

# **Econometric Analysis of the Effectiveness of Fiscal Policy in Economic Growth and Stability in Nigeria (1985-2003)**

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## **Abstract**

This work focused on the Econometric Analysis of the Effectiveness of Fiscal Policy in economic growth and stability in Nigeria between 1985 -2003. The study set four major objectives which include investigating the effect of fiscal policy on Gross Domestic Product , examining the effectiveness of fiscal policy in the control of inflation, determining the relationship between government spending and tax and to determine the effect of budget on investment or employment generation. The study only utilized secondary data from the central bank of Nigeria. The study specified a workable model in which GDP, inflation and balance of payment were the dependent variables while government expenditure , tax, capital formation ,foreign exchange rate, household consumption and money supply were independent variables. Ordinary least square [OLS] Technique, T-test, F-test were used as analytical techniques. The study revealed that fiscal policy were effective in the control of the level of inflation and balance of payment since the coefficient of determination ( $R = 0.75$  or 75%) was significant . on the flip side ; the study showed that fiscal policy was not effective in the control of GDP since the coefficient of the determination [ $R^2 = 48\%$  ] was not significant . This was confirmed by the F-test and T-test value . The study recommended that government should redirect its expenditure towards productive venture so as to increase GDP. Also, infant industries should be given tax concession since increase in tax decreases GDP and vice versa

## **1.1 Introduction**

Fiscal policy is a stabilization policy which strengthens government operations through the instrumentality of taxation (Revenue) and expenditure (Gbosi, 2001). Operations of fiscal policy is aimed at economic growth, the desire to attain economic growth is the focus of every nation (Okidim, 2012). Economic growth refers to a long term rise in capacity to supply increasingly diverse economic goods and services to its population (Jhingan, 2003). To achieve high level of economic growth, fiscal policy must be directed to the growth sector (real sector) of every economy because it is capable of increasing tangible output. To this end, fiscal policy could be defined in terms of macro economic framework as policy that focuses on macro economic activities, using the instrumentality of government budget. Fiscal policy involves the variation of government expenditure and tax or revenue in order to achieve macroeconomic objectives. Through careful spending and revenue generation (taxation) the rate of inflation and unemployment can be reduced which are some of the reasons for fiscal policy (Budgeting).When government budget surplus, it means it is aimed at controlling inflationary pressure, it does this by increasing taxes and reducing expenditure which may reduce income and aggregate spending (Nwikina, 2005) conversely, when government budgets deficit, it means it spends more in excess of revenue or taxes, in which case, the government will finance the budget through borrowing or increase in taxes. The implication of government borrowing is “crowding out” which edges out private borrowers because of high interest rate (Okidim, 2012). Fiscal policy is used as tool in smoothening the running of the economy during recession this is done through the introduction of passive fiscal policy or automatic stabilizer. Automatic stabilizers are national mechanisms which help the gross product (GNP) to respond to shock during economic depression. Automatic stabilizers are also known as shock absorbers.

## **1.2 Problem Statement**

More often than not, people commonly speak or argue that the Nigeria economy has myriad or hydra-headed economic problems. This means that people clearly observe the macro economic instability in Nigeria.

Although, in 2004 the fiscal operations of the federal government improved significantly, this was because the overall deficit was reduced from N202.7 billion (2.8%) to N142 billion in gross domestic product in 2004. Even though the economy was adjudged to be fairly good it however, fluctuated because the real gross domestic product (GDP) was unstable(CBN 2004). Also, other economic indicators such as unemployment, balance of

payment, exchange rate, prices (urban consumer price index) show some symptoms of ailing economy. It is against this backdrop that this research is carried out to find out whether the fiscal policy in Nigeria is effective in economic growth and stability.

### 1.3 Objectives of the study

The general objective of the study was the econometric analysis of the effectiveness of fiscal policy in economic growth and stability in Nigeria. While the specific objectives include to:

- (1) Investigate the effect of fiscal policy on gross domestic product (GDP).
- (2) Examine the effectiveness of fiscal policy in control of inflation.
- (3) To determine the relationship between government spending and tax (revenue).
- (4) To determine the effect of Budget on investment or employment generation.

