ASYMMETRIC IMPACT OF GOVERNMENT SPENDING BEHAVIOUR ON NATIONAL INCOME AND UNEMPLOYMENT IN AFRICA

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ABSTRACT

This study examines the impact of government spending behaviour on growth of national income and unemployment in Africa. The study used a sample of 40 countries covering from 1970 to 2017. Dynamic panel models were employed and the result of Hausman test showed that Pooled Mean Group (PMG) estimator is preferred for the National Income Model and Unemployment model. The study found that increasing government spending has strong positive influence on growth of national income and negative influence on unemployment among African countries while reduction in government spending has significant negative influence on growth of national income and significant positive influence on unemployment of the countries. However, the positive changes in government spending of African countries has stronger influence on growth of income and employment than reductions in the government spending. This implies that government intervention in Africa is crucial for making available huge investments that could spur growth in income and creation of employment. The study recommends increasing government spending that could accelerate economic growth and create employment opportunities. This is because, private investors are seen incapable of making massive investments that could bring out higher growth of national income and employment. The study also recommends powerful fiscal instrument such as progressive tax system that could bring about an equitable distribution of income and wealth.

KEYWORDS: Economic growth, Fiscal Expansion, Government Spending and Unemployment

1. INTRODUCTION

Government spending is an expansionary fiscal policy instrument or tool used by governments in achieving desired macro-economic objectives or goals. Keynes (1936) created macroeconomic framework that focuses on stabilisation policy and suggested that spending is a public good that benefits everyone especially in times of recession, and that aggregate level of government spending helps to control aggregate demand (Sammut, 2014). However, there has been a debate concerning government involvement or government spending behavior in economic system and its outcome on an economy since the Keynesian and Neo Classical periods (Prasetyo & Zuhdi 2013). Prior to the Keynesian thought, the classical economists believed that an economy can

always be at full employment state but the classical thought lost its stands during the great depression of the 1930s (Attamah, Anthony & Ukpere, 2015). Thus, despite the debate, the assertion that government expenditure contributes positively to economic growth has become an accepted premise in most economies (Prasetyo & Zuhdi, 2013).

Recently, unemployment is viewed as one of the most intractable problems facing developing countries. It has become a cankerworm that is eaten deep into the fabric of developing economies. It is referred to the condition and extent of joblessness within an economy, and is measured in terms of the unemployment rate, which is the number of unemployed persons who are willing and able to work divided by the total labor force (Egbulonu & Amadi, 2016). Over the years, unemployment has increased in the region. According to International Labour Organisation (2019), unemployment in Africa increased from 6.4% in 2008 to 6.7% in 2010 and 6.9% in 2017 respectively. However, government spending as a percent of GDP has been in the increase from 14.18% in 2008 to 14.4% and 14.61% in 2010 and 2013 respectively (World Bank, 2019). Unemployment therefore been seen as a social and economic malady. It affects the standard of living of people in the economy. To Egbulonu and Amadi (2016), insecurity, insurgency and terrorism as well as militancy, kidnapping, sea piracy and pipe line vandalism is as a result of the high rate of unemployment in the region. According to Englama (2001), the issue of persistent unemployment is now frightening considering the fact that it is widening poverty, misery, and social unrest, ethnic cum religious crisis, robbery, kidnappings, terrorism and other social vices. Conversely, national income from some of these African countries have been on the rise without improvement in the level of unemployment in the region. However, the GDP per capita growth rate in Africa has declined from 1.57% in 2001 to 0.27% and -0.166% in 2009 and 2017 respectively (World Bank, 2019).

Hence, in an attempt to reduce unemployment, increase income and encourage employment generation, fiscal policy tool such as government spending has been used by most developing countries such as African countries. It is against this background that this study examines the asymmetric impact of government spending behaviour on national income and unemployment in Africa. This is to account for the exact impact of government spending behavior of African countries on national income and reduction of unemployment. The objective of this study therefore is to provide a framework that will fill the existing empirical gap as the study assesses the exact impact of negative and positive (asymmetric) changes in government spending on national income and unemployment in Africa.

