

Inter-Relationship between Revenue, Economic Output, Unemployment and Development in the Nigeria Economic

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Abstract

This paper empirically examine the dimension of the inter-relationship between output, revenue, unemployment and economic development between the period's 1981 to 2014 using secondary source time series. Our data became stationary after first differencing in the order of I(1) integration while we observe the existence of long run correlation between variable employed. From the result of the error correction model, we found a negative correlation between unemployment and economic development such that 1% increase in unemployment will amount to about 0.06% decrease in the level of economic development which validate okun's (1962) postulation. The result of the causality test shows no existent of significant relationship between revenue (REVN), economic output (OUTP), and human development index (HDI) while we found a unidirectional causality flow between HDI and UMPL with causality flowing from UMPL to HDI which suggest that high unemployment rate debar economic development. The dimensions of inter-relationship between the exogenous variables reveals bilateral relationship between OUTP and REVN which suggest that economic output and generated income reinforce each other while there exist a unilateral nexus between REVN, OUTP and UMPL which suggest that increased unemployment rate will amount to low level of economic output and hence reduced generated revenue which is capable of downsizing economic development. On this premises, we conclude that there exist a symbiotic dimensional relationship between output, revenue and economic development while unemployment maintain a negative correlation to economic development hence, to achieve a sustainable level of economic development, ever teaming unemployment problem must be dealt with such that it will be reduced to a reasonable extent.

Key words: *unemployment, Revenue, error correction model, economic development*

1.0 Introduction.

One of the most persistence and unmanageable problems facing the LDC's is significant level of unemployment, low level of economic output and insignificant level of income. Minewhile, removal of unemployment and achieving of full employment has been the eclectic goals of public policy. Consequently, the strength of the industrial capacity of a country determines her economic output and the corresponding revenue (income).

However, Arthur okun (1962) was the first economist who empirically investigate the inter nexus between output, unemployment and income using US data and found that there is an inverse relationship between economic output and unemployment. He articulated that 1% increase in unemployment is capable of relegating economic output and downsize the revenue level of the US economic. Hence, he reported a negative correlation between economic output and unemployment. Though zero percent of unemployment cannot be attained even if an economic is operating at full level of employment due to frictional and structural unemployment

Accordingly, most LDC's have over the years recorded a significant level of unemployment as a result of high preference of foreign product to their local product which lead to low level of domestic demand for local goods and hence discourage local producer. Poor production output due to low patronage will amount to high level of unemployment and relegate total government revenue. Keynes gave a holistic view of the inter-relationship quadrant that exist between income, output and employment level. According to him, unemployment occur as a result of ineffective or low level of demand. He explains that when the citizen of a country demand more of foreign goods than their domestic product, this will relegate the productive output of the local producer and lead to lay off of workers which is capable of downsizing economic development and increasing level of unemployment over time.

In the Nigeria context, the relationship between revenue, economic output, unemployment and economic development has been symbiotic and inter-wind. The production output in the first quarter of this year drastically experience reduction due to exchange rate saga, world price instability and internal moral suasion which has obviously inflict on the total revenue and hence, debars economic development. Onobisi onafowora (2000) examine the nexus between economic output, total government revenue and economic development and report a direct and positive reinforcing/symbiotic correlation between those variable. His finding shows that increase in economic output is capable of stimulating total government revenue which will in turn promote economic development. In another related study, monogbe, et al (2016) examine the responsiveness of macroeconomic variable to increase in government expenditure, the study report that significant level of unemployment is a major impediment to decrease in economic output, reduced government revenue and debars economic development over the years. The findings suggest that high level of unemployment is negatively correlated to economic development. In another related study of Cahuc and Michael (1996), Daveri and Tabellini (2000), empirically investigate the nexus between real wage rate, unemployment and economic output. The result of their finding reported that increase in real wage rate will lead to high level of unemployment and hence reduced level of economic output. Quite a number of scholar report a negative correlation between economic output, income, unemployment and economic development such as Michelacci, Lopez--Salido (2005), okun (1962). Minewhile, (Gruchelski 2012) exert that the correlation between this variable are presented as an inverted U-shaped relationship (assuming that the entry cost is positive, but sufficiently low), while some other scholars allude a positive correlation.

