

AN INVESTIGATION OF THE EFFECTS OF INVESTMENT AND SAVINGS IN NIGERIA ECONOMY

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Abstract

The study examined the influence of investment and saving in Nigeria economy using time series data ranging from 1980-2012. Augmented Dickey-Fuller test was used to ascertain the time series property of the data. Based on the order of integration, long run relationship was tested using Johansen co-integration. Vector error correction model was employed in the data analysis. Impulse response function was used to trace the transmission of periodic shocks between gross domestic product (gdp) and savings, investment and foreign direct investment while Cholesky forecast error variances decomposition was used to forecast error variance decomposition between gross domestic product and savings, domestic investment and foreign direct investment (fdi). The results revealed, among others that the response of GDP to savings is oscillatory implying that there is no definite pattern of response of GDP to savings in Nigeria; FDI and savings seem to be the driving force behind GDP variance in Nigeria, and savings and domestic investment have long run positive and significant impact on the Nigerian economy while unexpectedly, FDI has negative but insignificant impact on the economy. Consequently, among the recommendations made were: inflation adjusted interest rate policy should be put in place in order to reduce the cost of borrowing and thus increase investment in the country and there is the need for proper maintenance of restrictive monetary, fiscal, and exchange rate policies.

Keywords: Economy, effect, investment, investigation and savings

1. INTRODUCTION

It is undisputable that aggregate saving in an economy is a prerequisite for raising investment fund. Saving is really the difference between income and consumption. Temidayo and Taiwo (2011) defined saving as that aspect of income which is not instantly utilised or consumed, rather kept aside for future consumption, investment or for unforeseen situations, and it is considered as a veritable tool for economic growth and development. It aids capital formation by raising the stock of capital and its effect promotes earning of more income. Really, the development or growth of a country requires investment which depends on saving. However, investment can be referred to as expenditure channeled to raising or maintaining the stock of capital. The stock of capital includes tangible assets or products, plants and machines and so on which aid production (Dornbusch and Fischer, 1981). Manpower training and provision of infrastructure which are relevant factors needed for encouraging economic activity depend on investment.

The private sector that is considered as engine of economic development is often handicapped due to

poor environment and deficiency of credit facilities. Just as Olise et al (2013) point out that the Nigerian private sector is at its developmental stage emanating to an extent from improper or lack of motivation from the public and the financial sectors to make available the needed funds coupled with the rudimentary technology and less attention to the development of entrepreneur. It can be inferred that absence of conducive environment and evenly available credit facilities in both the urban and rural areas have militated against private sector investment, hence low income and low saving.

Bakare (2011) categorised investment into private investment, the public domestic investment, the foreign direct investment and the portfolio investment. Private domestic investment refers to individuals or organisations investments which is an aspect of gross fixed capital formation. Government and public enterprises capital expenditure on social and economic assets are referred to as public investment. Really, gross fixed capital formation is a combination of private and public investments when compared with foreign investment. Foreign tangible asset is known as foreign direct investment while portfolio investment is when foreign assets are in the form of shares, bonds, securities and so on.

Nigeria is counted among the low income economies and this has retarded saving mobilisation and investment. On the average, productive investment is given less attention vis-à-vis consumption expenditure. In Nigeria, personal saving is one of the major sources of investment fund. But private investment is taken to relate positively with accumulated real money balances. Accumulation of personal saving has witnessed great difficulty owing to the low level of employment of human capital and inadequate infrastructure. In this regard, to encourage and stimulate investment in the developing countries, such as Nigeria requires raising real money balances prior to commencement of investment projects due to the constraint of access to credit and equity markets as an alternative. So, insufficient saving usually compels the governments of Nigeria into foreign debt financing (Oloyede, 1998, Okpara, 2010). Foreign debt as a source of public sector capital investment often come with a lot of problems to the country as experienced over the years due improper management and non-investment in productive venture that is capable of repayment.

Besides, the overdependence of large proportion of the population on the few work force has worsen the ability of workers to satisfy basic necessities of living and so usually ignore the issue of saving for investment. More so, the lack of banks in the rural areas mostly occupied by the citizens and subsistence farming has impeded income generation in the rural areas and acquisition of credit facilities for investment.

Poverty in Nigeria can be attributed to low income and low saving. In the word of Nurkse (1957) 'a country is poor because it is poor.' Actually, there are chain effects placing a country on recurring poverty situation, which can only be broken by sufficient reforms. The average Nigerians earn low income in comparison to many other countries due to low production and low capital formation which exist owing to low investment either due to low savings on the supply sides or low demand.

