An econometric analysis of the investment climate and growth potential in Nigeria

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Abstract

The slow economic growth rate experienced by most developing countries, including Nigeria in the late 1970s and the early 1980s, has now manifested itself in the form of macro-economic imbalances, a wide saving/investment disparity, a steep inflationary spiral, and a high debt overhang. Hence, the study examines improving the Nigerian investment climate for enhanced economic growth. The data was sourced from the Central Bank of Nigeria (CBN) Bulletin *and National Bureau of Statistics. The level testing results reveal that none of the variables were stationary at its levels. However, the absolute values of the variables in the first-difference is greater than the Mackinnon Critical value as provided by EVIEWS Package, which means that we do not reject the null hypotheses for the non-stationary series. It was observed that there were many reasons for the poor economic performance of the Nigerian economy, among which was the decline in investment rates. It is thus recommended that polices which will improve and encourage investment should be institutionalised, a stable macro-economic framework should be pursued, a favourable fiscal regime should be promoted, and the financial sector strengthened by diversification to achieve investment objectives.*

Keywords: Investment, economic growth, co integration, Nigeria

Sumário

A taxa de crescimento econômico lento vivida pela maioria dos países em desenvolvimento, incluindo a Nigéria no final dos anos de 1970s e início de 1980s, já se manifestava na forma de desequilíbrios macroeconómicos, uma grande poupança/disparidade de investimentos, uma espiral inflacionária íngreme, e um alto excesso da dívida. Assim, o estudo analisa a melhoria do clima de investimento nigeriano para um maior crescimento econômico. Os dados são provenientes do Banco Central da Nigéria (CBN) Bulletin and National Bureau of Statistics. *Os resultados dos testes revelam que nenhum nível das variáveis é estacionário. No entanto, os valores absolutos das variáveis na primeira diferença é maior do que o valor crítico de* Mackinnon, *tal como previsto pelo pacote* EVIEWS, *o que significa que não rejeitam as hipóteses nulas para a série de não-estacionária. Observou-se que havia muitas razões para o fraco desempenho econômico da economia nigeriana, entre os quais o declínio nas taxas de investimento.Portanto, recomenda-se que as políticas que irão melhorar e incentivar o investimento devem ser institucionalizada, um quadro macroeconómico estável deve ser desenvolvido, um regime fiscal favorável deve ser promovido, e o sector financeiro fortalecido pela diversificação dos seus produtos para alcançar os objetivos dos investimentos.*

Palavras chave: investimento, o crescimento econômico, a integração económica, Nigéria

Introduction

It is the desire to attract investment, particularly foreign direct investment, that has brought about economic reform in Nigeria. The economic rationale for offering special incentives to attract foreign direct investment frequently derives from the fact that it promotes growth, not only directly, by augmenting capital formation in the recipient countries, but also indirectly by improving human capital development, helping technology transfers and strengthening competition (Qi, 2007).

The desire to improve the Nigerian investment climate stems from the acknowledged advantages (Akinlo, 2004). In fact, the New Partnership for Africa Development (NEPAD), a programme floated by Africa's statesmen to address the downward spiral of poverty and to set Africa on the road to globalisation, was launched to increase capital in the sub-region to US$ 64 billion through a combination of reforms and resource mobilisation, as well as enabling the economies for investment (Funke and Nsouli, 2003).

From the current International Finance Corporation and World Bank report, Nigeria is ranked 133 out of 183 nations for doing business. For starting a new business, Nigeria is ranked 116, obtaining a construction permit 84, setting electricity for a local firm 176, registering property 180, getting credit 78, protecting investors 65, paying taxes 138, trading across borders 149, enforcing contracts 97 and resolving insolvency 99. In the regional ranking, Mauritius is the best country for doing business in Africa, while Nigeria (the 'giant of Africa') is ranked as the 15th. By comparison South Africa is ranked 1st, Rwanda (a former war-torn country) 2nd, Botswana 3rd and Ghana 5th (Ohura, 2012). Other economic indicators of low growth rates in Nigeria (out of 142 countries) include infrastructure 135, ease of access to loans 125, soundness of banks 136, regulation of securities exchange 81, business sophistication 64, capacity for innovation 54, state of the environment 119. For power generation, a critically important factor for growth, Nigeria's per capita energy consumption is one of the lowest in the world – about 12 watts, against that of South Africa 478 watts, Mauritius 198 watts, Gabon 124 watts, Cameroon 29 watts, and Ghana 27 watts.

