Employment intensity of the administration and social services sector of Nigerian Economy

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Abstract

The administration and social services sector of the Nigerian economy has emerged as a major contributor to aggregate employment, rising from 26.2 per cent to 41.2 per cent within the growth period between 1981 and 2014, an increase of 57.3 percent. This study investigated the employment intensity of gross value added growth in the sector during the period, using Vector Error Correction Model (VECM) with a view to providing useful information for sectoral employment strategy. The estimated employment elasticity of gross value added in the sector was not significant at 95 per cent confidence level, and can, therefore, not be relied upon for policy. However, the inter-sectoral relationships provided significant estimates, indicating that such relationships should be taken into account in designing and developing sectoral employment strategy for the administration and social services sector.

Keywords: Economic growth, Employment elasticity, Gross Value Added and Social Services Sector.

Introduction

In Nigeria, unemployment has assumed a frightening level of 33.3 per cent at the last count (NBS 2021). Ordinarily, economic growth is expected to stimulate job creation across the economy. It is against this background that it was expected that the growth period between 1981 and 2014 should have stemmed unemployment, although, economists have acknowledged the advent of job-insensitive growth, whereby unemployment co-exists with economic growth (Adeniyi, 2021).

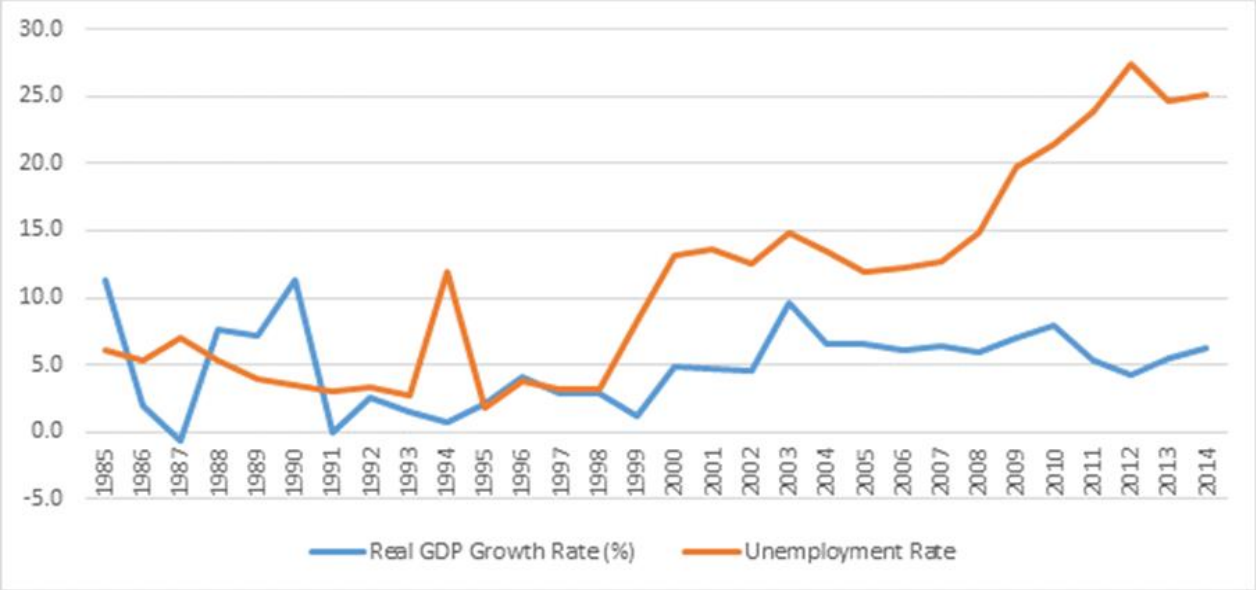

Figure 1: Rising Unemployment Co-existing with Economic Growth
Source: Adeniyi, 2019; and, 2021.

According to the National Bureau of Statistics (2015) the rate of unemployment was 8.2 per cent by the end of the second quarter of 2015, despite the growth performance of the preceding years. The situation, which has further deteriorated due to subsequent economic decline, was recently accentuated by the outbreak of the COVID-19 pandemic, as unemployment rose to 27 per cent by the second quarter of 2020; and more recently to a record high of 33.3 per cent in the fourth quarter of 2020 (NBS, 2021; NBS, 2020; FGN, 2020; FGN, 2017).

