

# Real Estate Development and Economic Growth in Nigeria; Cointegration, DOLS and Granger Causality Approach

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## Abstract

The recent advocacy in different quarters to diversify the mono-cultural nature of the Nigerian economy to the direction of non-oil sector makes the discovery of other viable sectors that could generate sustainable economic growth becomes imperative in the recent time. Consequently, this study examined the relationship between real estate development and economic growth in Nigeria between the periods of 1981 and 2016 using Johansen cointegration test, DOLS and Granger causality approach. However, the results of this study show that real estate development has a non-significant positive relationship with economic growth in Nigeria. In addition, there is a unidirectional causality which runs from inflation rate to real estate development and economic growth in the country. Furthermore, based on the findings that emerged in this study, the Nigerian government should see real estate as a viable sector that the current mono-cultural nature of its economy could be diversified into since this sector has the capacity to propel the expansion of the country's growth to a sustainable level if well explored and developed. Therefore, the policy makers in the country should embark on policy measures that will ensure a conducive climate for both local and foreign investors to thrive in this sector of the economy. Also, the federal government of Nigeria should not hesitate to address the unfriendly bureaucratic procedures, high cost of land registration and titling, uncoordinated policies and implementation at federal and state levels, ownership rights under the Land Use Act which could be inimical to the country's global competitiveness of real estate sub sector.

**Keywords:** Real Estate, RGDP, Diversification, DOLS and Nigeria.

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## INTRODUCTION

In any country, the relationship between economic growth and the share of the economy controlled by landlords is a complex issue that cannot be overemphasized [1]. Real estate can be conceptualized as the properties that are domiciled in the form of land and landed properties, buildings, flora and fauna [2]. Meanwhile, the development of real estate is regarded as purchase, management, rental land, sales of real estate with a purpose of making profit [3]. Real estate is another promising sector of the economy that can be explored in order to insulate the country from the oil price shocks. Before the discovery of oil and the oil boom of 1970s, agriculture was the backbone of the Nigerian economy. But, today the country is a mono-cultural economy which solely depends on the revenues from oil and gas for its economic activities. However, global oil prices dwindling coupled with the drastic reduction in the local production orchestrated by the actions and inactions of the Niger-Delta militants was the major factor that caused the recent recession in Nigeria in which the country has not recovered from the menace. It is worth of note that despite the downturn in the Nigerian economy, real estate has been rising in leaps and bounds in terms of high rise buildings, hotels, shopping malls, springing up of event centres everywhere especially the major cities of the country.

Consequently, it has been reported that real estate development, construction and technology sector in developing economies, Nigeria inclusive have served a support to the global economy during the periods of financial crisis in the recent years [4]. Nigeria is one of the promising developing economies with great potentials in real estate. Nigeria's competitiveness in the global real estate market is making the country to become increasingly attractive to investors. As a matter of fact, real estate contributed about 8.7 % to Nigeria's GDP in 2014, which is greater than the average GDP growth rate of 7.4 % in the same year [5]. Considering the strategic position in which this sector occupies in the Nigerian economy and the recent advocacy in different quarters to diversify its mono-cultural sector to the

direction of non-oil sector, therefore researches about the other viable sectors of the Nigerian economy that has the potential to generate sustainable economic growth become imperative currently. In view of the above, this study is set to examine the nexus between real estate development and economic growth in Nigeria which literature has been silent about it in the recent time. In addition to the introductory aspect, the other parts of this study are organized as follows: section two consists of the review of relevant literature however, section three presents the methodology, discussion and summary of the estimated results and policy recommendation.

## LITERATURE REVIEW

In this section, despite the fact that studies relating to real estate development and economic growth are somewhat scanty in Africa in general and Nigeria in particular, an attempt was made to critically review past studies on nexus between real estate development and economic growth in this regards.