It is notable that a statistical increase of a country's GDP, income per capita, external reserve and trade/revenue surplus does not necessarily constitute meaningful economic growth and development. It is about material improvement in the lives of the citizenry in terms of meeting and satisfying their basic needs and necessities of life, while enhancing the creation and equitable distribution of wealth, to minimise social disparity. The Nigerian development experience since independence in 1960 has been characterised by despair, frustration, disappointment, poverty and hunger (caused mainly by corruption in all levels of governance), changes in government from a military administration to a civilian regime, autocratic leadership and a lack of infrastructural facilities.

Furthermore, despite the various economic policies and structural reform programmes by successive Nigerian governments, the macro-economic problems of falling industrial output, rising inflation, a high level of unemployment, huge budget and balance of payments deficits, infrastructural decay and other economic difficulties, continue to linger. Therefore, for Nigeria to be able to meet the Millennium Development Goals and achieve the desired economic growth rate of 7.36% and reduce the inflation rate of 12.9%, there is a need for increased emphasis on improving and sustaining the Nigerian investment environment to make it more conducive for both domestic and foreign investment.

The broad objective of this study is to examine the Nigerian investment climate and to proffer policy options aimed at enhancing economic growth. Following the introduction is the investment climate in Nigeria – an overview. Next are the theoretical and empirical issues as it relates to investment, then methodology, a discussion of econometric estimating results, and finally, policy implications of the findings, as well as a conclusion.

Investment climate in Nigeria: A brief overview

At independence, in addition to being a leading exporter of groundnuts, Nigeria accounted for 16% and 43% of world cocoa and palm oil production respectively. The country was largely self-sufficient in terms of domestic food production (85%) and Nigerian agriculture contributed over 60% of the GDP and 90% of exports. Conversely, manufacturing was less than 3% of the GDP and 1% of exports, while the oil sector represented only 0.2% of the GDP.

Okigbo (1989) stated that the First National Development Plan of Nigeria (1962-1968) sought to broaden the base of the economy and limit the risk of over-dependence on foreign trade. In keeping with the developmental question of that period, the tariff structure was formulated with industrialisation and import substitution in mind.

The Second National Development Plan (1970-1974) accelerated indigenisation of resource and productive ownership on the grounds that it was vital for government to acquire, by law if necessary, the greater proportion of the productive assets of the economy (NIPC, 2011). Restrictions were therefore imposed on the activities of foreign investors with the first indigenisation decree. Relaxation of these restrictions began in 1989. The Nigerian Enterprise Promotion Decree (NEPD) was amended so as to leave a single group of 40 business activities in which foreign participation was completely prohibited, unless the value of the enterprise exceeded N20 million (US$2.7 million) in 1989.

In 1995, the Nigerian Investment Promotion Commission Act opened all sectors to foreign participation, except for a short list (including drugs and arms) and allowed for 100% foreign ownership in all sectors, with the exception of the petroleum sector (where foreign direct investment is limited to joint ventures or production sharing). Following the major decline of oil prices in the early 1980s, the shortcomings of past economic planning were exposed. Agriculture accounted for less than 10% of exports and the country had become a net food importer. Manufacturing output started falling at about 2% per annum between 1982 and 1986, while the GDP stagnated, with less than 1% growth annually. Furthermore, by 1986, there were about 1 500 state-owned enterprises, of which 600 were under the control of the federal government and the remainder under state and local governments. The evidence suggested that many enterprises made no contribution to Nigeria's productive capacities and were not financially viable (Mahmud, 2004).

Between 1970 and the mid-1990s, Nigeria as the primary destination for foreign direct investment inflows to Africa, accounted for more than 30% of all foreign direct investment inflows to the continent. This is largely as a result of its oil attractiveness. However, in 2007, notwithstanding

the booming oil industry, Nigeria accounted for only about 16% of total foreign direct investment inflows to Africa. It's leading role in terms of attracting foreign direct investment started eroding due to the surge of foreign direct investment inflows to oil-rich countries such as Angola and Sudan. Another factor was the improved foreign direct investment performance of other large African countries such as Egypt and South Africa, which were successful in attracting foreign direct investment in diverse sectors of their economies.

