Trade, Capital Flow and Economic Growth in Nigeria

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Abstract

This study investigated the relationship and role of capital flight, especially FDI and aid, in contributing to trade expansion and economic growth in Nigeria through the implementation of the general aggregate production function (APF) using annual data set covering 1980–2015. Autoregressive distribution lag (ARDL) cointegrating approach was used to test the link between capital flow and trade, while the static OLS estimation was used to determine the role played by the variables in relation to economic growth. It was found that foreign direct investment exhibited a negative relationship, while trade openness, capital stock measured by gross fixed capital formation over GDP and growth rate of labour force had a positive relationship. Thus, 1% increase in FDI led to a reduction in economic growth by 11.14%, while 1% increase in capital stock, labour growth rate and trade openness resulted in 18.11%, 70.11% and 93.11% increases respectively in economic growth. Also, there was long-run cointegrating relationship among the variables of interest from the general aggregate production function. In addition, it was a unidirectional causality from all the independent variables to the economic growth. However, the correction term showed an equilibrium correction estimate of -0.2063 (20.63%) which was fairly high speed adjustment to equilibrium after the shocks. It was recommended that government should improve its business environment by making it more attractive to multinational and domestic investors for prompt competition, to stimulate economic growth in the long run.

Keywords: Capital flow, aggregate production function, trade openness
JEL Classification: O24, E51, F43, O47

Introduction

For any developing country, trade may bring about the upgrading of skills through the importation or adoption of superior or sophisticated production technology and innovation (Aryeetey, 2005). However, the existence of stability

and efficient macroeconomic environment is essential for exogenous factors in which trade openness, capital formation, foreign direct investment (FDI), economics growth are attracted. The degree/level of trade openness could also indicate the degree of comparative advantage of a country in undertaking investment. This view basically rests on the 'transaction cost theory' (Coase, 1937; Williamson, 1975) which postulates that a low transaction cost environment generates financial incentives (higher return on investment) for both the domestic and foreign players in supplying large irreversible investments like FDI. Edwards (1992) pointed out that a country with higher degree of economic openness can grow faster by absorbing new technologies at a faster rate than a country with lower degree of openness. Wacziarg (2001) argued that trade openness exerts a positive and significant impact on economic growth due to the accelerated accumulation of physical capital, sustained technological transfer and improvement in macroeconomic policies. Likewise, capital formation is likely to influence FDI and economic growth.

Neoclassical growth model postulates that developing economies with lower initial capital stock tend to have higher marginal rate of returns (productivity) and growth rates if adequate capital stock is injected. In other words, in a capital shortage economy, the marginal productivity of investment is increased in the short-run when additional capital is injected in the form of long-term investment like FDI, and this leads to an increase in productivity; thus influencing economic growth in the long-run. Neoclassical and endogenous growth theories underline that FDI promotes economic growth in a capital scarce economy by increasing the volume, as well as efficiency of physical investment (Lucas, 1988; Grosman and Helpman, 1991; Baro and Salai-I-Martin, 1995). Similarly, foreign direct investment gives long-term capital with new technologies, managerial know-how and marketing capacities, which help augment economic growth by creating employment, increasing managerial skills, diffusing technologies and fostering innovations (Asiedu, 2002 and Paugel, 2007).

Essentially, trade and capital flows (FDI) are conceived as the two engines of globalization and are very important factors in the economic growth process. Hence, theoretically, the relationship between trade openness, capital formation, foreign direct investment and economic growth tends to be positive. Empirical studies have given mixed conclusions, both when using country-specific and cross-country data on how trade openness and FDI intertwine on growth (Borensztien et al., 1998; Mansouri, 2005). Thus, Pahlavani et al. (2005) concluded that both FDI and trade promote economic growth. In a contrary view Balasubramanyam et al. (1996), Borensztein et al. (1998), De Mello (1999),

Lipsey (2000) and Xu (2000) argued that in some countries FDI and trade can negatively affect economic growth. Kormendi and Meguire (1985), Barro (1991), Levine and Renalt (1992) concluded that the rate of physical capital formation influences the rate of a country's economic growth. Likewise, Kendrick (1993) noted that the formation of capital alone does not lead to economic prosperity; rather, the efficiency in allocating capital from less productive to more productive sectors enhances economic growth.