According to the NBS (2016) and Adeniyi (2019), in the growth period between 1981 and 2014, the contribution of administration and social services sector of the Nigerian economy to aggregate employment increased by 57.3 per cent from 26.2 per cent to 41.2 per cent of aggregate employment. However, productivity has declined in the sector as 41.2 per cent of the work force produced only 8.3 per cent of the GDP in 2014, whereas the 26.2 per cent of aggregate employment in the sector produced 8.5 per cent of the GDP in 1981 (Adeniyi, 2019). Consequently, if the issue of productivity is resolved, administration and social services sector may provide one of the many avenues to solve the current unemployment malaise in Nigeria.

The relevant research question then is: what is the employment intensity of the administration and social services sector and how can we apply this to contribute to finding solutions to the unemployment problem? This study, therefore, sets out to investigate the job creating capacity of the administration and social services sector of the Nigerian economy, particularly during the period of growth, with a view to advancing recommendations to enhance employment policy in the sector.

Theoretical framework

The national output of an economy, and by extension, any sector of the economy, is produced by combining labour input (demand for labor) with other factors of production in that economy or sector. The demand function for labor can be derived by assuming a constant elasticity of substitution (CES) production function and solving the marginal product of labor (MPL) equation for the labor input variable (Adeniyi, 2019; Mkhize, 2015) as follows: -

$$GVA_t = A\{\alpha K^{-\rho} + (1-\alpha) E^{-\rho}\}^{-\eta/-\rho} \quad (1)$$

where, GVA_t = Gross Value Added (sectoral output)

K_t = Capital (input) in year t; E_t = Employment/labor (input) in year t.

A = Efficiency parameter; $A > 0$

η = Returns to scale parameter; $\eta > 0$

α = Distribution parameter; $0 < \alpha < 1$

ρ = Extent of substitution (between K and E) parameter, $\rho > -1$, and related to elasticity of substitution; $\sigma = 1 / 1+ \rho$

The derivative of labor (i.e. marginal product of labor (MP_L)) from Equation (1) can be written as:

$$dGVA /dE = \eta(1-\alpha)/A^{\rho/\eta}.GVA^{(1+\rho)/\eta}/E^{\rho+1} \quad (2)$$

The above MP_L expression is solved for the E_t input variable in order to derive the empirical labor (employment) demand function:

$$\eta(1-\alpha)/A^{\rho/\eta}.GVA^{(1+\rho)/\eta} = E_t^{\rho+1}$$

$$[\eta(1-\alpha)/A^{\rho/\eta}.GVA^{(1+\rho)/\eta}]^{1/\rho+1} = E_t$$

$$E_t = [\eta(1-\alpha)/A^{\rho/\eta}.GVA^{(1+\rho)/\eta}]^{1/\rho+1}$$

$$= [\eta\,(1-\alpha) / A^{\rho/\eta}]^{1/\rho+1} \,.\, GVA^{(1+\rho/\eta)(1/\rho+1)}$$

$$E_t = \beta_0\, GVA^{\beta 1} \qquad (3)$$

where,

$$\beta_0 = [\eta\,(1-\alpha) / A^{\rho/\eta}]^{1/\rho+1} \;\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4)$$

$$\beta_1 = (1+\rho/\eta)(1/\rho+1) \;\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (5)$$

$$\beta_1 = 1+\rho/\eta \,.\, \sigma \;\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (6)$$

σ (elasticity of substitution) = $1/\rho+1$. However, if we log-transform Equation (3) above, we obtain the following employment function:

$$\ln E_t = \ln \beta_0 + \beta_1 \ln GVA_t = \beta_0 + \beta_1 \ln GVA_t + \ldots \beta_n \ln X_{nt} + \varepsilon_t \quad \ldots\ldots\ldots\ldots (7)$$

According to Ajilore and Yinusa (2011) and Adeniyi (2019), when a country experiences positive GDP growth, the employment elasticity figures can be explained as follows: -

Employment elasticity greater than 1 implies: positive employment growth; and, negative productivity growth.

Employment elasticity between 0 and 1 implies: positive employment; and, positive productivity growth. Higher elasticity within this range implies more employment (lower productivity) intensive growth.

Negative employment elasticity implies: negative employment growth; and, positive productivity growth.

Review of Empirical Literature

There have been a couple of studies on the employment intensity of growth around the world. However, employment intensity of growth is peculiar to a particular country, because it is influenced by a country's wage setting process, the share of the service sector, and labour market flexibility, among other factors (Dopke, 2001). In Ghana, employment growth trails economic growth due to high growth of low employment generating sectors against sluggish growth of high labor absorption sectors (Baah-Boateng, 2013). In Botswana, Ajilore and Yinusa (2011), used both simple elasticity and econometric procedures to provide empirical evidence concerning the extent to which economic growth that occurred in Botswana was employment insensitive and in which

sectors. Their findings confirmed the low labor absorptive capacity of the Botswana economy at the aggregate and at sectoral decompositions, suggesting that the growth performance in the country is jobless growth'. The study recommended a successful mineral-led economy that is able to diversify into sectors and activities that are by nature relatively more labor intensive.

