



# FOREIGN DIRECT INVESTMENT, CORRUPTION AND ECONOMIC GROWTH IN DEVELOPING ECONOMIES: EMPIRICAL STUDY OF NIGERIA

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## ABSTRACT

**Background:** This study empirically investigated the nexus between foreign direct investment, corruption and economic growth in developing economies: a case study of Nigeria under the period of 19 years from (1996-2014). **Objective:** The objective of this study was to investigate if corruption prevalent countries derive less benefit from the inflow of foreign direct investment, whether corruption reduced productivity and also to assess the influence of corruption on the growth of real gross domestic product. **Methods:** The study specifically examined the effect of corruption and foreign direct investment on economic growth of Nigeria. The real gross domestic product (RGDP), FDI, domestic investment (DINV), secondary school enrolment as a proxy for human capital (HC), labour force (LF) and a corruption index (CR) were used as dependent and independent variables respectively. The study employed Auto regressive distributed lag model (ARDL) analytical technique. The study found that there is a long run relationship among foreign direct investment, corruption and economic growth in Nigeria. The study further revealed that foreign direct investment, human capital, Labour force and domestic investment affect economic growth in Nigeria by 0.036%, 1.90% and 0.039% respectively and corruption has about 2% decreases in economic growth of Nigeria. This implies that increase in corruption contributes to the decrease in the pace of economic growth and development in Nigeria. **Conclusion:** The study concluded that the benefits derive from the inflow of FDI in corruption prevalent country reduces as a result of the presence of corruption in such country and as such, there is a positive relationship between foreign direct investment and economic growth, and a negative relationship exist between corruption and economic growth. Hence, the study recommended that government and policy makers should as a matter of urgency give high priority to the level of corruption in the economy. The study further suggested that concerted and sincere efforts should be made towards human capital development through adequate educational funding across all levels since this remains the major way of attaining sustainable economic growth and development in Nigeria.

**Keywords:** Human capital development, Education, Domestic investment, Foreign direct investment, Economic growth, Corruption.

## 1. INTRODUCTION

Every country wants to attract Foreign Direct Investment (FDI), because it is expected to have favourable effects on the economy: on income, technology, management skills, local market competition, job opportunities, global market, and economic growth. FDI inflows are affected by economic factors such as the size of the economy, its growth rate, but also by its business facilitation and institutional framework. Nigeria is one of the most blessed nations on earth, bestowed with vast human and natural resources. These resources, if properly harnessed, would have made Nigeria to be ranked among the top most developed nations of the world. Paradoxically, despite these abundant resources, the nation is still categorized among the comity of nations tagged underdeveloped. Hunger and poverty are common features in most Nigerian homes. An average man in Nigeria finds it difficult to meet the three square meal per day let alone being able to afford the basic necessities of life such as education, medical facilities etc. Expectedly, life expectancy is low compared with what is obtainable in the developed nations of the world. This sorry state of the Nigerian nation has been blamed on a number of factors by many analysts; most dominant among them include bad governance, mismanagement of funds, misplacement of priority and above all, corruption. In this sense, corruption may also be seen as an important determinant of FDI. Corruption potentially reduces Investment, particularly, foreign investment. Uncertainty increases in environments with higher corruption, as does the cost of doing business. According to the World Bank Definition, The working definition of corruption is the abuse of public power for private benefits. In the light of this Transparency International (1996) defines corruption as "behaviour on the part of officials in the public sector, whether politicians or civil servants, in which they improperly and unlawfully enrich themselves, or those close to them, by the misuse of the public power entrusted to them". Corruption, which can result from one or several factors, ranging from extravagant structures, ineffective and slowness of the legal system, low or little wages in the civil services, this will potentially affect some aspects of the economy which will have an adverse effect on the inflow of foreign direct investment and subsequently, economic growth.

FDI is believed to promote growth and offer other benefits to a host country, which would be helpful to transitional economies during their restructuring. Corruption, on the other hand, is seen as being an impediment for investors but it is believed that it is intrinsically part of Nigerian's way of life. A sampling was conducted among the few citizens on their take on whether corruption affect foreign investment and economic growth, their response was affirmative. It is widely accepted that corruption discourages any potential investor from investing in a country where corruption is thriving which will also affect them from establishing themselves in a transitional economy. Though, there are many reasons why corruption affects economic growth but, the question is "why does it have a direct impact on investment"? High level of corruption is a problem of economic growth in Nigeria. There is need for FDI in Nigeria but unfortunately, all efforts to get this done has been futile because of a deep level of corruption. In 2014, it was totally agreed by then government that Nigeria is the best growing economy in West Africa even with the country (Nigeria) level of Corruption. Nigeria is generally agreed to be the third most corrupt Nation in Africa behind Guinea and Guinea Bissau by the transparency international (TI).

The impact of the FDI inflows on economic growth is of concern to both academic researchers and policymakers. Studies have shown that FDI is a significant promoter of economic growth and development. However, some studies suggest that its' effects on growth is dependent on conditions in the host country. Important influences on the impact that FDI has on economic growth include the supply of human capital, the trade regime and the level of financial development; It is now recognized that other institutional factors including the prevalence of corruption increase the costs of firms and reduce productivity [9-39-15-37]. This research looked into the linkage between FDI, corruption and economic growth. Related research and studies have indicated that FDI, corruption does not have any positive impact on economic growth. On the other hand, FDI promote economic growth in developing and underdeveloped countries where shortage of investable funds is prevalent (by an authority).