However, it can be concluded that empirical literature, in relations to the theoretical paradox of the nexus between trade and capital flow, especially FDI, are inconclusive, as some are in support of positive relationship, while others reported a negative relationship. Besides, some could not trace any relationship or submitted a weak relationship. As such, this divergence of opinions could be trace to methodology, data selection, and analytical tools used in the analysis. Also, this could be attributed to country-specific studies on environment, institutional arrangement, economic and political settings and technological progress in the receiving country of interest of foreign direct investment. Furthermore, Akinlo (2003) and Alege and Ogun (2005) related the effects of trade to different macroeconomic indicators and sectors of various economies. Also, most empirical studies (e.g. Uwatt, 2004 and Orji, 2014) on growth of less developed countries, including ECOWAS members, were cross-country analyses. Only a few of them (like Abdulai and Jaquet, 2002; Akanyo and Ajie, 2015; Olaleye, 2015) were country-specific. Thus, relating the role of the impact of trade and FDI to economic growth, especially in Nigeria, has not been given much attention.

Thus, this study examined the role of capital flight, especially FDI and aid, in trade expansion and economic growth in Nigeria between 1980 and 2015, the periods marking the pre and post-financial liberalisation and the transition policy regime of structural adjusted programme (SAP) of 1986, which was followed by reforms that affected financial inclusion strategy and monetary policy in Nigeria. In addition, the scope is characterized in the transition process, attributed to the period that the economy underwent a series of reforms, such as privatization, deregulation, macroeconomic stability (which translated into the control of inflation), as well as adoption of various forms of monetary policy targets in order to stimulate savings and investment. Consequently, these led to economic growth. Moreover, cointegration techniques, the autoregressive distributed lag (ARDL) of Pesaran, Shin, and Smith (2001), was employed to test the existence of long-run equilibrium among the variables. Indeed, the study extended the Pesaran et al. procedure into multivariate analysis. Likewise, the choice of

ARDL bound tests was because it is often relatively more efficient in the case of small sample size, and gives unbiased estimates of the long-run model (Harris and Sollis, 2003). The choice of a new methodology is quite imperative because of its various advantages, as itemised by Pesaran et al. (2001).

The remainder of this report is organized as follows: section 2 provides the literature review that incorporates the theoretical and empirical reviews, while section 3 describes the methodology, which includes the model specification, variables definition, method of analysis and sources of data. Section 4 reports the empirical results, while section 5 provides the conclusion and recommendations.

Literature Review

There are two major strands of theoretical models that have been exploited and have underlined that foreign direct investment promotes growth in a capital-scarce economy: these are the neoclassical and endogenous growth theories. The neoclassical growth theory postulates, among others, that that any sustained level of growth is due solely to technology. Solow (1988) stated that it is a growth in which 'the permanent rate of growth of output per unit of labour input is independent of the saving (investment) rate and depends entirely on the rate of technological progress in the broadest sense'. This conclusion flows from a particular kind of equation, called an aggregate production function, and follows from the way Solow combined this function with the fact of depreciation and population growth.

The endogenous growth theory, on the other hand, emphasizes that economic growth is primarily the result of endogenous and not exogenous forces. That is, investment in human capital, innovation, and knowledge are significant contributors of growth. The focus of this theory is on positive externalities and spillover effects of a knowledge-based economy, which lead to overall economic development. The endogenous growth theory states that constant marginal product of capital at the aggregate level or, at least, at the limit of marginal product of generalized capital does not tend towards zero (Hulten, 2000).

Understanding the channel and/or role trade and growth impact of specific categories of capital inflows has important policy implications; but so far, studies in this area have received limited attention. However, majority of studies have tended to examine the causal relationship between FDI and economic growth. According to Okore and Onoh (2013), the greatest challenge facing the Nigerian economy is how to grow to reduce poverty. Meeting this challenge is particularly difficult if Nigeria relies solely on domestic resources, given the low rate of savings and the attendant savings-investment gap.