The rest of this paper is organised as follows; section 2 discusses literature review. Methodology is presented in section 3 while section 4 presents, discusses and interprets the empirical results. Section 5 offers conclusion and policy recommendations.

2. LITERATURE REVIEW

This section focuses on both theoretical and empirical literature. The theoretical review explains the relevance of the theories relating to the phenomena under study while the empirical review accounts for the review of previous empirical studies.

2.1 Theoretical Literature

The study adopts the Keynesian theory which explains the relationship between the variables of interest. Keynes theory asserts that increases in government spending leads to high aggregate demand and rapid growth in national income (Keynes, 1936). He favored government intervention to correct market failures, criticize the classical economists and argues that we are all dead in the long-run (Keynes, 1936). Keynes rejected the idea that the economy would return to a natural state of equilibrium. Instead, he envisaged economies as being constantly in flux, both contracting and expanding. In response to this, Keynes advocated a countercyclical fiscal policy in which, during the boom periods, the government ought to cut spending, and during periods of economic woe, the government should undertake deficit spending. Keynes categorized government spending as an exogenous variable that can generate economic growth instead of an endogenous phenomenon. He believed the role of the government to be crucial as it can avoid depression by increasing aggregate demand and thus, switching on the economy again by the multiplier effect. It is a tool that bring stability in the short-run but this need to be done cautiously as too much of public expenditure lead to inflationary situations while too little of it leads to unemployment (Keynes, 1936). According to Keynes' theory of the fiscal stimulus, an injection of government spending eventually leads to added business activity and even more spending. The theory proposes that government spending boosts aggregate output and generates more income.Wagnerian theory however focused on the view that increase in national income causes more government spending (Bataineh, 2012; Ahmad & Loganathan, 2015). According to Wagnerian approach, the share of government spending increases with growth in national income (Kumar, Webber & Fargher, 2012).

2.2 Empirical Literature

Several studies have examined the relationship between government expenditure and economic growth. For instance, Kimaro, Keong and Sea (2017); Dudzevičiūtė, Šimelytė and Liučvaitienė (2018); Bojanic (2013); Kapunda and Topera (2013); Taiwo and Abayomi (2011) and Wang (2011); and Beraldo, Montolio and Turati (2009) conclude that increasing government expenditure spurs economic growth. But other studies like Carter, Craigwell, and Lowe (2013); Chang, Huang and Wei (2011); and Nurudeen and Usman (2010) demonstrated that increasing government expenditure reduces economic growth. A similar study was carried out by Kimaro, Keong and Sea (2017) using panel analysis of Sub-Saharan African low income earner in analyzing the impact of government expenditure and efficiency on economic growth. The study showed that increasing government expenditure accelerates economic growth of low income countries in Sub Saharan Africa. Holden and Sparrman (2016) also attempted the effect of government purchases on

unemployment in 20 OECD countries covering 1980 to 2007. The study found that increase in government purchases reduce unemployment.

2.3 Gap in the Literature and Value Addition

Very few studies have carried out analysis relating to the impact of government spending on economic growth in Africa (Kimaro, Keong & Sea, 2017). Holden and Sparrman (2016) also attempted the examination of the impact of government spending o unemployment in OECD countries. Hence, there is still a wide gap in understanding the asymmetric impact of government spending on national income and whether these spending have reduced the unemployment in the region. Hence, the novelty of this research is to fill this empirical gap.

