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Public Spending for Growth – Induced Employment: The Nigerian Experience

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Authors' contributions

This work was carried out in collaboration between both authors. Author SOO designed the study and wrote the first draft of the manuscript. Author KJ reviewed the literature and analyzed the data. Author SOO interpreted the results of data analysis. Both authors read and approved the final manuscript.

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ABSTRACT

Rising unemployment has become a global phenomenon with its attendant social vices. Both developed and developing countries now grapple to cope with the problems of unemployment arising from global recession. Unemployment in Nigeria has assumed a more dangerous dimension with over 40 million Nigerian youths not having any chances of securing jobs in the next 10 years. The lack of elaborate employment policy has made matters worse. Efforts in this article were focused on identifying potent factors in public spending –economic growth-government revenue-employment nexus which could be constituted into dynamic employment policy instruments. The study revealed that deficit financing of recurrent expenditure was a most important single factor inhibiting public spending from inducing economic growth for employment generation. It was recommended, inter alia, that to ensure its efficiency, tax policy, pricing policy, exchange – rate policy and credit policy should form integral components of a country's employment policy.

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Jel classification: E60, E62, H00, H50, H53.

1. INTRODUCTION

Nigerian economy had remained agro based till the seventies. Hitherto, agriculture was the mainstay of the Nigerian economy. Awolowo [1] had stated that three out of every four Nigerians worked on the land and seventeen shillings out of every pound earned from export came from agricultural products. Even though the oil boom of the 1970's had led to the total neglect of the agricultural sector, agriculture still provides employment to over 70 per cent of the country's population [2]. Agricultural sector has continued to remain the dominant sector of the Nigerian economy [3].

Huge revenues from export of crude oil led to total neglect of agriculture. There was a shift of emphasis by successive governments from agriculture to industry. This had caused a sharp decline in investment in agricultural production and agricultural education. The economic consequence of this was, true to expectation a sharp fall in agricultural yield, and employment level. Shift of emphasis from agriculture to industry implied the channeling of resources away from agriculture to industry. The resulting transfer of demand rendered vocations in industry lucrative and attractive to workers in agricultural sector. Rural-urban migration occurred frequently as farmers abandoned their implements and tools in search of jobs in industries and the public service. The declining agricultural output and increasing farmer migration had constituted a drain on the revenue base and labour force of the agricultural sector, thereby fuelling growing dependence on oil export and an increasing need for further industrialization.

Nigeria's reliance on industrialization to achieve growth and development was conditioned by transfer of wealth from the export of crude oil [4]. Huge investment of oil revenues in public sector was productive in fostering the growth of public enterprises. By the 1980's, public enterprises had started playing dominant role in the Nigerian economy contributing about 50 per cent to GDP and more than 60 per cent to employment. The growing importance of public enterprises in revenue and employment generation provided the impetus for establishment of public enterprises in almost all sectors – mining, energy, transport, agriculture, manufacturing, commerce, social services and utility. By 1985, total government capital investment in these enterprises stood at ₦23 billion with ₦8 billion in equity and ₦15 billion in loans. With 70 non-commercial and over 100 commercial public enterprises, the federal government incurred annually 40 per cent of its non-salary expenditure and 30 per cent of its capital expenditure for the maintenance of these enterprises.

Low returns to investment and poor management acted as disincentive to the federal government to continue to finance public enterprises. With the crash of international oil price in 1986, Nigeria's fiscal and monetary postures became precarious thereby rendering further maintenance and sustenance of these public enterprises almost impossible. Following the approval of federal government proposal for partial and full privatization/commercialization of public enterprises by Council of States in November, 1987, Nigeria adopted the policy of privatization of its public enterprises. Privatization was aimed at curtailing wasteful expenditure and inducing revenue generation. However, it is surprising that public enterprises have continued to spread in Nigeria even after privatization exercise started. Jerome, cited in [5] had reported that by 2008 there were 600 public enterprises in Nigeria accounting for 50 per cent of GDP, 57 per cent of total investment, and 66 per cent of total employment. A plausible explanation of this is that the federal government has continued to pursue with extreme caution the privatization of public enterprises in order to forestall displacement of labour which occurs quite often when a public enterprise is transferred to private hands. Privatization of Nigerian International Telephone Exchange Limited (NITEL) and Power Holding Company (PHC) had displaced over 50,000 workers who now exert pressure on the already overstretched labour market.

Thus, Nigeria is currently faced with a situation of ever-increasing public expenditure and ever-decreasing returns to investment. This situation was worsened by the recent collapse of international oil price which has rendered the

Nigerian economy insolvent and incapable of sustaining its present level of employment. Anaeto [6] reported that most state governments are unable to pay workers' salaries for several months due to "economic policy constraints" hinged on bad debt and salary backlog. President Muhammadu Buhari has described the situation where Nigeria cannot pay its workers as a "disgrace". Indeed, it is surprising that the huge public expenditures and huge oil revenues which had facilitated a favourable combination of factors of production to yield the largest GDP in Africa cannot even sustain its workforce, let alone create new jobs. Twenty-two states out of the thirty-six states in Nigeria could not pay their workers for several months, and over 40 million Nigerians are unemployed, without any chances of securing jobs in the next ten years.

Unemployment in Nigeria has assumed a most dangerous dimension. The incidence of unemployment in Nigeria in this 21st century is alarming. The rates keep on rising without any appreciable effort to cushion the effects [7]. Social vices associated with unemployment in Nigeria include prostitution, human trafficking, drug trafficking, kidnapping, armed robbery, terrorism, etc. 'Boko Haram', a deadly terrorist group in Nigeria exploits the large reserve of unemployed Nigerians to boost their strength and capacity to unleash acts of terror. Unemployment now threatens the very existence of the Nigerian nation. It has evoked the concern of statesmen, academics, policy-makers and public-spirited individuals. Successive governments in Nigeria had adopted several measures aimed at creating jobs and reducing unemployment. Despite the efforts of successive governments, unemployment has continued to rise endlessly. This is partly because the measures were half hearted, being products of political considerations which thrive on political slogans and hatch in political propaganda. Or how could one justify the extension of retirement age of civil servants by a government committed to elimination of unemployment in a country characterized by 'chronic' unemployment? It is simply a matter of fact that Nigeria has no dynamic employment policy. Therefore, there is a dire need to embark on the present study aimed at isolating potent factors to activate government spending to generate revenue and employment maximally.