Ayanwale (2007) investigated the empirical relationship between non-extractive FDI and economic growth in Nigeria and examined the determinants of FDI into the Nigerian economy. He used an augmented growth model estimated via the ordinary least squares and the 2SLS method to ascertain the relationship between FDI, its components and economic growth. The study further suggested that the determinants of FDI in Nigeria are market size, infrastructural development and stable macroeconomic policy. FDI in Nigeria contributes positively to economic growth. The study also revealed that openness to trade is not inducing FDI.

Although the overall effect of FDI on economic growth may not be significant, the components of FDI have a positive impact. FDI in the communication sector has the highest potential to grow the economy and is in multiples of that of the oil sector. The manufacturing sector's FDI negatively affects the economy, reflecting the poor business environment in the country. Saibu et al. (2011) examined the effects of financial development and foreign direct investment on economic growth in Nigeria by modifying the standard endogenous model to incorporate foreign direct investment and financial development as determinants of growth in the long run. Using time series data from 1970 to 2009, they tested for the time series properties of the variables and adopted the autoregressive distributed lag (ARDL) technique to estimate the model. These further indicated that the effect of foreign direct investment differed significantly when different measures of financial markets are used. For instance, foreign direct investment was only significant when combined with stock market indices. The report further revealed that financial market liquidity and not the size of the market, matters for economic growth in Nigeria.

On the other hand, Ehimare (2011) empirically examined the effect of foreign direct investment on the Nigerian economy over the period 1980-2009. His study considered growth-determining variables in the economy, such as balance on current account (balance of payment), inflation and exchange rate and their effects on FDI, in relation to GDP. Econometric models were developed to investigate the relationships between the aforementioned variables and discovered that foreign direct investments have positive and significant impact on current account balance in the balance of payment. While inflation was seen not to have significant impact on foreign direct investment inflows, the exchange rate had positive effect on foreign direct investment.

Hassen and Anis (2012) investigated the impact of foreign direct investment on the economic growth of the host country, especially in Tunisia. The study was propelled by the fact that the global economy was becoming increasingly

complicated, given the mechanisms of free trade, free flow of capital and goods; and the fact that investment had become important for developing countries. The study covered the period 1975- 2009, for which data were available. The estimates and tests were based on modern analysis of time series (stationary tests, cointegration tests, error correction models), while the model was based on Enisan (2004). The results suggested that FDI can boost the process of long-term economic growth. This was consistent with Sackey et al. (2012) that a long-run relationship exists between the variables, and that FDI is positively related to economic growth in Ghana.

Olaleye (2015) investigated the effect of capital flows on economic growth in Nigeria and offered evidence on the relationship among real gross domestic product, foreign direct investment net flow, exchange rate and trade openness. Using Johansen cointegration test, it showed the presence of long-run relationship among the cointegrating variables. The model indicated that all the variables were statistically significant, except FDIN. The granger causality test indicated both the existence of unidirectional and bidirectional causality among some of the variables. Similarly, Akanyo et al. (2015) examined the impact of capital flows on the Nigerian economy in a liberalized environment between 1981 and 2012. Using Johansen cointegration test, the study found that net capital flow significantly and positively influenced the level of economic growth. The results revealed that a net increase in capital flow, especially of foreign direct investment by 1% increased the level of economic growth by 3%, while a percentage increase in foreign capital inflows, holding outflows constant, led to a 40% increase in the level of economic growth. The lower elasticity of net flows was explained by a number of factors, such as high level of corruption, political instability, and lack of confidence in the domestic currency, which led to capital flight in the economy

In summary, most empirical literature reviewed suggested a causal link between foreign capital flows and economic growth in Nigeria. However, this study significantly departs from previous studies by examining the role of capital flight, especially FDI and aid, in contributing to trade expansion and economic growth in Nigeria between 1980 and 2015. It applies modern cointegration technique (ARDL) to analyse the relationships.

Methodology

To empirically analyse the relationship, the study adopted the aggregate production function following the work of Feder (1983), Fosu (1990), Herzer et

al. (2006) and Magnus et al. (2006). In line with Magnus et al. (2006), the general APF model estimated was derived as:

$$Y_t = A_t K_t^{\alpha} L_t^{\beta} \quad (1)$$

Where Y_t denotes the aggregate production of the economy (real GDP per capita) at time t, and A_t, K_t, L_t are the total factor productivity (TFP), capital stock, and stock of labour, respectively. Lipsey (2001), observing the impact of FDI on economic growth, operated through TFP (A).