According to Transparency International (TI), Nigeria was rated 136<sup>th</sup> in the World, yet Nigeria economy was categorized as one of the fastest growing economy in year 2014 GDP. If FDI and corruption are moving in opposite direction, and economic growth and FDI are moving in the same direct, and the Nigeria economic is growing, this has now call for attention whether corruption actually discourage FDI inflows and by extension economic growth. It is against this backdrop that this study set out to investigate if corruption discourages FDI inflows and by extension economic growth. However, the analysis of the research will cover a period of 19 years, from 1996 to 2014 through the transparency international (TI) figures to get the corruption data.

## Literature Review

It has been widely written by various authors that FDI has direct impact on economic growth. Foreign direct investment (FDI) are the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. Countries of transition represent a large portion of the global market and hold great potential for the development of various industries and natural resources such as the energy and mineral sectors. Due to the advanced state of their economies, these countries ought to be able to advance and restructure their markets at a faster pace than developing economies. Recent improvements in these growth theories emphasize the improvements in technology, efficiency and productivity as results of foreign direct investment.

According to Transparency International (2010), corruption is the abuse of entrusted power for private gain. Corruption is a value concept which broadly means immorality, moral debasement and depravity. Ogundele and Opeifa (2004) describe corruption as consisting of several elements including deceit, trickery, cheating, intentional deception, dishonesty and the conscious premeditated action of a person or group of persons to alter the facts of a matter or transaction for the purpose of selfish personal gains [26]. This means that corruption involves an intentional perversion of the truth or a deliberate manipulation of facts and situation at one's disposal to gain illegitimate material and non-material advantages. Therefore, a corrupt act may be seen as both immoral and illegal. In this study, we adopt definition of corruption as the practice whereby a government official demands bribes from a foreign business in return for the right to operate in a country, industry or location [7]. Foreign Direct Investment (FDI) has been defined as the investment of resources in business activities outside a firm's home country [16]. Others studies define FDI as the long term investment that reflects the objective of a lasting interest and control by a resident entity of one economy (the direct investor) in an enterprise that is resident in another economy (the direct investment enterprise) [16-18-4]. The lasting interest reflects the continuation of a long-term relationship between the direct investor and the enterprise and a considerable level of influence on the management of the enterprise. According to the above definition, the terms "control" or "influence" and "long term" are used to make a distinction between FDI and international portfolio investment. Because FDI is about both ownership and control, such investments tend to be long term in their focus hence they are different from IPF which is a short term investment where the investor does not seek to control the firm [4]. Mwillima (2003) defines FDI as any

investment made that leads to the acquisition of a lasting ownership and control interest (usually at least 10% of voting stock) and at least 10 % of equity share in an enterprise operating in a country other than the home country of the investor. Mallompally (1999), define FDI as investments by multinational corporations in foreign countries with the aim of controlling assets and managing production activities in those countries [64]. An expanded explanation of the operational meaning of FDI has been offered by Adeoye (2009) as ownership of at least 10% of the ordinary shares or voting stock in a foreign enterprise [3]. Hence, ownership of 10% ordinary shares serves as the criterion for the existence of a direct investment relationship while ownership of less than 10% is recorded as portfolio investment. In this study we adopt the definition proposed by OECD (1996) and IMF (1999) [26, 18].

Corruption is a term that has been widely defined by numerous scholars. It is seen as a worldwide phenomenon which has long been with every nation of the world and has attracted in recent past competing views and approaches. Corruption is considered as an enemy of economic development because of its various vices. A nation that gives room for corruption is often besieged with a lot of economic, political and social vices. Eigen (2001) described corruption as a "daunting obstacle to sustainable development", a constraint on education, health care and poverty alleviation, and a great impediment to the Millennium Development Goal of reducing by half the number of people living in extreme poverty by 2015. The World Bank defines corruption as the abuse of public office for private gains. Public office is abused through rent seeking activities for private gain when an official accepts, solicits, or extorts a bribe. Public office is also abused when private agents actively offer bribes to circumvent public policies and processes for competitive advantage and profit. Public office can also be abused for personal benefit even if no bribery occurs, through patronage and nepotism, the theft of state assets or the diversion of state resources World Bank (1997). A public official is corrupt if he accepts money for doing something that he is under duty to do or that he is under duty not to do.

Corruption is a betrayal of trust resulting directly or indirectly from the subordination of public goals to those of the individual. Thus a person who engages in nepotism has committed an act of corruption by putting his family interests over those of the larger society [14]. The Asian Development Bank perspectives of corruption as cited by Agbu (2001), corruption is defined as the behaviour of public and private officers who improperly and unlawfully enrich themselves and/or those closely related to them, or induce others to do so, by misusing the position in which they are placed [54]. Systemic corruption also referred to as entrenched corruption, occurs where bribery (money in cash or in kind) is taken or given in a corrupt relationship. These include kickbacks, pay-off, sweeteners, greasing palms, etc) on a large or small scale. It is regularly experienced when a license or a service is sought from government officials. It differs from petty corruption in that it is not as individualized. Systemic corruption is apparent whenever the administration itself transposes the expected purposes of the organizations; forcing participants to follow what otherwise would be termed unacceptable ways and punishing those who resist and try to live up to the formal norms (International Center for Economic Growth, 1999). According to Obayelu (2007), different vocabularies used to describe corruption and typology of corruption in the Nigerian society includes bribery, extortion (money and other resources extracted by the use of coercion, violence or threats), embezzlement (theft of public resources by public officials), financial malpractices, egunje, dash, gratification, brown envelopes, tips, emoluments, greasing, softening the ground, inducements, sub-payments, side payments, irregular payments, payment under the table, undocumented extra payments, facilitation payments, mobilization fees, "routine governmental action," revised estimates, padded contracts over (under)-invoicing, cash commissions, kickbacks, payoffs, covert exchanges, shady deals, cover-ups, collusion, 10% rule (bribe surcharge), 50% rule" (sharing bribe within the hierarchy), let's keep our secret- secret [40]. Alatas (1990) divided corruption into seven distinct types: autogenic, defensive, extortive, investive, nepotistic, supportive, and transactive [66]. Autogenic corruption is self-generating and typically involves only the perpetrator. A good example would be what happens in cases of insider trading. A person learns of some vital information that may influence stocks in a company and either quickly buys or gets rid of large amounts of stocks before the consequences arising from this information come to pass. Defensive corruption involves situations where a person needing a critical service is compelled to bribe in order to prevent unpleasant consequences being inflicted on his interests. For instance, a person who wants to travel abroad within a certain time frame needs a passport in order to undertake the journey but is made to pay bribes or forfeit the trip. This personal corruption is in self-defense. Extortive corruption is the behaviour of a person demanding personal compensation in exchange for services. Investive corruption entails the offer of goods or services without a direct link to any particular favour at the present, but in anticipation of future situations when the favour may be required. Nepotistic corruption refers to the preferential treatment of, or unjustified appointment of friends or relations to public office, in violation of the accepted guidelines. The supportive type of corruption usually does not involve money or immediate gains, but involves actions taken to protect or strengthen the existing corruption. For example, a corrupt regime or official may try to prevent the election or appointment of an honest person or government for fear that the individual or the regime might be probed by the successor(s).

