

## Functional Government Spending, Unemployment and Poverty Reduction in Nigeria

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### Abstract

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This paper investigates the effects of government spending on unemployment and poverty in Nigeria. Government spending was disaggregated into its capital and recurrent functional components (economic service, administration, social service and transfer) measured at the federal level in order to isolate their individual effects on unemployment and poverty level for the period 1980-2017 using ARDL methodology. The results validate the fact that poverty is inherent in Nigeria and reveal significant heterogeneity in the effects of different components of public spending on unemployment and poverty. It was revealed that unemployment does not have any significant impact on poverty. This implies that reduction in unemployment rate may not be a channel through which government expenditure could impact on poverty. The findings show that while administrative and transfer components of capital expenditure could be used to reduce poverty both in the short and long run periods, capital expenditure on economic services and social services has no direct significant impact on poverty but rather could be used to reduce unemployment. Estimated results also show that none of the functional recurrent expenditure components has significant relationship with poverty in the short and long run periods. Based on these findings it is recommended that emphasis should be placed on government capital spending especially administrative and transfers components to reduce poverty while, capital expenditure on economic services and social services should be emphasized in tackling unemployment level in Nigeria.

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### I. Introduction

There is an apparent correlation between poverty and unemployment which makes it a twin problem as most countries with high unemployment rates are also plagued with high rates of poverty with the latter decreasing as unemployment levels declines (Dike, 2009; Crivelli, Furceri and Toujas-Bernat , 2012). The experience of high level of unemployment and prevalent poverty even when there is an increase in economic growth has given credence to the long-standing assumption that the economic growth may not spontaneously translate to development. Indeed, in Nigeria, statistics show that economic growth has not always been accompanied by a decrease in unemployment and poverty (Fajingbesi and Odusola, 1999; Gemmel and Kneller, 2001; Angelopoulos *et al*, 2007; Osinubi, 2005; Hull, 2009 (; Abu, et al 2010).

A useful rule of thumb which has been established in the literature is that employment generates income for the individual which in turn enhances the standards of living, hence, reduction in poverty level (Dike, 2009). Over the years, several policy measures (fiscal and monetary) have been introduced to reduce poverty level through employment generation (Bourguignon, 2004; Islam, 2004; ILO, 2008, Hull 2009; Abubakar, 2016). Despite these measures and efforts, unemployment and poverty have remained widespread and prevalent, that, recently the country was rated as having the largest number of people living in poverty in the world (Brooking Institute, 2017). To corroborate this, the National Bureau of Statistics (NBS, 2017) asserted that unemployment rate rose from 34.4% in 2010 to 41.5% as at 2016 with an average job growth rate of 1.6% and the labour force growth rate of 3.9%.

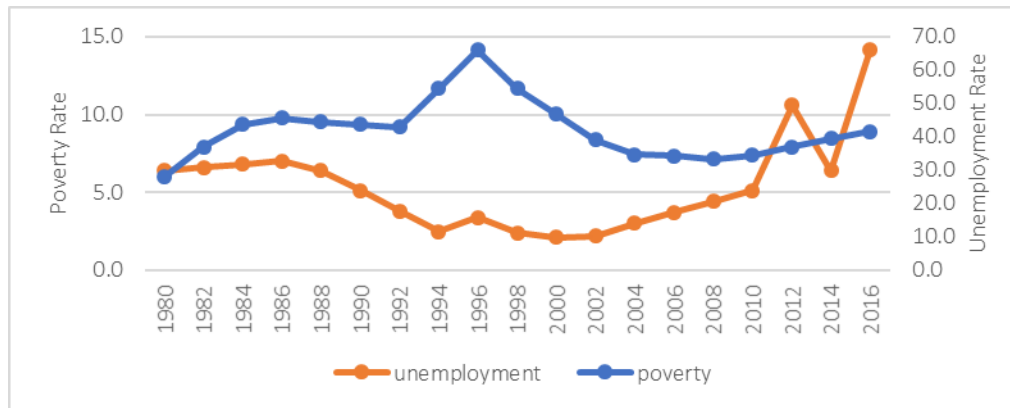
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Meanwhile, to reduce the unemployment rate which would dove-tailed into poverty reduction, it is estimated that employment growth rate of at least 4 to 5% is required, this translates to at least 3 million new jobs annually (Egunjobi, 2004; Abubakar, 2016; NBS, 2017).

Figure 1: Poverty and Unemployment Rates in Nigeria (1980-2016)



Source: Authors' computation

In order to attain the desired macroeconomic objectives, fiscal policy especially government spending has been found, and widely recognized as a potent tool for enhancing growth, redistributing income, generating employment and reducing poverty especially for developing countries (Bourguignon, 2004; Islam, 2004; Hull 2009; Obudah and Tombofa, 2013; Apere, 2014). The literature on the effects of government spending on poverty reduction has given rise to a number of studies focusing on the expansionary impact of fiscal actions (Hillman and Kojo 2004; Benos, 2009; Malush, 2013). Also, a number of channels through which government spending could impact on poverty level have been clearly identified. The overwhelming majority of the studies on the relationship between fiscal policy and poverty reduction in developing countries including the few on Nigeria had emphasized government expenditure and poverty nexus via economic growth with little attention on the channel of employment generation (Barro, 1991; Lucas, 1988; Rebelo, 1991; Hillman and Kojo 2004; Anyanwu, 1997; Warner, 2006).

