

Dynamics of Governance, Investment and economic Growth in Nigeria

Adeniyi O. Adenuga and Osaretin EVBUOMWAN*

Abstract

There is a general argument that, in all countries, the process of economic growth, governance and investment/capital formation is closely intertwined. The importance of the soundness and effectiveness of governance in attaining increased investment and sustained economic growth cannot be overemphasized. The specific objectives were to estimate the short-run dynamics as well as the error-correction mechanism of governance, investment ratio, price level, prime lending rate, openness and financial sector development on economic growth. The hypothesis that governance and investment promotes economic growth in Nigeria was validated. The findings reveal that the significance of the error correction mechanism (ECM1) supports cointegration and suggests the existence of long-run steady-state equilibrium between economic growth, investment and governance. In fact, the ECM1 indicates a feedback of about 58.8 per cent of the previous quarter's disequilibrium.

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* Adenuga and Evbuomwan, are Assistant Director and Assistant Economist in Macroeconomic Modeling Division of the Research Department, Central Bank of Nigeria, Abuja. The views expressed in this paper are those of the authors and do not represent the opinions of the Central Bank of Nigeria nor its Board of Directors.

Authors' telephone numbers are: +234946235926, +2348037882841 and +2348068818642.

E-mail : aoadenuga@cbn.gov.ng; adeniyiadenuga@yahoo.com; oevbuomwan@cbn.gov.ng; and ohsars04@yahoo.com

1. INTRODUCTION

In the past years, particularly after Nigeria got political independence in October 1, 1960, there has been several national development plans. First, was the National Development Plan (1962-68), during which the public sector intervened heavily in the economy. This belief was based on the notion that failure of the market could be corrected by the direct involvement of the public sector, to the extent that the living standard of the Nigerian citizens would be improved. However, this approach is fraught with inefficiency in the allocation of resources, wastages and slow growth, in spite of the huge human and natural resources. Comparatively, those countries on the same level of development with Nigeria in the 1980s, particularly the Asian countries have since grew and economically developed above what is being recorded currently in Nigeria.

The importance of the soundness and effectiveness of governance in attaining and sustaining economic growth cannot be overemphasized. The concept of governance adopted in this paper is that of the World Bank (2010), which covers an agglomeration of the six dimensions of governance - voice and accountability, political stability and absence of violence, government effectiveness, and regulatory quality, rule of law and control of corruption. This represents a multidimensional view of the Worldwide Governance Indicators (WGI) of several countries over 1996 – 2009 prepared by (Kaufmann et al., 2010). In essence, Governance could be seen as consisting of the traditions and institutions by which authority in a country is exercised. This includes the process by which governments are selected, monitored and replaced; the capacity of the government to effectively formulate and implement sound policies; and the respect of citizens and the state for the institutions that govern economic and social interactions among them, (World Bank 2010).

Empirical evidence reveals that investment and good governance are key determinants of sustainable long-term economic growth. In recent years, there has been mounting debate about the importance of domestic investment to economic development, especially in developing economies such as Nigeria. In order to contribute to this debate, Akanbi (2010) using time series spanning 1970 – 2006 empirically examines the pattern of domestic investment that is consistent with a neoclassical supply-side model of the Nigerian economy. The results revealed that a well-

structured and stable socio-economic environment will boost domestic investment over the long-run.

The rationale for this paper is motivated to add-value to the existing literature by examining the impact of governance and domestic investment on economic growth in Nigeria under a democratic regime, using quarterly series. Specifically, the questions this paper attempts to address are: Does governance have any significant impact on investment and economic growth in Nigeria?

Following the introduction as part one, the paper is organized as follows. Part two discusses the trend in investment and economic growth from 1999 to 2010. Part three provides a review of literature and theoretical framework on the role of governance, investment and economic growth. Part four presents the econometric methodology and the model while empirical results are reported and discussed in part five. The analysis of findings, policy implications and conclusion are covered in part six.