Finally, transitive corruption refers to situations where the two parties are mutual and willing participants in the corrupt practice to the advantage of both parties. For example, a corrupt business person may willingly bribe a corrupt government official in order to win a tender for a certain contract. The focus in this research work will be on the extortive,

nepotistic, and transitive corruption, not only because they appear to be at the core of the corruption phenomenon, but also because the other forms appear to be the offshoot of these three fundamental types. There would be no defensive corruption in the absence of the extortive type. Lambsdorff (1999) characterized corruption into: bribery, embezzlement, fraud and extortion [62]. Kaufman (1997) opines that there was an old myth that corruption by its "intrinsic nature" is impossible to measure and this has led to lack of serious empirical analysis on corruption [41]. In the past, there was a consensus that real magnitude of corruption cannot be measured.

According to [60] the obvious difficulties in measuring corruption have not kept a number of entrepreneurs, multilateral development banks, and academics from attempting to do so. Lambsdorff (1999) stresses that it is often difficult to accept the many limitations of the various measures of corruption and that all widely used 'scientific' methods in the field of corruption evaluation hold value in achieving the goal, that is, to estimate the spread and map the structure of corruption [62]. The first was identified by Akerlof (1985) as general perception which is regularly used as a sensitive core indicator to measure corruption through the feeling such as 'lack of justice' in public transactions [57]. Also, the incidence-based approach as identified by many authors [43-67-7-68]. The approach taken now is to transform the computation of corruption perception index (CPI) as a common index derived from different general polls and expert interviews. [7] is of the opinion that experience-based indicators offer the greatest potential for comparability, since they avoid some of the problems associated with perception-based indicator [7]. The concept of economic growth has been used synonymously with economic development and is associated with such things as growth in population, development of resources, technological advancement and increasing capital formation. Economic growth means growth in the level of output produced by a country over a certain period of time. It is a useful measure of economic performance of a country. Performance here means the degree of correspondence between actual output and the maximum output that could be realized if, given the pattern of demand, all the resources and the most advanced technology Availablewere used to full advantage.

According to Olamide (1999), economic growth is defined as long-term change in an economy's productive capacity. The productive capacity of the economy is the output that could be produced if all of the economy's resources were fully and efficiently employed. The definition links economic growth to rate of growth of potential output which is related to the rate of growth of labour force and of productivity. The determinants of economic growth in the long run include technological progress and population growth and accumulation of capital. The Wikipedia Free Encyclopedia (2012) defines economic growth as an increase (or decrease) in the value of goods and services that a geographic area produces and sells compared to an earlier time. If the value of an area's goods and services is higher in one year than the year before, it experiences positive growth, usually simply called "economic growth". In a year when less value than the year before is produced and sold, it experiences "negative economic growth," also called "recession" or "depression". Economic growth can occur due to an increase in the number of goods or services but such an increase must be sustained over a long time. It can also occur due to production of more expensive goods and services. A body of literature has carried out a cross-country theoretical and empirical research on corruption [60-59-44-45-58]. Another approach has been taken by authors, who used the number of public officials convicted for abuse of public office in various states of the USA as an indicator for actual levels of corruption [49-51]. Goel (1998) relate this variable to the real per capita total expenditures of the local government, arguing that state intervention and public spending give rise to rent-seeking activities and hence corruption [49]. Many literatures have found a strong negative correlation between GDP per head and corruption [50-48-51-52]. This notwithstanding, that a variable of institutional quality by PRS, which incorporates corruption among other factors, exerts a significant negative impact [52]. Dike (1997) produced insignificant results. A slightly significant impact in a bivariate regression was found, but as soon as the ratio of investment to GDP was included as an explanatory variable, this impact disappeared [44]. On the basis of mixed evidence, it is sometimes argued that corruption primarily impacts on the accumulation of capital, which can be derived from the ratio of investment to GDP, but it does not clearly affect the productivity of capital. Tanzi and Davood (1997) examined the impact of corruption on the quality of investments and found out that corruption lowers the quality of the infrastructure as measured by the condition of paved roads and power outages [58].

It is generally agreed that FDI is an engine on which economic growth of the developing countries rolled. On the other hand, Foreign Direct Investment (Inflows) contributes significantly to the economic growth of the developing countries like Nigeria. According to Aron doma growth Model, he said, developing countries are unable to develop because of shortage of capital that can facilitate growth, because of the capital inadequacy in all these countries (developing countries) that makes them to be yearning for foreign direct investment (FDI) inflows from the developed countries in order to stimulate their economic growth.