Upon this back drop, it is obvious that the argument is far from conclusion hence, this study set out to examine the inter-relationship between economic output, total government revenue, unemployment rate and economic development between the periods 1981 to 2014. The gross objective of this study is to examine how economic development respond to changes in this variables.

2.0 Literature Review

This section is a review of related literatures, which provides an understanding and important theoretical views and work done by various scholars to examine the relationship between economic output, total government revenue, unemployment rate and economic development.

Keynesian Theory of Income, Output and Unemployment.

According to Keynes employment depend on effective demand. That is, to experience low level of unemployment in an economy, there must be an effective demand which will in turn stimulate output and hence create more employment opportunities. On this note, $ED=f(E)$. he further explains that effective demand determines output which suggest that increase in the level of aggregate demand will stimulate production output hence, effective demand is a function of output $ED=f(OUTPUT)$. Furthermore, he explains that increase in output leads to increase in income and hence promote consumption, savings and investment which will in turn lead to creation of more employment opportunities. So, $E=f(I)$. To maintain a utopia flow between revenue, output and employment level, effective demand is paramount. That notwithstanding, Professor Henry Hazlitt criticise Keynes argument of effective demand determining employment level. Hazlitt articulated that employment depend on the inter-relationship between wage rate, price and money supply. According to him, it is possible to attain full employment even pm the face of ineffective demand provided the wage rate is flexible such that it can adjusted quickly to change in price. To him, the vertical nexus between unemployment and effective demand is fallacious.

Accordingly, okun's law postulate that there is an existence of negative correlation between economic output and unemployment rare. He articulated that 1% increase in the level of unemployment is capable of downsizing economic output to the tune of 0.5% and hence reduce the level of generated revenue.

Big bush theory

According to Rosenstein Rodan (1964) big push theory is a concept in development economics that try to examine the constrain in the underdeveloped countries. The theory articulated that to achieve a sustainable level of economic development in the under developed countries, the role of investment cannot be grossed out. He explains that the major challenges the under developed countries experience is virtues circle of poverty which usually occur due to low level of industries, low level of productive output which further amount to high level of unemployment and hence debar economic development. The theory further explains that in introducing investment, bite-by-bite investment on the preferred sector of the economic will not help the economy but rather extirpate further growth hence, massive quantum of investment is expected in all sector of the economic to accelerate the expected level of development.

The theory further highlight three indivisibilities in the underdeveloped countries which include (A) production; which involve, input, processes of raw materials and output. The first indivisibilities involve encouraging massive production in the economic through

combination of various raw materials which will amount to large scale production and hence stimulate employment rate. (ii) Processes; this involve mixing of various production materials to ensure quality output which will lead to increase in demand and hence lead to creation of more employment opportunities. (B) Demand indivisibilities; this can only be achieve through high level of productive output which will stimulate consumption expenditure and hence reduce poverty circle. (C) Supply of savings; articulated that to achieve sustainable level of economic development in the under developed countries, savings (capital formation) is gamine. This savings is what is refers to as critical minimum quantum of investment (CMQI) which must be timely and appropriate to avoid setting in of depreciation and ware/tear.

Review of related Literature

Dumitrescu, B. A, Dedu, V and Enciu, A (2010) empirically carried out a study to test the validity of okun's law using Romania time series between the periods 200 to 2008. The gross objective of this research is to ascertain the correlation between unemployment and economic output. This study employ unit root test and ordinary least square estimation tools to test its short run dynamics, finding reveals a negative correlation between economic output and unemployment. That is, 1% increase in unemployment will amount to about 0.5% fall in economic output of the Roman Empire and hence validate the efficacy of okun's law. However, the neoclassical economist articulated that the underlying factor that affect the real economic output and constitute high level of unemployment is technological progress and population growth.