2.0 TREND OF GOVERNANCE, INVESTMENT AND ECONOMIC GROWTH RATES IN NIGERIA

The various theoretical strands on the link between investment and economic growth shall be explored in the next section. The role of investment in the growth process cannot be overemphasized. There are other factors that could contribute to sustainable economic growth. These include human capital formation, increased productivity and technological progress, as well as the discovery of new mineral resources (Obadan and Odusola, 2001; p. 31). Therefore, increased capacity growth requires the government of an economy to formulate and implement favourable policies and measures that support investment in its entirety. Notwithstanding, there could be a considerable increase in output in the short-run through more efficient utilization of existing resources by economic agents (households, firms and government), sustainable economic growth however, over the long-run requires an increase in productive capacity which can only be achieved through increasing the rate of investment and improving its quality.

Nigeria has had several types of governments since its independence in 1960. This has brought about different types of governance methods. From a parliamentary form of government in 1960

when the federation comprised three major regions, Nigeria has experienced a number of civilian and military governments. In 1999, Nigeria embraced democracy and this ended the 16 years of consecutive military rule. Nigeria's present democratization, which culminated in the country's Fourth Republic commenced, bringing with it hopes and expectations given that the country suffered from chronic economic stagnation and deterioration of most of its democratic institutions.

From the available data that show the trend in gross fixed capital formation as a ratio of GDP and economic growth rate, domestic output growth has shown positive developments since the advent of democracy in Nigeria in May 1999. Even though at low ebb of 0.9 per cent at the inception of the democratic era in 1999, it increased to 9.6 per cent at the end of the first democratic tenure of the Nigerian government in 2003.

The economy witnessed growth rate of 7.9 per cent in 2010 compared with 7.0 per cent in 2009 (table 1 below). The economy was vibrant as growth in domestic output was robust and broad-based in 2010, due to sound economic management policies and vast economic reforms put in place by the democratic government. This achieved growth was attributed, largely, to the performance of the non-oil sector, which grew by 8.5 per cent, complemented by a significant increase in oil sector output.

Available statistics show that the ratio of gross fixed capital formation (GCF) in GDP was 11.0 per cent in 1999. It declined through 2001 to 8.6 per cent in 2003, and rose to 12.0 per cent in 2005. While it fell to 8.3 per cent in 2008, it increased to 11.2 per cent in 2010 (table 1 below). From the pattern of the ratio of GCF to GDP, it is evident that there are some elements of instability in this ratio over the period of study. This development can be attributed to the government's inconsistent policies, inadequate infrastructure and lack of enabling environment in the country. Therefore, in modeling investment in Nigeria, it is necessary to incorporate the critical role of governance.

Comparatively, modern growing economies where investment accounts for about 20.0 per cent or more of GDP, in Nigeria, the same accounted for 12.1 per cent in 2010, the highest during the

period of study (1999 – 2010). The country, therefore, requires a more significant contribution of investment to GDP if any meaningful economic growth that can fast track the achievement of the goals of Vision 2020: 20 is to be realized. For example, in Asia, the performance was even higher than the 20.0 per cent average – it was 26.0 per cent in Korea in 2009; 29.0 per cent in Singapore in 2008; 31.0 per cent in Indonesia in 2009; and 22.0 per cent in Thailand in 2009 (World Bank, 2011).

Table 1: Nigeria Gross Domestic Investment and Economic Growth Rates (1999-2010)

Year	Gross fixed Capital Formation (GCF) (as a % of GDP)	Economic Growth Rate (RGDPR) (%)
1999	11.0	0.9
2000	7.3	5.4
2001	7.2	4.7
2002	6.3	4.6
2003	8.6	9.6
2004	11.9	6.6
2005	12.0	6.5
2006	8.3	6.0
2007	9.2	6.5
2008	8.3	6.0
2009	12.1	7.0
2010	11.2	7.9

Source: Central Bank of Nigeria Annual Report (2004-2010 issues).

3.0 LITERATURE REVIEW AND THEORETICAL FRAMEWORK

The importance of the soundness and effectiveness of governance in attaining and sustaining economic growth cannot be overemphasized. In a broad sense, the term governance encompasses all aspects of the way a country is governed (Sharma, 2007). Conceptually, the World Bank (2002) posits good governance as an efficient and accountable management of public resources by the public sector and a predictive and transparent policy framework. As reported in Akanbi (2010), the term ‘governance’ refers to traditions and institutions by which the authority of a country is being exercised inclusive of the effectiveness of government in formulating and

implementing sound policies, the respect for the rule of law, the state of the institutions that govern against corrupt practices, and the stability of the political environment.