In addition, there is the existence of vicious circle of capital deficiency stemming from general poverty; low saving compliancy; inadequate banking facilities; low rate of investment due to low marginal efficiency of capital; unproductive investment and wasteful consumption expenditure by the rich class; inadequate basic infrastructural services and defective economic, social, religious, cultural, political and administrative set up (Ozoh 2006). This implies that a country is incapacitated to extricate itself from the vicious circle of poverty if it is unable to accumulate sufficient capital through saving required for investment and as such unable to improve the level of infrastructure and other capital needed to reposition the economy. Consequently, domestic and foreign investments are not sufficiently encouraged, thereby impacts adversely on inputs utilisation and income generation. The policy of trade liberalization, openness and low lending rate in an economy is known to attract and encourage investment, which Nigeria has pursued vigorously at different periods. Luca and Spatafora (2012) posit that net capital flow and domestic credit exert a positive effect on investment, and borrowing costs have adverse effect on domestic credit. Suffice it to point that commercial banks lending rates have been relatively high. In 2010, it was 22.51, it fell slightly to 22.42 in 2011 and at the last quarter of 2012, it stood at 24.65. In the view of Keynes, investment is inversely related to lending rate. High cost of credit facility usually lessen investment, raise production cost, which is transferred to the output inform of high price, thereby reducing the purchasing power of the populace and living standard.

Studies have shown that the extent of funds mobilization by commercial banks is relatively low in Nigeria due to some reasons such as low rate of savings deposit, lack of banking culture among many

Nigerians and the attitude of banks in respect of small savers. There is bias in targeting of savers in that corporate customer and government deposits are given sufficient attention whereas less attention is given to the small savers who form a large chunk of customers of banks (Olayemi & Micheal, 2013, Nnanna, Englama and Odoko, 2004). This attitude of banks has to be discouraged in order to motivate saving among the low income earners.

The level of a country's industrialisation is a function of capital accumulation through domestic investment and foreign capital inflow. Singer (1949) points out that the less developed countries experience "a dominant vicious circle of low productivity". Deficiency of surplus for industrial development presupposes inability to save enough or lack of enough credit facilities to acquire the necessary tools and equipment for industrial development. Domestic investment depends so much on saving and credit facilities. Although the government has design a lot of fiscal incentives for investment in Nigeria but many prospective investors, especially in the hinterlands cannot afford the conditions and requirements of assessing loans. Just as Igwemma and Nwoko (2007) point out that in order to help industrialists obtain cheap funds for investment, the government provided credit facilities on concessionary terms through Development Banks, and the provision of equity funds and long term loans by the banking sector for the encouragement of small and medium enterprises. The harsh business environment emanating from upsurge of kidnapping, Boko Haram terrorists and high crime rates have scared many domestic and foreign investors. Consequently, the economy has suffered low average manufacturing capacity utilisation (avcu). Central Bank of Nigeria (2012) points out that in 2006, avcu stood at 53.30%, rose to 55.14% in 2009 and 56.22% in 2010. Avcu appears rising over the years, but it is low considering the quantum of idle resources in Nigeria. Also, high unemployment rate is experienced in the country; it rose from 14.9 in 2008 to 19.7 in 2009, which has helped greatly to increase crime rate and youths restiveness.

Saving deposit rate (sdr) has been low over the years as depicted by CBN (2009), in 2004, sdr was 4.4%, it came down to 3.8% in 2005, declined further to 3.1% in 2006, and rose to 3.5% in 2007 but fell to 2.8% and 2.9% respectively in 2008 and 2009. In a similar vein, the total savings as a ratio of gross domestic product has not been encouraging. CBN (2012) shows the total saving as a ratio of GDP in millions thus: in 2008, it stood at 16.95, rose to 23.25 in 2009, fell to 17.52 and 17.46 in 2010 and 2011 respectively; it rose slightly to 19.89 in 2012. This shows that the saving has not been sufficient to the extent of building sufficient investment capital. So, both private and public investments in Nigeria are yet to reach a level commensurate to the population of the country. Low saving and lack of adequate credit facilities have made many Nigerians to prefer short term investment in petrol marketing and other trades instead of investing in the establishment of productive industries that is capable of increasing employment of resources.

In consideration of the aforementioned, it becomes necessary to empirically examine how saving, domestic and foreign investment has impacted on the economic development of Nigeria. So, the study is streamlined thus: section two is the review of literature; data and methodological issues make up section three; section four is empirical results and discussions while section five is policy implications and conclusion.