In a more recent study, Cameci and Mauro (2003), IMF (2010), Herwartz and Niebuhr (2011), Parello (2010), Ball, Leigh and Loungani (2012) examine the correlation between economic output, unemployment, income and development, the output of their finding reports that the generous welfare system, restrictive labour law and rigid labour market exert the negative effect of the labour market and the weak position of trade unions. Arthur okun (1962) using US time series and scattered diagram reported a negative correlation between economic output, income and unemployment such that 1% increase in unemployment is capable of downsizing economic output to the tune of 0.5%.

Gordon (1995) allude that one of the explanation of the trade-off between unemployment and economic output in the short run is the structural shock such as wages shock. In the long run, he stated that the relationship experience weak quadrant due to dynamic regulation process. Meckl (2001) articulated that the correlation between economic output and unemployment is not clear but could be related to inter-sectoral wages difference. To him, the positive correlation occur when the sector is characterize with high wage rate while the negative correlation between economic output and unemployment occurs when there is a low wages.

Daveri and Tabellini (2000) confirm that increase in labour tax amount to significant upward shift in unemployment and then downsize economic output, reduce generated revenue and finally debar economic development in the European countries. According to Hoon and Phelps (1997) they argues that there exist no significant correlation between economic output, income and unemployment rate in the long run. Mortensen and Pissarides (1998) reported that it is difficult to ascertain a clear correlation between economic output, revenue and unemployment.

In the Nigeria context, Nageri, el al (2013) examine the causality nexus between economic outputs through trade using time series data between the periods 1975 to 2012. The study

employ the multiple ordinary least square regression model to exert the short run dynamic. Finding reveals that domestic trade significantly contribute to the growth of economic output, stimulate revenue level and reduce level of unemployment which will in turn promote economic development. Monogbe, et al (2016) examine the responsiveness of macroeconomic variable to increase in government expenditure, study employ unit root test, Cointegration test, parsimonious error correction model and granger causality test. Findings reveals that to attained a sustainable level of economic development in Nigeria, domestic product must be largely patronise as it will lead to increase in economic output and create more employment opportunities which will in turn accelerate generated revenue.

Mahmoud A. and Mohammed A (2012) examine the correlation between unemployment and real economic growth rate of Jordan and some Asian countries between the periods 2006 to 2011. Findings reveals that output growth rate and unemployment for Jordan shows the direction of the high growth rate and related decline in the unemployment rate

3.0 Methodology

3.1 Research design and Data sources

This research employ ex post facto research design and time series secondary data were obtained from the CBN statistical bulletin between the periods 1981 to 2014. Under this design econometric modelling will be applied. The choice of this design is to enable measurability.

3.2 Model specification

We formulate our model in a functional form thus: economic development is a function of revenue, economic output and unemployment written mathematically

$$\text{HDI} = f(\text{OUTP}, \text{UMPL}, \text{REVN}) \dots \dots \dots (1)$$

We transform the above equation into econometric form by introducing constant and slope

$$\text{HDI} = \beta_0 + \beta_1 \text{OUTP} + \beta_2 \text{REVN} + \beta_3 \text{UMPL} + \epsilon_t \dots \dots \dots (2)$$

Where

HDI = Human development index

OUTP = Economic output

UMPL = Unemployment

REVN = Government Revenue

ϵ = error term

β_0 = constant

β_1, β_3 = slope

Apriori Expectation

Based on theoretical and empirical Studies, All employed variables are expected to be positively related to the dependent variable except for unemployment which appear to be inversely related to the endogenous variable. It is mathematically represent thus: $\beta_1, \beta_2 > 0, \beta_3$