Following the estimation of the current and future structure of employment in Sub-Sahara Africa (2005-2020) based on household survey estimates for 28 countries and an elasticity – type model that relates employment to economic growth and demographic outcomes, Fox *et al* (2013), found that agriculture still employs the majority of the labor force, although workers are shifting slowly out of the sector. Sub-Sahara Africa's projected rapid labor force growth, combined with a low baseline level of private sector wage employment, means that even if Sub-Sahara Africa realize another decade of strong growth, the share of labor force employed in private firms is not expected to rise substantially. Governments need to undertake measures to attract private enterprises that provide wage employment, but they also need to focus on improving productivity in the traditional and informal sectors as these will continue to absorb the majority of the labor force (Adeniyi, 2019).

In Nigeria, Sodipe and Ogunrinola (2011) estimated the impact of economic growth on employment using time series data. Ordinary Least Square (OLS) regression model was employed to analyze the data. The result revealed that economic growth impacted positively and significantly on employment. However, a negative and significant relationship between employment growth rate and the Gross Domestic Product (GDP) growth rate was observed. Also, Oloni (2013) investigated the impact of aggregate economic growth in Nigeria had on employment generation using Johansen Vector Error Correction Model. The findings revealed that, although economic growth had positive relationship with employment, the relationship was not significant. He did not disaggregate his analysis by sectors. Although, Ajakaiye *et al* (2016), attempted a sectoral analysis using the Shapley disaggregation, their methodology is not as robust as the Vector Error Correction Model employed in this study, which focuses specifically on the administration and social services sector.

Material and Methods

The study examined the job absorptive capacity of the administration and social services sector of the Nigerian economy. The employment intensity of the sectoral gross value added (GVA) growth between 1981 and 2014 was estimated. The secondary data used for the study were collected from the Central Bank of Nigeria (CBN), and the National Bureau of Statistics (NBS).

The variables collected, collated, analysed and presented were the figures of administration and social services sectoral gross value added, administration and social services sectoral employment, minimum wage rates, weighted average prime lending rates and inflation rates from 1981 to 2014. Similar data were collected for the other sectors. Estimation methodology of elasticity of employment, in deference to Ajilore and Yinusa (2011), Mkhize (2015) and Adeniyi (2019) was used to analyse the data. Specifically, we used the Vector Error Correction Model (VECM).

In order to estimate the sectoral employment elasticity of the administration and social services sector of the economy and the elasticity of employment with respect to wage rate, inflation and user cost of capital in the economy during the period under review, a double-log linear regression equation was constructed for the parameters as follows:

$$lnL_t = \beta_0 - \beta_1 lnW_t + \beta_2 lnr_t + \beta_3 lnGVA_t + \beta_4 ln\pi_t + T_t + \varepsilon_t \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (8)$$

where, t = 1, …, n years. The dependent variable, L_t, represents aggregate employment (formal and informal, public and private) in thousands of persons in the specific economic sectors, in year t.

The exogenous variables are:

W_t = minimum wage rate in time t, measured in thousand Naira.

r_t = is the user cost of capital in time t, represented by the weighted average prime lending rate in the economy.

π_t = inflation rate in time t.

GVA_t = administration and social services sectoral GVA in constant 2010 basic prices.

GVA_ADM&SOC= Gross Value Added in the Administration and Social Services sector in year t.

TIME (T) = yearly time trend variable, where t = 1 is year ended December, 1981 and

t = 34 is year ended December, 2014.

ε_t = error term.

From the model, the equation to analyse is: -

$$EMP\_ADM\&SOC = f(GVA\_ADM\ \&SOC_t, W_t, r_t, \pi_t) \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (9)$$

Where:

$W_t =$ Minimum Wage Rate in year t

$r_t =$ WAPLR in year t

$\pi_t =$ inflation rate in year t

The above model postulates that employment of persons in the mining and quarrying sector, will vary with gross value added in mining and quarrying, and macroeconomic variables of wage rate, interest rate, and inflation rate, and that employment decisions by economic units in the mining

and quarrying sector are a function of previous year's information.

Description of the variables

Gross Value Added (GVA): GVA is the value of goods and services produced in a sector. It is the output of the sector less intermediate consumption in that sector. Yearly administration and social services GVA series at 2010 constant basic prices were collected from NBS for the period 1981 to 2014. The series, which were in billions of Naira, were produced after the GDP rebasing exercise of 2014 which used 2010 as the base year (Adeniyi, 2021).