## 2.0 Literature Review

It is a known fact that variation in government expenditure, taxes and money supply affect economic activities. This has been backed up by different literatures and theories that there is a relationship between macroeconomic policies objectives such as interest rate, inflation, balance of payment, exchange rate and economic output level (Gross Domestic Product). Fiscal policy started in the 1950s, when there was economic depression, at that time market economy could no longer check economic depression (Gbosi 2001). Lord Keynes opposed to this school of thought because he believed that market economy which is driven by the forces of demand and supply could not bring about full employment. To this end, Lord Keynes held that the only way to eliminate low productivity and unemployment was through government intervention, this view was opposed by the classical economists who believed that an economy functions well if left to operate itself (Colander, 1998). The classical economist views were based on the long run and not in a short run, that in the long run market that is left to operate itself will device to adjust wages and prices by itself so as to eliminate unemployment. The classical economists further argued that government policies, economic institutions, labour unions, can distort the working of a market economy (Okunroumo, 1993), in real practice, John Kennedy in 1961 adopted the principles of Keynesian economics, in which fiscal policy became one of America's main weapon for fighting recession or inflation. He proposed substantial tax cut to lift the economy out of slump and much later the economy grew rapidly. Also, in 1981-1982, the American economy was pushed out of recession when president Ronald Reagan adopted another fiscal policy measure when congress passed his proposed tax cut bill (Samuleson and Nordaus 2005). According to (Gbosi, 2002) that the most effective and popular method of controlling business fluctuation or maintaining economic stability had been the deliberate use of fiscal policy. The monetarist believe that government intervention can bring about deliberate alteration of interest rate by the central bank which may not be healthy for any economy.

## Methodology

### 3.1 Study Area

The study was designed to cover the federal Republic of Nigeria. Nigeria is located on the gulf of Guinea in West Africa and occupies an Area of 923, 789 square kilometer and is bordered on the east by Republic of Cameroon, on the west by the Republic of Benin, and on the north by Niger Republic. Nigeria has a population of 151. Million people it has the largest population in Africa, it is also one of the largest producers of oil in the world her economy depends on oil which supply about 90% of her foreign exchange. Nigeria had her independence on October 1<sup>st</sup> 1960. 90% of its population resides in the rural areas and engage in fishing and farming.

### 3.2 Method of data collection

This research work only utilized secondary data. It utilized data from the Central Bank of Nigeria (CBN) and the Nigeria Bureau of statistics (NBS).

### 3.3 Method Of Data Analysis

Models were specified and ordinary least square (ols) regression was used to analyze the models. Estimation of parameters of the models required data on government expenditure, tax receipt, domestic investment, foreign exchange rate, Gross Domestic product at current prices, money supply, inflation rate, unemployment, household consumption and balance of payment. Some criteria such as coefficient of determination ( $R^2$ ) T-test, f-ratio and Durbin Watson (DW) statistics were used. Durbin Watson statistics was use to be able to examine the extent of serial correlation among variables.

### Model specification

The following models were specified

$$GDP = F(x_1, x_2, x_3, x_4, x_5) + U_t$$

Where

$$GDP = \text{Gross Domestic Product (y)}$$

- $X_1$  = Government Expenditure
- $X_2$  = Government Revenue (Tax)
- $X_3$  = Money Supply
- $X_4$  = Foreign exchange rate
- $X_5$  = Domestic Investment
- $U_t$  = Stochastic (error) variable

Where GDP is the dependent variable and  $X_1, \dots, X_5$  are independent variables which influence growth (Dependent). explicitly =  $b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_5 + U_t$

**Model 2**

$$INF = F(X_1, X_2, X_3, X_4, X_5, X_6) + U_t$$

Where inf = Inflation (Dependent variable)

- $X_1$  = Government expenditure
- $X_2$  = Government Tax
- $X_3$  = Money Supply (Ms)
- $X_4$  = Unemployment
- $X_5$  = Household Demand (Consumption)
- $X_6$  = Foreign Exchange Rate

Where  $X_1, \dots, X_5$  are the independent variables which affect inflation explicitly, the model could be rewritten as  $INF = F(b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_5 + b_6 X_6)$  where  $b_1, \dots, b_6$  are coefficients.

**Model 3**

$$Bop = f(X_1, X_2, X_3, X_4, X_5, X_6)$$

Where

- Bop = Balance of Payment
- $X_1$  = Government Expenditure
- $X_2$  = Government Revenue (Tax)
- $X_3$  = Money Supply
- $X_4$  = Foreign Exchange Rate
- $X_5$  = Investment level
- $X_6$  = Fixed Capital formation.

