Volatility in Foreign Capital Inflows and Economic Growth in Nigeria

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Abstract: This study examines the relationship between volatility in capital inflows and economic growth in Nigeria for the period 1986 to 2018. Specifically, this study address to research question "does volatility in component of capital inflows (foreign direct investment, foreign portfolio investment and other investment flows) affect economic growth differently?" This study employs the Auto-Regressive Distributed Lag (ARDL) method and the result of the study showed that volatility in capital inflows (measured in aggregate or component) negatively affected economic growth (albeit volatility in foreign direct investment was insignificant). The result of the study also shows that volatility of component of capital flows influenced economic growth differently (in terms of significance and magnitude). The study concludes that volatility in short term capital flows (foreign portfolio investment and other investment flows) hindered economic growth while volatility in long term capital flows (foreign direct investment) does not. Consequently, the study recommends the need for sound macroeconomic policy management such as effective monetary supervision and regulation capable of ensuring financial stability in both the banking and the capital markets which will improve investors' confidence and reduce the volatility of capital inflows in Nigeria.

Keywords: Volatility; Capital flows; ARDL; Nigeria

JEL Classification: F21; F32; O40

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1. Introduction

The experience of the developing countries towards the 2007/2008 US financial crisis clearly reflect the destabilizing effect of volatility in capital flows on the financial system of these countries; making volatility in capital flows a source of concern. Increase volatility in capital flows signifies large reversal of foreign capital which increases the risk of borrowers being faced with the risk of liquidity runs (Chang &Velasco, 2000), with possible long term adverse effect on economic growth and unemployment (FitzGerald, 2008). Volatility in capital flows sometimes results in policy and investment uncertainty of the host economy with consequence on growth (see Lensink et al., 1999; Aizenman & Marion, 1993). As posited by Lensink and Oliver (2001), volatility in capital flows (particularly foreign direct investment) could undermine investment in the host country by stirring uncertainty in the costs of Research and Development (R&D), with adverse consequence on the incentives to innovate.

The management of volatile capital flows is especially challenging for developing economies where capital flows are more unstable than in developed countries (Broto, Diaz-Cassou, & Erce-Dominguez,

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2011). Consequently, the management of volatility in capital flows in some developing countries have resulted in the impositions of varying degree restrictions on capital flows. For instance, Brazil and Taiwan imposed a 2 percent levy on foreign investments in stocks and fixed-income securities in 2009 while in Chile some measures of foreign capital controls were imposed over the period of 1991-98 (Olivier & Anton, 2012; Gallego, Leonardo & Klaus, 2002). In Argentina, since 2005 short-term investments require a deposit of 30% of the value of the investment to be held by the central bank for the period of one year while in Costa Rica, the monetary authority in September 2011 decided that short-term foreign loans received by banks and other financial entities would require a non-interest bearing deposit to be made at the central bank (Allendorf et al., 2011).

Besides concern on the consequence of volatility of total capital flows on the economy, studies (Mercado & Park, 2011; Neumann et al., 2009; Broto et al., 2008; Claessens et al., 1995) have also noted the different patterns of volatility exhibited by different component or category of capital flows. Volatility in the different capital flows have equally being observed to be detrimental to growth (Lensink & Oliver, 2001; Scott & Uhlig, 1999; Bernanke, 1983). While acknowledging the vast literature on capital flows and economic growth, most of these studies have focused on the impact of the size/level of capital flows on economic growth (see Fasanya, 2012; Okon et al., 2011; Kose, Prasad et al., 2006; Prasad et al., 2006; Akinlo, 2004; De Mello, 1997) and also on the determinants of capital flows (see Aurangzeb & UI Haq, 2012; Anyanwu, 2011; Wei, 2000). Another strand of studies focused on the spillover effect of capital inflows on the host economies (Lee et al., 2012; Ewe-Ghee, 2001; Sadik & Bolbol, 2001; Xu, 2000).