3. RESEARCH METHODOLOGY

3.1 Model Specification

Using the Keynesian aggregate demand which can be written as:

$$Y = C + I + G + (X - M) \quad (1)$$

Where Y is the Aggregate income, C is the Consumption expenditure, I is the Investment expenditure, G is the government expenditure, X is the exports and I is the Imports. Assuming that aggregate demand can be represented by GDP at purchaser's prices, consumption expenditure by household final consumption expenditure, Investment expenditure by gross capital formation, government expenditure by general government final consumption expenditure and exports minus (-) imports for net trade in goods and services. But given that African countries are opened economies, the study incorporated foreign direct investment inflows and exchange rate as explanatory variables for the national income model. The model can be rewritten in a functional form and assuming the asymmetric effect of government spending on growth of national income as:

$$GDP_{it} = f(GSP\_POS_{it}, GSP\_NEG_{it}, HCE_{it}, GFCF_{it}, TBAL_{it}, FDI_{it}, EXR_{it}) \quad (2)$$

Where GDP= Gross Domestic Product at current purchase prices, GSP= Government spending, HCE= Household consumption expenditure, GFCF=Gross Fixed Capital Formation, TBAL=Trade balance, FDI= Foreign Direct Investment and EXR =Exchange rate.

The functional model of the asymmetric effect of government spending on unemployment can be written as:

$$UEM_{it} = f(GSP\_POS_{it}, GSP\_NEG_{it}, HCE_{it}, GFCF_{it}, TBAL_{it}, FDI_{it}, EXR_{it}) \quad (3)$$

Where UEM= unemployment rate.

Transforming the equation (2) and equation (3), the model can be rewritten stochastically as:

$$GDP_{it} = \beta_0 + \beta_1 GSP\_POS_{it} + \beta_2 GSP\_NEG_{it} + \beta_3 HCE_{it} + \beta_4 GFCF_{it} + \beta_5 TBAL_{it} + \beta_6 FDI_{it} + \beta_7 EXR_{it} + \eta_i + \nu_{it} \quad (4)$$

$$\ln UEM_{it} = \beta_0 + \beta_1 GSP\_POS_{it} + \beta_2 GSP\_NEG_{it} + \beta_3 HCE_{it} + \beta_4 GFCF_{it} + \beta_5 TBAL_{it} + \beta_6 FDI_{it} + \beta_7 EXR_{it} + \eta_i + \nu_{it} \quad (5)$$

Where

$\ln$ =Natural Logarithm.

Following dynamic linear panel model in an autoregressive form such as:

$$y_{it} = \alpha y_{i,t-1} + \beta' x_{it} + U_{it} \quad (6)$$

$$U_{it} = \eta_i + \nu_{it} \quad (7)$$

Applying the above typical linear dynamic panel model to equation (4) in assessing the asymmetric impact of government spending behaviour on growth of national income in Africa, the model is re-stated as:

$$GDP_{it} = \beta_0 + \delta GDP_{i,t-1} + \beta_1 GSP\_POS_{it} + \beta_2 GSP\_NEG_{it} + \beta_3 HCE_{it} + \beta_4 GFCF_{it} + \beta_5 TBAL_{it} + \beta_6 FDI_{it} + \beta_7 EXR_{it} + \eta_i + \nu_{it} \quad (8)$$

While applying the above typical linear dynamic panel model to equation (5) in assessing the asymmetric impact of government spending behaviour on unemployment in Africa, the model is re-stated as:

$$UEM_{it} = \beta_0 + \delta GDP_{i,t-1} + \beta_1 GSP\_POS_{it} + \beta_2 GSP\_NEG_{it} + \beta_3 HCE_{it} + \beta_4 GFCF_{it} + \beta_5 TBAL_{it} + \beta_6 FDI_{it} + \beta_7 EXR_{it} + \eta_i + \nu_{it} \quad (9)$$

Where

β_0	=	Intercept
$\beta_1 - \beta_7$	=	Parameter Coefficients to be estimated
η_i	=	Individual Specific Effect or Fixed Effect
ν_{it}	=	An idiosyncratic error