Besides, there are contrasting viewpoints on the effects of government spending on poverty reduction via its growth effect. While some authors argued that government spending has positive effect on growth and hence poverty reduction (Komain and Brahmastre, 2007; Obademi, 2012; Obudah and Tombofa, 2013; Apere, 2014), others posit that excessive government spending has led to the problems of indebtedness and debt crisis, poor investment performance and poor economic growth rate which further aggravate poverty level (Adofu and Abula, 2010; Adefeso and Mobalaji, 2010; Onyeiwu, 2012; Nwosa, Adebisi, and Adedeji, 2013).

In addition, empirical studies on the effect of government expenditure on unemployment are very scanty and not comprehensive. For instance, studies such as Momodu and Ogbole (2014) and Obayori (2016) attempted to examine the effect of fiscal policy on unemployment, focusing on sectoral public expenditure, they however did not say anything about how this translate to poverty reduction. Considering the endemic and rising poverty level in Nigeria, and the failure of several attempts in the past to address the problem, this paper seeks to investigate the components of public expenditure especially in its functional disaggregated forms (economic service, social service, administration and transfer expenditure both for recurrent and capital) that can be used to reduce unemployment which is then expected to lead to poverty reduction in Nigeria. It is also imperative to establish the dynamic causal relationship and identify the linkage among each of these components of government expenditure, employment generation and poverty alleviation. This is crucial as there appears to be conflicting results in the literature and given the renewed interest in stimulating employment generation as a way to alleviate poverty in Nigeria.

The rest of the paper is structured as follows: section two presents the review of theoretical and empirical literature on the effects of functional government expenditure on employment and poverty reduction. Methodology of the study is presented in section three. Section four presents econometrics analysis including results and findings, while section five concludes with the summary and recommendations arising from the study.

## II. Literature Review

The exact nature of the impact of fiscal policy on economic growth and development according to endogenous growth models depends on the type of fiscal policy instruments – whether it is non-distortionary i.e. productive or distortionary i.e. distortionary (Buiter 1977; Ramirez 1996). In the view of the neo-classical economists, private enterprise economy ensures full employment as aggregate demand automatically adjust itself to the aggregate supply function of employment. This is also the case with the demand and supply of output. It was argued that government operations are inherently bureaucratic, inefficient and distortionary therefore stifle rather than promote employment generation and economic growth. The belief was that the higher the level of public expenditure, the greater the inefficiency and the lower the level of output (Blinder and Solow, 1975; Tanzi and Howell, 1997; Pechman, 2004).

Keynes however challenged this view and argued that fiscal expansion leads to a multiplier effect on aggregate demand and output which in turn generate employment and reduce poverty level. It was also argued that government intervention in economic activities helps in ensuring efficiency in resource allocation and stabilization of the economy (Fatas and Mihov, 2001; Folster and Henrekson, 2001; Feldmann, 2006; Angelopoulos, Economides, and Kamman, 2007). The proposition was that increased aggregate demand as a result of increase in government activities enhances the profitability of private investment and leads to higher investment at any given rate of interest.

Empirically, many scholars have explored the importance and impact of government spending on economic growth and development (Folster and Henrekson, 2001; Feldmann, 2006; Angelopoulos, Economides, and Kamman, 2007; etc. Also in developing countries, various studies have been conducted. These include studies by Buiter, 1977; Fiani, 1991; Brauninger, 2002; Atukeren, 2010; Bova, Kolerus, and Tapsoba, 2014). Specifically, Datt and Ravallion (2002) estimate the determinants of differences in the rate of reduction of the poverty headcount across Indian states over the period 1960–94. They find that state government development spending has a large and statistically significant effect on poverty reduction, even when controlling for changes in agricultural and non-agricultural productivity and a time trend.

Following the same line of argument, Mehmood and Sadiq (2010) examined the relationship between government expenditure and unemployment rate in Pakistan for the period 1976 to 2010, using an error correction modeling technique. The study revealed that a negative relationship exists between government expenditure and unemployment rate in Pakistan and that in the long run government expenditure results in poverty reduction. Also, Mahmood & Khalid (2013) re-examines the long run relationship between fiscal policy variables and unemployment using the yearly data from the period 1980 to 2010 for Pakistan. The results of co-integration indicated the long-run association between the fiscal variables and unemployment.

Umut (2015) investigated the effect of fiscal policy in Netherland, using VAR technique. The study revealed that fiscal shocks exert significant impact on GDP, unemployment rate, consumption and investment. The work suggests that unemployment rises in response to a fiscal contraction whereas it falls to fiscal expansion. In the same vein, Holden and Sparrman (2016) estimated the effect of government purchases on unemployment in 20 OECD countries, for the period 1980-2007. Their study revealed that an increase in government purchases equal to one percent of GDP reduces unemployment by about 0.3 percentage point in the same year. The effect is greater and more persistent under less “employment-friendly” labour market institutions, and greater and more persistent under a fixed exchange rate regime than under a floating regime. The effect is also greater in downturns than in booms. The effect on unemployment reflects a corresponding positive effect of increased government purchases on employment to population rate.

