

## The Agricultural Industry and Sustainable Development in Nigeria 1995 - 2015

**Rose Mbatomon Ako**

*Department of Economics, Nasarawa State University Keffi*

---

### Abstract

---

The paper employs analytical procedures including Robust Least Squares (RLS) estimation; unrestricted Vector Autoregression (VAR), Variance Decomposition (VD) and causality tests to explore the dynamics between unemployment (UNE), sectoral real gross domestic product (RGDP) for agriculture (ARG) and sustainable agricultural development (PAR) in Nigeria based on annual data from 1991–2015. Results indicate that rising unemployment will have un-salutary effects on sustainable agricultural development in Nigeria and the un-salutary effects of rising unemployment are further indicated in the negative relationship between it and sectoral RGDP for agriculture. Results further indicate unidirectional causation from both unemployment and sectoral RGDP for agriculture to sustainable agricultural development as well as one-way causality from unemployment to sectoral RGDP for agriculture. Moreover, since the variable engaged by the study is unemployment, - the antithesis of employment, - the lack of causation where it is endogenous indicates it must be exogenous and could be a support for our adaptation of Wagner's Law. Results also indicate about 58.9% explanation for sustainable agricultural development by selected variables. Empirical estimates indicate that improving sustainable agricultural development will directly reduce unemployment in Nigeria by about 11% of such proportional improvements. Additionally, as time passes, unemployment explains more and more of the shocks in sustainable agricultural development. The paper therefore recommends adequate attention be given to the menace of chronic unemployment to ensure not just its significant reduction but also to enhance sustainable agricultural development as this will vastly boost sustainable economic development in Nigeria.

**Keywords:** *Sustainable Agricultural Development, Unemployment, Sustainable Economic Development*

---

*Corresponding Author:* Rose Mbatomon Ako

<http://internationalpolicybrief.org/journals/international-scientific-research-consortium-journals/intl-journal-of-business-vol6-no1-august-2018>

### **Background to the Study**

Despite the speedy progression of global technology and development, Nigeria's agriculture remains largely under-developed and the industry is subsistence with about 80% of Nigeria's agricultural output coming from rural farmers living on less than a dollar per day earned from farming less than one hectare of land (2.47 acres) and using local implements. Moreover, Nigeria is still largely an agrarian economy providing employment for about 60% of Nigerians in both formal and informal sectors i.e. about 150 million people (Tersoo 2013). This implies the agricultural sector is a major employer of a larger proportion of the Nigerian population. The purpose of this paper is therefore to shed particular light on the relationship between unemployment and growth of agriculture in Nigeria and interpret it in terms of an adaptation of the Keynesian theory and Wagner's law. By this adaptation, the paper also reviews the resulting dynamics using observations of Glomm and Ravikumar (1997) and Abu and Abdullah(2010) as a backdrop to the effect that the larger the size of unemployment, the more negative is its impact on growth in agriculture. The dynamics between agriculture and unemployment in Nigeria which is the focus of this paper has to do with sustainable development goal 8 (SDG8) of the United Nations' Agenda 2030 (United Nations 2014, 2015). SDG8 deals with sustainable economic growth, full and productive employment and decent work for all (see Text Box1)



Text Box1: SDG8.  
Promote sustained,  
inclusive and  
sustainable economic  
growth, full and  
productive  
employment and  
decent work for all



### **Statement of the Problem**

Nigeria is basically an agrarian economy with diverse agro-ecological conditions that can support a variety of farming models and to this extent, Nigeria was once a large net exporter of agricultural products and agriculture was the major foreign exchange earner before the advent of oil in 1970s. However, despite agriculture still accounting for a significant portion of Nigeria's GDP, even to a greater proportion than the celebrated oil sector, and despite the salutary effects of enhanced agricultural production on employment, Nigeria is currently a huge net importer of agricultural products, with such imports exceeding \$3 billion (CBN 2010). This tardy situation came about because successive government administrations neglected the labor-intensive agriculture over the years and failed to diversify the economy away from over dependence on the capital-

intensive oil sector after the discovery of oil in Nigeria. Also, studies abound on the importance and contributions of agriculture to the state economy but hardly any exploration on possible linkages to unemployment status especially in a largely agrarian economy like Nigeria. This study is an attempt to investigate some of the issues.