However, literatures are scanty on the extent to which volatility in capital flows affects economic growth. The few studies in this area have focused on developed and emerging economies while with respect to Nigeria economy literature have not explored this issue. The few studies on capital flows and economic growth in Nigeria only focused on the impact of the size and not volatility of capital flows on economic growth (see Nkoro & Uko, 2012; Oyinlola, 1995). The lack of literature on this issue in Nigeria is particularly disturbing, given outcomes of the aftermath of the recent 2007/2008 global financial crisis on the Nigerian economy as evident in the banking system and capital market. In addition, this study explores the impact of the volatility in different types of capital flows (foreign direct investment; portfolio investment; and other investment flows) on economic growth. Understanding the impact of the volatility in the composition of capital flows on economic growth is important with regard to macroeconomic management and financial stability (Mercado & Park, 2011). Also, the outcome of this study would better equip the monetary authority in the management of capital flows volatility since monetary policy plays an important role in ensuring the stabilization of foreign capital in the domestic economy.

This paper contributes precisely to the literature by addressing the following research questions "Does volatility in capital flows affect economic growth in Nigeria?" Does volatility in component of capital flows (foreign direct investment, foreign portfolio investment and other investment flows) affect economic growth differently? With respect to Nigeria and to the best knowledge of the author, no study has examined the above issues. It is against the above background that this study seeks to examine the relationship between volatility in capital flows and economic growth in Nigeria over the period 1986 to 2018.

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2. Review of the Literature

As argued above, vast literature as examined the relationship between foreign direct investment and economic growth (see Fasanya, 2012; Okon et al., 2011; Kose et al., 2006; Prasad et al., 2006; Akinlo, 2004; Carkovic & Levine, 2002; Lensik & Oliver, 2001; Borensztein et al., 1998 De Mello, 1997 among others). Despite the extant literature, very few have examined the effect of volatility of the component of capital flows on economic growth. Kyriakos (2019) examine the relationship among macro-prudential regulation, financial flows volatility and economic growth. Specifically, the study analysed whether macro-prudential regulation mitigated the adverse effects of capital flows volatility on economic growth. Using cross-country data for a group of seventy-eight countries over the period 1973-2013, the study observed that macro-prudential regulation promoted economic growth by reducing the negative impact of volatile capital flows. The results of the study hold both for aggregate capital flows and their various components. The results of the study supported the argument that macro-prudential policy rules designed to ensure financial stability are beneficial to long-run economic growth.

Akinmulegun (2019) analyzes the relationship between capital market development and foreign portfolio investment in Nigeria. The study covers the period 1985 to 2016 and employs both the granger causality and Vector Error Correction Mechanism (VECM) estimation techniques. The result of the granger causality shows the absence of causation between capital market development and foreign portfolio investment in Nigeria while the vector error correction estimate reveals that Market Capitalization (MCAP) has negative and significant effect on foreign portfolio investment in Nigeria. The study also showed that All Share Index (ASI) has positive relationship with foreign portfolio investment. Ikpesu (2019) analyzes the growth effects of capital inflows and investment in Nigeria over the period 1981 to 2016. Specifically, the study examined the impact of foreign capital inflows and domestic investment on economic growth in Nigeria. Using the ordinary least squares, the study observes that foreign capital inflows and domestic investment had positive and significant effect ob economic growth in Nigeria.

Adekunle and Suliamon (2018) re-examine the impact of foreign capital flows and economic growth in Nigeria. The study covers the period of 1986 to 2015 and employs the autoregressive distributed lag (ARDL) estimation techniques. The findings of the study show the absence of a long-run relationship between foreign capital flows and economic growth. The short run estimate shows that net FDI inflows had positive impact on economic growth, while net foreign remittance and net portfolio flows had significant negative impact on economic growth. The study also found that lower levels of net external debt and net foreign aids enhanced economic growth, while excessive levels of these flows retard economic growth. Lee et al. (2012) assessed what influences volatility of capital flows to emerging countries and whether or not there is a spillover or contagion effect in the volatility. The empirical results suggested significant contagion effects from global and regional volatility on the volatility of capital flows in different types to individual economies. The evidence of contagion from global and regional volatility implies that there is a strong need for global and regional policy cooperation to curtail the spillover or contagion effects. However, other policy variables have a differential and time-varying effect on volatility of different types of capital inflow, presenting policy dilemma and challenge to producing co-ordinated efforts by global and regional policy makers. Lensink et al. (1999) examined the impact of uncertain capital flows (total capital flows, official capital flows and private capital flows) on

economic growth for a sample of 60 developing countries during the 1990s. Employing both ordinary least squares and GMM estimation techniques, the study observed for the two estimates that uncertain capital flows had negative effect on economic growth in developing countries.