The error correction version of the equation (7) yields the following:

$$\Delta GDP_{it} = ec_{i,t-1} + \sum_{j=1}^{p} \delta_i \Delta GDP_{i,t-j} + \sum_{j=0}^{q} \beta_{1i} \Delta GSP\_POS_{i,t-j} + \sum_{j=0}^{q} \beta_{2i} \Delta GSP\_NEG_{i,t-j} + \sum_{j=0}^{q} \beta_{3i} \Delta HCE_{i,t-j} + \sum_{j=0}^{q} \beta_{4i} \Delta GFCF_{i,t-j} + \sum_{j=0}^{q} \beta_{5i} \Delta TBAL_{i,t-j} + \sum_{j=0}^{q} \alpha_{6i} \Delta FDI_{i,t-j} + \sum_{j=0}^{q} \alpha_{7i} \Delta EXR_{i,t-j} + \eta_i + \nu_{it} \quad (9)$$

And the error correction version of the equation (8) yields the following:

$$\Delta UEM_{it} = ec_{i,t-1} + \sum_{j=1}^{p} \delta_i \Delta GDP_{i,t-j} + \sum_{j=0}^{q} \beta_{1i} \Delta GSP\_POS_{i,t-j} + \sum_{j=0}^{q} \beta_{2i} \Delta GSP\_NEG_{i,t-j} + \sum_{j=0}^{q} \beta_{3i} \Delta HCE_{i,t-j} + \sum_{j=0}^{q} \beta_{4i} \Delta GFCF_{i,t-j} + \sum_{j=0}^{q} \beta_{5i} \Delta TBAL_{i,t-j} + \sum_{j=0}^{q} \alpha_{6i} \Delta FDI_{i,t-j} + \sum_{j=0}^{q} \alpha_{7i} \Delta EXR_{i,t-j} + \eta_i + \nu_{it} \quad (10)$$

Where the error correction term ($ec_{i,t-1}$) for growth of national income model is stated as:

$$ec_{i,t-1} = \theta_i[GDP_{i,t-j} - \alpha_{1i}GSP\_POS_{it} - \alpha_{2i}GSP\_NEG_{it} - \alpha_{3i}HCE_{it} - \alpha_{4i}GFCF_{it} - \alpha_{5i}TBAL_{it} - \alpha_{6i}FDI_{it} - \alpha_{7i}EXR_{it}] \quad (11)$$

While the error correction term ($ec_{i,t-1}$) for unemployment model is stated as:

$$ec_{i,t-1} = \theta_i[UEM_{i,t-j} - \alpha_{1i}GSP\_POS_{it} - \alpha_{2i}GSP\_NEG_{it} - \alpha_{3i}HCE_{it} - \alpha_{4i}GFCF_{it} - \alpha_{5i}TBAL_{it} - \alpha_{6i}FDI_{it} - \alpha_{7i}EXR_{it}] \quad (12)$$

$\theta_i = -(1-\delta_i)$, group specific speed of adjustment coefficient (expected that $\theta_i \prec 0$)

$ec_{i,t-1}$ measures how long it takes the system to converge to its long-run equilibrium due to any distortion that may arise. The apriori expectations of the variables is positive for all the variables except for exchange rate in instance where developing economies trade deficit.

3.2 Data Needs and Data Sources

GDP at current purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. The GDP data are in current US dollars (billions) and the data were sourced from World Bank. General government final consumption expenditure (formerly general government consumption) includes all government current expenditures for purchases of goods and services (including compensation of employees) and most expenditures on national defense and security, but excludes government military expenditures that are part of government capital formation. The data for government expenditure are in current U.S. dollars (billions) and are sourced from World Bank.
Household final consumption expenditure (formerly private consumption) is the market value of all goods and services, including durable products (such as cars, washing machines, and home computers), purchased by households. It excludes purchases of dwellings but includes imputed rent for owner-occupied dwellings, payments and fees to governments to obtain permits and licenses. Data for household final consumption expenditure are in current US dollars (billions) and are sourced from World Bank.

Gross capital formation (formerly gross domestic investment) consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. Data for gross capital formation are in current US dollars (billions) and sourced from World Bank.