### **Objectives of the Study**

The main objective of the study is to examine the dynamics between agricultural business and unemployment in Nigeria over the period 1995 to 2015. Specifically the study is to determine the causal relationship between agricultural output and unemployment in Nigeria.

Following from this introduction, Section 2 presents the literature review while Section 3 contains the methodology employed. Section 4 discusses the results and Section 5 concludes with some policy recommendations.

### **Literature Review**

#### **Theoretical Concepts of the Paper**

Theoretical ideas of the Paper are derived mainly from an adaptation of two theories that are of tangential relevance to this study i.e. the Keynesian theory and Adolph Wagner's (1883) Law of Increasing State Activity. By adapting Wagner's Law, we assume that a rise in agricultural activity resulting in growth in agricultural development leads to a rise in employment, which in turn leads to a decrease in unemployment. This adapted proposition assumes that employment is endogenous. The adapted Wagner Law therefore postulates a one-way causality running from agricultural development to employment i.e. causality runs from growth in agricultural development to employment. This adaptation considers employment is a consequence rather than cause of agricultural development.

On the other hand, by adapting John M. Keynes' (1936) General Theory of Employment, Interest and Money, we consider employment as a cause rather than effect of agricultural development and could be used to improve agricultural development. This Keynesian adaptation assumes increases in employment result in agricultural development and therefore postulates a one-way causality running from employment to agricultural development i.e. causality runs from employment to growth in agricultural development. The Keynesian adaptation assumes that a rise in employment leads to increases in agricultural development, through multiplier effects on aggregate demand. By the Keynesian adaptation we regard employment as an exogenous factor that can be utilized as a policy instrument to promote agricultural development and from this perspective, employment positively contributes to agricultural development.

Another theory that could be of tangential relevance is the feedback hypothesis of Peacock & Scott (2000). By an adaptation of this theory, we assume there is a bi-directional causal relationship between employment and growth of agricultural development.

## **Empirical Review**

The importance of agriculture generally is such that both historical and present development experience indicates it is in agricultural sector that the battle for long term economic development will be won or lost. As such, empirical studies abound on the importance of various aspects of agriculture generally and specifically including linkages with employment status. For instance, it is reported that agriculture employs about 60% of Africa's labor force and accounts for about 25% of the continent's gross domestic product –GDP (Africa Economic Outlook Report (AEO) Report 2013, World Bank 2013), and to this end, the African Union has defined the immediate future around agriculture as the main force in social and economic transformation of the continent (Rukuni 2014).

Furthermore, the World Bank (2013) estimates that African agriculture and agribusiness could be worth \$1 trillion by 2030 and reports that increased focus on agriculture could enhance productivity, reduce food prices, increase incomes and create employment. The World Bank also estimates that Africa has more than 50% of the world's fertile and unused land and that Sub-Saharan Africa alone where Nigeria belongs has almost a quarter (24%) of the world's land with rain-fed crop production potential.

Also, in a study on “Empirical Analysis of Agricultural Growth and Unemployment in Nigeria”, Ayinde (2008) concluded that Nigerian agricultural growth rate has an inverse relationship with unemployment and that increase in agricultural growth decrease unemployment and thus can alleviate poverty. Related to this, it has been reported that about 17 million young people enter the job market in sub-Saharan Africa each year out of which about 4.7 million (27.6%) are from Nigeria (Adebayo Emuleomo 2016) but agriculture could potentially provide enough food and jobs according to Ibrahim Mayaki, chief executive officer of the New Partnership for Africa's Development (NEPAD), the African Union's development agency.