Nkoro and Uko (2012) examined the nature of causality between components foreign capital inflows (aid, remittance, foreign direct investment and external debt) and economic growth in Nigeria. The study also examined the impact of foreign capital inflows on economic growth in Nigeria. The employed co-integration, variance decomposition and impulse response analysis and block exogeneity techniques. The co-integration estimate revealed the existence of causation between foreign capital inflows and economic growth in Nigeria. The variance decomposition estimate supported the co-integration analysis of causality which revealed that, causality runs from foreign aid, remittance (RMC), external debt (TED) and foreign direct investment (FDI) to real GDP (growth). Responses of the real GDP to one standard deviation innovations of the components of foreign capital inflows do appear to be very sensitive. The shocks appeared to be very pronounced within the forecast period. However, the block of exogeneity estimates revealed that the granger causality runs from remittance (RMC) and external debt (TED) to real GDP (growth) only. Only remittance (RMC) and external debt (TED) were significant. Furthermore, the error correction estimates showed that aid and foreign direct investment had significant positive effect on real economic growth while remittance and external debt had significant negative effect on real economic growth.

Aurangzeb and UI Haq (2012) examined the effect of foreign capital inflows on economic growth of Pakistan for the period of 1981 to 2010. Using a multiple regression analysis, the study observed that remittances, external debt and foreign direct investment had positive and significant impact on economic growth (GDP). Also, the study observed a bidirectional causality between remittances and external debt; economic growth and external debt; foreign direct investment and external debt; and between foreign direct investment and remittances while a unidirectional causality was observed from economic growth to foreign direct investment. Aizenman et al. (2011) examined the relationship between economic growth and lagged disaggregated international capital flows (foreign direct investment, portfolio investment, equity investment, and short term debt). The study examines the relationship between these variables before and after the global crisis for a sample of about 100 countries during 1990-2010 when emerging markets became more integrated into the international financial system. The study revealed that the relationship between growth and lagged capital flows is depended on the type of flows, economic structure, and global growth patterns. The observed a large and robust relationship between foreign direct investment (both inflows and outflows) and economic growth. The relationship between growth and equity flows was observed to be smaller and less stable while the relationship between growth and short-term debt was observed to be nil before the crisis and negative during the crisis.

Choong et al. (2010) examined the effect of three different types of private capital flows on economic growth in 51 recipient developed and developing countries for the period 1988 to 2002. The study observed that foreign direct investment positively influenced economic growth while foreign debt and portfolio investment negatively influenced economic growth. Shen et al. (2010) examined the relationship between international capital flows (foreign direct investments (FDI) and foreign portfolio investments (FPI)) and economic growth for a sample of 80 countries for the period 1976 to 2007 within

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the context of some conditional factors that possibly have potential to influence such relationships. The study observed that only FDI had a positive effect on economic growth while FPI had an unfavorable, if not negative, effect on economic growth. The study also observed that conditional variables such as banking liberalization; high-income level; twin crises; lower corruption and human capital mitigate the positive effect of FDI on economic growth while middle-income level and good shareholder protection had positive effect on economic growth. With respect to FPI, the level of financial liberalization, being in a Latin American region, the wealth of countries, and market governance all influence the way that FPI affects growth, whereas the conditional variables of twin crises and human capital do not influence the effect of FPI on economic growth.

Sethi and Patnaik (2007) examined the effect of international capital inflows on Indian's economic growth from 1995 to 2004. The study observed that foreign institutional investment (FII) has negative impact on economic growth and foreign direct investment (FDI) had positive and direct impact on growth while total capital flows had positive impact on growth. Durham (2003) assessed the impact of foreign portfolio investment (FPI) and other foreign investment (OFI) on economic growth for a sample of 88 countries for the period 1977 to 2000. The findings of the study showed that foreign portfolio investment had insignificant effect on economic growth while other foreign investment (OFI) had a negative effect on economic growth. In a later study, Durham (2004) examined the effect of lagged FDI and lagged equity foreign portfolio investment (EFPI) on economic growth for a sample of 80 countries for the period 1979 to 1998. The study did not observe any positive relationship effect of either foreign direct investment (FDI) or equity foreign portfolio investment (EFPI) on economic growth. In addition, the study revealed that the effect of both FDI and EFPI on recipient countries is depended on financial and institutional development.