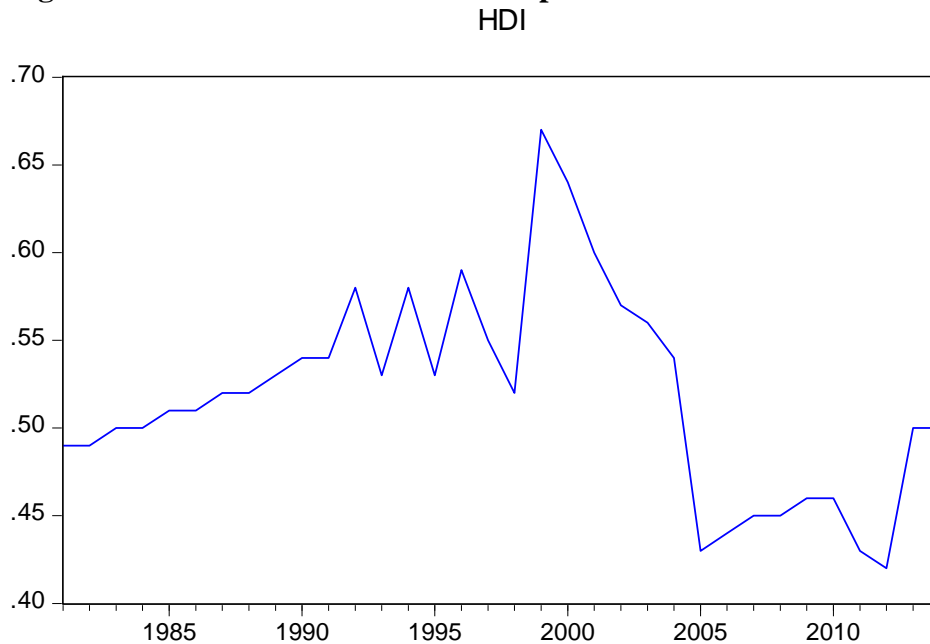
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4.0 Result and Discussion

The aim of this chapter is to report, present, analyse and discuss the result of the model estimation and other diagnostic tests conducted. This section is therefore subdivided into data presentation, data analysis, and the discussion of findings.

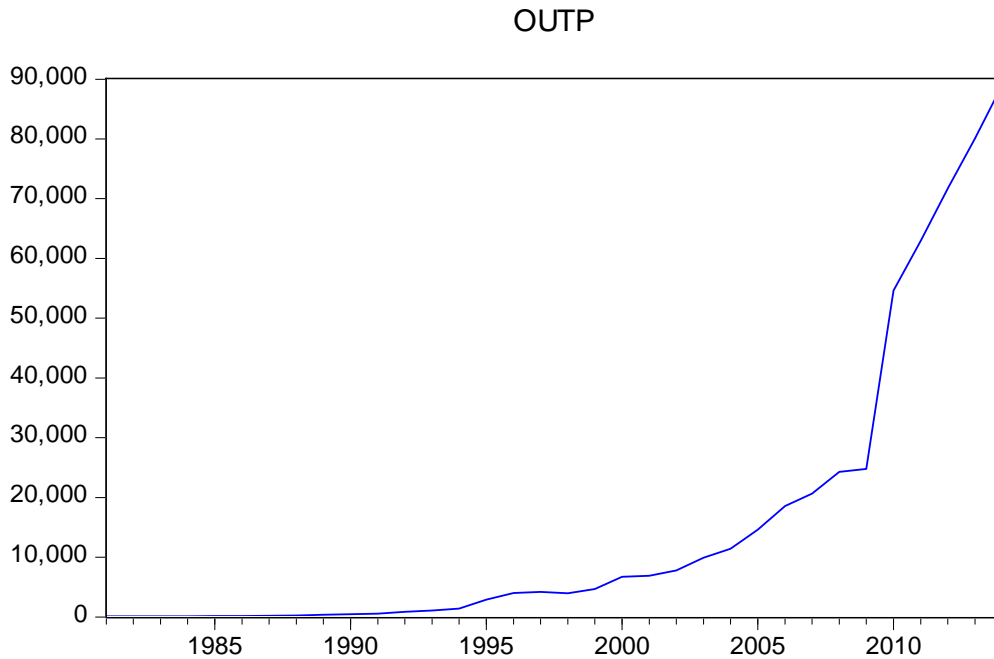
In starting our analysis, we are pleased to start our presentation with the time series plot of all the variable employed.