Trade balance also known as net trade in goods and services is derived by offsetting imports of goods and services against exports of goods and services. The exports and imports of goods and services comprise all transactions involving a change of ownership of goods and services between residents of one country and the rest of the world. Data for trade balance are in current US dollars (billions) and are sourced from World Bank

Unemployment refers to the share of the labor force that is without work but available for and seeking employment. This is measured in percentage and the data were sourced from World Bank.

Official exchange rate refers to the exchange rate determined by national authorities or to the rate determined in the legally sanctioned exchange market. Exchange rate is measured as local currency units per dollar and the data were sourced from International Monetary Fund.

Foreign direct investment refers to direct investment equity flows in the reporting economy. It is the sum of equity capital, reinvestment of earnings, and other capital. The data are in current US dollars (billions) and the data were sourced from World Bank.

3.3 Estimation Procedure

This study used Dynamic Panel Data Models which have the following techniques or estimators; Generalized Method of Moments (GMM) (either First Difference GMM or System GMM, that is; the Arellano-Bond estimator and the Arellano-Bover/Blundell-Bond estimator), Mean Group (MG), Pooled Mean Group (PMG) and Dynamic Fixed Effects (DFE). But since the number of time series for the study is relatively larger than cross sections (T >N), non-stationary heterogeneous panel models are preferred where Pooled Mean Group (PMG) estimator and Mean Group (MG) estimator are considered. Hence, PMG estimator constrains the long-run coefficients to be the same across countries and allows only the short-run coefficients to vary while the MG estimator estimates separate regressions for each country and computes averages of the country-specific coefficients, which provides consistent estimates of the long-run coefficients (that is, it allows for all coefficients to vary and be heterogeneous in the long-run and short-run). The Hausman test was therefore used to decide whether PMG or MG estimator is appropriate for the study.

The study estimated descriptive statistics to explain the characteristics of each variable in the model; correlation analysis to show whether regressors have perfect or linearly exact representations of one another in order to avoid multicollinearity; panel unit root tests to ascertain whether any variable is integrated of order 2 or not. The desired level of integration of the variables is being stationary at level, I (0) or integrated of order one, I(1). The study used Im, Peseran and Shin (IPS) panel unit root test. The study assumed long-run homogeneity and tested the null hypothesis of homogeneity through a Hausman-type test to compare between the Mean Group and the Pooled Mean Group (PMG) estimators. The decision rule is: reject the null hypothesis if the probability value is less than 0.05. The null hypothesis is that MG and PMG estimates are not significantly different or PMG more efficient. Therefore, the outcome of the Hausman (1978) test determines which estimator is most preferred.

4. FINDINGS/RESULTS

4.1 Descriptive Statistics

The results of descriptive statistics are presented in Table 1.

Table 1: Descriptive Statistics

Variable	Observations	Means	Standard Deviation
GDP	1,918	19.599	51.414
GSP	1,918	2.748	7.422
HCE	1,918	12.921	34.06
GFCF	1,918	5.769	16.168
TBAL	1,918	-0.311	3.946
FDI	1,918	0.356	1.03
EXR	1,918	428.49	1864.775
UEM	1,918	9.0311	0.0267

Source: Authors' Computation from STATA Output.

The result in Table 1 indicates that gross domestic product averaged 19.599 billion US dollars among the African countries within the study period. Government spending and household consumption expenditure averaged 2.748 billion US dollars and 12.921 billion US dollars with the standard deviations of 7.422 and 34.06 respectively. Trade balance averaged negative value of -0.311 billion US dollars within the study period. This indicates that African countries record unfavourable balance (trade deficit) which means that imports are more than exports. Gross Fixed Capital Formation and Foreign Direct Investment in Africa averaged 5.769 billion US dollars and 0.356 billion US dollars with standard deviations of 16.168 and 1.03 respectively. The high average value of exchange rate of 428.8.49 indicates the low value of African countries currencies to US dollar. Unemployment also averaged 9.03% in Africa during the study period. The high standard deviations implies that there is wide spread in the distribution of data across panels.