Hui and Yiu [6] employed the Granger Causality Test to examine the market fundamental dynamics of private residential real estate prices in Hong Kong from 1984 to 2000. The author concluded that residential prices contributed significantly to economic growth within the studied period. In another perspective, Chau and Lam [7] estimated the relationship between speculation, property prices and economic growth in Hong Kong. The authors opined that the nominal GDP was the leading indicator of housing price in the country. Coulson and Kim [8] submitted that residential investment contributed immensely to the growth of GDP in the United States. The resulted from the study proved that the residential sub-sector is the leading sector of the economy, to the extent that changes in housing demand are greater than the changes in aggregate demand. Meanwhile, Gachoka [9], Chege [10] and Kigige [11] investigated the effect of real estate investments in propelling economic growth of Kenya. The authors argued among others that the introduction of REITS in the Kenyan bourse would stimulate the economic activities at the NSE with view to generating a wider portfolio and a wealth effect to consumption. Also, construction investments alongside residential investments led to an increment in consumption and economic growth. Therefore, real estate investment trusts catalyzed the growth of the country's economy.

In addition, Adediji [12] evaluated how international housing finance affects the world challenge and effective governance in Nigeria. It was discovered from the study that the unusual increase in population and spontaneous expansion of the most Nigerian cities contributed to persistent shortage of affordable decent dwelling shelters. Ugonabo and Emoh [13] assessed critical factors that constitute major challenges to the development and delivery of housing in Anambra State of Nigeria. The author submitted that lack of secure access to land, high cost of construction, limited access to finance, bureaucratic procedures, high cost of land registration and titling, uncoordinated policies and implementation at federal and state levels, ownership rights under the Land Use Act, lack of critical infrastructure, affordability gap, inefficient development control, youths harassment of developers, and inelegant revocation and compensation process are inhibiting factors to housing development in Nigeria.

Moreover, the following studies Jiboye [14], Jiboye and Ogunmakin [15], Oduwaye [16], Olotuah and Ajenifujah [17], Olotuah and Babadoye [18] examined the relationship between housing and economic growth in Nigeria with a view to determining the contributions of the real sector to the economic growth of Nigeria. Despite the fact some of these studies were carried out from macroeconomic view point and microeconomic perspectives, the studies established among others that housing in propelled growth in Nigeria through the generation of employment opportunities for people in building business, enhancement of labour productivity and increase in household income which ultimately promoted the gross domestic product of the country in the long run. In other words, the results of those studies indicated that the real estate contributed a significant impact to the growth and development of the Nigerian economy.

In conclusion, it could be pinpointed from the above literature review that empirical investigation into the nexus between real estate sector and economic growth in Nigeria is still on going, and there is still no consensus about the relationship that exists among these important economic variables. Hence, the relevance of this study.

## METHODOLOGY

This study makes use of secondary data from 1990 to 2016. Data on real estate, inflation rate, interest rate and GDP were extracted from CBN Statistical Bulletin. E-Views software was employed for the running of the data.

### Model Specification

The model for this study can be specified in the general form as follows:

$$RGDP = F (REST, INF) \dots\dots\dots (I)$$

Model (I) can be linearized to form model as follows.

$$\text{LnRGDP}_t = \beta_1 + \beta_2 \text{LnREST}_t + \beta_3 \text{INF}_t + \mu_i \dots \dots \dots \text{ (II)}$$

It is expected that  $\beta_2, \beta_3 > 0$

**The Direction of Causality between Real Estate Development and Inflation Rate in Nigeria**

In addition, in analyzing the Granger causality between real estate development and economic growth the paper employed pairwise granger causality analysis in estimating the VAR model in equation (3-5) which states thus;

$$\text{RGDP}_t = \alpha_0 + \sum_{i=0}^p \alpha_1 \text{RGDP}_{t-1} + \sum_{i=0}^p \alpha_2 \text{REST}_{t-1} + \sum_{i=0}^p \alpha_3 \text{INF}_{t-1} + \varepsilon_{1t} \dots \dots \dots \text{ (3)}$$