In addition, from the Bhagwati's (1985) hypothesis, any gains from FDI on TFP will surely be dependent on the volume of trade openness of a particular host country. Since this study wanted to investigate the role of FDI inflows (*FDI*) and trade openness (*TRP*) on economic growth through changes in TFP, it assumed that TFP is a function of *FDI* and *TRP*. Therefore:

$$A_t = f(TRP_t, FDI_t) \quad (2)$$

Substituting equation 2 for equation 1, there is:

$$Y_t = TRP^{\sigma}{}_t, FDI^{\omega}{}_t K_t^{\alpha} L_t^{\beta} \quad (3).$$

Where σ, ω, α and β are constant elasticity coefficients of output with respect to TRP_t, FDI_t K_t and L_t.

From equation 3, by taking the natural logs of both sides, there is the following explicit estimable equation:

$$InY = a + \sigma InTRP_t + \omega InFDI_t + \alpha InK_t + \beta InL_t + \varepsilon_t \quad (4)$$

Where a is the constant parameter and ε_t is the white noise error term. However, the expected sign of the parameters are:

$$\alpha, \omega, \sigma > 0 \quad (5)$$

This study examined the nexus between trade openness, capital formation, FDI, and economic growth in Nigeria, spanning from 1980 to 2015. The variables employed included real GDP, trade openness, capital formation and foreign direct investment (FDI). The main explanatory variables used are

presented in table 8 (Appendix), with the real gross domestic product per capita as the explanatory variables.

To investigate the long-run relationship between each pair of variables under consideration, the bounds test for cointegration within ARDL (the autoregressive distributed lag) modelling approach was adopted. This model was developed by Pesaran, Shin and Smith (2001) and can be applied irrespective of the order of integration of the variables (irrespective of whether regressors are purely I(0), purely I(1) or mutually cointegrated). There were reasons for choosing this model, as against the use of other multivariate cointegration techniques, such as Johansen and Juselius (1990): it can be estimated using OLS once the lag order of the model is identified. Also, the bounds testing procedure does not require the pre-examining of the variables included in the model of interest, such as unit root. Moreover, the test is relatively more efficient for small sample size data, such as are used in case study. The only disadvantage of ARDL seems to be in relations to the fact that if it is integration of order 2 (I (2)) it cannot be applied. The ARDL cointegration test assumed that only one long-run relationship exists between the dependent and exogenous variables (Pesaran et al., 2001).

Basically, the bound test developed by Pesaran et al. (2001) is the Wald test (f-statistic version of the bound testing approaches) for the lagged level variables in the right-hand side of UECM. That is, the study tested the null hypothesis of non-cointegrating relation (Ho: $\delta_1 = \delta_2 = \ldots = \delta_5 = 0$) by performing a joint significance test on the lagged level variables. The asymptotic distribution of the f-statistic was non-standard under the null hypothesis of no cointegrating relation between the examined variables, irrespective of whether the explanatory variables were purely I(0) or I(1).

In addition, if the statistic from Wald test falls outside the critical bounds value (lower and upper values) a conclusive inference can be made without considering the order of integration of the explanatory variables. If the f-statistic exceeds upper critical bound, the null hypothesis of no cointegrating relation can be rejected. If the test statistic (f-statistic) fell below the lower critical bound, the study rejected the null of non cointegration. In the case where the f-statistic fell between the upper and lower bounds, a conclusive inference was not made. The order of integration, I(d), for the explanatory variables must be known before any conclusion can be drawn (see Pesaran et al., 2001). Since equation 4 was stationed as the long-run estimate of the coefficient of ARDL, the coefficients of the long-run cointegrating relationship and the corresponding ECM were estimated. Thus, it became necessary to determine the maximum order of the

lags in ARDL model (p1, q1, q2, q3, q4,). The long-run model for *Yt* was estimated as:

$$\ln Y = \delta_0 + \sum_{p=1}^{p_1} \delta_1 \ln Y_{t-p} + \sum_{p=0}^{q_1} \delta_2 \ln FDI_{t-p} + \sum_{p=0}^{q_2} \delta_3 \ln K_{t-p} + \sum_{p=0}^{q_3} \delta_4 \ln L_{t-p} + \sum_{p=0}^{q_4} \delta_5 \ln TRP_{t-p} + \varepsilon_t \quad (6)$$