Figure 1 Time Series of Human Development Index.



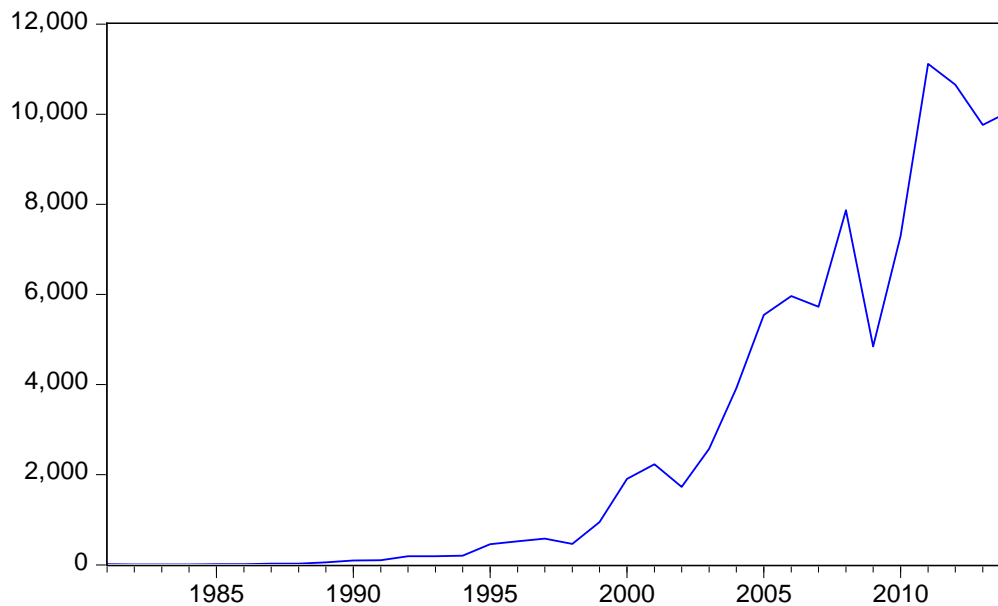
From the time series presented in figure 1 above, we observe that between the pre and post era of 1981 to 1986, the level of economic development was very minute, the economy begins to experience development between the periods 1989 to 1992 were the development trend stood at 0.58, from 1993 to 2003, inconsistency set in and the trend of development begins to fluctuate. From 2004 till date, the level of economic development begins to drop drastically has this could be attributed to low level of economic output, economic instability which does not encourage private investors.

Figure 2 Time Series of Economic Output



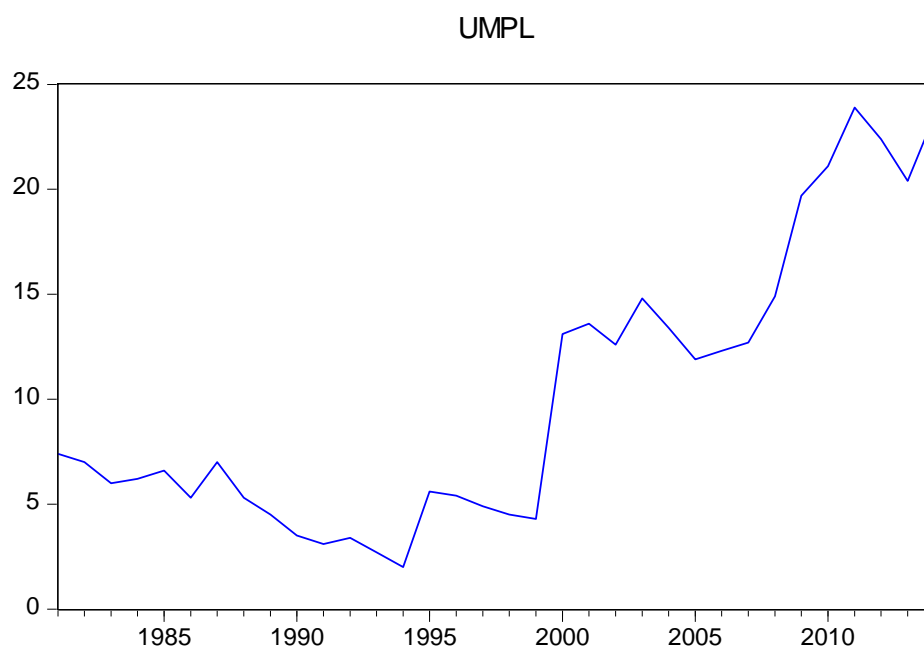
From figure 2 above we observe that between the periods 1981 to 1991 output experience a tremendous increase and in 2001, output stood at 6,895.20, between the periods 2002 to 2014, the economic experience almost double increment in output and it stood at 89043.62