The Structural Adjustment Period (SAP) (1986-1988), which emphasised privatisation, market liberalisation and agricultural export orientation, was not implemented consistently and was at odds with other facets of policy, e.g. tariff increases. The economic reform process, which continues to the present, has its origin in this period. Nigeria's return to democracy in 1999 has created the opportunity for economic renewal and associated ambitious measures with a view to improving the investment climate. The reform process also takes into account the potential role that close to five million Nigerians living abroad could play. The policy changes have started bearing fruit and if sustained, they will certainly provide an environment more conducive to private investment and contribute to enhance the attractiveness to foreign direct investment of Nigeria's large and growing market.

It is now widely acknowledged that foreign direct investment is an important aspect of the recent wave of globalisation. UNCTAD (2001) notes that foreign direct investment in the world rose from US$57 billion in 1982 to US$1,271 billion in 2000. Even so, only a few countries have been successful in attracting significant foreign direct investment flows. Indeed, Africa as a whole and sub-Saharan African (SSA) in particular, has not particularly benefited from a foreign direct investment boom, Ayanwale (2007).

Table 1: Nigeria: Net foreign direct investment inflows (US$ million)

Year	Africa	Nigeria	% of Africa
1980	392	-188.52	-
1990	2 430	588	24.19
1995	5 119	1 079	21.07
1997	10 667	1 539	14.43
1998	8 923	1 051	11.77
1999	12 231	1 005	8.22
2000	8 489	930	10.96
2001	18 769	1 104	5.88
2002	10 998	1 281	11.65
2003	15 033	1 200	7.78
2005	1 604	1 252	9.64
2008	2 047	1 678	12.57
2010	3 079	1 864	15.82

Source: UNCTAD Foreign Direct Investment Database Online

Despite its great potential, investment in Nigeria has been poor. Many reasons have been adduced for the poor investment condition in Nigeria and most are applicable to developing economics. These include political and social instability (including, Niger Delta militants, Boko Haram and ethnic based insurgencies), lack of transparency, corruption, poor human development, lack of favourable fiscal regime, and a poor legal system. These factors no doubt have caused a decline in foreign direct investment inflows to Nigeria as seen in the table above, in the early 1980s, 1990s and 2000.

Theoretical issues

Economic theory provides us with many reasons why investment, particularly foreign direct investment may result in enhanced growth performance in the recovery country. In the neoclassical growth theory, foreign direct investment is associated positively with output growth because it either increases the volume of investment and its productivity, thus putting the economy on a path of greater long-term growth. In an exogenous growth model, foreign direct investment has only a levelling effect in the steady state and no permanent impact on the growth rate, except during the transitional dynamics to the steady state. In a neoclassical production function, output is generated using capital and labour in the production process. With this framework in mind, foreign direct investment can exert an influence on each argument in the production function. Foreign direct investment increases capital, it may qualitatively improve the factor labour and by transferring new technologies, it also has the potential to raise total factor productivity. Further, as discussed in more recent theoretical growth models (e.g. Grossman and Helpman, 1991), by raising the number of varieties for intermediate goods or capital equipments, foreign direct investment can also increase productivity (Borensztein, Gregorio and Lee, 1998). This, in addition to the direct, capital-augmenting effect, FDI may also have additional indirect effects on the growth rate. Most importantly, foreign direct investment can permanently increase growth rate through spillovers and the transfer and diffusion of technologies, ideas, management processes, and the like.

Available evidence for developed countries seems to support the idea that the productivity of domestic firms is positively related to the presence of foreign firms (Globerman, 1979, Imbriani and Reganeti, 1997). The results for developing countries are not so clear, with some finding positive spillovers (Bloomstrom, 1986, Kokko, 1994) but reporting limited evidence. Still others find no evidence of positive short-run spillovers from foreign firms.

The growth-enhancing ability of foreign direct investment is affected by its chosen mode. It is argued by Johnson (2006) that the "effect of foreign direct investment inflows on variables such as technology spillover and physical capital are expected to differ been Greenfield and Brownfield foreign direct investment". According to him, Greenfield foreign direct investment implies that Multi National Enterprises (MNE) construct new facilities in production, distribution or research in the host county.