In the case of Nigeria, a large gap of literature exists on the relationship between fiscal policy variables, unemployment rate and poverty reduction in the country. Until very recently, most studies have focused on the growth effects of fiscal policy instruments. For instance, Elizabeth (2013) examined fiscal deficit and macroeconomic aggregates in Nigeria for the period 1980 to 2010. The empirical findings showed that fiscal deficits did not significantly affect macroeconomic output. The result also shows a bilateral causality relationship between government deficit and unemployment rate. Following the same line of argument, Nwosa (2014) examined the impact of government expenditure on unemployment and poverty rates for the period 1981 to 2011. Using an Ordinary Least square (OLS) estimation technique, the study established that government expenditure has positive and significant impact on unemployment rate while it has an insignificant impact on poverty rate. These results are in contradiction to the Keynes propositions

In his own part, Egunjobi (2014) determines the nature of the relationship between poverty and unemployment over the period 1977 – 2010. The paper also ascertains the causal link between poverty and unemployment. The results show that unemployment has a positive influence on poverty while government investment on infrastructures and human investment has a negative influence on poverty. Furthermore, there is no causal link between poverty and unemployment. The study recommended that government should intensify the provision of infrastructures and implementation of appropriate policies which will create a conducive environment needed for investment to thrive.

Also, concerned by the unemployment and poverty levels in Nigeria despite its rich endowment with natural resources, Owuru and Farayibi (2016) examine the effects of the three major fiscal policy variables namely; government capital expenditure, recurrent expenditure and budget deficit on poverty rate using a multiple regression analysis in the autoregressive distributed lag framework with ECM for the period 1980-2011. Although the ECM result which shows the speed of adjustment of the model from the short run to the long run equilibrium is on the average, yet the economy did not show any sign of much potency in using any of the selected fiscal policy variables to tackle the menace of poverty in Nigeria.

Similarly, Egbulonu and Amadi (2016) examine the relationship between fiscal policy and unemployment rate in Nigeria for the period 1970 to 2013. The fiscal policy variables employed in the study consists of government expenditure, public debt stock (as proxy for government borrowing) and tax revenue. The results reveal a long run relationship between unemployment rate and fiscal policy instruments examined in the study. While, government expenditure and government debt stock exert a negative effect on unemployment rate, government tax revenue exhibited a positive relationship with unemployment rate. This means that increase in tax rate increases unemployment in Nigeria.

In the same vein, Abubakar (2016) investigates the effect of fiscal policy shocks on output and unemployment in Nigeria under the Keynesian framework by employing the Structural Vector Autoregression (SVAR) methodology to analyse annual series on the relevant variables for the period 1981-2015. Findings of the SVAR model shows that shocks in public expenditure and revenue have positive long- lasting effect on output while the effect of revenue shock on unemployment was found to be negative in the short run. The study therefore suggests a restructuring in government spending pattern by allocating more to productive expenditure.

Recently, Maku and Alimi (2018) investigate the impact of fiscal policy instruments on employment generation in Nigeria within the periods of 1980-2015. The study used the Augmented Dickey Fuller test to estimate the stationarity level, Engel Granger cointegration test for long-run relationship and ordinary least square for long-run estimates. The findings show that government spending and manufacturing output had negative impact on unemployment rate in Nigeria. However, tax revenue and agricultural output have direct positive impact on unemployment rate in Nigeria. The findings suggest that government expenditure has the potential of creating more jobs if they were expended on appropriate capital projects that are capable of facilitating employment creation and linking rural-urban centres smoothly without encouraging migration.

The brief review of the literature shows that, theories differ on the relationship between fiscal policy variables and macroeconomic objectives. Also, the empirical findings on the relationship among fiscal policy variables, unemployment level and poverty reduction are not always clear-cut and are highly controversial in developed and developing countries including Nigeria. While some empirical studies revealed that government spending has negative effect on poverty reduction others found that the policy instrument aggravates poverty level. Most of the studies have focused on aggregate government expenditure without paying attention to the differential effects functional components of this instruments could have on poverty reduction through employment generation. Also the feedback effects of poverty and unemployment levels on government spending have not been adequately examined, hence, this study.

### **III. Methodology: Model Specification and Techniques of Analysis:**

To explicitly examine the role of government spending in reducing poverty through the channel of employment generation, the Autoregressive Distributed Lag (ARDL) Bounds Testing Approach was specified.

This study takes into account the differential effects of the four components of functional government expenditure (administration, economic services, social services, and transfers expenditure) for both recurrent and capital, while interest rate was included as intervening variable. The annual data covers 1980 to 2017. Data for the analysis were sourced from Statistical Bulletin, published by Central Bank of Nigeria (CBN) and from the National Bureau of Statistics' (NBS) publications.

The analysis of the relationship among government spending, unemployment and poverty alleviation in this study involve the establishment of the direction of causality among the variables and the effect of the causal variables on the dependent variable. The analysis requires four steps. First, the unit root test was conducted in order to determine the order of integration using Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) tests. Second, the long run equilibrium relationship among the variables was established. Third, the short run as well as the long run relationship was investigated and finally, the effect of the established causal variables on the explained variable was examined.