Time trend: In a time-series analysis, time is a variable as the other variables and the relationships among them changes or stabilises over time. The lagging approach employed in the analysis took care of the time trend in determining / explaining employment level in the economy (Adeniyi, 2021).

Wages: Wage series were not available from the National Bureau of Statistics and other relevant organisations. Furthermore, NBS has not produced the re-based GDP using expenditure approach as of the time of this study. The latter would have been decomposed to obtain the wage component.

Although there are various concepts of wages we adopted the minimum wage in the economy for the following reasons which outweigh its limited variability since it does not change annually: It is more relevant to policy making; more determinable with exactitude; better known to everybody; more relevant to the economic strata where employment expansion is most desired, more relevant in determining the minimum financial welfare in the economy, etc. According to ILO (1970), the minimum wage represents the amount of compensation that an employer is required to pay wage earners for the work performed during a giving period, which cannot be reduced by collective agreement or by an individual contract. Minimum wage is, therefore, the lowest compensation that employers may legitimately pay to workers. This implies that it is the price floor below which a worker may not legally sell his labour services (Adeniyi, 2021).

Furthermore, recent debates among the three tiers of Government in Nigeria, the Labour Union, the Legislators, Non-Governmental Organisations, and Social Commentators on minimum wage did not only support this choice but seems to have heavy impact on the ethnic - or geo - political organisation, reorganisation and/or viability of the federating units of Nigeria (Ajimotokan & Obi, 2016; Buhari, 2016; Eme & Ugwu, 2011). It is more relevant in employment decision making particularly in the government sector that is very wage elastic, but expected to be employment intensive. For example, according to the Senate of the Federal Republic of Nigeria in its plenary of July 21, 2016, '27 states of the federation can no longer pay the salary of their workers.'

Other wage concepts are: average wages in the public sector, average wages in the private sector, average wages in the junior staff category and average salaries and emoluments of senior staff categories both in the public and private sectors (Adeniyi, 2021; NECA, 2003). For this study, minimum wage change history was obtained from NBS and from this; the minimum wage series was generated.

Interest rate: There are various concepts of the user cost of capital (Mkhize, 2015; Ajilore & Yinusa, 2011). This study used the Weighted Average Prime Lending Rate (WAPLR) of banks operating in the economy during the period, because it is more relevant considering that it affects every economic borrowing decision in the economy. It is subject to regular (weekly) professional determination and reviews at the Assets and Liability Management Committees (ALCOs) of all the banks operating in the economy. Besides, the determination of WAPLR also bears reference to the weighted average cost of generating loanable funds by lenders in the economy. Long-term lending, available only to prime bank customers, is consummated at around the Prime Lending Rate (Adeniyi, 2021; CBN, 2015).

Unemployment Rate: The data of unemployment rate was collected at the National Bureau of Statistics (NBS).

Inflation Rates: Annual Inflation Rates data were also collected from the National Bureau of Statistics.

Unit Root Test

Time series data are most useful when they do not contain noise or unit root problems. However, frequently associated with time series data is the problem of noise. Consequently, it is necessary to test for and remove unit roots when and if they exist in any series. If they do, the noise must first be removed before proceeding with analysis in other that the results are not spurious, in other words, so that we can rely on the results for interpretation.

When there is no unit root or the noise has been removed, the series is said to be stationary. Several tests of stationarity have been developed to examine whether a series is stationary or non-stationary. If the series under analysis is stationary at level, this implies that the series contains no noise. Therefore, the series is said to be I(0). However, if the series being analysed is non-stationary in its level form, but stationary in the first difference form, then, it is said to be integrated of order 1 or I(1). Most time series can be classified as being integrated of order d, I(d). This means that the series must be differenced d times to become stationary. The most common test of the stationarity of a time series is the Augmented Dickey-Fuller (ADF) test proposed by Engle and Granger in 1987 as follows (Adeniyi, 2021):

$$\Delta \boldsymbol{Y_t} = \boldsymbol{\beta_1} + \boldsymbol{\beta_{2t}} + \boldsymbol{\delta Y_{t-1}} + \sum_{i=1}^{m} \alpha_i \Delta Y_{t-i} + \varepsilon_t \quad \text{.....(10)}$$

where Y_t is the relevant time series, t is time trend, ε_t a white noise error term ; where

$$\Delta Y_{t-1} = (Y_{t-1} - Y_{t-2}),\ \Delta Y_{t-2} = (Y_{t-2} - Y_{t-3}) \text{ ....(11)}$$