This result is an increase in the host country's stock of physical capital that can be substantial, especially for capital-scarce developing economies. In the case of a Brownfield investment, the MNE acquires already existing facilities in the host country. Brownfield foreign direct investment

should therefore only result in a limited increase in the stock of actual capital since there is a change in ownership rather than an inflow of new capital. Greenfield and Brownfield foreign direct investment should affect host country growth differently, since Greenfield foreign direct investment results in a larger inflow of actual capital.

Empirical issue

There is a large body of literature that has modelled the investment behaviour of countries across the world. These studies have adopted various investment models such as the accelerated model, the cash-flow model, Tobin's Q model, and the neoclassical model, which differ according to the various assumptions on which the models rest. Most studies on the determinants of investment (Shafik (1992), Oshikoya (1994), have focused on macro-economic and financial variables, while ignoring the role of policy and institution.

Oshikoya (1994) and Ndikumana (2000) investigated the importance of macro-economic and financial variables as determinants of domestic investment in sub-Saharan African. Evidence from their panel data estimates shows a positive and significant relationship between domestic investment and the various indicators of financial development and macro-economic variables. Similar results were found in Gbura and Godwin (2000), who investigated the determinants of private investment in Asia, sub-Saharan Africa and Latin America.

In analysing foreign direct investment in Nigeria and the agricultural sector, Ogbanje et al (2010) employed a one-way analysis of variance and concluded that the "agricultural sector, comprising crop production, forestry and fishery, received the least mean net foreign investment, showing that investments discriminate against Nigeria's agriculture, notwithstanding the strategic position of the sector to the economy".

Asiedu (2002, 2007), using cross country data on 71 developing countries, attempted to answer the following set of questions: What factor drives foreign direct investment to developing countries? Are these factors equally relevant for foreign direct investment to sub-Saharan Africa? Why has sub-Saharan Africa attracted so little foreign direct investment? Why has sub-Saharan Africa been relatively unsuccessful in attracting foreign direct investment despite policy reform? Is Africa different? Her analysis focused on only three main variables: the return on investment, availability of infrastructure and resources to trade. It does not take into account natural resource availability, which is an important determinant of foreign direct investment to Africa.

De Mello (1999) finds weak indications of a positive relationship between foreign direct investment and economic growth, despite using both times series and panel data fixed effects estimations for a sample of 32 developed and developing countries.

Zang (1999) analyses the causality between direct investment and economic growth. Using data from 11 developing countries in East Asia and Latin America and employing co-integration and Granger causality tests, he found that in five cases, economic growth is enhanced by foreign direct investment but that host country conditions such as trade regime and macro-economic stability are important.

Carkovic and Levine (2002) used a panel data set covering 72 developed and developing countries in order to analyse the relationship between foreign direct investment inflow and sound economic performance. The study performs a cross-sectional ordinary least square analysis, as well as a dynamic panel data analysis using generalised maximum likelihood. The paper concludes that there is no robust link running from inward foreign direct investment to host country economic growth.

Bengoa and Sanches-Robles (2003) investigated the relationship between foreign direct investment and market freedom and growth using panel data for Latin America, comparing fixed and random effects estimations. They concluded that foreign direct investment has a significant positive effect on host country economic growth but have similar views to Borensztein et al (1998) who concluded that the magnitude depends on host country conditions.

Kalemli-Ozean (2007) investigated FDI and economic growth, the role of local financial market, on selected Organisation for Economic Co-operation and Development (OECD) and non-OECD countries using cross-country data. He concluded that direct investment alone plays an ambiguous role in contributing to economic growth, but in countries with well-developed financial markets.

Ayenwale (2007), using an augmented growth model via the ordinary least square and two stage least square (2SLS) method, ascertained the relationship between foreign direct investment, its components and economic growth. He concluded that the determinants of foreign direct investment in Nigeria are market size, infrastructure development and stable macro-economic policy, not openness to trade and available human capital.

Jerome et al (2004) assessed the magnitude, direction and prospects of foreign direct investment in Nigeria. They noted that while foreign direct investment regime in Nigerian is generally improving, some serious deficiencies remain. These deficiencies are mainly in the area of the corporate environment (such as corporate law, bankruptcy, labour law, etc.).