4.2 Correlation Results

The result of correlation analysis is presented in Table 2.

Table 2: Correlation Test Results

	GDP	GSP	HCE	GFCF	TBAL	FDI	EXR	UEM
GDP	1							
GSP	0.8952	1						
HCE	0.7711	0.838	1					
GFCF	0.6714	0.6122	0.5925	1				
TBAL	-0.0152	-0.0492	-0.1171	0.0059	1			
FDI	0.7354	0.6357	0.7284	0.4739	-0.0738	1		
EXR	-0.0503	-0.0592	-0.0392	-0.0387	-0.0134	-0.0188	1	
UEM	0.1852	0.2804	0.1441	0.1550	0.1373	0.0579	-0.1273	1

Source: Authors' Computation from STATA 15 Output.

From the result of correlation test in Table 2, it implies that all the regressors are not linearly dependent on one another or exact. Hence, there is absence of multicollinearity in the model.

4.3 Panel Unit Root Tests Results

The result of panel unit root test using Im, Pesaran and Shin (IPS) test is presented in Table 3.

Table 3: Stationarity Test Results for the Panel Data

Variables	Im, Peseran and Shin (IPS)			Decision
	W-t-bar Statistic	Probability Value	Order	Remark
GDP	14.8421	1.0000		Not Stationary
D.GDP	-18.4661	0.0000*	1(1)	Stationary
GSP	10.4260	1.0000		Stationary
D.GSP	-15.0917	0.0000*	1(1)	Stationary
HCE	12.6151	1.0000		Not Stationary
D.HCE	-16.2035	0.0000*	1(1)	Stationary
GFCF	8.2481	1.0000		Not Stationary
D.GFCF	-17.8993	0.0000*	1(1)	Stationary
TBAL	1.6054	0.9458		Stationary
D.TBAL	-19.0151	0.0000*	1(1)	Stationary
FDI	0.7819	0.7829		Not Stationary
D.FDI	-25.7833	0.0000*	1(1)	Stationary
EXR	12.0470	1.0000		Not Stationary
D.EXR	-15.8265	0.0000*	1(1)	Stationary
UEM	0.3235	0.6268		Not Stationary
D.UEM	-14.2024	0.0000*	1(1)	Stationary

Source: Authors' Computation from STATA 15 Output. Note: The asterisk (*) denotes rejection of the null hypothesis that series has unit root at 5% level of significance.

Result in Table 3 shows the stationarity of the panels. The result indicates that all the panels contain unit roots at levels. However, the panels became integrated of order one after first difference. Thus, the variables were not integrated of order higher than one thereby satisfying the conditions for application of panel ARDL or non-stationary heterogeneous panel models.

4.4 Impact of Government Spending Behaviour on Growth of National Income in Africa.

The study employed Panel ARDL and the results of Hausman test are presented in Table 4. To determine the appropriate estimator, if the probability value of the Chi-square of the Hausman test is less than 0.05, we reject the null hypothesis (H_o: difference in coefficients not systematic) and conclude that the difference in the coefficients is systematic and preferably, use the estimates of MG estimator, otherwise, PMG estimates would be preferred.

Table 4: Hausman Test Results for National Income Model

	(b)	(B)	(b-B)	Sqrt (diag (V_b-V_B))
Variables	**mg**	**pmg**	**Difference**	**S.E**
GSP_POS	-669.1206	1.038473	-700.1591	1437.51
GSP_NEG	1.579347	-0.9196451	2.4989921	7.11125
HCE	22.1855	0.9780268	21.20747	35.7696
GFCF	-1.907433	0.9910314	-2.898465	3.83489
TBAL	0.701843	0.9637353	-0.2618709	2.5271
FDI	5.066443	0.2279045	4.838538	7.25831
EXR	-3.411357	0.0002503	-3.411607	7.18233
Chi-square (7) = 4.24				
Prob. = 0.7520				