The three models were built to ascertain the effect of each independent variable on Balance of payment, Gross Domestic Product, and inflation.

**Results and Discussion**

Table 4.1 (see appendix 1) show the various values of both dependent and independent variables. It shows GDP at current prices, Balance of payment inflation, money supply (Ms) foreign exchange rate, domestic investment, government expenditure Tax, unemployment, capital formation.

**Model 1**

In model 1 where the Gross Domestic product is the dependent variable. The GDP had continued to grow from 1985 to 2003 with an abysmal growth in 1996. Likewise government expenditure ( $X_1$ ) government revenue ( $X_2$ ) also increased and this increased money supply ( $X_3$ ) also. Within this period (1985-2003) domestic investment and capital formation increased. This research revealed that even though government expenditure increased, this increase never affected employment positively. This is evident in table 4.1(Appendix1) where unemployment continue to increase in Nigeria even with increase in government expenditure, the research shows that increase in government expenditure, ( $X_1$ ) tax( $X_2$ ), decrease gross domestic product (GDP).

$$GDP = -0.078X_1 - 0.0047X_2$$

The above equation shows that government expenditure ( $X_1$ ) and increase in Tax ( $X_2$ ) have a negative relationship with GDP. Domestic investment ( $X_5$ ) money supply ( $X_3$ ) and foreign exchange were positively correlated with Gross Domestic product (GDP).

$$GDP = 4.31X_3 + 14600X_4 + 500X_5, \dots \text{ the variables } X_3, X_4, X_5 \text{ show positive relationship with GDP.}$$

**Model 2**

Model 2 focused on Balance of payment and the various independent variables ( $x_1, x_2, x_3, x_4, x_5$ ). The model revealed that money supply ( $X_3$ ) foreign exchange ( $x_4$ ) and fixed capital formation ( $X_6$ ) shows a negative relationship with balance of payment. See equation below:

$$Bop = f(-2943X_3 - 4.59X_4 - 10162X_5)$$

The model also revealed that Tax ( $X_2$ ) government expenditure ( $X_1$ ) and domestic investment ( $X_5$ ) are positively related to Balance of payment this means that a deliberate increase in government expenditure, domestic investment and government Tax can increase Balance of payment.

### Model 3

Model 3, shows how the various independent variables affect inflation, which is growth indicator, government expenditure ( $X_1$ ), Tax ( $X_2$ ) had a positive relationship with inflation. This means that, a deliberate increase in tax will increase prices of goods also increase in government expenditure can also increase inflation since the model shows positive relationship. Again, money supply ( $X_3$ ) and foreign exchange  $X_4$  also had a positive impact on inflation

$$\text{Inf} = f(2.346X_1 + 8.48X_2 + 3709X_3 + 694X_4).$$

### Summary of regression results.

#### Models 1, 2 & 3

$$\text{GDP} = f(-0.078x_1 - 0.0047x_2 + 4.31x_3 + 1460x_4 + 50x_5)$$

$$\text{Inflation} = (2.346x_1 + 8.48X_2 + 3.709x_3X_2 + 694X_4 - 0.001X_5 + 2.69X_6).$$

$$\text{Bop} = (1327X_1 + 692X_2 - 2943X_3 - 4.59X_4 + 1482X_5)$$

### Test of goodness of fit ( $R^2$ )

**Model 1:** The coefficient of determination ( $R^2$ ) in model 1 shows that the model was not significant ( $R^2=0.48$  or 48%) this shows that only 48% of the variation in the dependent variable GDP was explained by the various independent variables, 0.52 or 52% was not explained. In model 2 the coefficient of determination  $R^2 = 0.76$  or 76%. This means that 76% of total variation in the dependent variable (inflation) was explained by the independent variables. This shows that the model was significant. Model 3, had 75% (0.75) as its  $R^2$  which also mean that the model was significant since it explained up to 75% of the variation in the dependent variable (Bop).

#### T – Test (model 1)

At 5% level of significant, the model showed that there was no significant relationship between GDP and government expenditure, Tax and money supply since T–test = T-cal (0.013) < T-tab (0.025) this confirmed the value of  $R^2= 48\%$  which was not significant. The F – Ratio also confirmed the same. This is because the F-tab (3.37) > F-cal (1.406) at 5% level of significant.