The paper was organized into six sections including the running section on 'Introduction'. Section 2 deals with literature review. Section 3 deals with method and procedure. Section 4 deals with the results of data analysis while Section 5 deals with empirical result and discussion. Finally, Section 6 deals with conclusion and policy implication.

2. LITERATURE REVIEW

The review of related literature has been discussed under theoretical literature and empirical literature.

2.1 Theoretical Literature

Economic literature is replete with theories on public expenditure, economic growth, and employment relationships. Prominent among these theories are Wagner's law of increasing state activities and Keynesian income/ expenditure hypothesis which have been considered crucial to the conduct and advancement of this study.

2.2 Wagner's Hypothesis

Adolph Wagner, proposed in 1893 that public expenditure is a natural consequence of economic growth. This proposition had evolved over the years into Wagner's Law of Increasing State Activity. This law states that a higher level of economic development leads to an increase in its relative size of public sector. The major implications of Wagner's hypothesis are: (1) As an economy grows industrialization and urbanization which occur would lead to a higher public expenditure. (2) Real income growth would lead to a higher level of demand for basic infrastructure. (3) Government interference is necessary in order to check monopolistic tendencies and ensure economic efficiency of the productive sector [8].

Wagner's hypothesis occupies a niche in the present analysis which relies heavily on its adapted version for the choice of relevant variables and their ordering in the scheme of this work. Wagner's law of increasing state activities postulates that there is a positive relationship between economic activities and government expenditure [9]. However, Dutt and Ghosh [10] had asserted that Wagner did not present his law in a mathematical form and he was not explicit in the formulation of his hypothesis. For this reason several versions of Wagner's law have been adapted by different authors. Prominent among these versions are:

Version I (Peacock – Wiseman, 1979)

$$\ln G_t = \alpha_0 + \alpha_1 \ln Y_t + e_t \qquad \alpha_1 > 1$$

Where G_t is the real total government expenditures, GC_t is real government consumption expenditures, Y_t is real income and P is population.

In this version, it is assumed that the α_1 parameter which represent the elasticity of government expenditures with respect to output exceeds unity.

Version 2 (Mann, 1980) – A modified version of Peacock – Wiseman's model.

$$\ln (G/Y)_t = \beta_0 + \beta_1 \ln Y_t + e_t \qquad \beta_1 > 1$$

In this model, government expenditure/total output ratio is a function of real output. It is assumed in this model that elasticity of government share in total output with respect to output exceed zero.

Version 3 (Musgrave, 1969)

$$\ln (G/Y)_t = \gamma_0 + \gamma_1 \ln ([Y/P])_t + e_t \qquad \gamma_1 > 1$$

In this model, real government expenditures/output ratio is a function of real per capita output; it is assumed in this model that γ_1 exceed zero.

Version 4 (Gupta, 1967)

$$\ln (G/P)_t = \delta_0 + \delta_1 \ln ([Y/P])_t + e_t \qquad \delta_1 > 1$$

This model specifies real per capita government expenditures as a function of real per capita output. The model is valid where elasticity of per capita real government expenditures with respect to real per capita output exceed unity.

Version 5 (Goffman, 1968)

$$\ln Gt = \rho_0 + \rho_1 \ln ([Y/P])_t + e_t \qquad \rho_1 > 1$$

In this model, the real government expenditures are specified as a function of real per capita output. The model is valid under the assumption that elasticity of real government expenditures with respect to per capita output exceed unity.

Version 6 (Pryor, 1968)

$$\ln GC_t = \theta_0 + \theta_1 \ln Y_t + e_t \qquad \theta_1 > 1$$

In this model, real government consumption expenditures are specified as a function of real output. This model is valid under the assumption that the elasticity of government consumption with respect to income exceed unity.

However, a major limitation of Wagner's hypothesis in its relevance to this study is the endless list of variables that could be categorized in state activities.

2.3 Keynesian Hypothesis

Keynesian hypothesis has provided an alternative approach toward the indepth understanding of the relationship between public expenditure and economic growth. In contrast to Wagner's law, Keynesian hypothesis assumes that growing government expenditure may lead to a higher level of aggregate demand, which in turn promotes economic growth. Singh and Sahni [11] had stated that relationship between public expenditure and national income had been extensively analyzed under two different approaches – Wagner's law and Keynesian hypothesis. The two different approaches had yielded two conflicting conclusions bothering on causality. While Wagnerian approach states that the causality runs from economic development to government expenditure, according to the Keynesian approach, the direction of causality runs in the opposite side [12].

The importance of Wagner's law and Keynesian hypothesis in the present study cannot be overemphasized. However, there is a preferred choice of Wagner's law over Keynesian hypothesis as a theoretical base of this study due to the special treatment of government expenditure and economic growth in Wagnerian analysis. Incidentally public expenditure and economic growth constitute two major variables in the present study. Government expenditure/economic growth now serve as an important fiscal policy measure for controlling cyclical fluctuations arising from economic recession. Certainly, a detailed analysis of the interrelationships among various fiscal policy variables and economic growth variables could yield certain factors which would have applicability in remedying the structural imbalance due to recession.

2.4 Empirical Literature

Studies in empirical literature were reviewed under the following sub-headings:

- Public expenditure – Economic Growth Nexus
- Public expenditure – Revenue/ Employment Nexus
- Economic growth - Employment Nexus

2.5 Public Expenditure – Economic Growth Nexus

Studies in this area are not new. Public expenditure-economic growth nexus has evoked the interest of researchers in Nigeria and overseas.

Barro [13] reported that the ratio of real government consumption expenditure to real GDP had a negative association with growth and investment, and growth was inversely related to the share of government consumption in GDP.

Hulten and Schwab [14] and Tatom [15] reported findings which indicate that public expenditure on economic infrastructures such as health and education has negative impact on economic growth or at least has no significant effect on output of private sector.