However, to obtain the short-run dynamic parameters by estimating an error correction model associated with the long-run estimates, the model is specified as:

$$\Delta \ln Y_t = \alpha + \sum_{p=1}^{q} \beta \Delta \ln Y_{t-p} + \sum_{p=0}^{q} \sigma \Delta \ln FDI_{t-p} + \sum_{p=0}^{q} w \Delta \ln K_{t-p} + \sum_{p=0}^{q} \Delta \ln L_{t-p} + \sum_{p=0}^{q} \theta \Delta \ln TRP_{t-p} + \beta_1 ECM_{t-1} + \varepsilon_t \quad (7)$$

Where Δ implies the differences and *In* represents log of the variables.

In equation 7, *ECMt-1* is the lagged error correction term which is the speed of adjustment, while $\theta, \partial, \omega, \sigma$, and β are the short-run dynamic coefficients of the model's convergence to the point of equilibrium. The appropriate lag structure of ECM is determined by the Akaike information criteria (AIC).

Findings

Table 1: Descriptive analysis

	FDI	GDPG	K	LGR	TRP
Mean	3.028538	710.0218	12.50405	37852.23	70.18227
Median	2.567352	608.9434	11.55206	37071.07	69.02992
Maximum	10.83256	1109.876	34.02084	53021.00	91.30857
Minimum	0.663717	494.2390	5.467015	24434.54	61.74737
Std. Dev.	2.204335	197.1312	6.047894	9191.836	5.960626
Skewness	1.851637	0.763300	1.889877	0.219013	1.663455
Kurtosis	6.616637	2.070671	7.046622	1.746356	6.736264
Jarque-Bera	40.19146	4.791243	45.99253	2.645235	37.54200
Probability	0.000000	0.091116	0.000000	0.266437	0.000000
Sum	109.0274	25560.78	450.1459	1362680.	2526.562
Sum Sq. Dev.	170.0683	1360124.	1280.196	2.96E+09	1243.517
Observations	36	36	36	36	36

Source: Authors' Computation 2017

Table 1 shows the descriptive statistics of the variables used in the analysis. The data show the mean values of capital stock (K), labour growth rate (LGR),

foreign direct investment (FDI), trade openness (TRP) and economic growth (GDPg) as 12.50, 37852.23, 70.18, 3.02 and 710.02, compared to the median values of 11.55, 37071.07, 69.02, 2.56 and 608.94 respectively. Although they were all positively skewed, the values of capital stock (K), labour growth rate (LGR) and foreign direct investment (FDI) were closely associated; thus implying that capital stock (K), labour growth rate (LGR) and foreign direct investment (FDI) varied along their means, while trade openness (TRP) and economic growth (GDPg) did not. Furthermore, the kurtosis result for economic growth (GDPg) and labour growth (LGR), which stood at 2.070671 and 1.746356 respectively were platykurtic (p-value less than 3), while capital stock (K), foreign direct investment (FDI) and trade openness (TRP) values stood at 7.046622, 6.616637 and 6.736264 were leptokurtic, since the p-values were more than 3.

The formal test of normality carried out using the Jarque-Bera (J-B) test showed that both GDPg and LGR had low J-B test values of 4.791 and 2.645235 and probability values of 0.091 and 0.266 respectively. On the contrary, foreign direct investment, capital stock and trade openness were non-normally distributed, given their J-B statistics and p-value of 40.19146 (0.00000), 45.99253 (0.00000) and 37.54200 (0.00000).

Table 2 presents the correlation coefficients of capital stock (K), labour growth rate (LGR), foreign direct investment (FDI), trade openness (TRP) and economic growth (GDPg). The results show that none of the correlation coefficient in the table was perfectly correlated.

Table 2: Correlation matrix

	FDI	*GDPG*	*K*	*LGR*	*TRP*
FDI	1.000000				
GDPG	-0.087216	1.000000			
K	0.073949	-0.031184	1.000000		
LGR	0.158986	-0.127659	-0.160006	1.000000	
TRD	0.235981	0.070133	-0.264086	0.266034	1.000000

Source: Authors' Computation 2017.