Empirical evidence shows that public investment still represents a large share of total investment in the majority of developing countries, (Khan, 1996). There is a general argument that, in all countries, the process of economic growth and investment/capital formation is closely intertwined. The Neo-classical and Marxist have placed emphasis on capital accumulation as the engine of economic growth. The Organisation of Economic Cooperation and Development (OECD) 2001 reveal that a country's economic performance over a period is determined to a large extent by its governance performances (i.e. political, institutional, and legal environment). It is widely accepted that long-term economic growth of a country will lead to a significant improvement in the welfare of its citizens.

Extensive literature exists with respect to country-specific and cross country investigations on broad effects of governance and investment on economic growth (See Martinez-Vasquez, McNab and Everhart, 2005; Kauffmann and Kraay, 2003; Sharma, 2007; Cooray, 2009; Udah, 2010; and Turner, 2011). While some studies have centered on the role of governance in stimulating private investment to induce economic performance (e.g Bamidele and Englama, 1998; Apkokodje, 1998; Udah, 2010), others have placed focus on public investment via government expenditure (Cooray, 2009; and Vasquez et al, 2005).

Blejer and Khan's (1994) examined the role of government policy in stimulating Investment and derived an explicit functional relationship between the principle policy instruments and private capital formation. Using the model they investigated the extent of the crowding out phenomenon. Their study made a distinction between government investment that is related to the development of infrastructure and government investment of other kind.

In addition, Yahyaoui, Chatti & Chtourou (2008) and Atsushi & Yasuhisa (2005) made mention of public investment, natural resource management as well as reduction of transaction costs as channels through which state institutions can influence economic growth. While the former elaborated that state defective institutions create a market for nonproductive activities such as

rent seeking, corruption, and also generate high transaction costs which create economic inefficiencies, Atsushi & Yasuhisa (2005) found that natural resource riches can be a key driver in spurring growth if a government has the ability to formulate and implement sound and effective resource management policies. This is relevant to my research due to the fact that some countries have been able to attain this proper resource management, while others have fallen victim to the “natural resource curse”.

In Nigeria, Apkokodje (1998) identified that in the late 1970s and early 1980s, most developing countries of Africa (including Nigeria) experienced unprecedented and severe economic crisis. These crisis manifested itself in several ways such as persistent macroeconomic imbalances, widening saving-investment gap, high rates of domestic inflation, chronic balance of payment problems and huge budget deficit His findings elaborated the negative impact of real exchange rate and high inflation on private investment in Nigeria. The paper also emphasized the adverse effect of large budget deficits on private capital formation.

Bamidele and Englama (1998) investigated the relationship between macroeconomic environment and private investment behavior in Nigeria. Their results revealed that high cost of doing business was attributable to policy reversals, political instability and poor infrastructural facilities. They therefore cited macroeconomic stability, reliable and efficient infrastructure, diversified export base, political stability and transparency as propellants of economic growth and development in Nigeria.

Udah (2010) analyzes the extent to which government size and other factors have been successful in improving the conditions needed to stimulate private investment in Nigeria. Government size is found not to complement private investment initiative due to inefficiency in government expenditure and poor service delivery. On the other hand, the reforms effort in the banking system yielded positive results due to the significance of private sector credit in stimulating private investment in Nigeria. Furthermore, interest rate, political stability and external debt were found to be significant factors.

In a similar study like ours, Akanbi (2010) examined the significant role played by governance in explaining the long-term pattern of domestic investment in the Nigerian economy from 1970 to 2006. The results conform to the findings of existing literature that real output, user cost of capital, and the level of financial development are significant determinants of domestic investment in Nigeria. The results from the long-run estimation and the impulse responses revealed that a well-structured and stable socio-economic environment will boost domestic investment over the long run. Therefore, in modeling domestic investment for Nigeria, it is imperative to incorporate the significant role played by governance.

Despite the burgeoning literature that exists on governance and economic growth, limited studies have particularly focused on the analysis of institutional and political environments as determining factors in explaining domestic investment and how it translates to sustainable long – term economic growth in developing economies. The purpose of the present study is to address the question of how government quality as measured by governance indicators and government size underpins the growth process through domestic investment in an emerging economy such as Nigeria.