$$\text{REST}_t = \beta_0 + \sum_{i=0}^p \beta_1 \text{REST}_{t-1} + \sum_{i=0}^p \beta_2 \text{RGDP}_{t-1} + \sum_{i=0}^p \beta_3 \text{INF}_{t-1} + \varepsilon_{2t} \dots \dots \dots \text{ (4)}$$

$$\text{INF}_t = \gamma_0 + \sum_{i=0}^p \gamma_1 \text{INF}_{t-1} + \sum_{i=0}^p \gamma_2 \text{RGDP}_{t-1} + \sum_{i=0}^p \gamma_3 \text{REST}_{t-1} + \varepsilon_{4t} \dots \dots \dots \text{ (5)}$$

Where RGDP is used to proxy economic growth, REST connotes real estate development which is measured by the contribution of real estate to the economy, INF is used to represent inflation rate which measures the stability of economy, Ln used to denote natural logarithm and  $\mu_i$  is error term.  $t=1990-2016$ .

**RESULTS AND DISCUSSION**

**Table-1: Descriptive Statistics of Annual Data Series (1981-2016)**

Descriptive Statistics	RGDP	REST	INF
Mean	39.68286	26.15201	20.16861
Median	30.76924	26.64408	12.55000
Maximum	346.1660	29.75214	72.84000
Minimum	28.16628	22.37959	4.700000
Std. Deviation	52.54444	2.699249	18.21183
Skewness	5.745490	-0.151506	1.493731
Kurtosis	34.01700	1.461319	3.972946
Jargue-Bera	1641.146	3.689032	14.80732
Probability	0.000000	0.158102	0.000609
Sum	1428.583	941.4724	726.0700
Sum. Sq. Deviation	96632.15	255.0080	11608.48
Observation	36	36	36

Source: Authors` Computation (2019)

The table above shows various descriptive statistics of the data used for the analysis in this work. This gives vital information about the distribution of the sample series. As shown in the table, the values of mean and median of the variable real estate development are almost the same. Meanwhile, those of real GDP and inflation rate are not too far from each other. This justifies the argument of Karmel and Polasek [19] that a distribution is perfectly symmetrical when the values of mean, mode and median of data series converge. Therefore, it could be concluded that the distribution of the time series data utilized for further analysis in this study is near symmetry

**Table-2: Unit Root Test**

Variables	ADF Test			PP Test		
	@Level	@First Difference	Remarks	@Level	@First Difference	Remarks
RGDP	-2.948404**		I (0)	-2.948404**		I (0)
REST	-2.954021**	-2.951125**	I (1)	-2.948404**	-2.951125**	I (1)
INF	-2.948404**		I (0)	-2.948404**		I (0)

Source: Authors` Computation (2019) \*\*5% level

Due to the problem of spurious regression which is often connected with time series data if such data are not stationary, the data in this study were subjected to a unit root tests with the aid of the standard Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests. However, the results above show that real GDP and inflation rate are stationary at a level while real estate development data are stationary at a first differencing. This implies that these variables of interest are combination of I(0) and I(1).

**Table-3: Johansen Cointegration Test (Trace Statistics) and (Maximum Eigenvalue)**

Null Hypothesis	Eigenvalue	Trace Statistics	P-value	Maximum Eigenvalue	P-value
r=0	0.740503	66.24412	0.0000	45.86636	0.0000
r≤1	0.434796	20.37776	0.0085	19.39933	0.0071
r≤2	0.028367	0.978421	0.3226	0.978421	0.3226

Source; Authors` Computation (2019)

The variables of interest real GDP, real estate development and inflation are the mixture of stationary and non-stationary data, which implies that these variables might show deviation in the short run. However, there is high possibility they possess a long run equilibrium relationship. In order to verify this, an attempt was made to carry out a multivariate cointegration test with the technique put forward by Johansen and Juselius [20]. It could be pinpointed from the reported results in table 3 that there is at most two cointegrating vectors in the systems. The results of the trace statistics of both Eigenvalue and Maximum Eigenvalue proved the existence of at most two cointegrating vectors in the model at a lag interval of 1 to 1. Hence, the variables of interest have a long run equilibrium relationship with one another. In order to estimate the long run equilibrium relationship among these variables, dynamic ordinary least square would be adopted to capture the nature of long run relationship that exists among these variables.