By and large, according to Transparency International (TI) data on Nigeria, corruption rate in Nigeria keeps increasing every day, not only in Nigeria but also internationally. On the other hand, it means corruption thrives in developing countries like Nigeria as a result of the shortage of capital propounded by Aron doma gap model analysis. It has been revealed that poverty is one of the reasons for corruption in the developing countries where the average monthly take



home of an average citizen of these countries cannot meet three square meal per day, even the basic needs like food, clothes and shelter, this aids propensity to corruption. It has also been revealed that poverty is not the only course of corruption. Cultural background is also one of the problems of corruption. As a result of this, it has been revealed that corruption is a leakage, sharp practices by the citizens of the developing countries which should automatically discourage foreign direct investment (FDI).

Now, if corruption retarded growths, which at the same time discourages FDI, and Nigeria is seen as one of the most corrupt nations, yet, Nigeria is one of the major beneficiaries of foreign direct investment (FDI) and it was revealed by various authors that foreign direct investors find it hard to invest in a corrupt nation because of the negativity corruption brings on investments, yet, it was revealed in 2014 that Nigeria is the fastest growing economy in Africa, even, with our level of corruption. Does it mean that corruption does not have any effects on Nigeria foreign direct investment? Does it mean that corruption does not deter economic growth?

The literature identifies several channels through which FDI contributes to economic growth. From the viewpoint of neoclassical growth theory FDI inflows increase the stock of capital in host countries thereby allowing higher rates of growth than would be possible from reliance on domestic savings. Endogenous growth theory postulates that technological advancement stimulates economic growth by creating externalities that compensate for diminishing returns to capital [30-23]. FDI can therefore enhance growth by allowing host countries access to advanced technologies not available domestically. It has also been argued that FDI leads to increased competition in the domestic market which can cause greater efficiency of domestic firms [35]. In addition, improved managerial practices may be transmitted to domestic firms that attempt to imitate foreign firms. In cases where FDI involves training of domestic labor, the strengthening of human capital will generate positive externalities that could raise economic growth. Moreover, FDI has the potential to expand access to export markets. For those developing countries with limited industrial bases, increased export earnings facilitate imports of capital goods that can lead to higher levels of economic growth.

The trade regime of the host country has been identified as an important factor influencing the impact that FDI can have on economic growth. It has been found that the effect of FDI on growth is positive in the case of countries with export promotion policies but negative in countries pursuing import substitution policies [8].

Recent empirical studies suggest that FDI may not promote economic growth in developing countries that lack the necessary absorptive capacity [9-15]. Absorptive capacity is determined by factors such as the quality of human capital, the level of development of the financial sector, technological development and quality of infrastructure [36-15]. Low levels of development of human capital reduce the spillovers from the advanced technology introduced by FDI as domestic firms will not be able to absorb the new technology. Similarly, underdeveloped financial markets limit the ability of domestic firms to access financial resources to undertake investment in new technologies. In the case of infrastructure, adequate infrastructure is required to support new technologies as well as to facilitate linkages between FDI and domestic firms.

Empirical research on the impact that FDI has on economic growth has produced mixed results. Li (2005) used panel data to examine the relationship between FDI and growth in 84 countries over the period 1970-99 [21]. They found that FDI promoted economic growth both directly and indirectly. This finding was not supported by Carkovic (2005) who studied 72 countries during the period 1960-1995 [11]. The authors controlled for simultaneity bias and concluded that FDI does not have an independent influence on economic growth [10]. Ram (2002) utilised data for the period 1990-97 to assess the effect of FDI on growth in a sample of 85 countries [28]. They found that the association between FDI and economic growth in the host country was "generally positive" during the 1990s, contradicting the result of an earlier cross country study undertaken by Dutt (1997) which indicated that FDI had a negative impact on economic growth [13]. The influence that FDI has on economic growth in a sample of 69 developing countries and concluded that FDI promotes economic growth only when the host country has sufficient human capital [9]. In a study of 67 developing countries, found that the development of the financial sector is necessary in order for FDI to have a positive effect on economic growth [15]. Similarly, Ajayi (2014) empirically investigated the impact of foreign direct investment and financial sector development on economic growth of Nigeria using Nigeria time series established the significant complementary role of foreign direct investment and financial sector development in promoting economic growth [2].

## 2. METHODOLOGY

### Research Design

This study adopts ex-post facto research design. The study covers the period 1996 when the Transparency International (TI), the global coalition against corruption began the publishing of the corruption perception Index ( $C_{index}$ ) to 2014 for 175 nations surveyed including Nigeria. Secondary data sourced from relevant authorities' publications were used. The annual data for FDI and economic growth were obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin, various

issues and Federal Bureau of Statistics. Data on corruption perception index was obtained from the official publications of transparency international (TI). The dependent variable is real gross domestic product (RGDP) and the independent variables are as follows: Foreign direct investment (FDI), domestic investment (DINV), secondary school enrolment as a proxy for human capital (HC), labour force participation rate (LF) and a corruption index (CR) that represents the institutional impact on real GDP growth.

### Model Specification and Estimation Techniques

The real output ( $Y_t$ ) model relies on an integrated approach based on a production function maximization procedure. It employs the three leading factors of production, namely  $L$  as raw labour input,  $K$  as capital inflows and  $H$  as human capital [5]. These variables ( $L$ ,  $K$ ,  $H$ ) will increase output ( $Y_t$ ) as additions in the stock of foreign direct investment (FDI) occur within markets.