Table 3: Choice criteria and test statistics for selecting the order of the VAR model

Order	*Adjusted LR Test*	*AIC*	*SBC*
0	-	48.67327	48.89774
1	275.2393*	40.31389*	41.66068*
2	21.66473	40.84253	43.31164

NB: AIC and SBC implies Akaike information criterion and Schwarz Bayesian criteria respectively

Time series data are often not stationary at level, but by differencing them (Nelson and Plosser, 1982). Likewise, Granger and Newbold (1974) argued that if the estimated variables are non-stationary, the regression results with the variables will be spurious. In addition, Pesaran et al. (2001) submitted that ARDL can be applied, irrespective of the order of integration of the variables (irrespective of whether regressors are purely I(0), purely I(1) or mutually cointegrated). Consequently, the selection of the lag length is crucial in estimating the ARDL regression; the test was thus run over 2 lag lengths to determine the optimal lag length for the study. Indeed, two criteria choices (AIC and SBC) were presented, but with the same results. The data in table 3 showed that both AIC and SBC suggested the same lag length of 1. Consequent on the nature of the data, the Akaike information criteria (AIC) was chosen.

Bounds tests for cointegration

To estimate the long-run relationship in line with the autoreggressive distributed lagged (ARDL) approach, the AIC was used to select a maximum lag order of two for the conditional ARDL-UECM.

Table 4: Bound F-tests cointegration

	@ 5% Lower Bound I(0)	*@ 5% Upper Bound I(1)*	*@ 1% Lower Bound I(0)*	*@ 1% Upper Bound I(1)*
F-Statistic	2.86	4.01	3.74	5.06

Source: Narayan (2004) P.26-27, Appendix, Case II: Unrestricted intercept and no trend

Table 5: Estimated results from Bounds tests

Variable	F_{GDPg}*(GDPg/FDI,K,Lg,TRD)*	F_{FDI}*(FDI/GDPg, K,Lg,TRD)*	F_{K}*(K/GDPg,Lg ,FDI,TRD)*	F_{Lg}*(Lg/GDPg.FDI,K,TRD)*	F_{trd}*(TRD/GDPg ,FDI,K,Lg)*
F-Stat	4.30	3.05	3.54	4.10	3.58
Probab.	0.0000	0.0248	0.0002	0.0040	0.0031
Decision	Cointegration	No Cointegration	No Cointegration	Cointegration	No Cointegration

Source: Authors Computation, 2017

In terms of the bounds cointegration test, by comparing the values in table 4 and the estimated values of table 5 (calculated f-statistics) when each of GDPg (gross domestic product growth rate), FDI (foreign direct investment as a percentage of gross domestic product), K (capital stock, captured by the ratio of gross capital formation to gross domestic product), L (labour growth rate) and TRD (trade openness, expressed as the sum of import and export divided by gross domestic product ratio) was expressed as dependent variable: FGDPg (GDPg/ FDI, K, Lg, TRD) = 4.30, FFDI (FDI/GDPg, K, Lg, TRD)= 3.05,

FK (K/GDPg, Lg, FDI, TRD)=3.54, FLg (Lg/GDPg, FDI, K, TRD)= 4.10 and Ftrd (TRD/GDPg, FDI, K, Lg) =3.58. These show that some values were higher than the upper bound critical and lower bound critical values of table 4, thus implying that the values fell within the bound critical values at 5%. Consequently, the null hypothesis of no-cointegration could not be accepted at 5% level of significance. This indicates the existence of long-run equilibrium among the variables.