2. REVIEW OF RELATED LITERATURE

2.1 Theoretical Literature

The problem of growthlessness in many developing economies hinges on vicious circle of poverty. Deficiency of capital due to low saving has retarded attainment of developmental objectives. Nurkse (1957) advocated that the under developed countries should increase their rate of capital formation by raising incentives and propensity to save and invest. Rodan (1947) opined that a certain minimum quantum of resources should be devoted for investment in capital overheads and development programme if an economy wishes to have an opportunity for success. This calls for sufficient saving in order to raise the needed capital.

In coming up with economic decisions about an economy, it is the responsibility of economic agents to trade-off present against the future. It is the responsibility of the economic agents such as the households, firms and the government, to make decisions on how much to consume and save. This requires weighing the benefits of keeping aside a proportion of income as saving for the future. On the other hand, the managers of firms do take decision on how much to spend today so as to increase the productive capacity for a certain period of time. In making decisions on saving and investment by economic agents, it calls for

proper consideration of expectations about the future of the economy and expectation about government policy (Abel & Bernanke, 1995). Government decision on investment usually bothered on what it intends to achieve or the direction it wants the economy to move. Actually, the essence of saving is to accumulate wealth or investible fund. Investment, which has a multiplier effect, is the key for income generation needed for more saving. National wealth increase depends considerably on the rate of saving of individuals, businesses and the government. Saving is the current income level less current spending on goods and services. In other words, it is the aggregate income less consumption.

Lipsey and Chrystal (2004) point out that among the determinants of economic growth includes investment in human capital, such as formal education and on-the-job experience; and investment in physical capital, such as factories, machines, transportation, and communication facilities. Varieties of developmental investments usually recondition and reposition an economy towards increase in use of resources available which in turn increases economic activity and invariably raises the aggregate output and income level. Given that saving, investment or consumption depends on income and/or stock of wealth, any action capable of accelerating income generation will also encourage capital formation required for investment. So, it is pertinent to point out that capital easily grow where there is abundance of capital, other things being equal.

However, it can be recalled that capital is necessary for development but not a sufficient condition for progress. This implies while economic factors are pursued for growth of a country, other non-economic factors such as political, religious and cultural set up should not be ignored. Ozoh (2010) posits that defective social set up is shown by tribalism, joint family system, class conflict, inequality of wealth and income, nepotism and so on. However, these factors act and react with cultural backwardness cum traditional ideas, customs, illiteracy and ignorance of the people cum religious and philosophical backwardness such as superstitions, fatalism, conservatism, spiritualism among others to impede social, economic, political and other institutional transformations, and so impact adversely on economic development.

This implies that while investment is pursued on economic matters, other non-economic factors should be given sufficient attention. This is plausible considering the recent experience in Nigeria. Religious crisis, Boko Haram insurgence and a host of other social and political issues must be addressed considerably so as to ensure the needed economic progress of Nigeria.

2.2 Empirical Literature

In his investigation of the most critical sources of investment finance in Nigeria, Okpara (2010) employed factor analysis method and the multiple regression analysis and found that saving and private sector credits are the most crucial sources of investment finance in Nigeria. Unfortunately, the level of saving has not been adequate and this has retarded sufficient investment. This calls for approaches for promoting saving with a view to raise aggregate capital for economic growth.

Luca and Spatafora (2012) study focused on the developing countries in the examination of the determinants of, and interaction between, capital inflows, financial development, and domestic investment using cross sectional and panel analyses. The study reveals among others that the reductions in the global price of risk and in domestic borrowing costs were the major contributors to the rise in net capital inflows and domestic credit. Besides, the variations in cross countries domestic and international finance are accounted for by basic factors like institutional quality, access to international export markets, and inappropriate macroeconomic policy. Private capital inflows and domestic credit impact desirably on investment.

This finding really support the theory of vent-for-surplus that stresses on the opening of world markets to remote agrarian communities or regions, which creates opportunities for investment of resources unlike in the traditional approach given that openness encourages the use of initially under-employed resources to produce larger output for export to foreign markets. The opening up of the nation to foreign markets due to globalisation is an incentive to make use of idle resources and promote development.

Bakare (2011) in his empirical analysis of the determinants of private investment in Nigeria involving error correction model showed that changes in real private investment are best explained by political instability, macroeconomic instability and deficiency of infrastructure. That is political crises have created unsatisfactory environment for private investment and as such a major impediment to private investment.

Investment in Nigeria is influenced by a lot factors due to unexpected and detrimental happenings in

the country. In the bid to ascertain if domestic condition matter in investment, Uche and Onwuka (2012) employ modern econometric technique involving co-integration in their study aimed at determining the factors that affect investment in Nigeria. The study reveals, among others that there is a long-run relationship among variables used; the main determinants of investment are the market size and incremental capital ratio. The militancy and Boko Haram have a negative effect on investment and worsening infrastructure is not favourable to investment. From the result, it can be inferred that domestic conditions such as insecurity and crises actually play a role in investment decision of investors, and the circumstance of Nigeria has adversely influenced productivity and investment.