The hypothesis of the ADF test will be specified as follows:

Null hypothesis: Ho: $\beta = 0$

Alternative hypothesis: $H_1 : \beta < 0$

If the null hypothesis is not rejected, then the series is non-stationary, but if it is rejected, it means the series is stationary or I(0). A time series is stationary when the process by which the data is generated is the same over time. That is, the series' mean, variance and covariance with lagged values of itself should not change with time. (Adeniyi, 2019; Mkhize, 2015; Hansen & King, 1996). According to Mkhize (2015) ADF test tends to over-reject the null hypothesis when using too few lags and to reduce the degrees of freedom when there are too many lags. Song and Witt, 2000, in their study of tourism demand modelling and forecasting, justified the importance of appropriate lag length for time series data. In determining the appropriate lag length for the ADF test in the study, Schwarz Information Criterion was used.

Co-integration Test

According to Stock and Watson (2017), when variables individually non-stationary are co-integrated, two (or more) variables may have common underlying stochastic trends along which they move together on a non-stationary path. For simple instances of few variables and one co-integrating relationship, an error-correction model (ECM) is the appropriate econometric specification. In this model, the equation is differenced and an error-correction term estimating the previous period's (t-1) deviation from long-run equilibrium is included.

The most common tests to investigate the number of common trends among the series in a VAR/VEC were developed and proposed by Johansen (1995). The approach is very similar to testing for unit roots in the polynomial representing an Auto Regression (AR) process. If we have n I (1) variables that are modelled jointly in a dynamic system, there can be up to n – 1 co-integrating relationships linking them. Stock and Watson (2017) thought of each co-integrating relationship as a common trend interconnecting some or all the series in the system. The co-integrating rank of the system is the number of such common trends, or the number of co-integrating relationships (Adeniyi, 2021).

To select the co-integrating rank r, a sequence of tests was performed. First, the null hypothesis of $r = 0$ against $r \geq 1$ to investigate if there is at least one co-integrating relationship was tested. If and when $r = 0$ is not rejected, then it was concluded that there were no common trends among the series, in which case, a VEC model is not needed. VAR is then simply used in the differences of the series.

If $r = 0$ is rejected at the initial stage, then at least some of the series are co-integrated. Then, the number of co-integrating relationships is determined. The second step is to test the null hypothesis that $r \leq 1$ against $r \geq 2$. If the hypothesis of no more than one common trend is not rejected, then we estimate a VEC system with one co-integrating relationship.

If the hypothesis that $r \leq 1$ is rejected, then the hypothesis $r \leq 2$ against $r \geq 3$ is tested, and so on. r is chosen to be the smallest value at which the null hypothesis that there are no additional co-integrating relationships is not rejected.

Johansen proposed many relevant tests that can be employed at each stage. The most common is the trace statistic, which was used in this study. The Stata command vecrank prints the trace statistic or, alternatively, the maximum-eigenvalue statistic.

Vector Error Correction Model

Vector error correction model (VECM) is the regression that takes into consideration the correction of the noise/unit root in the model as well as estimating the part of the noise that is being removed at each short run (Stock & Watson, 2017; and Stata.com). The software used for the regression analysis was Stata version 14.

A priori expectations

The signs expected for the coefficients in the model are as follows:

W_t : negative. If and when the percentage change in nominal wages increases, it reduces employers effective demand for labour, given a constant budget constraint and vice-versa (Adeniyi, 2021; Baah-Boateng, 2013; Soto, 2009; Dokpe, 2001).

r_t : positive or negative. If the interest rate increases, the demand by employers for capital decreases and the demand for consumer goods and services also decreases. The reduced demand for capital (that would become relatively more expensive) will reduce labour productivity and the depressed demand for consumer goods and services will decrease the derived demand for labour, vice versa. In these situations, employment would move in opposite directions to long term interest rates. However, in some industries capital may be a substitute for labour. In that wise, an increase in long term interest rates may depress the demand for capital and enhance the demand for labour, the substitute, vice versa. Consequently, long term interest rates would be a positive correlate of employment (Adeniyi, 2021; Mkhize, 2015; Baah-Boateng, 2013; Malunda, 2012; Nangale, 2012).

π_t : positive or negative. The effect of inflation rate is expected to either be positive or negative. When and if the rate of inflation increases, the marginal revenue products of labour increases. As a consequence, there is an increase in the demand for labour by employers. On the other hand, an increase in inflation rate may reduce consumer demand for goods and services, thereby depressing the derived demand for labour as a factor of production. (Mkhize, 2015).