Theoretically, approaches such as the Keynesian model, cash-flow model and the neoclassical model have been used to model investment behaviour. The most common being the neoclassical model (Akanbi, 2010). In the Keynesian model, increase in government expenditure (on infrastructures) leads to higher economic growth. Contrary to this view, the neo-classical growth models argue that government fiscal policy (intervention) helps to improve failure that might arise from the inefficiencies in the market. The simple neo-classical growth model (Solow, 1956; Swan, 1956) established that output in a given economy at any given time can be produced using a combination of labour and capital, while the extended version of the model includes technical progress to account for efficiency. The modern version of the model also makes distinction between physical and human capital (Romer, 1986; Lucas, 1988).

4.0 METHODOLOGY AND THE MODEL

The paper employs a vector error correction mechanism (VECM) technique after cointegration has been established among the variables. The VECM is adopted to estimate the effects of governance and investment on economic growth. According to Ang and McKibbin (2007), once the variables are cointegrated; it becomes easy to distinguish between the short-run dynamics and long-run relationship. Therefore, to capture both the long-run and the short-run dynamics of governance, investment, economic growth and other variables in Nigeria, an error correction model (ECM) using the Johansen and Juselius (1990) multivariate cointegration techniques was employed. The estimation is conducted using the econometric computer software package, EViews version 7.2. Quarterly series spanning 1999:q1 to 2010:q4 are adopted. This is to ensure enough data points to cater for loss of degree of freedom. The data are sourced from the Central Bank of Nigeria's Statistical Bulletin, December 2009 and its 2010 Annual Report.

From the literature and theoretical review, and following Akanbi (2010), the multivariate equation (1) to be estimated is specified below:

$$yr = \beta_0 + \beta_1cpi + \beta_2ir + \beta_3govn + \beta_4plr + \beta_5open + \beta_6fsd + \varepsilon_t \dots\dots\dots(1)$$

Where: *yr* = output (real GDP); *cpi* = price; *ir* = investment ratio (gross fixed capital formation divided by GDP); *govn* = governance (the concept of governance adopted in this paper is that of the World Bank (2010), which covers an agglomeration of the six dimensions of governance - voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law and control of corruption), an average of the worldwide governance indicators of the World Bank (2010) was utilised; *plr* = nominal prime lending rate (lending rate for high networth customers to the deposit money banks in Nigeria); *open* = openness of the economy (sum of export and import divided by GDP); *fsd* = financial sector development (broad money supply divided GDP).

The a-priori expectations of the explanatory variables are as expressed below:

$$\beta_1, \beta_4 < 0; \beta_2 > 0; \beta_3 > 0; \beta_5 > 0; \beta_6 > 0$$

5.0 EMPIRICAL INVESTIGATION AND RESULTS

5.1 Results of Summary Statistics and Unit Root Tests

The summary statistics of output (yr), consumer price index (cpi), investment ratio (ir), governance (govn), prime lending rate (plr), openness of the economy (open) and financial sector development (fsd) as shown in Table 2 below. The mean for the yr, cpi, ir, govn, plr, open and fsd was 5.7, 63.5, 8.1, -0.3, 19.4, 0.6 and 75.7 respectively. This indicates that the variables exhibit significant variation in terms of magnitude, suggesting that estimation at levels may introduce some bias in the results.

Table 2: Summary Statistics

	CPI	FSD	GOVN	IR	OPEN	PLR	YR
Mean	63.5	75.7	-0.3	8.1	0.6	19.4	5.7
Median	61.6	55.0	-0.3	8.2	0.6	18.9	3.1
Maximum	114.2	160.9	-0.3	10.7	0.9	26.3	42.7
Minimum	29.5	40.3	-0.3	5.2	0.4	14.9	-17.0
Std. Dev.	25.2	36.4	-0.2	1.4	0.1	2.8	10.2
Skewness	0.3	1.2	-0.2	-0.1	-0.2	0.6	1.4
Kurtosis	2.0	2.8	1.9	2.5	2.8	2.8	6.5
Jarque-Bera	2.9	11.3	3.1	0.8	0.3	2.9	39.0
Probability	0.2	0.0	0.2	0.7	0.8	0.2	0.0
Sum	3048.4	3635.1	-13.6	389.6	29.9	931.2	274.1
Sum Sq. Dev.	29921.6	62202.5	0.0	87.4	0.7	377.5	4880.1
Observations	48.0	48.0	48.0	48.0	48.0	48.0	48.0