Oyinlola [16] carried out a study on the relationship between defence sector and economic development. He found that defence expenditure had positive impact on economic growth.

Hansson and Henrekson [17], in their study found that an increase in total government spending by 10 percentage points would reduce the growth rate of total factor productivity by 0.92 per cent per annum.

Ogiogio [18] found a long-term relationship between government expenditure and economic growth in Nigeria. Moreover, his findings revealed further that recurrent expenditure exerted more influence on growth than did capital expenditure.

Folster and Henrekson [19] found a tendency toward a more robust negative growth effect of large public expenditure.

Fajingbes and Odusola [20] reported a finding which indicates that real government capital expenditure has a significant positive influence on real output.

Al-Yousif [21] reported that government spending had a positive relationship with economic growth in Saudi Arabia.

Bose, et al. [22] found that the share of government capital expenditure in GDP was positively and significantly correlated with economic growth.

Ramirez [23] using Mexican data for the period, 1955-1999, concluded that public infrastructure comprised of transport, communication, water and sewer systems, education and health care positively affected growth.

Akpan [24] used a disaggregated approach to determine the components of government expenditure that enhance growth, and those that do not. He concluded that there was no significant association between most components of government expenditure and economic growth.

Ismihan, Metin-Oczan and Tansel [25] in their study for Turkey during the period, 1963-1999, found a significant impact of public and public core investment on growth in the medium but not in the long term.

Komain and Brahmasrene [26] studied the association between government spending and economic growth in Thailand. They employed Granger causality test to analyze the data. The results indicate that government spending and economic growth were not co-integrated.

Olugbenga and Owoye [27] investigated the relationship between government spending and economic growth for a group of 30 OECD countries for the period, 1970-2005. The results of regression analysis revealed the existence of a long-run relationship between government expenditure and economic growth.

Ranjan and Sharma [28] studied the effect of government development expenditure on economic growth for India for the period, 1950-2007. They found a significant positive impact of government expenditure on economic growth.

Nurudeen and Usman [29] investigated the effect of government expenditure on economic growth in Nigeria. They employed disaggregated analysis. The results indicate that government total capital expenditure, total recurrent expenditure and government expenditure on

education had negative effect on economic growth.

Gangal and Gupta [30] studied the relationship between public expenditure and economic growth for India. Data were analyzed using ADF Unit Root Test, Cointegration Test and Granger Causality test techniques. They found that there existed a unidirectional relationship from total expenditure to economic growth.

Oktayer and Oktayer [12] analyzed the relationship between government expenditure and economic growth in Turkey for the period 1950-2010. Data were analyzed with autoregressive distributed lag cointegration technique in order to test for validity of Wagner's law. The results indicate that there was a long-run relationship between non-interest government expenditure and economic growth.

Mura [31] studied the effects of productive public expenditures on economic growth using panel data. He found that education, R & D and infrastructure expenditure were positively correlated with economic growth while health expenditure had weak negative relationship.

2.6 Public Expenditure- Revenue/ Employment Nexus

Sizeable volume of literature exists on public expenditure – employment nexus. Recent studies were reviewed in this section.

Okoh [32] had reported that an increased in public expenditure led to reduction in employment in Nigeria.

Samuelson and Nordhaus [33] observed that public expenditure grows in the same direction to achieve growth in labour.

The Joint Economic Committee of U.S. Congress, JEC cited in [5], had published a report which revealed that government spending reduced labour force participation and increased unemployment, while reducing labour productivity.

Fu, Taylor and Yucel [34] observed that increases in government spending or taxes led to persistent decreases in the rate of job growth.

Wells [35] reported that public investment on highways led to enhanced employment generation in U.S.

Schwartz, Andres and Dragoiu [36] had reported that the direct and indirect short-term employment generation potentials of infrastructure capital project may be considerable.

Heintz and Pollin [37] and Romer and Bernstein cited in [36], reported that infrastructure investment impacted on short-term employment generation in three levels: primary impact in the form of those directly employed on the site, secondary impact in the form of those indirectly employed in the manufacture of materials and equipment; tertiary impact in the form of the induced employment generation by direct and indirect jobs created.

Magazzino [38], studied revenue-expenditure nexus in ECOWAS countries for the period 1980 to 2011. He had reported a weak long-run relationship between government expenditure and revenue in West African Monetary Zone. His study also revealed that Granger causality test showed that government revenue drives expenditure in Gambia, Liberia, Nigeria and Sierra Leone.

Obeng [39] studied revenue – expenditure nexus in Ghana for the period 1980-2013. He employed OLS technique to analyze the data. He reported that there existed both short-run and long-run relationships between government revenue and government expenditure and that government revenue caused government expenditure.

2.7 Economic Growth – Employment Nexus

Studies on economic growth and employment relationship have been reviewed in this section.

Ogunrinola [40] reported that the urban informal sector of Ibadan had contributed significantly to employment generation, skill development and entrepreneurial development.

The Joint Economic Committee of U.S. Congress [5] had published a report which concluded that economic growth was created over the long run by a labour force which possessed the incentive to work and produce, and by entrepreneurs who had incentives to invest in capital stock. However, the committee had maintained that government spending reduced labour force participation, increased unemployment, and reduced productivity.

Walterskirchen [41] analyzed the linkage between economic growth and the labour market. He reported a strong positive correlation between GDP growth and changes in the level of employment.

Onwuoduokit [42] studied the linkage between unemployment and several macroeconomic variables in Nigeria. He concluded that the shift in the composition of unemployment in Nigeria since 2000 is very instructive. Result has brought to the fore the inadequacies of the received theory toward explaining the unemployment phenomenon in the country.

Swane and Vistrand [43] examined the GDP-employment growth relationship in Sweden. They reported that there was a significant and positive relationship between GDP and employment growth.

Yogo [44], in an empirical survey of the linkage between employment and growth in Sub-Saharan African countries, attributed the weak employment performance to weakness of economic growth over time.

Sodipe and Ogunrinola [45] reported that there was a positive and statistically significant relationship between employment level and economic growth in Nigeria.