Figure 3 Time Series of Total Government Revenue
REVN



From the above graph, between the periods of ten years interval 1981 to 1991, the economy experience increased revenue from 13.29 million to 100.99 million, the quadrant of increment is almost to the tune of 85%. From 1992 to 2002, total government revenue also experience sporadic increment until 2009 where inconsistency set in and the total revenue stood at 10,068.85 billion in 2014.

Figure 4 Time Series of Unemployment Rate



The unemployment rate between the periods 1981 to 1986 was recycling, between 1990 and 1999, the rate of unemployment was dropping to a reasonable extent. From the era of banking reform 2004 to 2006, the economy experienced a high level of unemployment as the capital base of commercial banks increased from 5 billion to 25 billion and most banks came into merger due to lack of financial strength which led to laying off of workers till date.

Table 1 presentation of Stationality Test Using PP test

Variables	PP Stat	5% critical value	Order	Remark
D(HDI)	-7.19814	-2.95711	1(1)	Stationary
D(OUTP)	-3.97002	-2.95711	1(1)	stationary
D(REVN)	-6.61583	-2.95711	1(1)	Stationary
D(UMPL)	-5.33249	-2.95711	1(1)	stationary

Source: E-view 9

The result in table 1 above reports stationarity of the time series employed in the process of research after first differencing in the order of 1(1) integration. Hence, we can proceed to test for long run nexus using Johansson Cointegration test.

Table 2 presentation of Cointegration test Result

Hypothesized	Eigenvalue	Trace stat	0.05 Critical Value	prob
No. of CE(s)				
None *	0.674957	63.89348	47.85613	0.0008

At most 1*	0.645545	62.48236	37.85615	0.0404
At most 2	0.271385	11.22848	15.49471	0.1978
At most 3	0.033700	1.096981	3.841466	0.2949

Source: E-views 9

From table 2 above, judging by the decision rule of trace statistic been greater than the critical value and by the ranking order, the output reveals the existence of two Cointegration equation which suggest that there is a long run correlation between all the variable employed in this research work. Hence, we can proceed to error correction model.

Table 3 presentation of parsimonious error correction model

Dependent Variable: HDI				
Method: Least Squares				
Date: 07/23/16 Time: 15:58				
Sample (adjusted): 1982 2014				
Included observations: 33 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.559131	0.017679	31.62629	0.0000
REVN	1.73E-05	6.28E-06	-2.764243	0.0100
OUTP	1.61E-06	7.42E-07	2.169706	0.0387
UMPL	-0.001428	0.002786	-0.512609	0.6122
ECM(-1)	0.624328	0.160440	3.891344	0.0006
R-squared	0.617463	Mean dependent var	0.520000	
Adjusted R-squared	0.562815	S.D. dependent var	0.059739	
S.E. of regression	0.039499	Akaike info criterion	-3.486334	
Sum squared resid	0.043686	Schwarz criterion	-3.259591	
Log likelihood	62.52452	Hannan-Quinn criter.	-3.410042	
F-statistic	11.29889	Durbin-Watson stat	2.401363	
Prob(F-statistic)	0.000014			