The cointegration process pertaining to the role of government spending in stimulating employment generation as a channel through which it could impact poverty level was specified such that, first, the study takes into account the effects of the four components of functional government expenditure (administration, economic services, social services, and transfers expenditure) which are grouped into government functional recurrent expenditure and functional capital expenditure, while interest rate was included as intervening variable. Thus:

$$\Delta pvt_y_t = \hat{h} + \sum_{i=1}^p a_{1i} \Delta pvt_{y_{t-i}} + \sum_{i=1}^p a_{2i} \Delta lrfge_{t-i} + \sum_{i=1}^q a_{3i} \Delta lcfge_{t-i} + \sum_{i=1}^r a_{4i} \Delta empl_{t-i} + \sum_{i=1}^s a_{5i} \Delta rate_{t-i} + \Upsilon pvt_y_t + \vartheta lrfge_t + \lambda lcfge_t + \sigma empl_t + \ell rate_t + \varepsilon_t \quad (3.14a)$$

Disaggregating government capital and recurrent expenditure into their functional components, we have:

$$\Delta pvt_y_t = \hat{h} + \sum_{i=1}^p a_{1i} \Delta pvt_{y_{t-i}} + \sum_{i=1}^p a_{2i} \Delta ladre_{t-i} + \sum_{i=1}^q a_{3i} \Delta lesre_{t-i} + \sum_{i=1}^r a_{4i} \Delta lssre_{t-i} + \sum_{i=1}^s a_{5i} \Delta ltrre_{t-i} + \sum_{i=1}^t a_{6i} \Delta empl_{t-i} + \sum_{i=1}^u a_{7i} \Delta lcfge_{t-i} + \sum_{i=1}^v a_{8i} \Delta rate_{t-i} + \Upsilon pvt_y_t + \vartheta ladre_t + \tau lesre_t + \chi lssre_t + \lambda ltrre_t + \sigma empl_t + \phi lcfge_t + \ell rate_t + \varepsilon_t \quad (3.15)$$

$$\Delta pvt_y_t = \hat{h} + \sum_{i=1}^p a_{1i} \Delta pvt_{y_{t-i}} + \sum_{i=1}^p a_{2i} \Delta ladce_{t-i} + \sum_{i=1}^q a_{3i} \Delta lesce_{t-i} + \sum_{i=1}^r a_{4i} \Delta lssce_{t-i} + \sum_{i=1}^s a_{5i} \Delta ltrce_{t-i} + \sum_{i=1}^t a_{6i} \Delta empl_{t-i} + \sum_{i=1}^u a_{7i} \Delta lrfge_{t-i} + \sum_{i=1}^v a_{8i} \Delta rate_{t-i} + \Upsilon pvt_y_t + \vartheta ladce_t + \tau lesce_t + \chi lssce_t + \lambda ltrce_t + \sigma empl_t + \phi lrfge_t + \ell rate_t + \varepsilon_t \quad (3.16)$$

where  $pvt_y$ ,  $lrfgr$ ,  $lcfge$ ,  $empl$ ,  $rate$ ,  $adre$ ,  $esre$ ,  $ssre$ ,  $trre$ ,  $adce$ ,  $esce$ ,  $ssce$  and  $trce$  represent poverty, recurrent functional government expenditure, capital functional government expenditure, employment, interest rate, recurrent expenditure on administration, economic services, social services transfers, capital expenditure on administration, economic service, social service and transfers respectively.  $\Delta$  represents difference operator,  $\Upsilon$  represents parameter for poverty while  $a_{1i} - a_{7i}$  represent the short run parameters.  $\vartheta, \tau, \chi, \lambda, \sigma, \phi$  and  $\ell$  captured the long run parameters. The region with the summation sign  $\sum$  in equations 3.15 and 3.16 represent the short run estimates while, the portion without the summation sign in the equations connote the long run estimates.

The cointegration test requires setting up the null hypothesis of no cointegration against the alternative hypothesis of cointegration ( $H_0 : \Upsilon \neq \vartheta \neq \tau \neq \chi \neq \lambda \neq \sigma \neq \phi \neq \ell$ ). Long run relationship exists if F-statistic is greater than the upper critical bound value for which the null hypothesis that signifies no cointegration is rejected. If the calculated F-statistics is below the lower bound critical value, the null hypothesis of no cointegration in equations is accepted. However, no inferential conclusion is made if its F-statistic lies within the lower and upper bounds.

The next step is to estimate the long-run model, having established that cointegration does exist between the variables. Therefore:

$$pvt_y_t = \hat{h} + \Upsilon pvt_y_t + \vartheta ladre_t + \tau lesre_t + \chi lssre_t + \lambda ltrre_t + \sigma empl_t + \phi lcfge_t + \ell rate_t + \varepsilon_t \quad (3.17)$$

$$pvt_y_t = \hat{h} + \Upsilon pvt_y_t + \vartheta ladce_t + \tau lesce_t + \chi lssce_t + \lambda ltrce_t + \sigma empl_t + \phi lrfge_t + \ell rate_t + \varepsilon_t \quad (3.18)$$

The selection of the lag orders for the variables are carefully decided by estimating and calculating the ARDL