**Table-4: The Impact of Real Estate Development on Industrial Economic Growth in Nigeria Dependent Variable: LRGDP**

Variable	Coefficient	t-statistics	P-value
LREST	5.333127	1.342849	0.1919
INF	2.015837	1.882619	0.0719
C	-128.0076	1.147738	0.2624
R-Squared	0.652949		
Adjusted R-Squared	0.570599		

Source; Authors` Computation (2019)

The relationship between real estate development and economic growth has the expected sign. This implies that real estate development has a positive impact on economic growth in Nigeria, though not significant at 5% level of significance. A unit change in real estate development leads to about 5.3% in economic growth in Nigeria. This study is validated by Olotuah and Babadoye [18] despite the adoption of different methodology. It is also supported by the submissions of Kigige [11] who carried out similar study in Kenya and Chau and Lam [7] in Hong Kong. In the same vein, the relationship between economic growth and inflation rate follows a priori expectation in Nigeria. A unit change in inflation rate causes an increment in economic growth by 2% in the country. Furthermore, the explanatory variables of the model which comprises real estate development and inflation rate jointly explained about 65% of the systematic variations in the dependent variable, real GDP, leaving 35% unexplained due to random chance. This shows that the model is relatively good for the analysis. However, after adjusting for the loss in the degree of freedom, the explanatory power reduces to 59%.

**Table-4: Pairwise Granger Causality Test**

Sample: 1981 2016			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
LR_ESTATE does not Granger Cause LRGDP	34	0.03576	0.9649
LRGDP does not Granger Cause LR_ESTATE		0.78861	0.4640
INFL does not Granger Cause LRGDP	34	6.39074	0.0050
LRGDP does not Granger Cause INFL		0.23811	0.7896
INFL does not Granger Cause LR_ESTATE	34	1.22958	0.3072
LR_ESTATE does not Granger Cause INFL		7.69535	0.0021

Source; Authors` Computation (2019)

The table above shows the estimated results of the causal relationship among real estate development and economic growth in Nigeria and within Pairwise Granger Causality Test. It could be submitted among others that there is a unidirectional causal relationship flowing from inflation rate to economic growth in Nigeria. Similarly, one way feedback runs from inflation rate to economic growth in the country. This implies that inflation rate is a propelling factor behind the growth of real estate development and economic growth in Nigeria. Conversely, there is no existence of causal relationship between real estate development and economic growth in the country.

## CONCLUSION AND RECOMMENDATIONS

In this paper, an attempt has been made to examine the relationship between real estate development and economic growth in Nigeria between the periods of 1981 and 2016 using Johansen cointegration test, DOLS and Granger causality approach. Consequently, the results of this study could be summarized as follows: the long-run effect indicates that real estate development has a non-significant positive relationship with economic growth in Nigeria. In addition, there is a unidirectional causality which runs from inflation rate to real estate development and economic growth in the country.

Furthermore, based on the findings that emerged in this study, it is pertinent this study makes the following recommendations for the policy makers, investors of real estate and future researchers in the country. The Nigerian government should see real estate as a viable sector that the current mono-cultural nature of its economy could be diversified into since this sector has the capacity to propel the expansion of the country's growth to a sustainable level if well explored and developed. Therefore, the policy makers in the country should embark on policy measures that will ensure a conducive climate for both local and foreign investors to thrive in this sector of the economy. Also, the federal government of Nigeria should not hesitate to address the unfriendly bureaucratic procedures, high cost of land registration and titling, uncoordinated policies and implementation at federal and state levels, ownership rights under the Land Use Act which could be inimical to the country's global competitiveness of real estate sub sector.

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