Unit Root Test Results

To examine the existence of stochastic non-stationarity in the series, the paper establishes the order of integration of individual time series through the unit root tests. The tests of the stationarity of the variables adopted were Augmented Dickey Fuller (ADF) and Phillips-Perron (PP). The variables tested are: yr, cpi, ir, govn, plr, open and fsd. The results indicate that all the variables are integrated of order one, i.e they were non-stationary at levels. However, they

became stationary after first difference, which implies that they are I(1) series. Given the unit-root properties of the variables, we proceeded to establish whether or not there is a long-run cointegrating relationship among the variables in equation (1) by using the Johansen full information maximum likelihood method³⁶. Quarterly data from 1990 to 2010 was utilized to achieve this.

The unit root tests results are presented in appendix 1. Before conducting the cointegration test, the appropriate optimal lag-length that would give standard normal error terms that do not suffer from non-normality, autocorrelation and heteroskedasticity was determined. Four (4) lags (since the model adopts quarterly data and there are large numbers of observations) were allowed at the beginning. The VAR order selection results indicated lag one for all the information criteria.

5.2 Cointegration Test using Johansen-Juselius Technique

The cointegration tests are undertaken based on the Johansen and Juselius (1990) maximum likelihood framework. The essence is to establish whether a long-run relationship(s) exist among the variables of interest.

Starting with the null hypothesis that there is no cointegrating vector ($r = 0$) in the model, the results show that there exist three cointegrating relations in the model as both the trace (λ_{trace}) and maximum eigenvalue (λ_{max}) statistics reject the null of $r \leq 0$ against the alternative $r \geq 1$ at 5 per cent level of significance. This is indicative of three cointegrating vectors in the model, which drive the relationship toward equilibrium in the long-run (the table 6 below). It is necessary to note that even though the result of the Johansen cointegration test revealed that the trace statistic indicates 3 cointegrating equations, the maximum-eigenvalue statistic indicates 2 cointegrating equations, which is a conflict. This is recognized in the literature and it was shown

¹ The Johansen/Juselius approach produces asymptotically optimal estimates because it incorporates a parametric correction for serial correlation (which comes from the underlying vector autoregression (VAR)) and the system nature of the estimator means that the estimates are robust to simultaneity bias. Moreover, the Johansen method is capable of detecting multiple cointegrating relationships (if they exist) and it does not suffer from problems associated with normalization.

that since the trace statistics takes into account, all of the smallest eigenvalues, it possesses more power than the maximal eigenvalue statistic. Furthermore, Johansen and Juselius (1990) recommend the use of the trace statistics when there is a conflict between the two statistics.

The conclusion drawn from table 3 in the appendix shows that there exists a $|c|$ long-run relationship between *yr*, *cpi*, *ir*, *govn*, *plr*, *open* and *fsd*. The selection was based on the result of the cointegrating equation with the lowest log-likelihood which was used for the analysis of the long-run relationship. The cointegrating vector (long-run relationship) for output can be obtained by normalizing the estimates of the unconstrained cointegrating vector on output. The parameters/long-run elasticities of the cointegrating vector for the long-run output are presented in equations (2). The identified cointegrating equation can then be used as an error-correction term (ecm) in the overparameterised error correction model, which would be refined to derive the parsimonious model. The component is the error correction term (as indicated in equation (3)), *akin* to the residual generated from the static regression when the Engle-Granger (E-G) two-step approach is adopted.