However, youth unemployment is a prevalent challenge for most countries including Nigeria (Kakwagh and Ikwuba 2010, Bakare 2011, Salami 2013, Emeh 2012, Adesina 2013, Ifeoma 2013, Bafana 2014). Nevertheless, there is growing consensus that a focus on agriculture is a sustainable solution to this challenge because of the wide range of employment opportunities given the multifaceted and multifunctional nature of agribusiness (Sumberg and Okali 2013, Naamwintome and Bagson 2013, Vaarst 2010, Barbu and Capusneanu 2012, Akpan 2010). Olokundun *et. al.* (2014) therefore conclude that “an efficient agricultural sector would enable a country to generate employment opportunities and that the agricultural sector is a springboard for youth empowerment”.

## **Methodology and Data**

### **Definition of Variables**

The categories of the variables PAR, ARG and UNE are defined and specified in Table 1. The endogenous variable PAR is considered a structural variable and the exogenous variables policy instruments. The choice of variables is motivated by both the background discussion above and the findings in the literature.

**Table 1: Definition of Variables**

Variable	Definition
UNE	Percentage Unemployment
ARG	Agriculture Sector Real Gross Domestic Product (RGDP)
PAR	Percentage Contribution of Agriculture to national RGDP - a Proxy for Sustainable Agricultural Development

**The Model and Estimation Procedure**

**Specification of Model**

The model to be estimated is of the following form

$$PAR = F(ARG, UNE) \dots \dots \dots (1)$$

And

$$PAR = C_1 ARG + C_2 UNE + C_3 \dots \dots \dots (2)$$

Where  $C_i$  = coefficient to be estimated.  
The other variables are as defined in Table2 above.

**The Estimation Procedure**

Given the nature of the data, the analytical procedures include the Robust Least Squares (RLS) estimation; unrestricted Vector Autoregression (VAR), Variance Decomposition and causality tests. Variance decomposition (VD) analysis on the basis of VAR will estimate the relative significance of each random innovation to the system variables if policy does not change and looking ahead. Robust Least Squares (RLS) regression using M-estimation method is employed given the nature of the study's dependent variable defined above and the observance of possible data outliers. The advantage of RLS regression is that this approach is not as vulnerable as OLS to unusual data and the M-estimation method addresses dependent variable outliers where the dependent variable differs noticeably from the regression model norm.

**Data Sources**

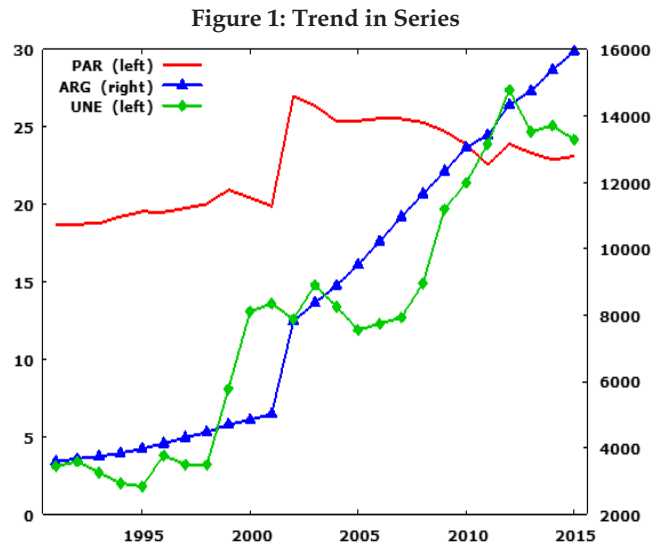
Secondary annual data for the period 1991 – 2015 is obtained from the Central Bank of Nigeria, National Bureau of Statistics, World Bank, International Monetary Fund and pertinent derivatives there from.

**Results and Discussions**

**Analysis of Trends**

Figure 1 below displays trends in sustainable agricultural development (PAR), Sectoral real gross domestic product for agriculture (ARG) and unemployment (UNE) over the study period from 1991-2015. From Figure 1, unemployment (UNE) and sustainable agricultural development (PAR) trended mostly upwards from 1991 to converge by 2011 at a point sustainable agricultural development was actually declining and thereafter, unemployment out-grew sustainable agricultural development. However, as unemployment rose geometrically beyond 1998 up till 2015 covering six growth bands,

the increase in sustainable agricultural development was almost flat and remained within two growth bands, with noticeable spikes between 2001 and 2010 and this could have been a contributory factor to Nigeria's economic recession beyond 2015 (Ako 2017).