2.8 Shortcomings of the Empirical Literature

The review of empirical literature on public expenditure-economic growth nexus has revealed some shortcomings which are worthy of mention. An important limitation of studies by Barro [13], Oyinlola [16], Fajingbes and Odusola [20], Bose et al. [22], Ramirez [23], Akpan [24], Ismihan, Metin-Oczan and Tansel [25], Ranjan and Sharma [28], Oktayer and Oktayer [12] and Mura [31] analyzed relationship between components of public expenditure and economic growth. It could be possible that a detailed analysis involving total expenditure and economic growth would yield different results. However, the nature of correlational analysis between government expenditure and economic growth has placed a high premium on Wagner's law and Keynesian hypothesis as relevant theoretical theories for the present study.

Moreover, review of empirical literature on public expenditure – revenue/employment nexus has revealed that Wells [35], Schwartz et al. [36], Heintz and Pollin [37] and Romer and Bernstein [36] had employed disaggregated public expenditure in their analysis. It is possible that the analysis with total government expenditure rather than its disaggregated components might yield a different result. On the whole the findings of these studies serve as an indication of existence of strong relationship among the variables which had warranted the application of factor analysis to identify factors influencing the interrelationships among the included variables.

Furthermore, review of empirical literature on economic growth – employment nexus has revealed that Ogunrinola [40] and Onwuoduokit [42] had also analyzed the relationship between components of public expenditure and employment. This again is an important limitation which could undermine the accuracy of the result.

2.9 Summary of Review

Literature review has revealed that there are conflicting findings on public expenditure-economic growth nexus, public expenditure – employment nexus and economic growth-employment nexus. Significant positive relationships among public expenditure, economic growth and employment did not come as a surprise. Since the results are a validation of Keynesian theory on income and employment determination. Keynes had argued that injection of income, in particular, would result in greater spending in the economy and employment generation which, in turn, would stimulate more production and investment, thereby creating a multiplication of original investment. On the contrary, the findings of negative correlation among public expenditure, economic growth and employment are a violation of Wagner's law. No plausible explanation was provided for the negative relationships among these variables. There was therefore the need to embark on the present study. Apart from yielding results to mediate among the conflicting findings of earlier studies, the paper explored the causes of distortion in the functional relationship among public spending, economic growth, employment and revenue. Moreover, the paper focused on isolating factors which could activate public expenditure and economic growth for revenue and employment generation. There is a consensus that with a

neutral revenue policy, government revenues move with output in a proportion that is determined by certain structural factors [46]. This provides a priori reason to expect that public expenditures, government revenues, output and employment move in a proportion which is determined by certain structural factors. To identify these factors is the declared objective of this study.

3. RESEARCH METHODOLOGY

The method and procedure adopted for the conduct and advancement of this study have been discussed in this section.

3.1 The Data

The data for the study were sourced from Central Bank of Nigeria (CBN). The study covered the period 1970 to 2014. The variables included in the analysis conformed to CBN's categorization of these variables as common determinants of public expenditure and economic growth in Nigeria.

3.2 Model Specification

As stated earlier the main focus of the study is the identification of factors which influence the relationships among public spending, economic growth, government revenue and employment in Nigeria. The present study employed Obeng's 2015 model which he used to study the causality of revenue -expenditure nexus in Ghana. His model is in the form:

$$\ln E_t = \alpha_0 + \alpha_1 \ln R_t + \varepsilon_t \quad (1)$$

$$\ln R_t = \beta_0 + \beta_1 \ln E_t + \mu_t \quad (2)$$

Where E_t and R_t represent real government expenditure and government revenue respectively. α_1 and β_1 are the coefficients of government revenue and government expenditure and ε_t and μ_t are the error terms in the equations. However, this study has modified slightly Obeng's model to reflect its primary objective of identifying the factors which influence the contribution of public spending to growth-induced employment in Nigeria. Thus, the modified version of Obeng's model has been expressed in the functional form:

GEX = f (GDP, PCE, GCF, GCE, TEM, REV, INF)

Where

GEX is total government expenditure
GDP is real gross domestic product
PCE is private consumption expenditure
GCF is gross capital formation
GCE is gross consumption expenditure
TEM is total employment
REV is total revenue
INF is inflation

The choice of these variables and their ordering in the scheme of this work conform to CBN categorization that they constitute common determinants of GEX and GDP in Nigeria. The inclusion of common determinants of GEX and GDP has reduced drastically the extremely large number of variables which otherwise would have been required for factor analysis.

Now, since the study revolved around identifying factors influencing the contributions of GEX to TEM, it is reasonable to replace GEX with TEM as dependent variable. Such replacement is considered to be inconsequential as factor analysis relies heavily on correlational analysis which unlike regression analysis is not affected by such interchange. Thus, applied aptly, the revised version for factor analysis model is in the form:

TEM = f(GEX, GDP, PCE, GCF, GCE, REV, INF)

3.3 Factor Model

Common factor model was used for this study. The a priori justification for the choice of common factor model was the application of Pryor's (1968) modified version of Wagner's law which expresses a linear functional relationship between real government consumption expenditure and real output. Barro [13] had established a linear relationship among consumption, GDP and investment. Magazzino [38] also established a linear long-run relationship, though weak, between government expenditure and revenue. Common factor model is appropriate when the variables are assumed to be a linear function of a set of latent variables [47,48]. This model assumes that the variance in a variable can be divided into common and unique components, with the unique variance being further divided into specific and random error variance [49].

Factor analysis model requires that the variables included in the analysis should be linearly related

to each other [50]. Scatterplots of pairs of variables conformed to linearity. The factor model used for this study was developed by Cornish [50]. The model had been expressed algebraically in the form:

$$X_i = \alpha_{i1}F_1 + \alpha_{i2}F_2 + \ldots + \alpha_{im}F_m + e_i$$

Suppose there are p variables X_1, X_2,…, X_p measured on a sample of n subjects, variable i is a linear combination of m factors F_1, F_2,…, F_m and m < p, where α_is are the factor loadings for variable i and e_i is the part of variable X_i that cannot be explained by the factors.