The normalized cointegrating vector was extracted from the cointegration result above and is expressed as:

$$yr + 0.020068cpi + 1.690788ir - 102.5866govn + 0.547302plr + 1.847807open + 0.021955fsd - 64.16180...(2)$$

And the ecm can be written as:

$$ecm = yr - 0.020068cpi - 1.690788ir + 102.5866govn - 0.547302plr - 1.847807open + 0.021955...(3)$$

This ecm expression is incomplete. After -1.847807open we should have -0.021955fsd+64.16180

5.3 Vector Error Correction Model (VEC) Framework

The results indicate that the variables in the output model in equation (1) tend to move together in the long-run as predicted by economic theory. In the short-run, deviations from this relationship could occur due to shocks to any of the variables. In addition, the dynamics governing the short-run behavior of economic growth are different from those in the long-run. Due to this difference, the short-run interactions and the adjustments to long-run equilibrium are important because of the policy implications. According to Engle and Granger (1987), if cointegration exists between non-stationary variables, then an error-correction representation of the type specified by equation (4) below exists for these variables. Given the fact that the variables of the economic growth equation are cointegrated, the next step is the estimation of the short-run dynamics within a vector error correction model (VECM) in order to capture the speed of adjustment to equilibrium in the case of any shock to any of the independent variables.

5.3.1 The Over-parameterised Error-Correction Model

The generalized specification framework of the over-parameterised VEC model is expressed below:

$$\Delta yr = \beta_0 + \sum_{i=1}^{k-1} \beta_i \Delta yr_{t-i} + \sum_{i=0}^{k-1} \alpha_i \Delta cpi_{t-i} + \sum_{i=0}^{k-1} \chi_i \Delta ir_{t-i} + \sum_{i=0}^{k-1} \delta_i \Delta gov_{t-i} + \sum_{i=0}^{k-1} \phi_i \Delta plr_{t-i} + \sum_{i=0}^{k-1} \varphi_i \Delta open_{t-i} + \sum_{i=0}^{k-1} \gamma_i \Delta fsd_{t-i} + \Omega ecm_{t-1} \dots (4)$$

where:

Δ indicate the first difference of a series.

$\beta_0, \beta_i, \alpha_i, \chi_i, \delta_i, \phi_i, \varphi_i, \gamma_i$ and Ω are the parameters of the model to be estimated.

“i” is the number of lags included for the first difference of both the dependent and independent variables.

ecm_{t-1} is the lagged error correction term and t represent time period. The error term, ε_t of equation (4) has the same explanations as that in equation (1) as earlier discussed while Ω is expected to be less than one, negative and statistically significant. The negative sign of the

ecm_{t-1} term indicate long-run convergence of the model to equilibrium as well as explaining the proportion and the time it takes for the disequilibrium to be corrected during each period in order to return the disturbed system to equilibrium.

As is the tradition, the over-parameterised model was reduced to achieve parsimonious models, which are data admissible, theory consistent and interpretable. Parsimony maximizes the goodness of fit of the model with a minimum number of explanatory variables. The reduction process is mostly guided by statistical considerations, economic theory and interpretability of the estimates (Adam, 1992). Thus, our parsimonious reduction process made use of a stepwise regression procedure (*through the elimination of those variables and their lags that are not significant*), before finally arriving at an interpretable model. The parsimonious error-correction model is in the appendix as table 4. Thus, the discussion of the parameter estimates of the model would be useful for policy implications, recommendations and conclusion.

6.0 Analysis of Findings, Policy Implications and Conclusion

6.1 Analysis of Findings

By examining the overall fit of the model, it can be observed that the parsimonious model have better fit compared with the over-parameterised model, as indicated by a higher value of the F-statistic 24.79 and it is significant at the 5.0 per cent level. It can be observed from the results that the coefficient of the error correction term ECM1 (-1) have the expected negative sign and it is highly significant at the 1.0 per cent level of significance. The significance of the error correction mechanism (ECM1) supports cointegration and suggests the existence of long-run steady-state equilibrium between economic growth and governance, prime lending rate and financial sector development. In fact, the ECM1 indicates a feedback of about 58.8 per cent of the previous quarter's disequilibrium. The adjusted R^2 of 0.69 indicates that about 69.0 per cent of the variation in economic growth is explained by governance in the past one year (four quarter lag), prime lending rate in the previous quarter and financial sector development in the last six months (two quarter lag).

The findings suggest that in the short run, a unit change in governance performance indicator in the past one year will induce 1 unit change in output and it conforms to economic theory with 5.0 per cent level of significance. In the case of the investment ratio, a unit change in the investment ratio lead to a rise of 0.78 unit change in output in the short-run and the coefficient is rightly signed and in line with theory. The variable is significant at 1.0 per cent level.

