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## **Fiscal Policy and Labour Absorption Rate in Nigeria (1980 - 2000)**

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**ABSTRACT** - This study investigates the kind of causal relationship that exists between fiscal variables and unemployment in Nigeria. The study specifically examined the nature and direction of causality between government expenditure and fiscal deficit on one hand and unemployment rate on the other. The study relied on annual time series data from 1980 to 2000 on Nigerian economy. The cointegration and error correction technique was adopted to examine the characteristics of the data and to draw policy conclusion. This result showed that though, there exist long run relationship between the fiscal policy variables and unemployment. However, the results showed that the causality between fiscal policy variables and unemployment is unidirectional and runs from unemployment to fiscal policy. This finding may suggest that fiscal imbalance is a consequence not a cause of unemployment in Nigeria.

**KEYWORDS:** Fiscal policy, Labour absorption rate, Nigeria

### **INTRODUCTION**

For most countries of the world, full employment is an important macroeconomic objective. There is however no unanimity among economists as to how to achieve this objective especially if one takes a cursory look at different



economic schools of thought. For example prior to the Keynesian revolution of the thirties, the classical believed that it was automatic that the economy would attain full employment equilibrium. This is however predicted on the implicit theoretical assumption that the economy is Walrasian with flexible prices, full and costless market and equilibrium, see Bhatia (1981) and Umo (1996). But with Keynes' prognosis for an ailing economy, which bailed out the world from the Great Depression of 1929 to 1933, the faith for restoring full employment shifted to government expansionary fiscal measures.

Hence, as noted by Shapiro (1974), fiscal policy has grown to be a major means by which the government attempts to achieve full employment from its modest beginning in the 1930s. Indeed, in his full employment macroeconomic theory, Keynes (1936) postulates that fiscal policy is a compensatory finance ordained to attain and maintain full employment in the economy. He goes on to highlight the fiscal measures needed to raise employment as: taxation designed to promote and sustain consumption; budget deficit; public expenditure; reduction in direct tax and large-scale productive borrowing.

In the light of this postulate of Keynes, the question can then be asked whether fiscal policy can impact on the employment level in Nigeria. There are usually two major instruments taxation and government expenditure. This study concerns itself with the latter. The question can then be posed more succinctly; is there any relationship between government expenditure and the rate of employment/unemployment in Nigeria?

The objective of this paper is therefore to examine whether there is a causal relationship between fiscal policy variables such as government expenditure and fiscal deficit and the rate of unemployment in Nigeria. It is important that the managers of the economy should be able to predict, with a reasonable degree of accuracy the consequences of their action or in-action regarding government policy as it relates to labour absorption rate. Apart from this introductory part, the paper has four other parts. The next section reviews some of the existing literature on the topic. Section three present the methodology adopted in the study. Section four present the analysis of the empirical results and highlights the findings of the study. The last section looks at the policy implication of the finding and concludes the paper.

## **REVIEW OF RELATED STUDIES**

By labour absorption rate we mean the rate of employment in an economy. Full employment is a relative concept. As noted by Umo (1996) it does not mean that every member of the labour force is gainfully engaged; it implies that a very high level of employment consistent with the economy's potential output is achieved. Hence what constitutes full employment rate differs from country to country. While

it is 96% in the United State economy, it is as high as 98% in Japan and most of the East Asian economies. There is yet to be a well-defined rate for Nigeria.

Ikpeze (1996) observes that historically the full employment question arose as a consequence of industrialization and urbanization in the West. Indeed it started years after the industrial revolution in the nineteenth century. It was in 1848 that the state was called upon to fulfill its task of findings employment at a sufficient rate of wages for the unemployed. See Gaffikin and Morrissey (1992).

In Nigeria, like in many other developing countries, prior to the advent of the colonialists, unemployment was non-existent. Each person was occupied in a traditionally assigned occupation like farming, hunting, carving, blacksmithing, trading, animal rearing, etc. Ndegqa and Powelson (1973) observe that wars, cattle raids, famine, disease and poverty were the major problems in the pre-colonial days in the present day developing countries, not lack of occupation. The colonial masters then resorted to the use of monetary incentive and brute force to get the African to work in the modern wage sector. When those measures did not work the colonialists employed the use of forced labour. See Yesufu (1982). Now, industrialization, population explosion, urbanization and modernization have all worked in concert to bring unemployment into the country.

