969941
2004	0.152336597	0.154240601	0.077198134	0.07484224
2005	0.163568257	0.071185857	0.051493572	0.06804959
2006	0.140311601	0.066481936	0.048075688	0.09401772
2007	0.119529114	0.127390088	0.123810251	0.13243414
2008	0.165021846	0.100894764	0.088058435	0.10395505
2009	0.112574423	0.171721445	0.165242541	0.20353274
2010	0.135233086	0.119511465	0.091485498	0.13055219
2011	0.132629631	0.130928392	0.102645337	0.13293868
2012	0.130196764	0.12733239	0.103836014	0.15468171

Source: Author's Computation