GVA_t : positive. The growth of sectoral real GVA will lead to expanded derived demand for labour because employers will view real sector output growth as an indication of future expansion in demand for consumer final goods and services (Adeniyi, 2021; Mkhize, 2015; Temitope, 2013; Sodipe & Ogunrinola, 2011; Soto, 2009).

In order to make the model very useful for the analysis, equation (6) is log-linearised. The logarithmic functional form ensures that β_i can be interpreted as elasticities (Koop, 2005), where

β_2 is the elasticity of employment with respect to user cost of capital, while holding all other things constant ceteris paribus. In the same manner, also β_3 is the elasticity of employment with respect to output. It estimates the proportional change in the number of labour employed for a proportional change in sectoral GVA, holding other factors constant, ceteris paribus. Consequently, a positive elasticity coefficient of 0.25, for example, indicates that a percentage increase in GVA is associated with a quarter of a percentage increase in the number of people employed. The employment elasticity coefficients that will be calculated from the equation above imply that employment is a direct correlate of output (Adeniyi, 2021; Temitope, 2013; Sodipe & Ogunrinola, 2011; Soto, 2009). Consequently, the elasticity coefficients estimated for individual economic sectors are suggestive of the correlation between the number of persons employed and gross value added.

Result of the Findings

The result of the VECM is presented in Tables 1 and 2 below. Table 1 below presents the result of the VECM estimation of equation 9; viz: -

$$EMP\_ADM\&SOC = f(GVA\_ADM\ \&SOC_t, W_t, r_t, \pi_t) \quad (12)$$

Column two of the table contains the estimated regression coefficients with respect to the variables in the first column. These coefficients also represent the elasticity of employment in the administration and social services sector with respect to the respective variables. Thus, the elasticity of employment with respect to administration and social services GVA is 0.10, but it is not significant at 95% level of confidence. Although, we may not be able to rely on the result for policy, because the coefficient is not significant, the interpretation of the result is that a one per cent change in administration and social services GVA will lead to 0.10 per cent change in administration and social services employment in the same direction.

In the same manner, the estimated elasticities of employment in the sector with respect to wage rate, interest rate and inflation rate, respectively, are: -0.01, -0.01, and -0.00, and the coefficients are, also, not significant at 95% confidence level. Similarly, were the coefficients to be significant, it would mean that a one per cent change in wage rate, interest rate and inflation rate, respectively, will lead to a 0.01 per cent, 0.01, and 0.00 per cent change in administration and social services employment in the opposite direction,

Table 1: VECM estimation of employment intensity of administration and social services sector in Nigeria.

EMP_ADM&SOC = f(GVA_ADM &SOC$_t$, W_t, r_t, π_t)

Vector error-correction model

Sample: 1983 - 2014		**Number of obs**	= 32
		AIC	= -6,391025
Log likelihood = 153,2564		**HQIC**	= -5,616702
Det(Sigma_ml) = 4,76e-11		**SBIC**	= -4,055009

Equation	Parms	RMSE	R-sq	chi2	P>chi2
D_lnemp_admin	9	,015881	0,9189	249,1586	0,0000
D_lngva_admin	9	,024777	0,8594	134,4368	0,0000
D_lninflation	9	,620644	0,5142	23,2859	0,0056
D_lnwap_rate	9	,183715	0,5252	24,33107	0,0038
D_lnminim_wage	9	,439396	0,3761	13,26425	0,1510

	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
D_lnemp_admin						
_ce1						
L1.	-0,14	0,04	-3,59	0,000	-0,21	-0,06
_ce2						
L1.	0,11	0,03	3,73	0,000	0,05	0,16
_ce3						
L1.	0,00	0,01	0,31	0,757	-0,01	0,01
lnemp_admin						
LD.	-0,23	0,19	-1,22	0,222	-0,60	0,14
lngva_admin						
LD.	0,10	0,13	0,75	0,455	-0,16	0,35
lninflation						
LD.	-0,00	0,00	-0,73	0,463	-0,01	0,01
lnwap_rate						
LD.	-0,01	0,01	-0,96	0,336	-0,04	0,01
lnminim_wage						
LD.	-0,01	0,01	-1,46	0,144	-0,02	0,00
_cons	0,06	0,01	5,86	0,000	0,04	0,09

Source: Author's Analysis of Data collected from the National Bureau of Statistics

Investigated as a stand-alone sector, the results did not provide any reliable outcome for policy, despite the apparent potentials of the sector in generating employment. However, the economy consists of other sectors with which administration and social services sector co-exists and establishes various dynamic linkages, which if estimated, may help explain and stimulate its job absorptive capacity (Adeniyi, 2019). In order to incorporate this inter-sectoral linkages and relationships, a system of six plausible scenarios were developed from a system of six simultaneous equations of aggregate employment from the series as follows: -

Scenario 1: lntot_empl = f (lnemp_agric, lnemp_non-agric, lngva_agric, lngva_nonagric.)