With the growing population (of youths) and the correspondingly increasing demand for educational institutions, there has been a phenomenal rise in enrolment in various educational institutions. Enrolment in primary school was 16.2 million in 1994, 4.5 million in secondary schools, 100,000 in Polytechnics and about 310,000 in universities all in the same year, (FOS, 1996, Abdulkadir, 1999, Omolewa and Okiei, 1999). The figures for tertiary level educational institutions far outstrip the rate at which employment is being generated in the country. Hence, Oladeji (1987) notes that the phenomenon of graduate unemployment has been associated with over-production of graduates or over-investment in University education in Nigeria. Similarly, Diejomaoh (1984) says that whereas in the seventies, most university graduates were employed within three months of graduation; now, even postgraduates spend years before securing employment.

Two approaches have been identified for the measurement of employment. These are gainfully employed approach and the labour force approach (FOS, 1996). The gainfully employed approach measures employment from the perspective of the activity for which people were trained or their usual activity. A person is therefore regarded as being gainfully employed if such a person is doing his desired "job" e.g., a construction industry worker is regarded as being employed if he is employed only in the construction sector. If it is outside this, he is deemed unemployed. This definition is flawed because there may be a difference between the job one is trained for and the desired job one is now doing.

On the other hand the labour force approach classifies persons according to economic activity. A person, who did any work at all, even for a short time, is deemed to be employed. This is the approach adopted in Nigeria. But because of the apparent flaw it contains, the concept of underemployment was introduced. This is defined in the 1984 Labour Force Sample Survey (LFSS) as “insufficient volume of work for involuntary reasons”. In quantitative terms, people whether in paid or self employment that are working less than forty hours per week for involuntary reasons are underemployed.

## METHODOLOGY

This study seeks to find out whether there is a causal relationship between government expenditure and labour absorption rate in Nigeria i.e. examining the nature of the nexus between government expenditure and labour absorption. Two variables may show some correlations even when they are not directly related, if there exist other factor that influences the two variables in the same way, (Obadan and Odusola, 1999). Thus the concept of causality is indispensable and considered most appropriate to examine the relationship between Government expenditure and fiscal deficit on one hand and unemployment rate on the other. According to the Granger causality approach a variable Y is caused by X, if Y can be predicted better from the past values of Y and X than from past values of Y alone. Four patterns of causality from X and Y; distinguished: (a) unidirectional causality from X to Y; (b) unidirectional causality from Y to X; (c) Feedback or bi-directional causality; and (d) no causality.

For our bivariate model, estimating regression of Y on X on all the relevant variables including the current and past values of X and Y identifies the pattern of causality respectively. By using the following model the causality between the two fiscal policy variables (Y) and unemployment rate (X) can be tested.

$$Y_t = \alpha_0 + \sum_{j=0}^m \alpha_{1j} X_{t-j} + \sum_{j=1}^m \alpha_{2j} Y_{t-j} + U_t \quad (1)$$

$$X_t = \beta_0 + \sum_{j=1}^m \beta_{1j} X_{t-j} + \sum_{j=0}^m \beta_{2j} Y_{t-j} + V_t \quad (2)$$

Where Y represents Government expenditure and or fiscal deficit of fiscal policy. X represents unemployment rate.

Where  $U_t$  and  $V_t$  are mutually uncorrelated white-noise series testing the null hypothesis that  $\alpha_j = \beta_j = 0$  (for all  $j = 0..m$ ) against the alternative hypothesis that  $\alpha_j \neq 0$  and  $\beta_j \neq 0$  for at least some  $j$ 's will determine the direction of the relationship between X and Y.