Source: E-views 9

The output of the error correction model reveals that the disequilibrium in the short run dynamics is corrected and adjust in the long run to the tune of 0.6243 unit. From the global statistics, we observe a high predictive ability of the adjusted R^2 which suggest that about 56% fluctuation in the endogenous variable is captured and explained by the exogenous variables while the remaining 44% is handled by the error term. The value of the Durbin Watson statistic (2.4013) show an absent of autocorrelation which suggest that the output of this empirical finding could be used for policy making while the probability value and corresponding F statistic reveal general significances of the model. From the relative statistics, we observe a significant but negative correlation between unemployment and economic development which validate okun's (1962) postulation. U MPL stood at 0.6122 with a negative coefficient of -0.000016 which suggest that 1% increase in the level of

unemployment is capable of relegating economic development to the tune of 0.06%, revenue and output maintain a significant probability value of 0.0100 and 0.0387 respectively which suggest that increase in generated revenue and economic output is a key stimuli to economic development in the Nigeria context. The dimension of inter-relationship between the exogenous variables will be eclectically explained using the granger causality test.

Table 4 presentation of granger causality test result

Pairwise Granger Causality Tests			
Date: 07/23/16 Time: 16:08			
Sample: 1981 2014			
Lags: 1			
Null Hypothesis:	Obs	F-Statistic	Prob.
REVN does not Granger Cause HDI	33	2.51685	0.1231
HDI does not Granger Cause REVN		0.15459	0.6970
OUTP does not Granger Cause HDI	33	0.65289	0.4254
HDI does not Granger Cause OUTP		0.63495	0.4318
UMPL does not Granger Cause HDI	33	3.93782	0.0504
HDI does not Granger Cause UEMPL		2.16976	0.1512
OUTP does not Granger Cause REVN	33	1.45197	0.0376
REVN does not Granger Cause OUTP		0.22850	0.0361
UMPL does not Granger Cause REVN	33	6.86984	0.0136
REVN does not Granger Cause UEMPL		2.54300	0.1213
UMPL does not Granger Cause OUTP	33	5.79146	0.0225
OUTP does not Granger Cause UEMPL		1.16236	0.2896

Source: E- views 9

The result of the granger causality test reveals the dimension of causality that exist between the predictors and the endogenous variable. From the result above, there is no existent of significant correlation between REVN, OUT, and HDI while on the order hand, we found a unidirectional causality flow between HDI and UEMPL with causality flowing from UEMPL to HDI which suggest that high unemployment rate debar economic development. Hence, to achieve a sustainable level of economic development, unemployment rate must be reduced to a reasonable extent.

5. Discussions, Summary and Conclusion

This paper empirically examine the dimension of the inter-relationship between output, revenue, unemployment and economic development between the period's 1981 to 2014 using secondary source time series. Our data became stationary after first differencing in the order of 1(1) integration while we observe the existence of long run correlation between variable employed. From the result of the error correction model, we found a negative correlation between unemployment and economic development such that 1% increase in unemployment will amount to about 0.06% decrease in the level of economic development which validate

Okun's (1962) postulation. Output and revenue report a positive and significant correlation to economic development between the periods under study. The result of the causality test shows no existent of significant correlation between REVN, OUT, and HDI while we found a unidirectional causality flow between HDI and UMPL with causality flowing from UMPL to HDI which suggest that high unemployment rate debar economic development. Hence, to achieve a sustainable level of economic development, unemployment rate must be reduced to a reasonable extent. The result further shows a significant level of unemployment which implies that high level of unemployment is corrosive to economic development. In the dimension of inter-relationship between the exogenous variables, we found a bilateral relationship between OUP and REVN which suggest that economic output and generated income reinforce each other. that is, increase in economic output promote revenue while there exist a unilateral nexus between REVN, OUP and UMPL which suggest that increased unemployment rate will amount to low level of economic output and hence reduced generated revenue which is capable of downsizing economic development. On this premises, we conclude that there exist a symbiotic dimensional relationship between output, revenue and economic development while unemployment maintain a negative correlation to economic development hence, to achieve a sustainable level of economic development, ever teaming unemployment problem must be dealt with such that it will be reduced to a reasonable extent.

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