Scenario 2: lntot_empl = f (lnemp_agric lnemp_minin lnemp_manufac lnemp_const lnemp_admin lngva_agric lngva_minin lngva_manufac lngva_const lngva_admin)

Scenario 3: lntot_empl = f (lnemp_agric lnemp_mini lnemp_manufac lnemp_const lnemp_admin lninflation lnwap_rate lnminWage)

Scenario 4: lntot_empl = f (lngva_agric lngva_minin lngva_manufac lngva_const lngva_admin lninflation lnwap_rate lnminimWage)

Scenario 5: lntot_empl = f (lngdp lninflation lnwap_rate, lnminim_wage)

Scenario 6: lnemp_agric = f(lnemp_minin lnemp_manufac lnemp_const lnemp_admin lngva_agric lngva_minin lngva_manufac lngva_const lngva_admin).. …. …….. (13)

The above equations (13) were then estimated using VECM, and the results presented in Table 2 below: -

Table 2: Employment in Administration and Social Services Sector

	Scenario1	Scenario2	Scenario3	Scenario4	Scenario5	Scenario6
	Coef.(z)	Coef.(z)	Coef.(z)	Coef.(z)	Coef.(z)	Coef.(z)
Ce1		0.308(2.08)**	-6.349(-1.31)	-0.302(-1.04)		-0.241(-0.98)
Ce2		0.359(2.18)**	5.077(1.38)	-0.21(-1.02)		0.039(0.93)
Ce3		-0.304(-2.02)**	-0.425(-1.05)	0.465(1)		0.401(0.78)
Ce4		0.702(2.17)**				
Ce5		-0.332(-2.46)**				
Employment Agriculture(-1)		0.344(0.32)	-3.294(-1.24)			1.236(1.39)
Employment Agriculture(-2)		2.584(1.73)*	-0.221(-0.18)			0.841(1.36)
Employment Mining(-1)		-1.045(-0.82)	0.887(0.73)			0.757(0.72)
Employment Mining(-2)		0.444(0.31)	-0.343(-0.3)			-0.349(-0.41)
Employment Manufacturing (-1)		-1.194(-2.05)**	-0.6(-0.5)			-1.195(-2.08)**
Employment Manufacturing (-2)		-1.112(-0.76)	-0.292(-0.40)			-0.86(-1.19)
Employment Construction(-1)		0.027(0.02)	-2.3(-0.77)			-1.177(-0.98)

Employment Construction(-2)	-1.112(-0.76)	-0.874(-0.40)		-0.484(-0.51)
Employment Admin(-1)	-0.796(-0.57)	0.573(0.44)		0.790(0.77)
Employment Admin(-2)	1.742(1.26)	0.694(0.51)		0.44(0.45)
Employment Trade				
Employment Non-agric(-1)				
Employment Non-agric(-2)				
GVA Agriculture(-1)	-0.007(-0.07)		0.101(0.42)	0.014(0.09)
GVA Agriculture(-2)	-0.098(-0.77)		0.249(1.31)	0.072(0.56)
GVA Mining(-1)	0.423(2.09)**		-0.076(-0.27)	-0.046(-0.37)
GVA Mining(-2)	0.216(1.75)		-0.162(-0.81)	0.091(0.69)
GVA Manufacturing (-1)	-0.133(-1.07)		0.028(0.8)	0.011(0.18)
GVA Manufacturing (-2)	-0.190(-1.52)		-0.034(-0.23)	0.039(0.71)
GVA Construction(-1)	0.077(0.81)		0.09 (0.58)	-0.023(-0.17)
GVA Construction (-2)	-0.396(-2.24) **		0.227(1.35)	0.046(0.58)
GVA Admin (-1)	0.695(1.19)		-0.112(-0.27)	0.194(0.38)
GVA Admin (-2)	0.496(1.29)		-0.594(-1.21)	0.285(0.63)
GVA Trade				
GVA Non-agric(-1)				
GVA Non-agric (-2)				
GDP (-1)				
GDP (-2)				
Inflation Rate(-1)		-0.02(-1.47)	-0.004(-0.32)	-0.009(-0.87)
Inflation Rate(-2)		-0.005(-0.67)	-0.011(-0.71)	0.0005(0.05)
WAPLR(Weighted Average Prime Lending Rate)(-1)		-0.047(-0.94)	0.086(0.69)	
WAPLR(Weighted Average Prime Lending Rate)(-2)		-0.024(-0.65)	0.031(0.42)	
Minimum wage (-1)		-0.025(-2.77)***	-0.023(-0.67)	
Minimum wage (-2)		-0.005(-0.45)	0.015(0.59)	
Constant	-0.027(-0.57)	0.013(0.57)	0.089(2.46)**	0.001(0.06)