Before conducting the causality test, we need to ensure that variable series are stationary individually and cointegrated together. A series  $X_t$  is said to be integrated of order  $d$  denoted by  $X_t(d)$  if it becomes stationary after differencing  $d$  times and thus  $X_t$  contains  $d$  unit roots. A series that is  $I(0)$  is said to be stationary. To determine whether a series is stationary or non-stationary, unit root test developed by Fuller (1976) and Dickey and Fuller (1981) is used. The Augmented Dickey-Fuller test (ADF) is based on the estimate of the following regression.

$$\Delta V_t = \alpha_0 + \alpha_1 t + \alpha_2 X_{t-1} + \sum_{i=1}^K \alpha_i \Delta X_{t-i} + e_t \quad (3)$$

Where  $\Delta$  is the first difference operator,  $t$  is the linear time trend and  $e_t$  is the normally distributed error term. In equation (3), the null hypothesis  $H_0: \alpha = 0$  against the alternative hypothesis  $H_1: \alpha \neq 0$  is tested by comparing the calculated  $t$ -ratio with the critical value from the appropriate table. If calculated  $t$ -ratio is less than the critical  $t$ -value, then the null hypothesis of unit root (non-stationarity) is rejected. In this case, the level of time series  $X_t$  is characterized as integrated of order zero if  $I(0)$ . If it is found that individual time series in equation (3) are integrated order one  $I(1)$ , and hence non-stationary the next step is to examine the cointegration among the series. A set of variables is said to be cointegrated if a linear combination of their individual integrated series  $I(d)$  is  $I(d)$  is stationary. The procedure needs an estimation of the following regression equation:

$$Y_t = \Phi X_t + e_t \quad (4)$$

If the residual  $e_t$  from the regression i.e.  $I(0)$  is stationary, then the variable are said to be cointegrated and hence interrelated with each other in the long run.

If the series are found cointegrated, then we conduct standard Granger causality test by augmenting with an appropriate error correction term derived from the cointegration equation. If the series were  $I(1)$ , the Granger causality tests are performed after taking their first difference and with that equation (1) and (2) take the form:

$$\Delta Y = \alpha_0 + \sum_{i=0}^m \alpha_{1i} \Delta X_{t-i} + \sum_{i=1}^n \alpha_{2i} \Delta X_{t-i} + \alpha_3 ECM_{t-1} + U_t \quad (5)$$

$$\Delta X = \beta_0 + \sum_{i=0}^m \alpha_{ij} X_{t-i} + \sum_{i=1}^n \beta_{2i} \Delta Y_{t-i} + \beta_4 ECM_{t-1} + V_t \quad (6)$$

Where  $\Delta$  denotes the first difference of the variables and  $ECM_{t-1}$  is the error correction term lagged one period derived from cointegration equation (4) - The lag length  $m$  and  $n$  is a prior set at par.

The data used for this study are annual secondary time series data. Data on all the variables i.e. fiscal deficit, government expenditure and unemployment rate were got from the Central Bank of Nigeria publication Major economic and Financial Indicators (2000). The study sample covered a period of 20 years, 1980 to (2000). This choice of the study period was determined by data availability on labour absorption level in Nigeria.

## EMPIRICAL RESULTS

The results of unit root, cointegration and causality tests are reported in this section. Annual time series data for the period 1980-2000 were employed for the estimation and analysis. The Fiscal Policy variables were proxied by Government Expenditure (GEXP) and the Fiscal Deficit (FD) calculated as the difference between of government revenue and expenditure while the Unemployment rate (RUEMP) values were as published by CBN.

### UNIT ROOT (STATIONARITY) TEST

Table 1 presents the results of both DF and ADF unit root tests for the variables based on the critical values for stationarity and cointegration test in Chamrenza and Deadman (1991), the hypothesis of non-stationarity is rejected at level. In all the cases stationarity was induce only when the variables were first differenced. Fiscal deficit and unemployment rates were not logged since they are already in rate.

**TABLE 1: UNIT ROOT TEST (AT LEVELS)\***

	AT LEVELS		AT FIRST DIFFERENCE	
	ADF	DF	ADF	DF
RUEMP	-1.87800	-1.84039	-3.25348	-4.35449
LGREV	-0.36531	-0.01807	-3.62269	-3.650
LGEXP	-1.08924	-1.21765	-4.71989	-3.67203
FD	-2.10107	-1.786	-3.62956	-4.11410

*Notes: The critical values for the DF and ADF are 2.18 and 2.22 respectively*

\*RUEMP - Rate of Unemployment  
 LGREV - Log of Government Revenue  
 LGEXP - Log of Government Expenditure  
 FD - Fiscal Deficit = LGREV - LGEXP