There are eight variables, the number of factors that could be extracted is one-third of eight which is approximately three. Thus, the modified form of Cornish model is presented as follows:

$$TEM = \alpha i_1F_1 + \alpha i_2F_2 + {}_{\alpha i3}F_3 + ei$$

Where αi_1 is the factor loading of factor 1

αi_2 is the factor loading of factor 2
αi_3 is the factor loading of factor 3
ei is the part of the criterion variable,

TEM that cannot be explained by the factors.

3.4 Validation Technique

To determine the suitability of factor analysis for the study, Kaiser-Meyer-Olkin (KMO) statistic and Bartlett's test of sphericity have been computed. KMO statistic was used to ascertain whether or not the factors were comprised of sufficient number of variables while Bartlett's test (Chi-Square) was used to ascertain whether or not the variables were sufficiently correlated. KMO statistic should exceed 0.7 to justify the application of factor analysis while Bartlett's test (Chi-Square) value should be significant at 0.05 confidence interval to infer that the variables were sufficiently correlated [50].

KMO and Chi-Square values have been presented in a tabular form:

KMO and Bartlett's test

Kaiser-Meyer-Olkin measure of sampling adequacy.	.757
Bartlett's test of Sphericity approx. Chi-Square	180.270
df	28
Sig.	.000

As can be seen above, KMO statistic is 0.757. Since this is greater than the criterion KMO statistic of 0.700, KMO statistic of 0.757 was considered to be significant. Again, Bartlett's test of sphericity (Chi-Square) is 180.270, df 28, p≤0.000. Since p≤0.05 is greater than p≤0.000, Chi-Square value of 180.270 was considered to be significant. These results have warranted the use of factor analysis for the present study.

3.5 Eigenvalues for Determination of Number of Factors

Cornish [50] had recommended that to determine the number of factors to be extracted, say m, the number of eigenvalues should be divided by 1 to obtain m. The eigenvalues have been presented in a tabular form:

Total variance explained

Component	Initial eigenvalues			Extraction sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1.	5.886	73.569	73.569	5.886	73.569	73.569
2.	1.092	13.652	87.220	1.092	13.652	87.220
3.	.745	9.309	96.529			
4.	.136	1.704	98.233			
5.	.088	1.098	99.330			
6.	.044	.549	99.879			
7.	.009	.118	99.997			
8.	.000	.003	100.000			

Extraction method: Principal component analysis

As can be seen above, the number of eigenvalues equals 2 which when divided by 1 yields 2. Thus, accordingly only two factors could be extracted in this analysis.

3.6 Method of Data Analysis

Data were analyzed using factor analysis. The major focus of factor analysis was to determine the nature of the factor structure of GEX – TEM nexus in Nigeria. The principal axes method was used for the factorization of the inter-correlation matrix. This method is also known as the method of principal factor solution.

To keep the number of independent dimensions to the essential minimum, extraction of factors was restricted to only those values of the correlation coefficients equal to or greater than unity. Furthermore, a conservative rule of thumb for accepting a factor as real is as follows: No attempt is made to take decision on the significance of unrotated loadings, e.g., as obtained from the centroid method or the method of Principal Axes [51]. Thus, following this principle, the Varimax rotation of the matrix was carried out.

By rotating the factors slightly in a clockwise direction, the strength of the relationship between the factors and the variable clustered near each other was increased [52,53]. Rotation improves the meaningfulness, reliability and reproducibility of factors [47,54]. Interpretation of results was based on the new values of factor loadings obtained through the use of 'Orthogonal Rotation' formula expressed in the form of $X_1 = X \cos \theta + Y \sin \theta$. Factor loadings which were equal to or greater than ±0.300 were considered to be significant [49,51,55-57]. For the sake of elaborate discussion, however, loadings of ±0.250 or little below were also included. Ford et al. [47] had suggested the inclusion of factor loading ±0.400. Factor loadings of the criterion variable were given for all factors disregarding the level of significance so as to ascertain whether or not the factors represented correlates of TEM. The process of factor extraction was discontinued when the product of two higher factor loadings exceeded the value $\sqrt{n}$ of 2 where n is the total number of variables included in the analysis.

Extracting too many factors may present undesirable error variance but extracting too few factors might leave out valuable common variance [58].

4. RESULTS

The results of data analysis have been present in tables and discussed under the following sub-heading:

- Inter- correlation matrix
- Factor structure of GEX-TEM nexus
- Varimax (rotated) factor structure of GEX-TEM nexus
- Factors affecting the contributions of GEX to TEM.

4.1 Inter-correlation Matrix

Inter-correlations among the criterion variable, TEM and seven independent variables have been presented in Table 1.

As can be seen in Table 1, all the correlation coefficients are of zero order. The table also evinces that, with the exception of TEM, inter-correlations were greater than ±0.30 and hence

Table 1. Correlation matrix (8x8) among TEM(CRN), GDP, GEX, INF, PCE, GCE, GCF and REV

S/NO.	Variable / Code	1	2	3	4	5	6	7	8
1	REV	X							
2	TEM	-0.212	X						
3	GDP	0.949	-0.227	X					
4	GEX	0.913	-0.125	O.914	X				
5	INF	-0.330	-0.085	-0.311	-0.405	X			
6	PCE	0.977	-0.201	0.984	0.929	-0.341	X		
7	GCE	0.971	-0.200	0.981	0.931	-0.334	O.999	X	
8	GCF	0.888	-0.192	0.925	0.859	-0.279	0.939	0.953	X

NB: All figures were rounded to three places of decimal

in conformity with Tabachnick and Fidell's [59] requirement that the correlation r must be 0.30 or greater since anything lower would suggest a really weak relationship between the variables. Now, the generally low r between TEM and the other variables has raised the fundamental issue bordering on whether or not Nigeria has any properly articulated employment policy.

4.2 Factor Structure of GEX-TEM Nexus

The factor structure of GEX-TEM nexus has been presented in Tables 2 and 3 to facilitate the extraction of factors lying concealed in the interrelationships among the criterion variable and the independent variables.

Table 2 presents the original principal component factor matrix. The last column reveals the communalities (h^2). On the whole, factor analysis led to the extraction of two factors (according to the criterion mentioned earlier).