For developing countries, the understanding of the determination of real output, depends not only on the production factors ( $L$ ,  $K$  and  $H$ ) but on other institutional factors like the prevalence of corruption, which is the focus of this paper. The level of institutional corruption ( $Cindex$ ) within developing economies can have an adverse effect on real output growth, as scarce resources are deprived from essential sectors and investors find it increasingly difficult to conduct business ventures.

The model for the study is specified as:

$$\Delta(\emptyset) = \Pi \emptyset_{t-1} + \sum_{k=1}^k \alpha_k \Delta \emptyset_{t-k} + \delta g_t + \varepsilon_t \quad (1)$$

where  $(\emptyset) = [\text{labour input, capital inflows, human capital and the corruption index}]$  is a data vector explaining the real output relationship. It determines the elasticities of real output with respect to raw labour, capital, human capital and the corruption index by the factor  $t g (1-\alpha-b)$  as stated by de Mello (1997), Ramirez (2000) and Akinlo (2004) [12-29-5]. The  $g$   $t$  is a vector of deterministic variables, and the random term  $\varepsilon_t$  is expected to be white noise.

### Estimation Technique

Autoregressive Distributed Lag model (ARDL) was employed in the study. The technique of ARDL became essential for the study because it can simultaneously establish short run and long run relationship at a time. More so, ARDL is superior to Johansen co-integration based on mixed stationarity level i.e.  $I(0)$  and  $I(1)$  but must not exceed  $I(1)$  unlike Johansen co-integration which rule stated that all variables should be associated of the same order.

### Unit Root Test

Prior to testing for cointegration, the time series properties of the variables need to be examined. The study made use of Augmented Dickey-Fuller (ADF) test for unit root regression test which was estimated by equation (3.2) as follow:

$$\Delta Y_t = \alpha_0 + \beta Y_{t-1} + \gamma_1 \Delta Y_{t-1} + \gamma_2 \Delta Y_{t-2} + \gamma_3 \Delta Y_{t-3} + \gamma_4 \Delta Y_{t-4} + \gamma_k \Delta Y_{t-k} + \varepsilon_t \quad (2)$$

Where  $\Delta$  is the difference operator,  $Y_t$  the series to be tested,  $k$  is the number of lagged differences, and  $\varepsilon_t$  is error term. The standard Augmented Dickey-Fuller (1979) test for a unit autoregressive root tests the null hypothesis  $H_0: \delta=0$  against the one side alternative,  $H_1: \delta < 0$  in the regression. Under the null hypothesis  $Y_t$  has a stochastic trend; under the alternative hypothesis  $Y_t$  is stationary. The ADF statistic is the OLS  $t$ -statistic testing  $t$ -statistic  $\delta=0$ . The lag length  $k$  can be estimated using the BIC or AIC [32]. The rule of the thumb stated that the series must be mixed with  $I(0)$  and  $I(1)$  and significant at either 1%, 5% and 10%.

### ARDL Approach to Co-Integration

ARDL estimated the long run relationship in the model. To do this, Autoregressive-distributed lag (ARDL) model proposed by Personn (2001), was employed [27]. The rule of the thumb was that should the F-statistic exceeds the upper critical bounds value, then the  $H_0$  (null hypothesis) is rejected; should the F-statistic falls between the bounds, it is inconclusive and should the F-statistic falls below the lower critical bounds value, it is no co-integration. When long-run relationship exists, the F-test indicates which variable should be normalized.

$$\begin{aligned} \Delta \ln(RGDP)_t = & \lambda_0 + \sum_{i=1}^n \lambda_1 + \Delta \ln(FDI)_{t-1} + \sum_{i=1}^n \lambda_2 + \Delta \ln(DINV)_{t-1} + \sum_{i=1}^n \lambda_3 + \Delta \ln(HC)_{t-1} + \sum_{i=1}^n \lambda_4 + \Delta \ln(LF)_{t-1} \\ & + \sum_{i=1}^n \lambda_5 + \Delta \ln(CR)_{t-1} + \beta_0 \ln(RGDP)_{t-1} + \beta_1 \ln(FDI)_{t-1} + \beta_2 \ln(DINV)_{t-1} + \beta_3 \ln(HC)_{t-1} \\ & + \beta_4 \ln(LF)_{t-1} + \beta_5 \ln(CR)_{t-1} + \mu_{it} \end{aligned} \quad (3)$$

Where  $\ln(RGDP)$  the natural logarithm of real gross domestic product deflator is,  $\ln(FDI, DINV, HC, LF, CR)$  were the natural logarithm of foreign direct investment, domestic investment, human capital, labour force and corruption index,  $\Delta$  is the change in each operator and  $\mu_{it}$  is the i.i.d stochastic error term. In investigating the long run association with restriction of coefficients  $\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5$  the null hypothesis in long run was written as follow:

$$H_0 = \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = 0$$

However, for policy reasons, the short-run adjustment of real gross domestic product, foreign direct investment, domestic investment, human capital, labour force and corruption index, to changes in its determinants is necessary. The significance of error correction model lies in its ability to correct spurious regression results on time series data. The error correction model (ECM) is specified as:

$$\begin{aligned} \Delta \ln(RGDP)_t = & \alpha_0 + \sum_{i=0}^n \lambda_i \Delta \ln(RGDP)_{t-1} + \sum_{i=0}^n \lambda_i \Delta \ln(FDI)_{t-1} + \sum_{i=0}^n \lambda_i \Delta \ln(DINV)_{t-1} + \sum_{i=0}^n \lambda_i \Delta \ln(HC)_{t-1} \\ & + \sum_{i=0}^n \lambda_i \Delta \ln(LF)_{t-1} + \sum_{i=0}^n \lambda_i \Delta \ln(CR)_{t-1} + (ECM)_{t-1} \end{aligned} \quad (4)$$

Where;  $ECM_{t-1}$  = Error correction model;  $t-1$  shows variables were lagged by one period;  $\Delta$  = Changes in ECM coefficient.