### Robust Least Squares (RLS) Regression Estimates

The result of the RLS regression using M-estimation method is presented in Tables 2-3 below.

**Table 2: RLS Results**

Method: Robust Least Squares

Dependent Variable: PAR

Variable	Coefficient	Std. Error	z-Statistic	Prob.
ARG	0.000648	0.000291	2.229041	0.0258
UNE	-0.113456	0.151443	-0.749166	0.4538
C	18.04094	1.064521	16.94748	0.0000

Robust Statistics			
R-squared	0.478224	Adjusted R-squared	0.430790
Rw-squared	0.589243	Adjust Rw-squared	0.589243
Akaike info criterion	36.41692	Schwarz criterion	40.12925
Deviance	79.71793	Scale	1.617421
Rn-squared statistic	18.96922stat.)	Prob(Rn-squared)	0.000076



**Table 3: Coefficient Covariance Matrix**

	ARG	UNE	C
ARG	8.46E-08	-4.12E-05	-0.000199
UNE	-4.12E-05	0.022935	0.059727
C	-0.000199	0.059727	1.133204

From Table2, the estimated RLS regression equation is given as:

$$PAR = 0.00065ARG^{**} - 0.11346UNE + 18.04094 \dots \dots \dots (3)$$

**Where:** \*\*denotes significance at 5%.

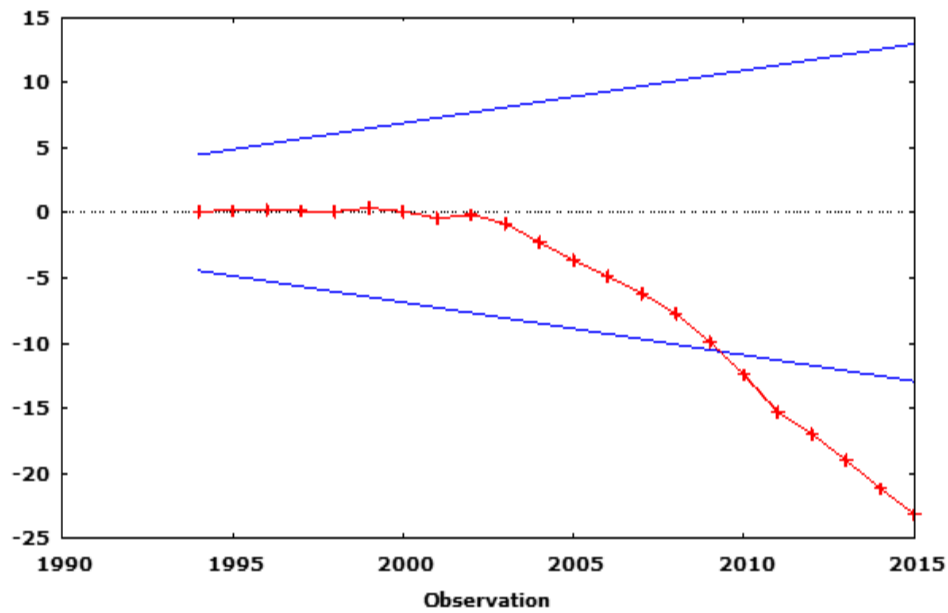
From the Table 2 results, only sectoral real gross domestic product for agriculture (ARG) is significant in explaining sustainable agricultural development (PAR) in Nigeria at 5% level. Unemployment is not significant in explaining sustainable agricultural development although the nature of the relationship is negative and thus supports our adaptation of Wagner's Law, whereby we assume that a rise in agricultural activity resulting in growth in agricultural development leads to a rise in employment, which in turn leads to a decrease in unemployment. From this result, the weighted  $R_w^2$  indicate about 58.9% explanation for sustainable agricultural development by selected variables. The robust  $R_n^2$ -statistic of 18.9692 with  $p$ -value < .01 indicates the overall model of sustainable agricultural development is significant at the 1 percent level and that the non-intercept coefficients are jointly statistically significant under this estimation. From the RLS estimates, for every one percent increase in sectoral real gross domestic product for agriculture, on average, sustainable agricultural development will improve by about 0.0006 percent at aggregate level and for every one percent increase in unemployment, on average, sustainable agricultural development will degrade by about 0.1135 percent at aggregate level holding all other variables constant.