Source: Author's Computed from STATA 15 Output

The results in Table 4 showed the chi-square value of 4.24 with its probability value of 0.752 that is greater than the 0.05 (at 5% level of significance). Therefore, we do not reject the null hypothesis and conclude that difference in coefficients not systematic and hence, PMG estimator is preferred over MG estimator. The results of long-run estimates are presented in Table 5. This means that Pooled Mean Group (PMG) constrains the long-run coefficients to be the same across countries (cross-sections) and allows only the short-run coefficients to vary due to short-run policy changes and structures.

Table 5: Long-run Estimates of National Income Model

GDP	**Coefficient**	**Std. Err.**	**z**	**P>|z|**
GSP_POS	1.03847	0.047393	21.91	0.000*
GSP_NEG	-0.91965	0.078515	--11.71	0.000*
HCE	0.97803	0.008863	110.35	0.000*
GFCF	0.99103	0.020663	47.96	0.000*
TBAL	0.96374	0.270757	35.59	0.000*
FDI	0.2279	0.053773	4.24	0.000*
EXR	0.00025	0.000068	3.68	0.000*

Source: Author's Computed from STATA 15 Output. The asterisk (*) denotes rejection of null hypothesis that the estimate of the variable is not highly significance at 5% level of significance.

The result of the PMG estimator shows that an increasing government spending have significant positive influence on growth of national income among African countries in long-run by 1.038 at 5% level of significance. This implies that increase in government spending leads to 1.038 increases in growth of national income in Africa. On the other hand, a reduction in government spending leads to 0.919 reduction in the growth of national income in Africa. This explains the asymmetric impact of government spending behaviour on growth of income in Africa. This implies

that increasing government spending (expansionary fiscal policy) is more beneficial to the growth of African countries than a contractionary fiscal policy of cutting government spending. The results also show that the magnitude of the effect of government spending behavior (either increasing or decreasing government spending) on national income differ. Other estimates such as household consumption expenditure, gross fixed capital formation, trade balance and foreign direct investment are theoretically plausible and statistically significant at 5% level of significance. The estimated coefficient of exchange rate also has positive influence on growth of national income in Africa. This implies that increase in household consumption expenditure and gross fixed capital formation, favourable trade balance, increased foreign direct investment inflows and exchange rate depreciation have strong positive influence on growth of African countries in the long-run. Mixed effects (positive and negative impact) of government spending on national income were revealed in the short-run due to differences in short-terms and medium term policies among the African countries. However, the study revealed significant speed of adjustment to long-run equilibrium in case of initial distortions.

4.6 Impact of Government Spending Behaviour on Unemployment in Africa.

The study employed Panel ARDL and the results of Hausman test are presented in Table 6. To determine the appropriate estimator, if the probability value of the chi-square of the Hausman test is less than 0.05, we reject the null hypothesis (H_o: difference in coefficients not systematic) and conclude that the difference in coefficients is systematic and preferably, use the estimates of MG estimator, otherwise, PMG estimates would be preferred.

Table 6: Hausman Test Results for Unemployment Model

	(b)	**(B)**	**(b-B)**	**sqrt(diag(V_b-V_B))**
Variables	**mg**	**pmg**	**Difference**	**S.E**
GSP_POS	-0.0387	-0.2854	0.24674	0.44039
GSP_NEG	0.65916	0.47515	0.184008	1.06535
HCE	-0.0387	-0.094	0.05532	0.25879
GFCF	1.03881	-0.4934	1.532217	0.91052
TBAL	0.09368	-0.1372	0.230864	0.15751
FDI	0.19881	-0.0415	0.240297	0.24841
EXR	-2.4114	0.013	-2.424357	1.18233
Chi-square = 7.33				
Prob. = 0.2917				

Source: Author's Computed from STATA 15 Output

The result in Table 6 shows the chi-square value of 7.33 with its probability value of 0.2917 that is greater than 0.05 (at 5% level of significance). Therefore, we do not reject the null hypothesis and conclude that PMG estimator is preferred over MG estimator. The results of long-run estimates

are presented in Table 7. This means that Pooled Mean Group (PMG) constrains the long-run coefficients to be the same across countries (cross-sections) and allows only the short-run coefficients to vary due to short-run policy changes and structures.