#### T – test (model 2 and 3)

At 5% level of significant. models 2&3 where shown to be significant. T-cal (4.311) > T-tab 2.26 and Ttab (3.12)> T-tab (2.26) respectively This shows that inflation and balance of payment (Bop) have significant relationship with government expenditure, tax and money supply.

### Summary

This work focused on the analysis of effectiveness of fiscal policy in economic growth and stability in Nigeria (1985-2004) essentially, some macroeconomic indicators such as gross domestic product (GDP), inflation and Balance of payment (Bop) were brought to focus as independent variables, while government expenditure, government tax (revenue), money supply, domestic investment and household consumption were the independent variables.

### Conclusion

The conclusion emerging from this study is that fiscal policy was only effective in the control of level of inflation and Balance of payment to a very large extent. But it was ineffective in the control of Gross domestic Product (GDP). This was because government expenditure and Taxation never had the desired correlation with GDP. This was probably because expenditure of government may have been directed towards unproductive ventures.

**Recommendations** – Base on the outcome of this study, the following recommendations were proffered. That Government should redirect its expenditure towards productive investment so as to increase output(GDP) That since the study showed that increase in tax, decreased output, the tax incidence should be lesser on infant industries so as to encourage productivity and improve GDP.

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## Appendix 1

### Data For Analysis

YEAR	GDP at current p # MILLION)	BOP MILLION)	INFL RATE	GEX(X1) MILLION)	GTA(X2) MILLION)	MS(X3) MILLION)	X4 FXR R	X 5 UNM	DINV (X6 MILLION)	X6 GFCF	HHC At current Price (# MILLION
1985	68916	2,215,000	5.5	14828.8	15050.4	23818.6	0.89	98461	5573	5,573.00	53,331.10
1986	71075	-2999,000	5.4	16773.7	12592.7	24592.7	2.02	88785	7323	7,323.00	55,934.60
1987	70741	-295,000	10.2	22018.7	25380.6	32092.7	4.01	155021	10661.1	10,661.10	79,628.30
1988	77752	-965,000	38.3	27749.6	27596.7	42780.3	4.51	129668	12383.7	12383.70	113,01330
1989	83495	8,232,000	40.9	41028.3	53870.4	46222.9	7.39	106182	18414.1	18,414.10	136,569.70
1990	90342	44,731,000	45.5	61149.1	98102.4	46902.7	8.04	97031	30626.8	30,626.80	169,309.20
1991	94614	12,655,000	45	66584.4	100991.6	86152.5	9.9	120049	35423.9	35,423.90	218692.80
1992	97431	39,422,000	44.6	92890.2	190433.2	128517.7	17.29	96354	54640.3	58,640.30	396,156.50
1993	100015	-52,304,000	57.2	233806.5	192769.4	192458.6	22.05	185342	80948.1	80,948.10	529,623.60
1994	101040	-52,304,000	57	210437.5	210910.8	267759.8	21.89	98372	85021.8	85,021.90	686,989.80
1995	103502	-186,084,000	85	275311.1	459987.3	295221.8	81.02	112489	114390	114,476.30	1,517,235.90
1996	106870	376,024,000	29.3	341217.6	520190	368762.3	81.25	157250	172100	172,100.00	2,331,306.80
1997	11050	268,899,000	8.5	428215.2	582811.1	431196.6	81.65	150157	205550	205,553.20	2,401,595.90
1998	112948	-331,429,000	10	487113.4	463608.8	522086.6	83.81	182736	192990	192,984.40	2,712,511.30
1999	116138	441,047,000	6.4	945690	749187.7	633086.9	92.34	147944	177450	175,735.80	2,089,505.30
2000	120587	706,977,000	27.4	701059.4	1906159.7	766035.2	101.65	189290	268895	268,897.50	2,331,878.20
2001	126323.8	4,286,000	18.90	1018025.6	2231532.9		111.7		211221.3	371,897.90	4,225,976.90
2002	131489.8	331,475,000	7.50	1018155.8	1731837.5		120.55		212639.1	438,114.90	5,805,085.90
2003	136470	186,324,000	10.20	1225965.9	2575095.9		128.93		217551.2	429,230.00	4,979,560.00

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