This estimation indicates that rising unemployment will have un-salutary effects on sustainable agricultural development in Nigeria as less people are engaged in the production necessary to raise the percentage contribution of agriculture to national RGDP. Moreover, the un-salutary effects of rising unemployment are further indicated in the negative relationship between it and sectoral real gross domestic product for agriculture reflected in the table of covariance (Table 3). This is another indication for the imperative of adequately tackling the menace of unemployment in Nigeria to enhance contribution of agriculture to RGDP and sustainable agricultural development in the country.

**Diagnostic Tests Results**

Figure 2 plots the cumulative sum (CUSUM) from a recursive estimation of the model and indicates model stability in the coefficients is partial from about 2010 as part of the plot of the CUSUM statistic falls outside the critical bands at the 5% significance level for parameter stability.

Figure 2: CUSUM plot with 95% confidence band



**VAR Lag Order Selection and Group Unit Root Test**

**Table 4: Group Unit Root Test: Summary**

Series: ARG, PAR, UNE

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-6.55297	0.0000	3	69
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-5.45882	0.0000	3	69
ADF - Fisher Chi-square	36.3339	0.0000	3	69
PP - Fisher Chi-square	36.6012	0.0000	3	69

\*\* Probabilities for Fisher tests are computed using an asymptotic Chi

-square distribution. All other tests assume asymptotic normality.

The unit root test results in Table 4 above indicate that the variables are integrated of order one i.e. they are stationary at first difference while Table 5 below reports a maximum/optimal lag order 2 is selected by two of the three information criteria.



**Table 5: VAR System, Maximum Lag Order 2**

Lags	Loglik	p(LR)	AIC	BIC	HQC
1	-89.07042		8.440906	8.835860*	8.540236
2	-83.11542	0.01803	8.270906*	8.863338	8.419901*

The asterisks above indicate the best (that is, minimized) values of the respective information criteria, AIC = Akaike criterion, BIC = Schwarz Bayesian criterion and HQC = Hannan-Quinn criterion.

### **Granger Causality Tests**

The results of Block Exogeneity tests presented in Table 6 below indicate that for equation one (Eq1), both unemployment and sectoral real gross domestic product for agriculture with their lags each granger causes sustainable agricultural development at 5% but taken together, all explanatory variables with their lags granger cause sustainable agricultural development only at 10%. This shows that while both unemployment and sectoral real gross domestic product for agriculture as a whole impact sustainable agricultural development, their individual effects are more impactful.

For Eq2 where unemployment is the dependent variable, there is no granger causality on all fronts whether the variables are taken singly or together. This could indicate unemployment in Nigeria for the period is not really tied to economic fundamentals but could be the result of the celebrated “corruption” in Nigeria and thus cannot be readily predicted.

For Eq3, unemployment with its lag granger causes sectoral real gross domestic product for agriculture at 5% but sustainable agricultural development with its lag does not granger cause sectoral real gross domestic product for agriculture. Taken together however, all explanatory variables with their lags granger cause sectoral real gross domestic product for agriculture at 5%.

The results do not indicate any bi-directional causation between the variables and so do not support the feedback hypothesis of Peacock & Scott (2000). However, the results indicate unidirectional causation from both unemployment and sectoral real gross domestic product for agriculture to sustainable agricultural development as well as one-way causality from unemployment to sectoral real gross domestic product for agriculture. Moreover, since the variable engaged by the study is unemployment, - the antithesis of employment, - the lack of causation where it is endogenous indicates it must be exogenous as reflected in both Eq1 and Eq3 but could be a support for our adaptation of Wagner's Law.