Baghebo and Edumiekumo (2012) examined the relationship between domestic private capital accumulation and economic development in Nigeria covering the period 1970-2010, and using the approach of co-integration and error correction model, they found that inflation, interest rate, size of the public and private sectors, among others, play prominent role in domestic private capital accumulation in Nigeria. It also reveals that the private sector is growing at the period of study. In a related vein, Olise et al (2013) employed ordinary least square method in the investigation of the effect of domestic investment on foreign direct investment (FDI). They found that private and public investments, human capital and market size are negatively related to foreign direct inflows, whereas trade openness and natural resources are positively related to FDI.

Olufemi (2013) in his empirical analysis of energy resources, domestic investment and economic growth in Nigeria found, among others that public investment is the channel through which energy resources enhance economic growth; the ability of investment to enhance economic growth is considerably debilitated by energy resources dependence; trade openness tend to reduce economic growth potentials; changes in price and exchange rate impact positively on the growth of the economy.

In the examination of foreign aid inflow on domestic saving in Nigeria, Eregha and Irughe (2009) revealed that foreign aid inflow impacts positively on domestic saving while total debt service payment has negative effect on domestic savings. Igbatayo and Agbada (2012) employed Vector Autoregressive (VAR) method in the study of inflation, savings and output in Nigeria for the period 1970-2010. The study showed that savings do stimulate output production while the opposite is got from inflation. Granger results show that changes in savings have desirable effect on output and output brings about changes in savings.

Olayemi and Micheal (2013) studied real interest rate and savings mobilization in Nigeria using Vector-Auto-Regressive model. They found that real interest rate has negative effect on saving mobilization at the period of study.

3. Data and methodological Issues

Annual data series from 1980 to 2012 were employed. These series were sourced from Central Bank of Nigeria Statistical Bulletin (2012). To fully explore the data generating process, we first examined the time series properties of the model variables using Augmented Dickey-Fuller test in a regression with a drift.

The ADF test regression equations with constant are:

$$\Delta GDP_t = \alpha_0 + \alpha_1 GDP_{t-1} + \sum_{j=1}^k a_j \Delta GDP_{t-1} + \varepsilon_t \dots \quad (1)$$

$$\Delta SAV_t = \beta_0 + \beta_1 SAV_{t-1} + \sum_{j=1}^k b_j \Delta SAV_{t-1} + \varepsilon_t \dots \quad (2)$$

$$\Delta INV_t = \gamma_0 + \gamma_1 INV_{t-1} + \sum_{j=1}^k \varphi_j \Delta INV_{t-1} + \varepsilon_t \dots \quad (3)$$

$$\Delta FDI_t = \lambda_0 + \lambda_1 FDI_{t-1} + \sum_{j=1}^k \sigma_j \Delta FDI_{t-1} + \varepsilon_t \dots \quad (4)$$

Where Δ is the first difference operator, ε_T is random error term that is iid $k =$ no of lagged differences. In equations (1) through (4), the null hypothesis holds as: $H_0: \alpha_i = \beta_i = \gamma_i = \lambda_i = 1$ (unit root) $H_1: \alpha_i \neq \beta_i \neq \gamma_i \neq \lambda_i < 1$ (level stationary). The long run equilibrium relationship between savings, investment and economic development was investigated using Full Information Maximum Likelihood (FIML) Multivariate Johanson co-integration procedure. The Johansen co-integration test is given as

$$Y_t = A_1 Y_{t-1} + \dots + A_p Y_{t-p} + B X_t + \varepsilon_T \dots \quad (5)$$

Where Y_t is a vector of non stationary I(1) variables; X_t is a vector of deterministic variables and ε_T is a vector of innovations. We may rewrite this as in VAR form as:

$$\Delta Y_t = \pi Y_{t-1} + \sum_{i=1}^{p-1} \delta_i Y_{t-p} A_p Y_{t-p} + B X_t + \varepsilon_t \dots \quad (6)$$

where

$$\pi = \sum_{i=1}^p A_i - 1, \quad \delta_i = - \sum_{j=i+1}^{p-1} A_j + B X_t + \varepsilon_t \dots \quad (7)$$

If the coefficient matrix π has reduced rank $r < k$, then there exist $k < r$, matrices α and β each with rank r such that $\pi = \alpha\beta$ and βY_t is I(0) (Granger 1987). r is the number of co-integrating relation (the co-integrating rank) and each column of β is the co-integrating vector. Johansen's method is to estimate the π matrix from unrestricted VAR and to test whether the rejection implies by the reduced rank π .