### 3. RESULTS

#### 3.1 Unit Root Test

The unit root test is conducted to determine whether the variables are stationary and to determine the order of integration of the variables using the Augmented Dickey-Fuller (ADF) test.

**Table 1:** The table presents the ADF Unit Root Test Results at Level.

Variables	ADF Test Statistics	Critical Value	Integration Level	Remarks
<b>RGDP</b>	-4.145638	-3.733200	I(0)**	Stationary
<b>FDI</b>	-3.701349	-3.710482	I(1)**	Stationary
<b>DINV</b>	-4.442399	-3.710482	I(1)**	Stationary
<b>HC</b>	-3.330924	-3.710482	I(1)*	Stationary
<b>LF</b>	-5.600641	-3.733200	I(1)**	Stationary
<b>CR</b>	-3.954591	-3.733200	I(0)**	Stationary

**Note:** (\*\*)(\*\*\*) - Significant at 10% (5%) (1%) percent level respectively; **Source:** E-view 9 Statistical Package.

Table 1 showed that real gross domestic product and corruption attained stationarity at level while foreign direct investment, domestic investment, human capital and labour force attained stationarity at first difference. It should however be noted that RGDP, FDI, DINV, LF and CR were significant at 5% while HC is significant at 10%. The implication is that there existed mixture of differencing order of integration which theoretically nullified the rule of Johansen cointegration and validates the adoption of Autoregressive Distributed Lag model (ADRL). Hence ARDL is adopted and bound test is used to capture the presence of cointegration.

#### 3.2 Co-integration

Null Hypothesis: No long-run relationships exist

**Table 2:** The table presents the Psaran Shin (1999) Bounds Test Table.

Test statistics	Value	Regressors (k)
<b>F-statistics</b>	3.805463	4
<b>Critical Value Bounds</b>	I(0) Bound	I(1) Bound
<b>10%</b>	2.26	3.35
<b>5%</b>	2.62	3.79
<b>2.5%</b>	2.96	4.18
<b>1%</b>	3.41	4.68

**Source:** E-view 9 Statistical Package.

Table 2 indicated that the F-stat of 3.805463 is higher than any of the Upper Bound value at 10% and 5% respectively which implied that the null hypothesis that no long run relationship exist cannot be accepted. Hence, the existence of long-run relationship among the variables in the model was accepted leading to the analysis of long run analysis and the short-run dynamic and error correction analysis.

### 3.3 Long and short run Estimation Coefficients

Having confirmed the existence of long-run relationship among the variables, the study estimates long run and short run parameters by general to specific procedure ARDL model.

**Table 3:** The table showed the Long Run Co-Integrating Coefficients.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
<b>C</b>	9.954590	64.261341	0.154908	0.8844
<b>FDI</b>	-0.187535	1.332837	-0.140704	0.8949
<b>DINV</b>	-0.722611	4.584343	-0.157626	0.8824
<b>HC</b>	2.541435	15.096647	0.168344	0.8745
<b>LF</b>	-5.502067	50.332186	-0.109315	0.9182
<b>CR</b>	-1.086641	5.535415	-0.196307	0.8539

Source: E-view 9 Statistical Package

Table 3 showed the interrelationship among the variables. Evidently, Table 3 showed that the coefficient of real gross domestic product is positive and statistically insignificant. This implies that if all the variables are held constant, real gross domestic product will positively increase 9.95 per cent. The table further revealed that there exist a negative relationship between foreign direct investment and economic growth in Nigeria. It therefore implied that foreign direct investment has insignificant negative relationship with economic growth and will deter the growth of Nigerian economy by 0.18 per cent decrease. The study also revealed negative and statistically insignificant coefficient of domestic investment on economic growth implying the existence of negative and insignificant long run relationship between domestic investment and economic growth in Nigeria. As a result, 1 per cent changes in domestic investment decreases economic growth by 0.72 percent change. The coefficient of human capital depicted an insignificant positive effect on economic growth; hence there existed a positive and insignificant long run relationship between human capital and economic growth in Nigeria. Therefore, a percent change in human capital insignificantly increases economic growth in Nigeria by 2.54%. More so, labour force explored an insignificant and negative long-run relationship with economic growth, that is labour force decreases economic growth by 5.50 percent and lastly, the coefficient of corruption revealed a negative and statistically insignificant relationship with economic growth in Nigeria. Hence, there is evidence of negative and insignificant long run relationship between corruption and economic growth in Nigeria. This therefore implied that a percent increase in corruption lead to a decrease of about 1.08 per cent in Nigerian economic growth.

The implication arising from the study is that in the long run, proportion of foreign and domestic investment to advance to Nigerian economy has a reductive effect and this is not far fetch from the corruptible happenings in the country. Money meant for infrastructural activities which are siphoned into individual pocket for private investment have a negative effect on the economy at large and as such it is accountable for the slow pace of the growth in the country.