**Table 6: VAR Granger Causality/Block Exogeneity Tests**

Dependent variable: PAR			
Excluded	Chi-sq	df	Prob.
UNE	6.104882	2	0.0472
ARG	6.551594	2	0.0378
All	8.449969	4	0.0764
Dependent variable: UNE			
Excluded	Chi-sq	df	Prob.
PAR	0.279099	2	0.8697
ARG	3.235577	2	0.1983
All	4.202007	4	0.3794
Dependent variable: ARG			
Excluded	Chi-sq	df	Prob.
PAR	2.954353	2	0.2283
UNE	6.077382	2	0.0479
All	9.707508	4	0.0457

**Variance Decomposition Results**

The results of the Forecast Error Variance Decomposition (FEVD) presented in Table 7 and Figures 3-4 below indicate that in the period right after a shock, sustainable agricultural development in Nigeria (PAR) explains 100 percent of its own shocks and unemployment (UNE) about 96 percent of its own. The fact that their movements are largely explained by past values indicates they have a significant lagged effect but the lagged effect on unemployment seems more absolute.

Own shock has the strongest and most lasting effect on both unemployment and sustainable agricultural development although after period 3, the contribution of unemployment to sustainable agricultural development is progressively higher than own shock of sustainable agricultural development and appears significant and lasting even becoming dominant by period 10. The results indicate that as time passes, unemployment explains more and more of the shocks in sustainable agricultural development.

**Table 7: Variance Decomposition Results**

**Table 7A:** Decomposition of variance for PAR

period	std. error	PAR	UNE
1	1.21444	100.0000	0.0000
2	1.47655	99.6853	0.3147
3	1.81055	93.3814	6.6186
4	2.29702	79.2186	20.7814
5	2.82058	67.5878	32.4122
6	3.28388	60.1311	39.8689
7	3.6509	55.5303	44.4697
8	3.92203	52.6664	47.3336
9	4.11264	50.8619	49.1381
10	4.24157	49.7187	50.2813

**Table 7B:** Decomposition of variance for UNE

period	std. error	PAR	UNE
1	1.82553	3.9818	96.0182
2	2.8313	7.6088	92.3912
3	3.21311	7.8887	92.1113
4	3.30931	7.6422	92.3578
5	3.32022	7.6550	92.3450
6	3.32904	8.0777	91.9223
7	3.35369	8.7364	91.2636
8	3.38809	9.4153	90.5847
9	3.42317	9.9904	90.0096
10	3.45338	10.4260	89.5740

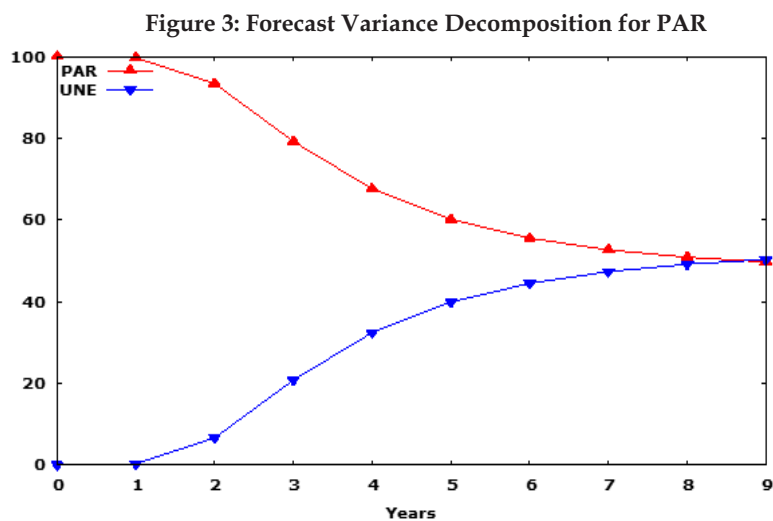
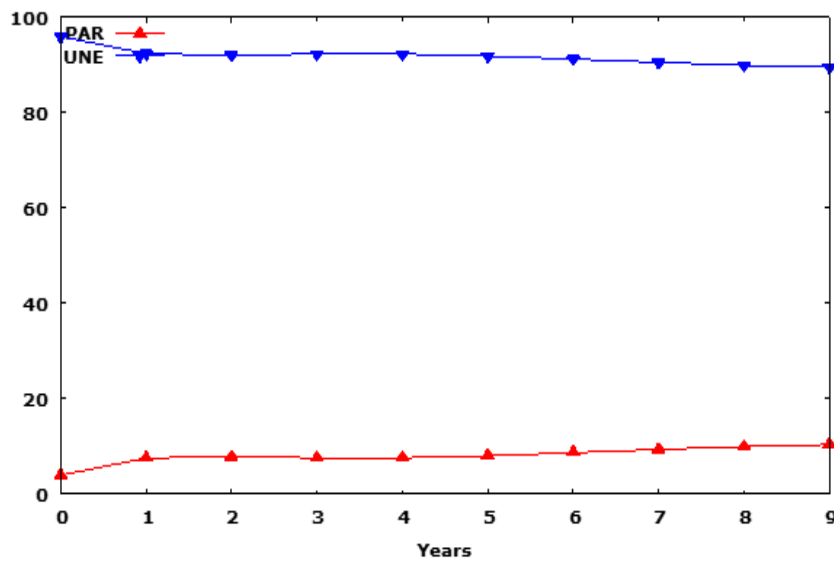