Herzer et al (2006) using a bivariate VAR modelling technique, found evidence of a positive growth for Nigeria, Sir Lanka, Tunisia and Egypt led by foreign direct investment and based on weak exogenous tests, a long-run causality between foreign direct investment and economic growth running in both directions was found for the same set of data. A slight difference from this result is observed in Okodua (2009) who examined the sustainability of the foreign direct investment growth relationship in Nigeria.

Finally, Ogho (2011) is of the view that the Nigerian economy has the potential for significant increments in investment. However, the nature of attracting investment is such that the public investment must precede private investment.

The review of empirical literature on the investment climate and growth potential reveals that much has been done on developing countries, Nigeria inclusive, and that all the factors (mostly economic) for investment are the same in every economy. This research departs from previous work on investment climate and growth potential in Nigeria by accounting for the direct effect of security, corruption, red tape, political and social instability and a lack of transparency on the part of government.

Table 2: Summary of empirical literature relating to developing countries

Author/year	Country	Nature of study	Nature of data	Methodology/ estimations technique	Findings
Balasubraman yam, (1996)	Developing countries	Foreign direct investment and economic growth	Time series	Ordinary least square	Foreign direct investment has a positive effect on growth in host country using an export promotion strategy but not in countries using import substitution strategy.
Borensztein (1998)	Developing countries	Foreign direct investment, technology diffusion and growth	Time series	Ordinary least square	Foreign direct investment has a positive effect on growth but the magnitude of the effect depends on the amount of human capital in the host country.
Olofsdoffer (1998)	Developing countries	Foreign direct investment, technology diffusion and economic growth	Time series	Ordinary least square	Foreign direct investment stock is positively related to growth and the effect is stronger for host countries with a higher level of institutional capability as measured by the degree of property right protection and efficiency (management) in the host country.
Zang, (1999)	East Asia and Latin America	Causality between foreign direct investment and Economic Growth	Time series	Co-integration approach	Economic growth is enhanced by foreign direct investment but the host country conditions such as trade regime and macroeconomic stability are important.
Carkwic and Ledine, (2002)	Developed and developing	Relationship between foreign direct investment inflow and economic growth	Time series	Granger causality test approach	There is no robust link running from inward foreign direct investment to host country economic growth.
Kalu, *et al* (2012)	Nigeria	Econometric analysis of Investment climate and growth potential in Nigeria	Time series	Co-integration approach	Investment and trade are two complementary elements in the strategy t accelerate Nigeria's development, boost the rate of economic growth and sustain progress toward central eradication of poverty.

Methodology

The methodology adopted in the study follows the co-integration approach. Traditional economic theories are premised on the assumption that the underlying data processes are stationary. The co-integration and error correction mechanism was first proposed by Granger (1981) and developed further by Hendry and Richard (1982, 1985), Engle and Ganger (1987), and Johansen and Juselius (1990).

As described by Granger (1981) and Engle and Granger (1987), a non-stationary time series **Xt** is said to be integrated of order **d** if it achieves stationary status after being differenced **d** times. This is usually denoted **Xt I(d)**. Generally, co-integration means that non-stationary time-series variables tend to move together, such that a linear combination of them is stationary. Hence, the basic idea of co-integration is that two or more variables may be regarded as defining a long-run equilibrium relationship if they move closely together in the long run Even though they might drift apart in the variables, a regression containing all the variables if none of the variables taken alone is stationary.

A popular approach to co-integration has been to use a unit root test such as the Dickey-fuller or the Augmented Dickey-fuller test to determine relevant variables' degree of integration, and then to apply the Engle and Granger (1987) two-step procedure, based on an ordinary least square estimation of the co-integrating vectors and unit test of its residuals. There exists a correspondence between co-integration and error correction mechanisms. For every co-integrated variable, there is a valid error correction mechanism. This mechanism represents a systematic adjustment process through which the variables are prevented from drifting apart. The error correction model has existed as a dynamic specification for a significant period of time, Sargan (1984). The specification relates the short-run changes in the dependent variable to the short-run change in the explanatory variables (the impact effect), but ties the change to the long-run proportionality between the dependent and explanatory variables (the long-run effect) through a feedback mechanism. In doing so, it allows us to exploit information on the equilibrium relationship between non-stationary series within a stationary and statistically consistent model.