The prime lending rate has the correct sign even though is not significant, its inclusion in the model retains the parsimony of the model. A unit change in financial sector development lagged by two quarters will lead to a rise of 0.37 unit change in output in the short-run and the coefficient is rightly signed with 5.0 per cent level of significance.

The residual graph, which shows the actual and fitted observations, is depicted below in Fig. 1. It indicates that the fitted observations are as close as possible to their observed value, which is the hallmark of ordinary least squares (OLS) estimation. The recursive residual also falls within the $\pm 2S.E.$ as indicated below in figure 2. The CUSUMSQ test is based on a normalized version of the cumulative sums of squared residuals. Under its null hypothesis of parameter stability, the CUSUMSQ statistic will start at zero and end the sample with a value of 1. In the same vein, a set of ± 2 standard error bands is usually plotted around zero and any statistic lying outside these is taken as evidence of instability. Since the line is well within the confidence bands, the conclusion is that the null hypothesis of stability is not rejected. The stability test (CUSUM Squares) thus far support the view that the model is stable as shown in figure 3 and will be robust for policy analysis.

Figure 1

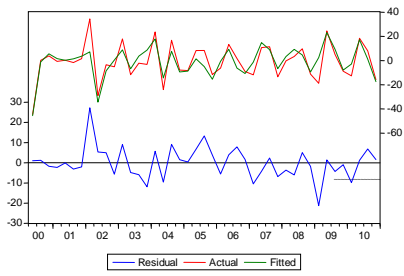


Figure 2:

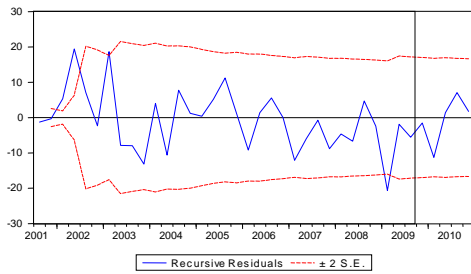
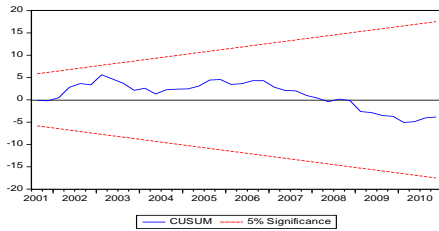


Figure 3:



6.2 Policy Implications

The economic implications of the above findings are as follows:

- With the positive relationship between governance variable and economic growth, it follows that effective governance will promote/support economic growth in Nigeria. This will impact a positive change in the economic development of the country and the citizenry are expected to be better for it. This result is in tandem with (Akanbi, 2010) and Udah (2010).
- There is an evidence of positive relationship between investment ratio of second lag and output. This implies that investment made in the economy would impact on output after six months. Hence, other things being equal, in a secure and stable socio-economic environment, increase investment is expected to lead to higher output for the country.
- The direct relationship between financial sector development (fsd) and output shows that improvement in fsd would lead to higher output, other things being equal. There will also be a multiplier effect on the overall economy. This indicates that if the financial institutions perform their intermediation role effectively, the much needed growth could be attained.
- The inverse relationship between the prime lending rate and output conforms to theory, even though not significant. This suggests that a unit change in the prime lending rate would culminate into a decline of 1.9 unit change in output, *ceteris paribus*. Hence, banks, in particular, are expected to work towards lowering the lending rate to a more acceptable level without necessarily discouraging savings, in order to increase loans availability to investors. This will require the Government to improve on those constraints and bottlenecks, such as infrastructure, power, water and roads that are putting pressures on the cost of funds, forcing banks to increase lending rate. The idea is to encourage borrowing and investment in the economy.

6.2 Conclusions

The paper examined the dynamics of governance, investment and economic growth in Nigeria from 1999:q1 to 2010:q4 using cointegration and vector error correction approach. The specific objectives were to estimate the short-run dynamics as well as the error-correction mechanism of the price level, investment ratio, governance, prime lending rate, openness and financial sector development on economic growth. In the process of doing this, the hypothesis that governance and investment promotes economic growth in Nigeria was validated.