( $p, q, r, s, t, u, v,$ ) model and the associated long-run multipliers, the following error correction model is formulated in order to estimate the short-run dynamics:

$$\Delta pvt_y_t = \hat{h} + \sum_{i=0}^p a_{1i} \Delta ladre_{t-i} + \sum_{i=0}^q a_{2i} \Delta lesre_{t-i} + \sum_{i=1}^r a_{3i} \Delta lssre_{t-i} + \sum_{i=0}^s a_{4i} \Delta ltrre_{t-i} + \sum_{i=0}^t a_{5i} \Delta empl_{t-i} + \sum_{i=0}^u a_{6i} \Delta lcfge_{t-i} + \sum_{i=0}^v a_{7i} \Delta rate_{t-i} + \Omega ECM_{t-1} + \varepsilon_t \tag{3.19}$$

$$\Delta pvt_y_t = \hat{h} + \sum_{i=0}^p a_{1i} \Delta ladce_{t-i} + \sum_{i=0}^q a_{2i} \Delta lesce_{t-i} + \sum_{i=1}^r a_{3i} \Delta lssce_{t-i} + \sum_{i=0}^s a_{4i} \Delta ltrce_{t-i} + \sum_{i=0}^t a_{5i} \Delta empl_{t-i} + \sum_{i=0}^u a_{6i} \Delta lrfge_{t-i} + \sum_{i=0}^v a_{7i} \Delta rate_{t-i} + \Omega ECM_{t-1} + \varepsilon_t \tag{3.20}$$

The ECM is the lagged error correction term obtained from the estimated cointegration model of equations (3.33 and 3.34). To establish the stability of the long-run and short-run coefficients, the CUSUM and CUSUMSQ tests to the residuals of the equation was applied to examine if the two statistics stay within the 5 % significant level.

**IV. Presentation and Discussion of Results**

The unit root test carried out using Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests indicated that all the series reported in Table 1 are stationary at level (1%) except poverty, unemployment, interest rates, oil revenue and non-oil revenue that have unit root properties. This imply that the series have to be differenced once in our models in order to avoid spurious results. All the variables with unit root properties were stationary at first difference i.e. I(1).

**Table 1: Unit Root Result**

Variable	ADF		PP		Order of Integration	
	At Level	1 <sup>st</sup> Difference	At Level	1 <sup>st</sup> Difference		
PVTY	-2.410941	-2.942703*	-2.165862	-2.918583*		I(1)
UNMP	-1.191682	-6.827231*	-1.100107	-6.828617*		I(1)
LCFGE	-6.123402*		-6.128065*			I(0)
LADCE	-9.106810*		-9.145668*			I(0)
LESCE	-9.307157*		-9.456935*			I(0)
LSSCE	-6.258931*		-6.263226*			I(0)
LTRCE	-12.27948*		-12.27948*			I(0)
LRFGE	-7.848551*		-7.829345*			I(0)
LADRE	-7.820240*		-7.870400*			I(0)
LESRE	-7.595225*		-7.606808*			I(0)
LSSRE	-7.898430*		-7.972395*			I(0)
LTRRE	-8.318614*		-8.315371*			I(0)
RATE	-2.827166	-6.828135*	-2.713389	-7.962331*		I(1)
<b>Critical Value</b>						
1% level	-3.626784	-3.632900	-3.626784	-3.639407		
5% level	-2.945842	-2.948404	-2.945842	-2.951125		
10% level	-2.611531	-2.612874	-2.611531	-2.614300		

After the unit root test, the choice of the lag length in the Autoregressive Distributed Lag (ARDL) Bounds Testing Approach is determined as the ARDL tests are sensitive to the lag length selection. Indeed, wrong lag order selection can cause spurious rejection or acceptance of no causality. The Akaike Information Criteria (AIC), Schwartz Information Criterion (SIC), and Hannan-Quinn information Criterion (HQ) alongside with the Likelihood Ratio (LR) and Final Prediction Error (FPE) proposed by Sims (1980) are used in the determination of the optimal lag length.

**Table 2: Lag Order Selection with PVTY as Endogenous variable**

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-98.39718	NA	75.85933	7.087323	7.774387	7.315066
1	-64.39008	34.00709	9.826819	5.024380	5.757248	5.267305
2	-55.34802	8.476935*	6.080847*	4.521751*	5.300423*	4.779859*
3	-55.05574	0.255742	6.527815	4.565984	5.390460	4.839274
4	-54.43307	0.505919	6.896859	4.589567	5.459848	4.878040

\* 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

**Cointegration Test Results**

To avoid over parameterization in the cointegration test results, the components of capital and recurrent functional government expenditure are split into two models and are, therefore, examined alongside unemployment and poverty in order to establish their cointegrating vectors. This is to confirm if capital and or recurrent government expenditure individually cointegrate with poverty and unemployment.

The cointegration test results for the components of functional capital expenditure and that of the recurrent expenditure indicated four (4) cointegrating vectors as revealed by Trace and Max-Eigenvalues at 5% significant level. Table 3 indicates long run relationships among the variables in the model. Panel A of Table shows that the F-statistic value of 4.82 falls outside the upper bound critical value (4.63) at 1% significance. This indicates an existence of long run relationship between the disaggregated functional government capital expenditure and poverty level. Also, Panel B of Table 3 depicts that F-statistic value of 4.65 also falls outside the upper bounds value of 4.63 at 1 percent significance level indicating the existence of long run relationship between the disaggregated functional government recurrent expenditure and poverty.