Figure 4: Forecast Variance Decomposition for UNE



### Conclusions

The paper employs analytical procedures including Robust Least Squares (RLS) estimation; unrestricted Vector Auto regression (VAR), Variance Decomposition (VD) and causality tests to explore the dynamics between unemployment (UNE), sectoral real gross domestic product for agriculture (ARG) and sustainable agricultural development (PAR) in Nigeria based on annual data from 1991–2015. Results indicate that rising unemployment will have un-salutary effects on sustainable agricultural development in Nigeria as less people are engaged in the production necessary to raise the percentage contribution of agriculture to national real gross domestic product (RGDP). Moreover, the un-salutary effects of rising unemployment are further indicated in the negative relationship between it and sectoral RGDP for agriculture.

Results further indicate unidirectional causation from both unemployment and sectoral real gross domestic product for agriculture to sustainable agricultural development as well as one-way causality from unemployment to sectoral real gross domestic product for agriculture. Moreover, since the variable engaged by the study is unemployment, - the antithesis of employment, - the lack of causation where it is endogenous indicates it must be exogenous and could be a support for our adaptation of Wagner's Law. Results also indicate about 58.9% explanation for sustainable agricultural development by selected variables. Empirical estimates indicate that improving sustainable agricultural development will directly reduce unemployment in Nigeria by more about 11% of such proportional improvements. The results indicate that as time passes, unemployment explains more and more of the shocks in sustainable agricultural development.

## Recommendation

The paper therefore recommends adequate attention be given to the menace of chronic unemployment to ensure not just its significant reduction but also to enhance sustainable agricultural development in Nigeria. Enhanced sustainable agricultural development in Nigeria implies increased agricultural output which in turn will vastly boost sustainable economic development.