### 3.4 The Short-run Dynamic and the Error Correction Model

**Table 4:** The table showed the short-run dynamic and ECM results.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
<b>D(RGDP(-1))</b>	0.076629	0.150745	0.508336	0.6380
<b>D(FDI)</b>	0.036016	0.011091	3.247401	0.0315
<b>D(DINV)</b>	0.039767	0.023996	1.657237	0.1728
<b>D(HC)</b>	0.163139	0.072777	2.241625	0.0885
<b>D(LF)</b>	1.908152	0.575775	3.314059	0.0295
<b>D(CR)</b>	-0.028275	0.025495	-1.109060	0.3296
<b>CointEq(-1)</b>	-0.502242	0.198397	-2.531499	0.0279

Source: E-view 9 Statistical Package

Table 4 explained that ECM was correctly signed at -0.502242 and significant though with an average rate of adjustment. Hence, it can be said that the level at which foreign direct investment, corruption and economic growth adjust to equilibrium was about 50.22% on yearly basis. The short run result revealed that all the explanatory variables were positive except corruption which maintained negative effect as recorded in the long run effect. However, FDI significantly increases economic growth by 0.03 percent change in the short run. Domestic investment (DINV) insignificantly increases economic growth by 0.03 percent change. Human capital is significant at 10% leading to an increase of about 0.16 percent change on economic growth. Furthermore, the coefficient of labour force is recorded to be 1.908152 and by implication it denotes that LF significantly increases economic growth by 1.90 percent and lastly corruption has a negative



effect on economic growth, therefore an attempt to further increase corruption cases in Nigeria will lead to about 2 percent decrease in economic growth.

Hitherto, the level of corruption in Nigeria economy under the study period is about 2%. This implies that, on the short run, corruption practices in Nigeria do not affect the inflow of foreign direct investment and domestic investment as well as capital development into the country. Nevertheless, Nigerian government should reinvigorate effort at tackling the issue of corruption may be soon become a deadly disease in the financial system of the country if precautions measures were not put in place.

### 3.5 Residual Diagnostic Test

In the study, diagnostic tests that were identified are serial correlation LM test; Ramsey Reset test; normality test and heteroscedasticity test (ARCH). The results of the diagnostic tests were shown in the Tables below.

### 3.6 Autocorrelation Test

Breusch-Godfrey serial LM test measures the validity of the modeling assumptions intrinsic in applying regression-like models to observe data series. The Breusch-Godfrey test result as depicted in LM section of table 5.1 showed that there was existence of no serial correlation in the residuals because observed R-squared (16.70480) has its corresponding prob. chi-square of 0.2002 which is greater than 5% level. Therefore, the hypothesis that no existing autocorrelation is accepted which made the model dependable, reliable and free from any serial error correlation.

**Table 5.1:** The table presents the Breusch-Godfrey Serial Correlation LM Test.

<b>F-statistic</b>	56.58768	Prob. F(2,9)	0.2113
<b>Obs*R-squared</b>	16.70480	Prob. Chi-Square(2)	0.2002

Source: E-view 9 Statistical Package

### 3.7 Stability Test

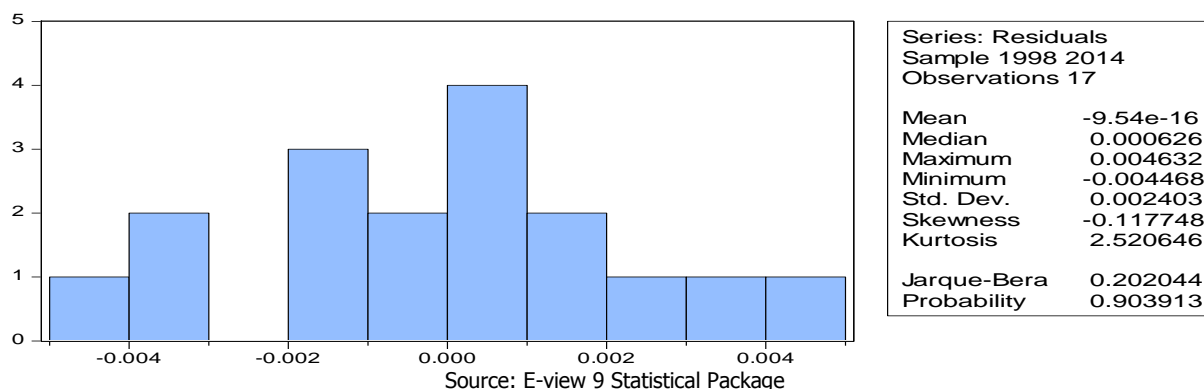
Ramsey RESET test is a regression specification error test. The RESET test is widely employed to test for a non-zero mean of the error term. The null hypothesis is that, the regression model fit the data well versus its alternative hypothesis of invalid regression model. From all indication the p-value of 30.18% is much greater than 5%, therefore it can be inferred that the model do fits the data leading to stability of the model.

**Table 5.2:** The table presents the Ramsey RESET Test.

	Value	Df	Probability
<b>t-statistic</b>	1.244245	3	0.3018
<b>F-statistic</b>	1.548146	(1,3)	0.3018

Source: E-view 9.5 Statistical Package

### 3.8 Normality Test



**Figure 1:** The figure showed the result of Normality Test.

It is expected that the regression residuals should be normally distributed. It is a good idea to check if the residuals are normally distributed, this is not essential for forecasting but it does make the calculation of prediction intervals much easier. Hence, a critical look at the histogram test result in Fig.1, the Jarque-Bera statistics indicated the normal distribution of the residual because of the JB p-value 0.202044 (20.20%) > 5%. Therefore, the residual of the analysis was normally distributed.

### 3.9 Heteroscedasticity Test (ARCH)

The existence of heteroscedasticity ARCH test is a major concern in the analysis of variance (ANOVA), including the presentation of regression analysis, as it can invalidate statistical tests of significance that postulates that modelling errors are uniform and uncorrelated. Therefore, this section of the Table revealed that the observed R-squared probability chi-square (0.5001) is above 5% significant level which implied that there is no heteroscedasticity in the modelled regression thereby affirming the regression result efficient and reliable. Hence, the residual of the regression are homoscedastic (all random variables in the sequence or vector have the same finite variance) and normally distributed with no serial autocorrelations therefore it can be concluded that the model was valid.