**Table 3: ARDL Bounds Test Results**

Panel A: CFGE		Null Hypothesis: No levels relationship (Critical Value Bounds)		
Test Statistic	Value	Significance	I(0)	I(1)
F-statistic	4.817553***	10%	2.38	3.45
K	7	5%	2.69	3.83
		1%	3.31	4.63
Panel B: RFGE				
F-statistic	4.649849***	10%	2.38	3.45
K	7	5%	2.69	3.83
		1%	3.31	4.63

Source: Author's Computation, 2019.

\*\*\* = 1%, \*\* = 5% and \* = 10% levels of significance.

**Long Run and Short Run Estimates of the Functional Components of Government Capital and Recurrent Expenditure**

It becomes imperative to use ARDL bounds tests since the order of integration and cointegration test results indicate mixed order of integration and the existence of long run relationship respectively. Results from Panel A of Table 4 on the influence of the components of functional government capital expenditure reveal that lag one value of poverty significantly and positively affects the current year. This implies that poverty features for last year influences the current year by 43 percent. This validates the fact that poverty is inherent in Nigeria. However, the results indicate that unemployment does not have any significant impact on poverty both in the short and long run period. This is contrary to a-priori expectation. This implies that employment generation may not be a veritable channel through which government expenditure can be used to impact on poverty.

A look at the influence of functional government capital and recurrent expenditure on poverty reveals that administrative components of capital expenditure significantly and negatively influence poverty both in the short run and long run while social services component of capital expenditure has a positive effect on poverty both in the short run and long run periods. Although, capital expense on social services influences poverty positively both in the short and long run period. It is noted that its lag value negatively impact on poverty which implies government capital expenditure can be used to reduce poverty although its impact may not be felt immediately. Also, capital component of expenditure on transfers has an immediate negative effect on poverty both in the short and long run period.

This indicated that capital expenditure on transfers replenishes reproducible capital thereby reducing poverty levels. As expected interest rate has a significant positive relationship with poverty. The values for constant and trend have positive and negative effects on poverty at 1 percent and 5 percent levels of significance respectively while the Error Correction Mechanism (ECM<sub>t</sub>) adjust at 31 percent. These results corroborate the views of Adofu and Abula (2010); Adefeso and Mobalaji (2010); Onyeiwu (2012); and Nwosa, Adebisi, and Adedeji (2013).

Similarly, Panel B of Table 4 representing the disaggregated functional recurrent expenditure shows that past value of poverty has a positive and significant effect on the current value. Recurrent expenditure on social services and transfers were found to have positive and significant relationship with poverty in the short and long run periods. Additionally, the long run component indicated that lending rate affects poverty positively and significantly. These findings support the views of Monacilli *et al.* (2010) that increase in government spending generates output and unemployment multiplier and hence affecting poverty levels. The ECM<sub>t</sub> is negatively significant at 1 percent and revert back to equilibrium at 23 percent speed supporting the a priori expectation.

**Table 4: ARDL Result (Poverty) – Unrestricted Constant and Unrestricted Trend Short Run Estimate**

Panel A (Capital Expenditure)			Panel B (Recurrent Expenditure)		
Dependent Variable: PVTY			Dependent Variable: PVTY		
Variable	Coefficient	Prob.	Variable	Coefficient	Prob.
$\Delta PVTY_{t-1}$	0.434417**	0.0469	$\Delta PVTY_{t-1}$	0.649643***	0.0023
$\Delta UNMP_t$	0.060453	0.6215	$\Delta UNMP_t$	-0.192868	0.2227
$\Delta LADCE_t$	-6.054178**	0.0284	$\Delta LADRE_t$	2.462588	0.2419
$\Delta LADCE_{t-1}$	2.505187*	0.0642	$\Delta LESRE_t$	0.479865	0.7380
$\Delta LESCE_t$	-0.431329	0.7142	$\Delta LSSRE_t$	1.801999*	0.0925
$\Delta LSSCE_t$	4.373285**	0.0135	$\Delta LTRRE_t$	-1.002906	0.6193
$\Delta LSSCE_{t-1}$	-4.851940**	0.0145	$\Delta LTRRE_{t-1}$	4.908257***	0.0109
$\Delta LTRCE_t$	-1.491536*	0.0823	$\Delta LCFGE_t$	-3.407842	0.1438
$\Delta LRFGE_t$	-0.913261	0.7255	$\Delta RATE_t$	-0.013853	0.9007
$\Delta RATE_t$	0.372311*	0.0952	$\Delta RATE_{t-1}$	-0.288182**	0.0426

#### Long Run Estimate

Panel A (Capital Expenditure)			Panel B (Recurrent Expenditure)		
Dependent Variable: PVTY			Dependent Variable: PVTY		
Variable	Coefficient	Prob.	Variable	Coefficient	Prob.
$ECM_{t-1}$	-0.309784***	0.0007	$ECM_{t-1}$	-0.234976***	0.0011
$UNMP_t$	0.195145	0.6307	$UNMP_t$	-0.646733	0.2213
$LADCE_t$	-42.92552**	0.0407	$LADRE_t$	-6.821322	0.6236
$LESCE_t$	-6.146111	0.4334	$LESRE_t$	-2.652900	0.6671
$LSSCE_t$	38.25864***	0.0125	$LSSRE_t$	16.89539*	0.0804
$LTRCE_t$	-8.464618*	0.0755	$LTRRE_t$	-23.77510	0.2710
$LRFGE_t$	-7.182021	0.6836	$LCFGE_t$	-14.50292	0.1693
$RATE_t$	0.868617*	0.0676	$RATE_t$	1.422482**	0.0247
<b>TREND</b>	-0.972860**	0.0215	<b>TREND</b>	--0.361821	0.4485
<b>C</b>	14.45706***	0.0045	<b>C</b>	31.750790***	0.0013

Source: Author's Computation, 2019.