The Vector Autoregressive (VAR) model was employed. The choice of a VAR model to be transformed into a vector error correction mechanism (VECM) is made because it is one of the models that is not vulnerable to simultaneity bias. It offers an easy solution in explaining, predicting and forecasting the values of a set of economic variables at any point in time. It has the ability to test for weak exogeneity and parameter restrictions. It also assumes there is no priory direction of causality among variables. A good attribute of the VAR model is that it obviates a decision as to what contemporaneous variables are exogenous with only lagged variables on the right-hand, and all variables are endogenous.

The VAR model is stated in equation 8 as:

$$GDP_t = \alpha_0 + \alpha_1 \sum_{j=1}^P GDP_{t-1} + \alpha_2 \sum_{j=1}^P SAV_{t-1} + \alpha_3 \sum_{j=1}^P INV_{t-1} + \alpha_4 \sum_{j=1}^P FDI_{t-1} + \varepsilon_{1t} \dots (8)$$

$$SAV_t = \beta_0 + \alpha_1 \sum_{j=1}^P SAV_{t-1} + \alpha_2 \sum_{j=1}^P GDP_{t-1} + \alpha_3 \sum_{j=1}^P INV_{t-1} + \alpha_4 \sum_{j=1}^P FDI_{t-1} + \varepsilon_{2t} \dots (9)$$

$$INV_t = \gamma_0 + \alpha_1 \sum_{j=1}^P INV_{t-1} + \alpha_2 \sum_{j=1}^P GDP_{t-1} + \alpha_3 \sum_{j=1}^P SAV_{t-1} + \alpha_4 \sum_{j=1}^P FDI_{t-1} + \varepsilon_{3t} \dots (10)$$

$$FDI_t = \phi_0 + \alpha_1 \sum_{j=1}^P FDI_{t-1} + \alpha_2 \sum_{j=1}^P GDP_{t-1} + \alpha_3 \sum_{j=1}^P SAV_{t-1} + \alpha_4 \sum_{j=1}^P INV_{t-1} + \varepsilon_{4t} \dots (11)$$

Where j is the lag length, K is the maximum distributed lag length $\alpha_0, \beta_0, \gamma_0, \phi_0$, are the constant terms ε_T is independently and identically distributed error term. Transforming the VAR equations into VECM specifications correspond to:

$$\Delta GDP_t = \alpha_0 + \alpha_1 \sum_{j=1}^P \Delta GDP_{t-1} + \alpha_2 \sum_{j=1}^P \Delta SAV_{t-1} + \alpha_3 \sum_{j=1}^P \Delta INV_{t-1} + \alpha_4 \sum_{j=1}^P \Delta FDI_{t-1} + \delta_5 ECM_{t-1} + \varepsilon_{1t} \dots (12)$$

$$\Delta SAV_t = \beta_0 + \alpha_1 \sum_{j=1}^P \Delta SAV_{t-1} + \alpha_2 \sum_{j=1}^P \Delta GDP_{t-1} + \alpha_3 \sum_{j=1}^P \Delta INV_{t-1} + \alpha_4 \sum_{j=1}^P \Delta FDI_{t-1} + \Pi ECM_{t-1} + \varepsilon_{2t} \dots (13)$$

$$\Delta INV_t = \gamma_0 + \alpha_1 \sum_{j=1}^P \Delta INV_{t-1} + \alpha_2 \sum_{j=1}^P \Delta GDP_{t-1} + \alpha_3 \sum_{j=1}^P \Delta SAV_{t-1} + \alpha_4 \sum_{j=1}^P \Delta FDI_{t-1} + \lambda ECM_{t-1} + \varepsilon_{3t} \dots (14)$$

$$\Delta FDI_t = \phi_0 + \alpha_1 \sum_{j=1}^P \Delta FDI_{t-1} + \alpha_2 \sum_{j=1}^P \Delta GDP_{t-1} + \alpha_3 \sum_{j=1}^P \Delta SAV_{t-1} + \alpha_4 \sum_{j=1}^P \Delta INV_{t-1} + \psi ECM_{t-1} + \varepsilon_{4t} \dots (15)$$

Where α^s are parameters to be estimated, Δ is the difference operator, ε_T, k are as defined above. The

parameter estimates of δ , Π , λ and ψ should be negative (<0). Equations 12, 13, 14 and 15 can be summarized in the form;

$$y_{1t} = \alpha_i + \beta_i \sum_{j=1}^p y_{j,t-1} + \delta_i \sum_{j=1}^p X_{j,t-1} \varphi.ECM_{t-1} + \varepsilon_t \dots \quad (16)$$

4. Empirical Results and Discussions

4.1 Unit Roots Test Result

In this study, the Augmented Dickey Fuller (ADF) unit roots tests was employed to test for the time series properties of model variables. The null hypothesis is that the variable under investigation has a unit root against the alternative that it does not. The decision rule is to reject the null hypothesis if the ADF statistic value exceeds the critical value at a chosen level of significance (in absolute term). These results are presented in table I below.