Adenikinju *et al* (2004) posit that the presence of co-integration permits the combination of the long run and short run information in the same model, and thereby overcomes some of the drawbacks associated with the loss of information that occurs from other attempts to address non-stationary variables through differencing.

Finally, the error correction mechanism encompasses models in both levels and differences of variables. It is also compatible with long run equilibrium behaviour. Equilibrium here refers to the situation in which the variables that are hypothesised to be linked, should not diverge from each other in the long run.

Such variables may drift apart in the short-run for several reasons, such as seasonal effects, price stocks etc., but in the long run, they should not diverge and should return back to the long run behaviour.

Model specification

Our model specification follows the Solow model with little modification to test the impact of investment, in particular, foreign direct investment, on Nigeria's economic growth. We assumed a neoclassical production function:

$$Y = Af(kl) \text{ ——————————————————— (1)}$$

Where Y = output, L = labour, K = capital and A = technical change variable.

The Solow model assumes that output is a function of capital (human and physical), labour and technical progress. However, proponents of the new growth theory put forward explanatory variables for economic growth as investment, population, and human capital. Hence, the model is based on the assumption that investment (both foreign and domestic) as a percentage of GDP and export and import as percentages of GDP are expected to rise as countries pass through stages of development and experience faster growth rates. Thus:

$$GDP = f(FDI, CF, HC, INF, NE, EG, GDPt\text{-}k)\text{... (2)}$$

The corresponding error correction specification incorporating the long run equilibrium relationship and short-run dynamic for the third equation is given as:

$$\Delta LGDP = a_0 + a_1\sum\Delta LFD1t\text{-}i + a_2\sum\Delta LCFt\text{-}i + a_3\sum\Delta LHCt\text{-}i + a_4\sum\Delta LINFt\text{-}i + a_5\sum\Delta LNEt\text{-}i + a_6\sum\Delta LEGt\text{-}i + a_7\sum\Delta LGDPt\text{+}I\text{-}i + \delta ECMt\text{-}i\text{.. (3)}$$

Where:

Δ = first difference

L = natural logarithm

LGDP = log of real gross domestic product

LFDI = log of foreign direct investment

LCF = log of domestic capital formation

LHC = log of human capital (primary & secondary school enrolment)

LINF = log of inflation rate

LNE = log of net export

LEG = log of infrastructure development

δ = adjustment factor

ECMt-i= error correction term

Theoretical expectation

The theoretical expectation about the coefficients of the third equation is as follows:

$$a_1>0, a_2>0, a_3>0, a_4<0, a_5>0, a_6>0$$

Foreign direct investment is expected to have a positive relationship with economic growth. Similarly, we expect domestic human capital formation (increased primary and secondary school enrolment), net export, and infrastructure development to have a positive relationship with economic growth while we expect a negative relationship between inflation rate and economic growth. The coefficient of the error-correction term is to be negative, so as to serve as a feedback mechanism among the variables and also to ensure a long run relationship.

Presentation and discussion of results[1]

The first step of this model employs a comprehensive pre-testing procedure to investigate the characteristic of the time series variables, before conducting Johansen's procedure for co-integration and developing error correction models.

Results of the stationary tests on the level data were obtained using the Augments Dickey-Fuller (ADF) procedure. The ADF procedure is used because it is more powerful and captures autocorrelation problems among error terms more precisely, and because most of the previous studies on foreign direct investment has made use of the ADF procedure. The result of the stationary test is shown in Table 2 below.

Table 2: Stationary test using the ADF procedure

Variables	ADF*	Variables	ADF**
LGDP	-01646	DLGDP	-3.4553
LFDI	-0.7521	DLFDI	-7.6725
LCF	-1.0589	DLCF	-5.4858
LHC	-0.1888	DLHC	-4.9662
LEG	-1.9565	DLEG	-5.7782
Mackinnon CV *5% **5%		-2.9499 -2.9499	**Note:** The shifting state of the variables above is at of 5% level.

Source: Computed

The level testing results reveal that more of the variables were stationary. However, the shifting variable became stationary when first differenced. The absolute value of all the variables in the first difference is greater than the Mackinnon critical value as provided by the EVIEWS package, which means that we do not reject the null hypothesis for the non-stationary series.