\*\*\* = 1%, \*\* = 5% and \* = 10% levels of significance

#### 4.5 ARDL Diagnostic Tests



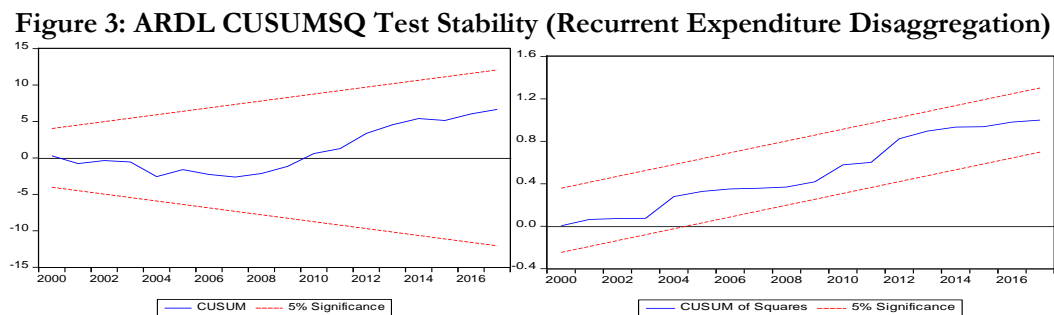
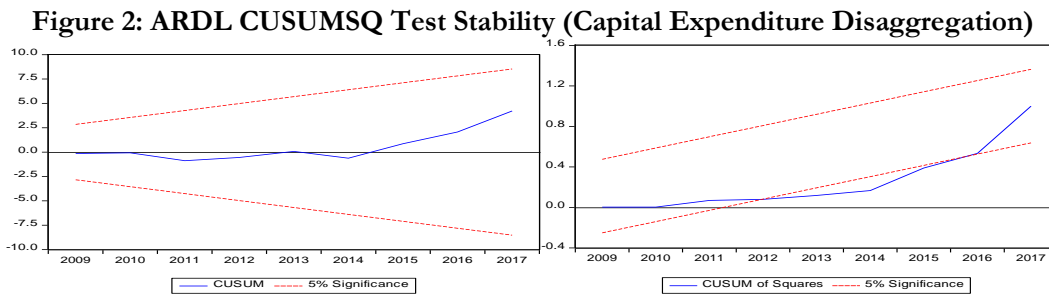
Pursuant to diagnose and analyse the residuals estimates on the ARDL model, various diagnostic tests were carried out as shown Table 5. The Breusch-Godfrey serial correlation LM test indicated no autocorrelation in the ECM residuals estimated for all the disaggregation components. The model also passes the heteroskedasticity test of Breusch-Pagan-Godfrey for the disaggregation of government expenditure. This conclusion is informed by their P-values. Similarly, the model passed the normality test as the probability of Jarque-Bera distribution is above 3 percent.

Stability test presented in Figures 1 and 2 reveals the stability of the short run dynamics alongside the long run coefficients of the estimated model which were assessed with CUSUM and CUSUMSQ tests. The result of the short run dynamics in Figure 1 suggests that the parameters generated for the model of functional capital expenditure components are stable as the cumulative residual fall within the critical bounds of 5% significance level. The long run dynamics negatively offshoots the 5% critical bounds initially and finally revert to settle within the bounds. Both the short run and long run dynamics for the components of functional recurrent expenditure in Figure 2 is also stable as CUSUM and CUSUMSQ parameters settle within the 5% critical bounds.

**Table 5: ARDL Diagnostic Tests Results**

Test Statistics	Panel A: Capital Expenditure		Panel B: Recurrent Expenditure	
	F-Statistic	P-Value	F-Statistic	P-Value
Serial Correlation	0.124458	0.8849	0.903988	0.4247
Heteroskedasticity	0.060453	0.9802	1.861492	0.1025
Normality	0.186400	0.9110	0.598458	0.7414

Source: Author's Computation, 2019



Source: Author's Computation, 2019

**4.6 Dynamic Interactions among Poverty, Unemployment and Components of Functional Government Expenditure (Toda-Yamamoto Causality Test Approach)**

Having verified the existence of cointegrating vectors for each of the functional components of capital and recurrent expenditure, poverty and unemployment, as well as estimated both the short and long run relationship among the variables of interest, it is imperative to carry out causality test. Granger Causality tests approach (Toda-Yamamoto, 1995) is employed to determine the dynamic relationships among poverty, unemployment and fiscal policy variables both in aggregate and functional disaggregate components in the VAR system.

The results, based on Toda and Yamamoto (1995) approach to Granger causality test, as reported in Table 6 show that the test results conform to the Chi-square distribution with 2 degrees of freedom (2df). Empirical evidence from the test result in the poverty (PVTY) equation indicated that unemployment does not cause poverty in Nigeria.