Table 1: Unit Roots Test Result

Variable	ADF statistics		ADF statistics	
	Level	Critical values	1 st difference	Critical values
SAV	-0.215786	1% -3.6661 5% -2.9627 10% -2.6200	-3.833327	1% -3.6661 5% -2.9627 10% -2.6200
INV	-0.093197	1% -3.6576 5% -2.9591 10% -2.6181	-3.815776	1% -3.6661 5% -2.9627 10% -2.6200
FDI	-2.886452	1% -3.6661 5% -2.9627 10% -2.6200	-4.114434	1% -3.6852 5% -2.9705 10% -2.6242
GDP	0.195151	1% -3.6752 5% -2.9665 10% -2.6220	-3.496590	1% -3.6852 5% -2.9705 10% -2.6242

The results of table 1 above show that all the variables are non-stationary in level form since their ADF values are less than the critical values at 5%, the null hypothesis of a unit root was accepted for all the variables but was rejected in 1st difference. Thus, we conclude that the variables under investigation are integrated of order one. (i.e. I(1)). Since the variable are integrated of the same order. We therefore, examine their co-integrating relationship using Johansen co-integration procedure.

4.2 Co-integration Test Result

A necessary but insufficient condition for co-integrating test is that each of the variables be integrated of the same order. The Johansen co-integration test uses two statistics test namely: the trace test and the likelihood eigenvalue test. The first row in each of the table test the hypotheses of no co-integrating relation, the second row test the hypothesis of one co-integrating relation and so on, against the alternative of full rank of co-integration. The results are presented in table 2 below.

Table 2: Co-integrating Test Result between the Variables: GDP SAV INV FDI

Eigen value	Likelihood Ratio	5% critical value	1% critical value	Hypothesized No of CE(s)
0.876039	92.23963	47.21	54.46	None**
0.496729	27.51819	29.68	35,65	At most 1
0.177324	6.232762	15.41	20.04	At most 2
0.005847	0.181797	3.76	6.65	At most 3

*(**) denotes rejection of the hypothesis at 5% (1%) significance level.

L.R. test indicates 1 co-integrating equation(s) at 1% level of significance

4.2.1 Interpretation of co-integrating results

From table 2 above, the likelihood statistics indicates the presence of one co-integrating equation at 1% significance level which implies that savings (SAV), investment (INV), FDI and GDP are co-integrated. This shows that there is a long-run relationship between savings, investment (foreign and domestic) and GDP in Nigeria.

4.3 Vector Error Correction Model (VECM) Result

Since there is co-integration, the vector error correction model is estimated. The results are presented in table 3 below.

Table 3: Variables included in the VECM: GDP SAV INV FDI

Variable	α 's	ECM
D(GDP (-1))	1.0000	-0.469539 (-2.86915)
D(SAV (-1))	6.476454 (2.66889)	
D(INV (-1))	9.749436 (2.48571)	
D(FDI (-1))	-20.44471 (1.91648)	
C	480423.1	

Note: The t-statistics are in Parentheses

4.3.1 Interpretation of VECM Results

From table 3, we can formally state the normalized long-run co-integrating equation between GDP and savings, investment and FDI.

$$GDP = 480423 + 6.476 SAV + 9.749 INV - 20.445 FDI \text{-----} \quad (17)$$

From equation (17) as in table 3, the VECM result shows that there is a significant positive long-run relationship between savings and gross domestic product suggesting that an increase in savings impacts positively on gross domestic product in Nigeria. Specifically, one naira increase in domestic savings will lead to about 6.48 naira rise in Nigerian GDP. This is in line with "a priori" expectation implying that increase in savings will boost capital formation in the country which in turn will enhance investment and thus increase in national income.

Similarly, domestic investment has positive and significant impact on the Nigerian economy proxied by GDP. This suggests that an increase in domestic investment will lead to increase in GDP in the country. Specifically, a one naira increase in investment will increase GDP by 9.75 naira. This is consistent with theory postulates.