Table 3 represents the rotated Varimax factor matrix along with the communalities and uniqueness of the variables. The total variance of any variable comprises of common variance (h^2) as well as specific variance and error variance. Now, since it is usually difficult to separate specific variance from error variance, both are always combined and denoted by unique variance (u^2). This has been revealed in the last column of this table. At the end of each column of the factor, percentages of total variance and common variance contributed by the factor were entered.

4.3 Factors Affecting Contributions of GEX to TEM

To identify Factors 1 and 2 which had crystallized from data analysis, Table 3 was further split into two sub-tables (Tables 3.1 and 3.2).This has facilitated the discussion on the significant factor loading of each of the factors.

4.3.1 Factor 1

Significant factor loadings of Factor 1 are shown in Table 3.1 for sake of convenience of discussion of results. As has been explained earlier, the Varimax rotation of the original factor matrix involving the dimension of GEX and TEM was carried out. The Varimax rotated version was presented in Table 3.1.

Table 2. Principal axes (Original) factor structure for GEX-TEM Nexus (N=45)

S/No	Variables codes	Factor1	Factor 2	h^2
1	GDP	0.981	-0.053	0.965
2	TEM	-0.224	0.821	0.724
3	GEX	0.949	-0.096	0.909
4	INF	-0.394	-0.634	0.558
5	PCE	0.994	-0.016	0.989
6	GCE	0.995	-0.019	0.990
7	GCF	0.946	-0.047	0.897
8	REV	0.973	-0.028	0.947

NB: Factors loadings are rounded to three decimal places

Table 3. Varimax (Rotated) factor matrix for GEX- TEM Nexus (N=45)

S/No	Variables codes	Factor 1	Factor 2	h^2	$u^2=(1-h^2)$
1	REV	0.973	0.011	0.947	0.053
2	TEM	-0.257	0.812	0.724	0.276
3	GDP	0.982	0.014	0.965	0.035
4	GEX	0.944	0.133	0.909	0.091
5	INF	-0.369	-0.650	0.558	0.442
6	PCE	0.994	0.024	0.989	0.011
7	GCE	0.995	0.021	0.990	0.010
8	GCF	0.947	-0.009	0.897	0.103
Sum of squares		5.878	1.100		
Percentage of total variance		73.47	13.75		
Percentage of common variance		73.47	13.75		

NB: Factor loadings are rounded to three decimal places

Table 3.1. Varimax factor 1

S/NO.	Description of variable	Code	Factor loading
7	Gross consumption expenditure	GCE	0.995
6	Private consumption expenditure	PCE	0.994
3	Real growth domestic product	GDP	0.982
1	Revenue	REV	0.973
8	Gross capital formation	GCF	0.947
4	Government expenditure	GEX	0.944
5	Inflation	INF	- 0.369
2	Total employment	TEM(CRN)	- 0.257

Table 3.1 shows that Factor 1 had its highest loadings on dimensions of consumption expenditures, GCE (0.995) followed by PCE (0.994). With the high loading on GEX (0.944), Factor 1 comes close to 'Recurrent Expenditure'. The significant negative loading on INF (-0.369) indicates that the recurrent expenditure component of Factor 1 caused a reduction in inflation rate. In neo-classical economists' perspective, with mooring in money-price proportionality rule, only a decrease in money supply causes a reduction in inflation rate. It then becomes reasonable to assert that the federal government incurred its recurrent expenditures from domestic borrowing thereby causing a reduction in money supply and inflation rates. Viewed thus, it is not now difficult to clear the ground for identifying and terming Factor 1. Government borrowing to finance its expenditures is simply 'Deficit financing'. Therefore, Factor 1 has been appropriately identified as deficit financing. Significant positive loading on GDP served further to confirm this outcome as evidences abound that deficit financing enhances economic growth. Also, significant positive loadings on REV, and GCF had reinforced the finding considering that domestic or foreign borrowing enlarges the revenue and capital bases of the government. Negative, though nonsignificant loading of -0.257 on TEM implies that countries applying deficit financing of recurrent expenditures would usually have negative valence for TEM.

The common factor variance accounted for by deficit financing was 73.47 per cent which is 73.47 per cent of the total variance explained by the two factors.

The results indicate that: (1) Public spending enhances economic growth in Nigeria (2) Government borrowing enlarges the revenue and capital bases of Nigeria (3) The potent factor which inhibits the contribution of public spending to employment generation is deficit financing of recurrent expenditures.

4.3.2 Factor 2

Significant loadings on Factor 2 have been presented in Table 3.2 to facilitate discussion of results. As was discussed earlier, the Varimax rotation of the original factor matrix involving the dimensions of GEX and TEM was carried out. The Varimax rotated version has been presented in Table 3.2.

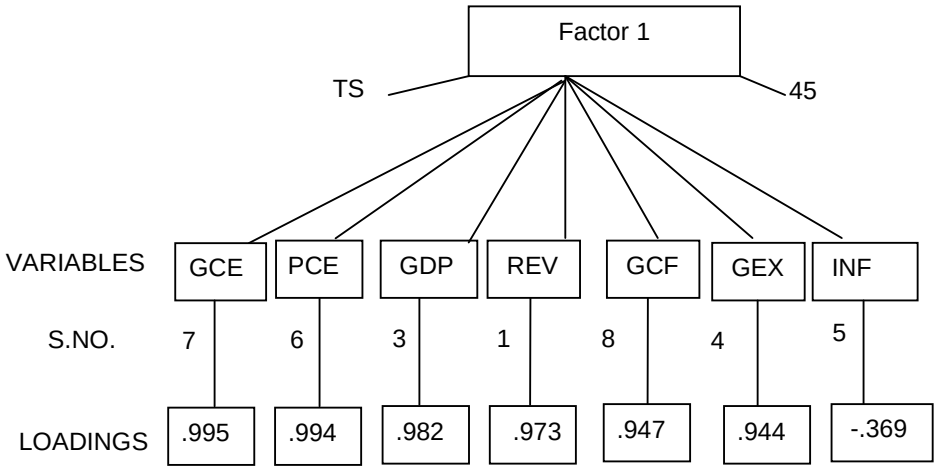
Table 3.2. Varimax factor 2

S. No	Description of variables	Code	Factor loading
5	Inflation	INF	-0.650
2	Total employment	TEM (CRN)	0.812

Table 3.2 shows that Factor 2 had significant loadings on two variables, INF (-0.650) and TEM (0.812). With only two significant loadings, it could not be called a factor in the true sense of the term. Thus Factor 2 could not be identified. Tabachnick and Fidell [59] had stated, inter alia, that for something to be termed as a factor it should have at least 3 variables. Factor 2 can then, at best, be termed as 'pseudo factor'.