While all the variables in the poverty equation jointly cause poverty, only capital expenditure on economic services (LESCE) and transfers (LTRCE) individually cause poverty. This implies that government expenditure on the two functional components of capital expenditure can be used to effectively combat the scourge of poverty directly in Nigeria. In the unemployment (UNMP) equation, poverty (PVTY) and capital expenditure on social services (LSSCE) individually causes unemployment with no evidence of joint causality.

For the functional recurrent expenditure disaggregation, the causality test results in the poverty (PVTY) equation indicates that all the variables cause poverty individually except recurrent expenditure on social services and interest rate. This implies that these components of functional government expenditure have direct effects on poverty and so they can be used to tackle poverty except for recurrent expenditure on social services that is not significant in causing poverty in Nigeria. In the unemployment (UNMP) equation, no evidence of individual and joint causality was indicated among variables. This is an indication that government expenditure (recurrent or capital) may cause poverty directly without necessarily causing unemployment.

**Table 6: Toda-Yamamoto (T-Y) Causality Test Results for Capital Expenditure**

Dependent variable: PVTY			Dependent variable: UNMP			Dependent variable: LADCE		
Excluded	Chi-sq	Prob.	Excluded	Chi-sq	Prob.	Excluded	Chi-sq	Prob.
UNMP	4.38069	0.1119	PVTY	9.30231***	0.0096	PVTY	6.31702**	0.0425
LADCE	1.70163	0.4271	LADCE	4.13806	0.1263	UNMP	1.14272	0.5648
LESCE	13.4877***	0.0012	LESCE	4.68620*	0.0960	LESCE	14.3726***	0.0008
LSSCE	2.97751	0.2257	LSSCE	7.21991**	0.0271	LSSCE	30.1765***	0.0000
LTRCE	7.85814**	0.0197	LTRCE	2.95908	0.2277	LTRCE	53.3037***	0.0000
LRFGCE	1.85130	0.3963	LRFGCE	2.76498	0.2510	LRFGCE	7.8393**	0.0198
RATE	1.53830	0.4634	RATE	4.38618	0.1116	RATE	65.8081***	0.0000
All	41.4001***	0.0002	All	13.3139	0.5020	All	148.3782***	0.0000

**Toda-Yamamoto (T-Y) Causality Test Results for Recurrent Expenditure**

Dependent variable: PVTY			Dependent variable: UNMP			Dependent variable: LADRE		
Excluded	Chi-sq	Prob.	Excluded	Chi-sq	Prob.	Excluded	Chi-sq	Prob.
UNMP	4.676447*	0.0965	PVTY	3.421779	0.1807	PVTY	6.265084**	0.0436
LADRE	22.43932***	0.0000	LADRE	3.886744	0.1432	UNMP	0.143136	0.9309
LESRE	25.88225***	0.0000	LESRE	3.194508	0.2025	LESRE	0.612291	0.7363
LSSRE	3.807080	0.1490	LSSRE	2.296482	0.3172	LSSRE	1.462688	0.4813
LTRRE	15.94268***	0.0003	LTRRE	0.284007	0.8676	LTRRE	0.549716	0.7597
LCFGE	7.933295**	0.0189	LCFGE	3.864927	0.1448	LCFGE	1.399968	0.4966
RATE	1.560881	0.4582	RATE	0.603776	0.7394	RATE	4.998214*	0.0822
All	59.94707***	0.0000	All	12.32142	0.5805	All	29.97158***	0.0077

Source: Authors compilation, 2019.

Note: \*\*\*, \*\* and \* indicate the causation level of significance at 1%, 5% and 10% respectively. The degree of freedom is represented by df

## V. Conclusion

This paper investigated the relationship between functional government expenditures, unemployment and poverty and established if employment generation could be a veritable channel through which different components of functional government expenditure could impact on poverty reduction in Nigeria for the period 1980-2017. The components of functional government spending include recurrent and capital expenditure on economic service, social service, administration and transfer. The paper employs ARDL bounds tests approach since the unit root test results indicate mixed order of integration. The cointegration test reveals that the series are cointegrated, and hence, a long run relationship exists among the variables. The results reveal that lag one value of poverty significantly and positively affects the current year level of poverty. This validates the fact that poverty is inherent in Nigeria.

The results indicate that unemployment does not have any significant impact on poverty. This implies that unemployment is not be a channel through which government expenditure can be used to impact on poverty.

A look at the effects of functional government capital and recurrent expenditure on poverty reveals that administrative and transfer components of capital expenditure significantly and negatively influence poverty both in the short run and long run while social services component of capital expenditure has a positive effect on poverty. This shows that capital expenditure on economic services and transfers could be used to replenish reproducible capital thereby reducing poverty levels. It is noted however, that capital expenditure on economic services and social services has no direct significant impact on poverty but rather could be used to reduce unemployment. For the disaggregated functional recurrent expenditure, the estimated results show that none of the functional component of recurrent expenditure has no significant negative relationship with poverty in the short and long run periods.

The implication of the above findings is that in Nigeria, emphasis should be placed on the functional government capital spending especially administrative and transfers component of capital expenditure to reduce poverty directly. Also, since it has been established in the study that unemployment does not have significant relationship with poverty, capital expenditure on economic services and social services should be emphasized to tackle unemployment level in Nigeria.

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