TABLE 2: COINTEGRATION TESTS

SERIES	CONT.	RUEMP	FD	LGEXP	DF	ADF	
RHEMP	9.695 (4.7426)	-	-	-0.560 (0.4365)	-2.6741	-4.1291	-
RHEMP	4.112 (0.690)	-	-1.773 (2.1767)	-	-3.4275	-2.56689	
LGEXP	12.234 2.45174	-1.144 (0.7661)	-	-			
FD	0.707 (0.3892)	-0.0997	-	-			

Notes: The critical values for the DF and ADF are 2.18 and 2.22 respectively.

### COINTEGRATION TEST

Having established that the variables are stationary at first difference, cointegration is tested using the bivariate equation (4). The unit root tests were conducted on the residuals from the equation. A set of four equations was estimated to generate the required number of residuals for the causality test later. Table 2 presents the cointegration results. The results of DF and ADF statistics on the residuals presented in the last two columns of Table 2 showed that the null hypothesis of non-stationarity of the residual at level is rejected in all the cases. Thus, implies that there is a long run relationship between the fiscal policy variables and unemployment rate. Also the result indicates that causality exists at least in one direction between fiscal policy and unemployment in Nigeria.

TABLE 3: CAUSALITY TEST

SERIES	CONT.	$\Delta$ UNEMPI	$\Delta$ LGEXPI	$\Delta$ FDI	ECMI
$\Delta$ UNEMP From Government Expenditure to Unemployment.	0.2711 (0.8759)	0.64289 (1.22193)	-1.24662 (-1.36447)	-	-0.94309 (-1.62474)
$\Delta$ UNEMP From Fiscal Deficit to Unemployment.	-0.011416 (-0.04259)	0.79645 (1.47591)	-	0.352635 (0.47417)	-1.11425 (-1.83727)
$\Delta$ LGEXP From Unemployment to Government Expenditure.	0.036582 (0.36260)	-0.010882 (-0.22073)	1.04542 (2.28612)	-	-1.45175 (-2.62217)
$\Delta$ FD From Unemployment to Fiscal Deficit.	0.15965 (0.23852)	-0.056572 (-0.83730)	-	0.931412 (1.86362)	-0.83730 (-2.15228)

Notes: see Table 1.

### CAUSALITY TEST

Following from the confirmation of long run relationship and existence of causality between the fiscal policy variables and unemployment rate, the direction of causality and the long run relation were examined by estimating equation (5)



and (6) for the pairs of cointegration series. The residuals from the cointegration equation (4) were lagged and used as the error correction term in the model. All the variables were lagged once (since annual time series data were used) as also in the cases of unit root and cointegration tests. The estimates of the regression were reported in Table (3) in two parts, according to the direction of the causality being investigated. For instance the first two rows present estimates where causality runs from fiscal policy to unemployment.

## CONCLUSION

The estimates in Table 3 showed that in all the cases where causality ran from fiscal policy variables (government expenditure and fiscal deficit) to unemployment, the error correction terms were not statistically significant at 5% level as indicated by the below 2.0 points of the ECM t-value. However in the cases where the causality ran from the unemployment rates to fiscal policy, the error correction term is not only statistically significant, it also has negative sign as expected. This result shows that though, there exist long run relationship between fiscal policy and unemployment, the way the variable enter the model is crucial to the outcome of the results. It thus implies that the causality between fiscal policies is unidirectional and runs from unemployment to fiscal policy.

The implication of this finding is that, the rate of unemployment determines the rate of the fiscal deficit in Nigeria. The insignificance of the error term in the equation running from fiscal policy to unemployment rate suggests that unemployment do not respond to long run disequilibria in fiscal policy but the reverse is the case in Nigeria. The finding could be interpreted to mean that high and increasing government spending and the fiscal imbalance that has remained a recurring decimal in the Nigerian economic management for the past two decades. The causality found here could therefore be the consequence of government efforts at reducing the rate of unemployment and promotion of real growth.

The study thus suggests that as long as there is persistent high rate of unemployment in the economy, and promoting real growth remained the cardinal objective of government policy, then effort at achieving a fiscal balance may not be satisfactorily achieved.

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