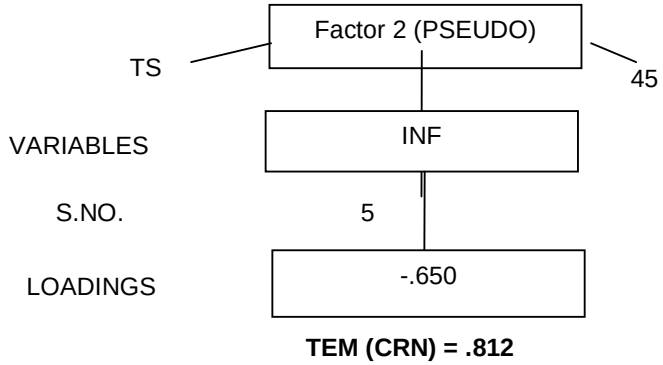
However, negative significant loading on INF and positive highly significant loading on the criterion variable TEM are both interesting, instructive and thought evoking. The results indicate that reduction of inflation rates in Nigeria was compatible with employment generation. It could be rightly inferred from the signs of the loadings on INF and TEM that the domestic borrowing through CBN's instrument of open market operations (OMO) caused a reduction in inflation rates while at the same time stimulating job creation in Nigeria.

The common factor variance accounted for by this pseudo factor was 13.75 per cent which is 13.75 per cent of the total variance explained by the two. By the sheer size and direction of its contribution, this unnamed factor has far-



TEM (CRN) = -0.257

Fig. 1. Factor 1: Deficit financing



TEM (CRN) = .812

Fig. 2. Factor 2: Un-named

reaching implications for employment generation in Nigeria. It is important to state that this unnamed factor has been interpreted with extreme caution to be OMO. Yong and Pearce [58] had stated that as a general rule, rotated factors that have 2 or fewer variables should be interpreted with caution.

4.4 Diagrammatic Representation of Factors

For at a glance appreciation, the factors have been presented diagrammatically in Figs.1 and 2 above.

4.5 Modal Summary

The results of factor analysis have been aptly summarized in the following equation:

TEM = - 0.257DFI +0.812 OMO.

5. EMPIRICAL RESULTS AND DISCUSSION

5.1 Empirical Result

The major findings which have emerged from this study include the followings:

1. Public spending contributed significantly to economic growth in Nigeria.
2. Public spending did not contribute significantly to job creation in Nigeria.
3. Economic growth failed to induce employment generation in Nigeria.
4. Deficit financing was a single potent factor which acted as an inhibitor of public spending from stimulating growth-induced job creation.

5. Deficit financing comprised of a constellation of GCE, PCE and GEX in conjunction with TEM.
6. There was a significant negative relationship between inflation and employment, which was boosted by OMO.

5.2 Discussion

The findings of the study were discussed elaborately in this section in order to integrate the article into the existing economic literature.

The results which indicate that public spending contributed significantly to economic growth in Nigeria would serve to mediate among conflicting findings of earlier studies. On one side, Barro [13], Hulten and Schwab [14], Hansson and Henrekson [17], Folster and Henrekson [19] and Nurudeen and Usman [29] had reported that government spending impacted negatively on economic growth. On the other side, Oyinlola [16], Ogiogio [18], Fajingbesi and Odusola [20], Al-Yousif [21], Bose et al. [22], Ramirez [23], Olugbenga and Owoye [27], and Ranjan and Sharma [28] found that public expenditure exerted positive impact on economic growth. And to Akpan [24] and Komain and Brahmasrane [26], public expenditure and economic growth were not co-integrated. It is the need to reconcile the conflicting findings of the three groups of researchers which has put a halo around the results of the present study. This need was immediately satisfied with the confirmation of the results which indicate that public spending contributed significantly to economic growth in Nigeria. There is no a priori reason why the present finding would not be apt to mediate among conflicting findings of earlier studies considering that factor analysis has the capacity to combine its inherent exploratory and confirmatory powers with the predictive powers of multiple regression to yield results with robust applications.

Another important finding of the study is that public spending did not contribute significantly to job creation in Nigeria. This has not come as a surprise. No nation which commits over 70 per cent of its annual budgets to recurrent expenditure can ever hope to generate surplus sufficient to create new jobs. This was precisely the situation in Nigeria where capital expenditures of federal, state and local governments constituted only a small chunk of their annual budgets. The generally low returns to public sector investment were grossly inadequate to sustain the existing labour force, let alone create new jobs. Besides, Nigeria's private sector was characterized by declining marginal efficiency of capital. This had undermined the productive capacity of the private sector, thereby inducing it to resort to retrenchment of workers to reduce cost and stay afloat. This finding is in agreement with the findings reported by Okoh [32], JEC [5], and Fu et al. [34]. On the contrary, however, this finding is a contradiction of the results which indicate that public spending impacted positively on employment generation. This has raised the pertinent question on what the extraneous variable was, which had activated public expenditure in one situation and inhibited it in another situation. Fortunately, the excavation of the factor structure of public spending-growth-employment nexus has yielded some clues for answering the question.

Still, there is the finding that economic growth failed to induce employment generation in Nigeria. This finding corroborates the fact that there was a clear manifestation of growthmanship syndrome in Nigeria. Bronfen brenner et al. [60] had coined up the concept, growthmanship to refer to an economic situation where economic growth of a country is not reflected in its economic development indicators. Okafor and Uchendu [61] had reported that management in the country's public sector was fraught with apparent difficulties such as inefficiency, capacity underutilization and low productivity which were rooted in lack of managerial capabilities and corruption. It is, therefore, not surprising that Africa's largest economy and World's Third fastest growing economy is still grossly underdeveloped. No wonder then Okafor et al. [62] found that job creation strategies did not contribute significantly to total employment in Nigeria. While this finding is in conformity with JEC's [5] finding, it contradicts the finding of positive significant contribution of growth to employment reported by Ogunrinola [40], Walterskirchen [41], Swane and Vistrand [43], Yogo [44] and Sodipe and Ogunrinola [45]. Perhaps, it could be possible to trace the discernible lack of conformity between the findings to the differences in methods of data analysis, and periods of study.