Table 6: Estimated long-run coefficients using the ARDL approach

Selected Model: ARDL (1, 0, 0, 0, 0)

Variable	*Coefficient*	*Std.Error*	*t-Statistic*	*Prob.*
Constant	-5.142723	1.278005	-4.024024**	0.0003
FDI	-0.111435	0.041146	-2.708298***	0.0109
Capital stock	0.181140	0.066526	2.722830***	0.0105
LGR	0.701693	0.120840	5.806777**	0.0000
TRP	0.931119	0.351020	2.652606***	0.0125

***(**) denotes 1%(5%) significance level.

The long-run relationship estimated coefficient shows that foreign direct investment (FDI) has a contradicting sign, as against the a priori expectation under the review period. Although for the FDI exhibiting a negative sign with a significant impact on GDP growth rate at 10% level, trade openness was significant and exhibited a positive sign and also significant at 10%. A 1% increase in foreign direct investment and trade openness led to 11.14% decrease in economic growth. However, trade openness, measured by summing export and import, divided by gross domestic product, exhibited a positive impact on the economic growth, so that a 1% increase in the degree of trade openness led to 93.11% increase in the economic growth. This can be attributed to the various forms of trade liberalization policy the country employed. The capital stock, proxied by gross fixed capital formation, had high significant impact on the economic growth. A 1% increase in capital stock resulted in 18.11% increase in the economic growth. This showed the efficacy of monetary authority in Nigeria, which has provided an enabling environment for business to thrive. Moreover, labour had positive significant impact at 5%, an indication that a 1% increase in employment rate in Nigeria led to 70.16% increase in economic growth. This shows a plausible picture of the country's employment rate.

The data in table 7 show that the equilibrium correction coefficient was -0.206, which was a correct sign. However, this result provided a fairly low adjustment speed for equilibrium after a shock. Indeed, 20.6% of disequilibria

from the previous year's shock converged back to its long-run equilibrium in the current period. Bannerjee (1998) noted that a highly significant error correction term is a further proof of a stable long run relationship. Furthermore, Granger (1986) also noted that the existence of a significant error correction term is evidence of causality in, at least, one direction.

Table 7: Error correction representation for the ARDL model

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
D(FDI)	-0.004180	0.005195	-0.804665	0.4276
D(K)	0.013332	0.045324	0.294160	0.7707
D(LGR)	0.261968	0.093362	2.805945	0.0089
D(TRP)	0.162037	0.176721	0.916907	0.3668
ECM(-1)	-0.206336	0.104647	-1.971737	0.0025

Conclusion

Trade and capital flows are both conceived as the two engines of globalisation and are very important factors in the economic growth process. Thus, the study examined the role of and relationship between capital flows, especially FDI and aid, as they contribute to trade expansion and economic growth in Nigeria for the period 1980-2015. Based on its general aggregate production function (APF) specification and the use of autoregressive distribution lag (ARDL) method, the result showed that FDI exhibited an inverse relationship with economic growth. This finding supports those of Balasubramanyam et al. (1996), Borensztein et al. (1998), De Mello (1999), Lipsey (2000) and Xu (2000). The negative relationship of FDI reflected the poor business environment in the country and poor policy implementation on the part of the government with regard to trade with the rest of the world. However, a positive relationship existed for the capital stock captured, by gross capital formation over gross domestic product and economic growth. This supports the findings of Levine and Renalt (1992). However, trade openness exhibited significant positive relation with economic growth in Nigeria

In all, the estimated autoregressive distribution lag results revealed that there existed a long-run cointegrating relationship among economic growth, gross fixed capital formation, trade openness and capital flow in Nigeria. Also, this study has established that there is a unidirectional causality from all the independent variables to economic growth. The study, thus, concludes that labour, capital stock (investment) and trade are important in explaining economic growth in the long-run. Therefore, the government of Nigeria should improve the business

environment and make it more attractive to multinational and domestic investors for prompt competition. This will stimulate economic growth for the country in the long-run.

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Appendix

Table 8: Data description and source

Variables	*Description*	*Sources*
Economic growth (GDPg)	This is an indicator of economic growth which is measured as a growth of gross domestic product	CBN Statistical Bulletin
Trade Openness (TRD)	This was expressed based on Gries et al (2009) where trade openness is measured by adding import and export together and divided by GDP ratio. i.e = (EX + IM)/GDP ratio	CBN Statistical Bulletin
Capital Stock (K)	This is measured as a percentage of Gross Fixed Capital Formation over GDP. This is adopted by Ghali and Al-Mutawa (1999), Barro (1991).	CBN Statistical Bulletin
Foreign Direct Investment (FDI)	This is measured as a percentage of GDP	CBN Statistical Bulletin
Labour (LGR)	This is measured as the growth rate of the total labour force.	The conference Board total economy data base.