Surprisingly, FDI has a negative but insignificant impact on GDP in Nigeria. This is inconsistent with economic theory but suggests that activities of foreign investors in the host country have adverse effect on the economy. This is in line with many studies on FDI on economic growth such as Bos et al, 1974; Saltz, 1992; Carkovic and Levine, 2002.

4.3. Interpretation of Vector error correction term

The vector error correction term is -0.469. This speed of adjustment suggests that about 46.9% of the previous period's disequilibrium in the economy is corrected every quarter. The implication is that it will take approximately two years for any disequilibrium in the economy caused by savings, domestic investment and FDI to be corrected.

The optimum lag length of 4 was selected based on AIC and SBC information criteria. This means that the convergence between the variables is not instantaneous.

4.4 Impulse Response Function

Impulse Response Function (IRF) is used to trace the transmission of periodic shocks between GDP and savings, investment and FDI for over 10 years. The impulse response graph (see appendix IV) represents various response of GDP to a one standard deviation (0.25 percentage point) shocks in savings. The response of GDP to savings is oscillatory implying that there is no definite pattern of response of GDP to savings in Nigeria. Between the first and the second year, GDP responded positively to savings but responded negatively after the second year with fluctuations till the fifth period. After the eight periods it became slightly downwardly explosive. On the other hand, the response of GDP to investment is negative. Though response of GDP to investment is negative, it is marginally equal to zero implying that shocks in investment fluctuations insignificantly impact negatively on the Nigerian economy.

4.5 Forecast Error Variance Decomposition

The forecast error variance decomposition between GDP and savings, domestic investment and FDI was examined using Cholesky Forecast Error Variances Decomposition (FEVD) for a period of ten years (see appendix V). This is computed by orthogonalizing the innovations with Cholesky decomposition. After ten periods, the savings accounted for 9.3% of the forecast error in GDP, while investment and FDI accounted for 6.6% and 12.5% respectively accounted for the forecast error variance in GDP in Nigeria. This suggests that FDI and savings seem to be the driving force behind GDP variance in Nigeria.

5. Summary and Policy Recommendations

The main findings are itemized below as follows: (1) Johansen co-integration test result shows evidence of co-integration implying that there is a long run relationship between GDP and savings, investment and FDI in Nigeria. (2) Savings and domestic investment have long run positive and significant impact on the Nigerian economy while FDI has negative but insignificant impact on the economy.

Based on the research findings, the following recommendations were made to arrest the enumerated problems. Since there is a positive and significant impact of savings and investment on the Nigerian economy, appropriate monetary- fiscal policies mix that will encourage domestic savings, which in return will foster capital accumulation and investment should be pursued. To achieve this, focus should be the on the following:

- (i) Inflation adjusted interest rate policy should be put in place in order to reduce the cost of borrowing and thus increase investment in the country.
- (ii) Restrictive monetary, fiscal, and exchange rate policies should be maintained in order to fight highly pervasive and persistent increase in the general price level and increasing interest rate. The Nigerian government should as a matter of urgency set up internal control system that will checkmate the activities and operations of foreign investors in the country.
- (iii) Banking sector has to pursue saving mobilisation from all aspects of the economic agents, especially in the rural areas that lack sufficient awareness of banking.
- (iv) The government has to encourage investment in every nook and cranny of the country by improving the environment and capital overheads which is expected to encourage production, consumption and income generation capable of encouraging saving.

Conclusion

The study investigated the role of saving and investment in the growth and development of Nigeria over the years. The degree of investment in any economy really bothers on the extent of saving. Savings and investments are imperative for development given that they play significant role in bringing about capital required to increase production process, harnessing and transforming the resources of the country. It is obvious that the level of saving required to raise enough capital for investment is yet to be achieved due to myriad of bottlenecks, among which includes improper mobilisation of saving by the banking sector, poor banking habits of many Nigerians, insecurity of lives and property which have for sometime retarded smooth economic operation and consequently low income generation, which in turns adversely affected capital accumulation. Although, the study shows a significant impact of saving and investment at the period of study, but more is expected to be achieved if and only if most of the difficulties in the environment are sufficiently controlled.