**Table 5.3:** The table presents the Heteroskedasticity Test: ARCH.

<b>F-statistic</b>	0.409511	Prob. F(1,25)	0.5326
<b>Obs*R-squared</b>	0.454712	Prob. Chi-Square(1)	0.5001

Source: E-view 9 Statistical Package

## 4. DISCUSSION

The study investigated the nexus between foreign direct investment, corruption and economic growth in Nigeria. Evidence from Augmented Dickey-Fuller (ADF) unit root test indicated that real gross domestic product and corruption attained stationarity at level while foreign direct investment, domestic investment, human capital and labour force attained stationarity at first difference. Hence, ARDL Bound test was employed on co-integration and discovered that truly there exist a long run association among the parameters.

The long run relationship between foreign direct investment and economic growth indicated that the F-statistic of 3.805463 was higher than the lower and upper bound values at 5% and 10% respectively. This point to the importance of foreign direct investment, corruption and economic growth of an economy, hence foreign direct investment and corruption has a long run relationship with economic growth in Nigeria. This therefore implied that as the degree of foreign direct investment into a country has the propensity and the magnitude to accelerate the pace of growth and development in an economy, corruption equally have the tendency to retard the significant progress. It is consistent with others studies, who found long run relationship between foreign direct investment, corruption and economic growth [2-58].

Taking a careful look at the result of the study both at the long run and short run, it was revealed that all the variables were negatively related to economic growth in the long run with the exception of human capital proxy by secondary school enrolment. This implies that secondary education has tendency at influencing economic growth in Nigeria but yet not significant. Secondary education is expected to be free across the federation but what is discovered is the contrary. In 1996, secondary school enrolment rate was 29.17 while in 2014 it marginally increased to 55.70. This inefficient allocation to the education sector has its effect on the macro economic performance of the country especially in terms of rising unemployment and inflation, low industrial productivity, increased poverty amongst others. The insignificant secondary school enrolment lead to negative and insignificant labour force which implies that the level of employed youth male and female is less than the production capacity in Nigeria. That is, capacity of employed youth cannot be commensurate with the production index Nigeria ought to produce and consume. Hence, effort should be made by Nigerian government to build industries and companies and employ more youth into such sector irrespective of educational background. Apparently, when this is done, the negative effect will sequentially yield positive effect in the long run. More so, it implies that the effect of foreign and domestic investment to Nigerian economy has not been effectively felt against what is recorded in other developing countries like Ghana and South-Africa. This can however be attributed to the deadly corruption and financial malpractices recorded in Nigeria under the study period. To this end, corruption has a hindering effect on the pace of growth in Nigeria.

However, based on the short run, the result indicated that the coefficient of the error correction term ECM (-1) has the correct sign and significant at 5% level. The value of the coefficient is -0.502242 and this means about 50.22 unit of the disequilibrium in the level of real gross domestic product of previous year's shock adjust back to the long run equilibrium in the current year. In another word, the level of real gross domestic product adjust to equilibrium with lags and only about 50.22 unit of the discrepancy between long and short run level of real gross domestic product in Nigeria is corrected within a year. This is an increasing rate of adjustment.

The short run result revealed that all the explanatory variables became positive with the exception of corruption which maintained its negative effect. Reportedly, it implies that foreign direct investment and domestic investment significant and insignificantly increase economic growth in Nigeria by 0.036 and 0.039 respectively. Hence, government should not only depend on FDI into the country to finance its budgetary expenditure but also create a suitable environment in the

country that can accelerate the level of domestic investment into the economy. More so, human capital proxy by secondary school enrolment positively increases economic growth but irrespective of the positive effect, government should intensify effort at compulsorily making secondary school education free for all citizens. This is consistence with Adawo (2011), concluded that there exist a relationship between human capital development and economic growth in Nigeria [1]. Labour force significantly increases economic growth by 1.90 percent change. This result is in connection with Olugbenga (2007) who concluded positive and significant effect of labour force on economic growth in Nigeria [25]. Lastly, corruption has about 2% decreases in economic growth of Nigeria in the short run. This means that as much foreign direct investment and domestic investment allotted to Nigerian government, 2% of such funds are diverted to private or individual uses as a result of corruption in the system. However, the 2% effect of corruption is not significant which implies that the effect is minimal on economic growth. Nevertheless, effort should be made by Nigerian government to check inwardly into such cases and penalized any person or agent found guilty. With this, it will imbibe fear in the heart of office holder and public servant that no one is above the law, the trend of corruption cases in Nigeria will tremendously reduce if proactive measures were considered.

## 5. CONCLUSION

The study concluded that there is a long run relationship between foreign direct investment, corruption and economic growth in Nigeria. However, the relationship between foreign direct investment and economic growth is positive while that of corruption and economic growth is negative which has led to the slow pace of growth and development in the country. This study deduced that corruption does not stop the inflow of FDI into Nigeria rather it reduces the benefits that ought to come to the country as a result of the inflow. However, the study proffered based on the objectives that there is need for the implementation of free Universal Basic Education (UBE) at all level of education especially at secondary school level in order to increase the enrolment rate in institutions of learning. The government should create an enabling environment in order to encourage private sector investment in the education sector; Government and policy makers should as a matter of urgency give high priority to human capital development, concerted and sincere efforts should be made in building and developing human capacity through adequate educational funding across all levels since it remains the major way of attaining sustainable economic growth and development; Government should see to the level of corruption in the economy, by putting in place proper machinery and a system that reduce as well as severely punish corrupt officials.

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