Furthermore, another finding is that deficit financing was a potent factor which acted as inhibitor of public spending from stimulating growth-induced job creation. The isolation of deficit financing as a potent factor inhibiting

public expenditure from simulating job creation in Nigeria has not come as a surprise. For several years, Nigeria had adopted deficit budgets in which over 70 per cent was allocated to recurrent expenditures and less than 30 per cent to capital projects. It is only reasonable to assert that deficit financing of recurrent expenditures is, to say the least, most unproductive. In this context, deficit financing could be viewed as an extraneous variable that boosted the strength of relationship between public spending and growth on the one hand and inhibited the contribution of economic growth to employment on the other. In one situation, deficit financing enhanced economic growth [63]. In such a situation, deficit financing acted as a booster to public expenditure to ignite economic growth to generate employment. In another situation, in conformity with Bamidele and Englama's finding, cited in Paiko [64] deficit financing impacted negatively on economic growth. In this particular situation, deficit financing was an inhibitor of public spending which neutralized its potency to ignite economic growth to induce job creation. In this way, deficit financing emerged as a key factor which mediated among conflicting findings on impact of public spending on economic growth.

Yet there is the finding that deficit financing was comprised of a constellation of GCE, PCE and GEX in conjunction with TEM. It is not surprising that GCE, PCE and GEX were, by implication, plausible correlates of TEM. What is perhaps startling is the negative sign of loading on TEM which indicates that TEM was inversely related with GCE, PCE and GEX. However, an insight into governance in Nigeria would reveal almost immediately that this was a true reflection of the situation where there was a total dependence on imported consumer goods such as food, textiles, cosmetics, furniture, etc. It is not surprising then that GCE and PCE contributed highest positive significant loadings to deficit financing in conjunction with GEX. Government expenditure on consumption and debt financing of budget deficits on consumption had eroded the country's capital stock and reduced considerably, private investment. Rama cited in Paiko [64] and Paiko [64] had earlier reported that deficit financing crowds out private investment. Under the prevailing circumstances, the capacity of private sector to create jobs was reduced drastically thereby forcing governments at all levels to grapple to cope with the problem of rising unemployment in Nigeria.

Finally, there is the finding that there was a significant negative relationship between inflation and employment in Nigeria. It is reasonable to expect significant negative relationship between inflation and unemployment, which is in conformity with the results of Philip's curve analysis of inflation-unemployment nexus. Even then, the observed inverse relationship between inflation and employment is not an isolated evidence. Low growth rates and inflation rates are correlated with large overall budget deficit in parts because the financing was done with Central Bank loan, as was the case in Nigeria [65]. Relating the evidence to this finding facilitated the understanding that deficit financing of consumption through CBN borrowing caused a decline in growth, accompanied by discernible mismatch between aggregate supply and aggregate demand that resulted to inflation.

6. CONCLUSION AND POLICY IMPLICATION

6.1 Conclusion

The generalization warranted by this study is that public spending might not necessarily stimulate growth-induced employment generation. Deficit financing was isolated as a potent factor which had inhibited government expenditure from exerting its positive effect on growth to generate employment. This is a true reflection of the situation in developing economies where governments allocate chunks of their annual budgets for recurrent expenditures and only small chunks for capital expenditures. Under the prevailing circumstance, several governments were unable to create new jobs or maintain the existing labour force. Quite often, they resorted to retrenchment of workers as a Hobson's choice, thereby swelling the army of unemployed persons. With teeming population of jobless youths, unemployment has continued to pose a serious law and order problem in both developed and developing countries. Rising unemployment in both developed and developing countries has offered excellent opportunities to terrorist outfits such as Boko Haram, Al-Shabab, Al-Qaeda, Islamic State of Iraq and Levant (ISIL), Islamic State of Iraq and Syria (ISIS), Taliban, etc. to recruit willing restive youths into their rank and file. Unless measures are evolved to reverse the rising trend of unemployment in different countries, the world would soon be sitting on a seething volcano. Any conscientious effort to evolve measures to curb unemployment would begin essentially with the formulation of a

dynamic employment policy. And this paper has derived its relevance from its effectiveness in isolating active employment policy instruments.

6.2 Policy Implication

The findings of this study have several policy implications for both developed and developing countries. First is the need to adopt high-employment budget norm, otherwise known as budget balance at-high-level income and employment. The application of this norm ensures that public spending results to high-level income and employment.

Second, as fiscal instrument for achieving sustainable growth and full employment, a suitable budgetary framework is important, together with effective and evenhanded implementation of government budget. However, misapplication of budgeting principle during economic recession or boom tends to be perverse in their effects. Deficit financing of capital projects is an important policy prescription during economic recession in order to expand the economy under conditions of cyclical depression. During the period of economic boom, the adoption of surplus budgets remains the preferred policy option of the government to constrain the pressure of demand inflation and to establish a deficit budget to expand the economy. Therefore, any decision on the use of deficit financing to stimulate growth and employment should be based purely on the consideration of the state of the economy.

Third is the desire to formulate a dynamic employment policy- a need which is often highlighted by lack of clear policy objectives. A constellation of expenditure dimensions including GCE, PCE and GEX which constituted deficit financing has placed a high premium on GCE, PCE and GEX as key elements in any dynamic employment policy. It is therefore important that in formulating a dynamic employment policy, all variables which impinge on GCE, PCE and GEX such as pricing, exchange rate, tax rate, wage rate, etc. should be modelled as employment policy instruments.

Fourth, given the deficit financing of consumption and the inverse relationship between inflation and employment, the next priority is arguably the adoption of a tax policy which could yield sufficient tax revenues to offset expenditures and so reduce any inflationary gap.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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