Johansen's co-integration test was carried out for the model, to determine the existence of a long run relationship between the dependent and independent variables. The Johansen method tests the null hypothesis of "no co-integrating relationship". That is r = 0 versus r ≥ 0. The optimal lags for the variables were determined using Akaike information criteria.

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1   The empirical specification took cognisance of those variables for which there is data availability.

Table 3: Co-integration test

Null	Alternative	Eigevalue	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value
r ≤ 0	r – 1	0.9929	407.7504	94.15	103.18
r ≤ 1	r – 2	0.9759	288.8988	68.52	96.07
r ≤ 2	r – 3	0.9268	199.5078	47.21	57.46
r ≤ 3	r – 4	0.8936	136.7486	29.68	35.65
r ≤ 4	r – 5	0.8288	82.9693	15.41	20.04
r ≤ 5	r – 6	0.8159	40.61361	3.76	6.65

Source: Computed

From the co-integration table, the likelihood ratio test indicates that all the variables are co-integrated at 5% critical levels. We therefore reject the null hypothesis of no co-integration and conclude that there exists a long run relationship among the dependent and independent variables.

The satisfactory results obtained from the unit root and co-integration tests motivated the estimation of an over-parameterised model using three lags or each variable in the equation. Redundant variables were eliminated using the variable redundancy test. The resultant frugal error-correction model estimated is presented in the table below.

Table 4: Error correction result

Variables	Coefficient	Standard error	T-statistics	Probability
Constant	-0.157137	0.031693	-4.958179	0.0413
ΔLDP	1.9159	0.2764	6.9330	0.0010
ΔLFDI	0.066094	0.017208	3.840991	0.0027
ΔLCF	0.0526	0.019455	2.7030	0.0426
ΔLHC	0.050872	0.020571	2.461009	0.0572
ΔLINF	0.071625	0.01834	3.9063	0.01130
ΔLEG	0.0553305	0.117718	4.7002	0.0053
ECM (-1)	-1.519296	0.206549	-7.355625	0.0007

Source: Computed

R2 = 0.971   Schwarz Criterion = 3.108639
Adj R2 = 0.85   F – statistics = 8.456179
DW = 2.04

The general statistics of the results R2, F, and DW, are within the acceptable region. The R2 shows that about 97% of systematic variation in economic growth is explained by the admitted exogenous variables. The F value is significant, complimenting the coefficient of determination, R2, to confirm the 'right fit' of the model. It also establishes the existence of a significant linear relationship between the endogenous and exogenous variables. One can conclude that there is no serial correlation given the Durbin-Watson statistics. The coefficient of the ECM is correctly signed, suggesting that it will rightly correct any deviation from its long-run equilibrium.

The coefficient of foreign direct investment lagged is signification and the t-statistic (3.840991) is positive. This results corroborate with some foreign direct investment-led growth hypothesis (Oseghale and Amonkhienan, 1987, Akinlo, 2007). The coefficient of lagged energy is significant, and therefore a major determinant of economic growth. Despite been relatively poor in supply, this result suggests than an improvement on infrastructure will lead to industrial growth. Human capacity building is very important to economic growth and therefore a major determinant of economic growth. The inflation rate rises by about 72% with a 100% increase in growth of money supply, exchange rate depreciation and government expenditure, which explains inflation in the economy.

Policy implication of findings and conclusion

The study set out to further lend evidence on improving the Nigerian investment climate for enhanced economic growth. First, the econometric results of the model reveal that foreign direct investment, human capacity building, domestic capital formation, infrastructural development and a country's degree of amenability through export promotions, determine economic growth rate.

Second, a high inflationary rate on a year-on-year basis in Nigeria has negatively impacted on Nigeria's economic growth drive. This has been attributed to the reckless spending of oil money, monetisation of political activities in Nigeria, the increase in domestic money supply, and uncontrolled expenditure by the government.

Given the central role of investment in the Nigerian development process, steps must be taken to create a stable macro-economic framework, ensuring a favourable fiscal regime, strengthening the capacity and integrity of institutions, developing human resources, deepening and diversifying the economic base, as well as enhancing competitiveness among others policy options to boost investment. The fight to control inflation and mitigate its debilitating effects in the economy must be encouraged. This is the only way Nigeria can position herself among the investment destination economies.

Finally, whatever policy the government embarks upon should be stable and relevant to the Nigerian economy and should create an enabling environment for investment and investors.

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