Table 7: Long-run Estimates of Unemployment Model

UEMP	Coefficient	Std. Err.	z	P>|z|
GSP_POS	-0.28543	0.077353	-3.69	0.000*
GSP_NEG	0.47515	0.124384	3.82	0.000*
HCE	-0.09401	0.024311	-3.87	0.000*
GFCF	-0.49341	0.102515	-4.81	0.000*
TBAL	-0.13718	0.078343	-1.75	0.080*
FDI	-0.04149	0.009111	-4.55	0.000*
EXR	0.01300	0.003532	3.68	0.000*

Source: Author's Computed from STATA 15 Output. The asterisk (*) denotes rejection of null hypothesis that the estimate of the variable is not highly significance at 5% level of significance.

Similarly, the result of the PMG estimator shows that an increasing government spending have significant negative influence on unemployment among African countries in long-run by 0.285 at 5% level of significance. This implies that increase in government spending leads to 0.285 reduction in the level of unemployment in Africa. On the other hand, a reduction in government spending leads to 0.475 increases in the level of unemployment in Africa. This explains the asymmetric impact of government spending behavior on unemployment in Africa. This indicates that increasing government spending improves employment situation in Africa than reduction in government spending. Other estimates such as household consumption expenditure, gross fixed capital formation, foreign direct investment and exchange rate are theoretically plausible and statistically significant at 5% level of significance. There are also mixed effects (positive and negative impact) of government spending on unemployment in the short-run due to differences in short-terms and medium term policies among the African countries. The positive influence of exchange rate on unemployment implies that exchange rate depreciation among African countries exposed firms and individuals to excessive cost that retards their production level thereby increasing the level of unemployment among the African countries. The study also revealed high convergence speed towards long-run equilibrium in case of initial distortions.

5.0 Discussions and Conclusions

The study found that there is asymmetric effect of government spending on national income and unemployment in Africa. The implication is that increasing government spending spurs economic growth and reduces the level of unemployment in Africa. This conforms to the theoretical argument of Keynes that increases in government spending leads to high aggregate demand and rapid growth in national income and too little of government spending leads to unemployment and reduction in income (Keynes, 1936). However, the improvement in national income and reduction

in unemployment due to increased government spending have higher impact relative to the income and unemployment effects of reduction in government spending in Africa.

6.0 Recommendations and Policy Implications

The study recommends the following for policy options:

i. The Nigerian government should increase government spending that could accelerate economic growth and create employment opportunities. This is because, government expenditure boost aggregate demand through its multiplier effect which in turn create employment and higher output.

ii. More so, private investors are seen incapable of making massive investments that could bring out higher growth of national income and employment. Friendly business environment should be created by the Nigerian government while credit facilities should also be enhanced. This, there should be judicious use of government resources towards attaining the set macroeconomic goals of employment, higher income, stability, among others.

iii. The study also recommends powerful fiscal instrument such as progressive tax system that could bring about an equitable distribution of income and wealth. These can be done through expansionary fiscal policy.

7.0 Limitations and direction for future research

This study is limited to one fiscal tool for actualizing desired macroeconomic objectives of income improvement and unemployment reduction. There are other fiscal policy tools such as taxes and public debt. More so, appropriate policy mix mimic the policy combinations adopted by several countries. Hence, the study further suggests assessment of the effectiveness of fiscal policy tools in actualizing macroeconomic goals of income, price stability and unemployment in developing countries and not just Africa for sound generalization.

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