The adjusted R^2 of 0.69 indicates that about 69.0 per cent of the variation in economic growth is explained by governance in the past one year (four quarter lag), prime lending rate in the previous quarter and financial sector development in the last six months. The coefficient of the error correction term ECM1 (-1) have the expected negative sign and it is highly significant at the 1.0 per cent level of significance. The significance of the error correction mechanism (ECM1) supports cointegration and suggests the existence of long-run steady-state equilibrium between economic growth and governance, prime lending rate and financial sector development. In fact, the ECM1 indicates a feedback of about 58.8 per cent of the previous quarter's disequilibrium.

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Appendix 1: ADF and PP Unit Root Tests

Variable	ADF			Phillips-Perron		Remarks
	Level	1 st Difference	Remarks	Level	1 st Difference	
Yr	-2.4839	-4.9753***	I(1)	-2.7042	-6.8215***	I(1)
cpi	-2.8319	-6.9311***	I(1)	-2.9877	-10.9418***	I(1)
Ir	-2.3745	-5.9348***	I(1)	-2.5386	-5.9718***	I(1)
Govn	-2.1870	-2.3919**	I(1)	-0.1422	-3.8429***	I(1)
Plr	-2.3976	-5.4091***	I(1)	-2.6180	-5.4806***	I(1)
Open	-1.9562	-4.1620**	I(1)	-2.4531	-4.7537**	I(1)
Fsd	-2.2173	-5.2014***	I(1)	-1.5738	-5.1195***	I(1)

Note: *** and ** indicates that the variables are significant at 1 per cent and 5 per cent levels, respectively.

Appendix 2: Test of VAR Lag Order Selection

VAR Lag Order Selection Criteria

Endogenous variables: YR CPI IR GOVN PLR OPEN FSD

Exogenous variables: C

Date: 09/11/11 Time: 23:40

Sample: 1999Q1 2010Q4

Included observations: 45

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-570.3312	NA	328.3489	25.65916	25.94020	25.76393
1	-231.4205	557.3198*	0.000855*	12.77425*	15.02254*	13.61239*
2	-185.4895	61.24137	0.001149	12.91064	17.12619	14.48216
3	-134.6764	51.94228	0.001670	12.83006	19.01286	15.13495

* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

Table 3: Unrestricted Cointegration Rank Test Results

Null Hypothesis	Trace Statistic	Critical value at 5 per cent	Null Hypothesis	Maximum-Eigen statistic	Critical value at 5 per cent
$r = 0^*$	175.8760	134.6780	$r = 0^*$	49.3409	47.0789
$r \leq 1^*$	126.5351	103.8473	$r \leq 1^*$	45.5831	40.9568
$r \leq 2^*$	80.9511	76.9728	$r \leq 2$	28.2146	34.8059
$r \leq 3$	52.7374	54.0790	$r \leq 3$	25.2761	28.5881
$r \leq 4$	27.4613	35.1928	$r \leq 4$	13.2294	22.2996
$r \leq 5$	14.2318	20.2618	$r \leq 5$	9.6987	15.8921
$r \leq 6$	4.5332	9.1645	$r \leq 6$	4.5332	9.1645

Note: r represents number of cointegrating vectors. Trace test indicates 3 cointegrating equations at the 0.05 level while max-eigenvalue test indicates 2 cointegrating equations.

*denotes rejection of the hypothesis at the 0.05 level.

Table 4: Parsimonious Error-Correction Model of yr

Dependent Variable: D(YR)

Method: Least Squares

Sample (adjusted): 2000Q2 2010Q4

Included observations: 43 after adjustments

Variable	Coefficient	t-Statistic	Prob.
C	-56.31738	-9.684180	0.0000
D(GOVN(-4))	1.0080	2.044586	0.0479
D(IR(-2))	0.78214	-6.403159	0.0002
D(PLR(-1))	-1.915271	-1.351926	0.1844
D(FSD(-2))	0.372637	2.265921	0.0292
ECM(-1)	-0.587601	-9.674970	0.0000
R-squared	0.722982	Mean dependent var	-
Adjusted R-squared	0.693822	S.D. dependent var	0.955814
S.E. of regression	8.223201	Akaike info criterion	14.86120
Sum squared resid	2569.599	Schwarz criterion	7.160740
Log likelihood	-148.9559	Hannan-Quinn criterion	7.365531
			7.236261

	Durbin-Watson	
F-statistic	24.79379stat	1.935935
Prob(F-statistic)	0.000000	