## References

- Abu, N. & Abdullahi, U. (2010). Government expenditure and economic growth in Nigeria, 1970-2008: A Disaggregated Analysis, *Business and Economics Journal, BEJ* 4 1-11.
- Adebayo, E. (2016). *How agriculture can solve Nigeria's unemployment crisis*. <https://ynaija.com> August 2, 2016
- Adesina, O. S. (2013). Unemployment and security challenges in Nigeria. *International Journal of Humanities and Social Science* 3 (7).
- Africa Economic Outlook Report (2013). *Economic commission for Africa*.
- Akpan, S. B. (2010). Encouraging youth involvement in agricultural production and Processing. *International Food Policy Research Institute, Sustainable Solutions for Ending Hunger and Poverty*.
- Ayinde, O. E. (2008). Empirical analysis of agricultural growth and unemployment in Nigeria, *African Journal of Agricultural Research* 3 (7)465-468, July 2008
- Bafana, B. (2014). Denting youth unemployment through agriculture. *Africa Renewal*. Special Edition on Agriculture 2014. [www.un.org/africarewal](http://www.un.org/africarewal)
- Bakare, A. S. (2011). The determinant of urban unemployment crisis in Nigeria: An Econometric Analysis, *Journal of Emerging Trends in Economics and Management Sciences*. 2 (3) 184-192.
- Barbu, C. M. & Capusneanu S. (2012). Agriculture, environment and sustainable development of Rural Areas. *International Journal of Academic Research in Business and Social Sciences*, 5 (9)
- CBN (2017). *Central Bank of Nigeria annual statistical bulletin 27*. Central Bank of Nigeria, Abuja
- CBN, (2010) Agriculture credits guarantee scheme fund in Nigeria. <http://victor/Document/Agriculturefund.htm>. *Accounts*. Garki, Abuja

- Emeh, I. E.G. (2012). Talking youth unemployment in Nigeria: The Lagos State development and empowerment programmes initiatives. *Afro Asian Journal of Social Sciences*. 3 (3).
- Glomm, J. J. & Ravikumar, D. J. (1997). The Growth of public expenditure in selected developing nations: Six Caribbean Countries, *Public Finance/Finances Publique*, 3 (3) 57 – 74
- Ifeoma A. B. (2013). Challenges of youth unemployment in Nigeria: Effective career guidance as a Panacea. *African Research Review, An International Multidisciplinary Journal, Ethiopia*, 7(1), Serial (28)
- Kakwagh V. V. & Ikwuba A. (2010). Youth Unemployment in Nigeria: Causes and Related Issues *Canadian Social Science*, 6 (4) 231-237.
- Keynes, J. M. (1936). *The general theory of employment, Interest and Money*, 7, Cambridge: MacMillan.
- Naamwintome, B. A. & Bagson, E. (2013). Youth in Agriculture: Prospects and Challenges in the Sissala area of Ghana. *Net Journal of Agricultural Science*, 1 (2) 60-68.
- Olokundun, A. M., Falola, B. H. & Ibidunni, A. S. (2014). Agro business as a remedy for youth unemployment towards the achievement of sustainable development in Nigeria: Comparative Perspectives from Kwara State Agro Business Economy. *Journal of Economics and Sustainable Development*, 5 (3) 46-57.
- Peacock, A. T. & Scott, A. (2000). The Curious Attraction of Wagner's Law". *Public Choice* 10 (2) 1-17.
- Rukuni, B., Mandivamba in Bafana. (2014). Denting youth unemployment through agriculture *Africa Renewal*. [www.un.org/africarenewal](http://www.un.org/africarenewal)
- Salami, C.G.E. (2013). Youth unemployment in Nigeria: A Time for Creative Intervention, *International Journal of Business and Marketing Management*, 1 (2) 18-26
- Sumberg J. & Okali C. (2013). Young people agriculture and transformation in rural Africa: An opportunity space approach. *Innovations*. A Quarterly Journal published by MIT Press. Global Youth Opportunities Conference.
- Tersoo, P. (2013). Agribusiness as a versatile tool for rural development in Nigeria. *Mediterranean J. Soc. Sci.* 4 (8) 17-26

United Nations, (2014). *Prototype sustainable development report* (UNDESA, 2014) <https://sustainabledevelopment.un.org/globaldreport/2014> United Nations, (2015). *Global Sustainable Development Report*. <https://sustainabledevelopment.un.org/globaldreport>

Vaarst, M. (2010). Organic farming as a developmental strategy: Who are interested and Who are not? *Journal of Sustainable Development*. 3 (1).

Wagner, A. (1883) Three extracts on public finance. In: Musgrave R.A., & Peacock A.T. (ed) (1958) *Classics in the theory of public finance*, Macmillan, London.

World Bank -World Development Indices (various)

World Bank (2013). *Agriculture as a sector of opportunity for young people in Africa*. Policy Research Working Paper. World Bank June 2013