Source: Author's Analysis of Data collected from the National Bureau of Statistics

The results indicate that employment in the administration and social services sector of the Nigerian economy during the period under review is significantly and positively influenced by the level of employment of the past two years in the agricultural sector. Specifically, the employment intensity of growth in the administration and social services sector with respect to employment in the agricultural sector is 2.584, lagged by two years. This implies that a one per cent change in the level of employment in the agricultural sector two prior years is associated with a 2.584 per cent

change, in the same direction, in the current level of employment in the administration and social services sector.

The current level of employment in the administration and social services sector is also significantly influenced by the immediate past year's employment in the manufacturing sector. The employment intensity of growth in the administration and social services sector with respect to prior year's employment in the manufacturing sector is -1.194. This means that a one per cent change in the employment level of the immediate past year in the manufacturing sector is accompanied by a 1.194 per cent change, in the opposite direction, in employment in the administration and social services sector of the economy.

Furthermore, the current level of employment in the administration and social services sector is significantly and positively influenced by one-year lagged level of Gross Value Added in mining and quarrying. The employment intensity of growth in the administration and social services sector with respect to one-year lagged level of Gross Value Added in the mining and quarrying sector is 0.423 and positive. This means, a one per cent change in the level of the immediate past year's Gross Value Added in the mining and quarrying sector of the economy is accompanied a 0.423 per cent change, in the same direction, in employment in the administration and social services sector of the economy.

Also, employment in the administration and social services sector of the economy is significantly influenced by the level of Gross Value Added in the construction sector, lagged by two years. The employment intensity of growth in the administration and social services sector with respect to Gross Value Added in the construction sector is -0.396. This means that a one per cent change in the previous two years' Gross Value Added in construction sector is accompanied by 0.396 percent change, in the opposite direction, in the employment level of the administration and social services sector.

Conclusion

Analysed as a stand-alone sector, the estimates of employment intensity with respect to GVA, interest rates, wage rates, and inflation rates in the administration and social services sector were not significant at 95% level of confidence. This means we may not be able to rely upon the results for pin-point policy. However, the results signpost the direction of the relationships. Employment in the sector is co-integrated with GVA. The interpretation of the result is that a one per cent change in administration and social services GVA will lead to 0.10 per cent change in administration and social services employment in the same direction. For job creation in the sector, Nigeria will need to promote policies that encourage sectoral output growth.

Similarly, the estimated elasticities of employment in the sector with respect to wage rate, interest rate and inflation rate, which are: -0.01, -0.01, and -0.00, respectively, are also not significant at 95% confidence level. Were the coefficients to be significant, it would mean that a one per cent change in wage rate, interest rate and inflation rate, respectively, will lead to a 0.01 per cent, 0.01, and 0.00 per cent change in administration and social services employment in the opposite

direction. These, however, confirmed the expected inverse relationship between employment growth and the variables. The implication is that policy makers would need to design and implement policies that encourage low wage rate, low interest rate and low inflation rate in the sector in order to create more jobs.

When the employment function incorporated the other sectors in the Nigerian economy, as exists in real life, the estimates became significant and explained some of the real-life issues that have characterised employment in the sector. In other to fully tap the job absorptive capacity of the administration and social services sector, policy makers should create and implement policies aimed at taking advantage of the inter-temporal and the inter-sectoral linkages with the agricultural sector, mining and quarrying sector, construction sector and the manufacturing sector of the economy.

Recommendations

i. In order to stimulate job creation in the sector, Nigeria will need to promote policies that encourage sectoral output growth, since employment in the sector is co-integrated with sectoral gross value added.
ii. Policy makers would need to design and implement policies that encourage low wage rate in the sector. This will enable employers to be able to employ more people within the limit of their often limited resources.
iii. Policy makers should design and implement policies that facilitate low interest rate . This will encourage new and expansionary investments in the sector.
iv. Also, policy makers should facilitate stable general price level and low inflation rate in the in the economy in order to encourage planning and investment that will, in turn, create more jobs.
v. Furthermore, policy makers should create and implement policies aimed at taking advantage of the inter-temporal and the inter-sectoral linkages with the agricultural sector, mining and quarrying sector, construction sector and the manufacturing sector of the economy.

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