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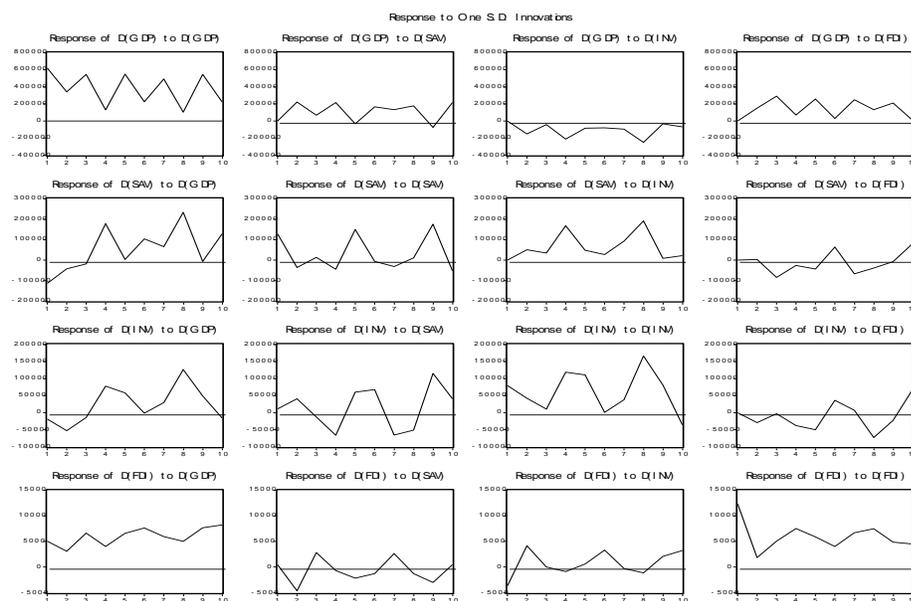
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APPENDIX IV: IMPULSE RESPONSE TEST



APPENDIX V: VARIANCE DECOMPOSITION TEST

Variance decomposition of D(GDP)

Period	S.E.	D(GDP)	D(SAV)	D(INV)	D(FDI)
1	617963.3	100.0000	0.000000	0.000000	0.000000
2	768540.5	84.02972	8.177759	3.938167	3.854356
3	988171.2	81.14028	5.404495	2.583178	10.87204
4	1043786.	74.28023	9.126019	6.418090	10.17567
5	1208534.	75.76984	6.886841	5.260784	12.08254
6	1242764.	74.86708	8.251275	5.407037	11.47461
7	1367934.	74.57684	7.722254	4.949859	12.75104
8	1412041.	70.52702	8.830591	7.822553	12.81983
9	1530163.	72.74379	7.766763	6.707934	12.78151
10	1562443.	71.77784	9.323144	6.638467	12.26055

Perio d	Var decom (sav)				
	S.E.	D(GDP)	D(SAV)	D(INV)	D(FDI)
1	171840.2	44.40324	55.59676	0.000000	0.000000
2	187529.1	42.43659	50.49494	7.035420	0.033056
3	209583.2	34.79586	40.82536	8.212579	16.16620
4	325439.7	43.96456	18.80179	29.89213	7.341516
5	363890.3	35.17162	31.86604	25.63117	7.331165
6	384594.8	38.75239	28.55358	23.43325	9.260786
7	407349.2	37.05943	26.06919	25.93354	10.93784
8	508238.1	44.79620	16.78463	30.80890	7.610273
9	537372.9	40.08491	25.50886	27.57900	6.827229
10	560729.6	41.95911	24.30813	25.47076	8.262001

Perio d	D(INV)				
	S.E.	D(GDP)	D(SAV)	D(INV)	D(FDI)
1	82141.12	5.095656	1.812667	93.09168	0.000000
2	117442.6	22.92001	12.71140	58.30685	6.061735
3	119510.9	23.61049	13.47939	56.98875	5.921366
4	200260.3	23.36317	15.82780	55.14086	5.668167
5	248174.1	20.56637	16.11334	55.61726	7.703043
6	259522.0	18.81139	21.39254	50.85976	8.936316
7	271856.2	18.28649	25.28886	48.21094	8.213719
8	353281.4	23.39995	17.07090	50.41215	9.116999
9	383691.2	21.45506	23.37177	47.09170	8.081472
10	393543.0	20.55747	23.25600	45.58165	10.60487

Perio d	D(FDI)				
	S.E.	D(GDP)	D(SAV)	D(INV)	D(FDI)
1	13783.50	13.35393	0.107784	6.950702	79.58758
2	15535.18	14.39954	8.928208	12.63638	64.03587
3	17860.68	24.65272	9.280396	9.560182	56.50670
4	19821.34	24.13144	7.645206	7.948591	60.27477
5	21805.69	28.98451	7.278461	6.642351	57.09468
6	23709.70	34.82604	6.453701	7.587245	51.13301
7	25469.67	35.57161	6.667761	6.587942	51.17269
8	27059.91	34.93039	6.129082	6.005162	52.93536
9	28777.37	37.99460	6.498657	5.843010	49.66373
10	30439.75	41.24987	5.831954	6.338264	46.57991