Soto (2000) examined the effects of the different components of private capital inflows on the economic growth of 44 developing countries for the period 1986 to 1997. The study observed foreign direct investment and portfolio equity flows exhibited a robust positive correlation with economic growth while portfolio bond flows were insignificantly linked to economic growth. Further, the study revealed that countries with undercapitalised banking systems, experience a negative correlation between bank-related inflows and economic growth rate for both short- and long-term bank-related inflows. Oyinlola, (1995) examined the relationship between disaggregated foreign capital (foreign loans, direct foreign investment and export earnings) and economic growth in Nigeria. Using Chenery and Stout's two-gap model, the study revealed that foreign direct investment had a negative effect on economic growth in Nigeria.

2.1. Summary of Gap in Literature

It is evident from the above review that there exists dearth of literature on the relationship between capital flows volatility and economic growth. Most of the reviewed literature on the effect of foreign capital flows (aggregate and/or compositions) on economic growth focused on the levels of these capital inflows and not on volatility of these flows. The few studies on volatility of capital flows and economic growth focused on developed and other emerging economies (Nigerian exclusive). Differences in the economic, political and institutional structures between these countries and the Nigerian economy

render the policy recommendations from these countries inappropriate. Therefore, this study adds to the existing literature on the relationship between volatility of foreign capital flows and economic growth in Nigeria for the period 1986 to 2018.

3. Research Method

3.1. Model Specification

This study specifies a simple model in which capital flows is explicitly incorporated as a factor of production (see Akinlo, 2004; Ramirez, 2000; De Mello, 1997):

$$Y_t = A_t (\lambda L)^\alpha K_D^\beta, E^\chi \quad \text{where} \quad \lambda = H^z \qquad (1)$$

Y_t is real output, A is the efficiency of production, L is labour force or the working population, λ is the level of human capital (proxied by investment in education and health "H"), K_D is domestic capital stock, E is the externality generated by capital inflows, α, β, χ, and z are elasticities of labour force, domestic capital, capital inflows and return to education relative to labour force. However, Borenstein et al. (1998) posited that the ability of capital flows to positively influence the host economy is dependent on development of its absorptive capacity. Thus, this study assumed E as a function of Labour force (L), domestic capital stock (K_D) and foreign capital stock (K_F), that is:

$$E = (L, K_D, K_F^\theta)^\varphi \qquad (2)$$

Given the purpose of this study which is to examine the effect of volatility of capital inflows (in addition to the impact of the size of capital inflows) on economic growth, thus foreign capital stock is assumed to be a function of the size of foreign capital inflows (K_{FS}^υ) and volatility of these flows (K_{FV}^τ). This can be expressed as:

$$K_F^\theta = (K_{FS}^\upsilon, K_{FV}^\tau)^\varphi \qquad (3)$$

Incorporating equation (3) into equation (2) becomes:

$$E = (L, K_D, K_{FS}^\upsilon, K_{FV}^\tau)^\varphi \qquad (4)$$

where υ and τ are the elasticities of the size of capital inflows and its volatility respectively while φ is the intertemporal elasticity of substitution between domestic and the size of foreign capital inflows. If $\upsilon > 0$, increase inflows of foreign capital is expected to yield a positive externality to the host economy; if $\tau > 0$, increase in volatilities of capital inflows would yield a negative externality to the host economy; if $\varphi > 0$, intertemporal complimentarity prevails and if $\varphi < 0$, increase in capital inflows crowd out domestic capital overtime and culminates in a decline in growth potential of the host economy. Substituting equations (4) into equation (1), we obtain:

$$Y_t = A_t (\lambda L)^\alpha K_D^\beta \left[\{(\lambda L), K_D, K_{FS}^\upsilon, K_{FV}^\tau\}^\varphi \right]^\chi \qquad (5)$$

Factorising out equation (5) becomes:

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$$Y_t = A_t (\lambda L)^{\alpha + \varphi(\chi)} K_D^{\beta + \varphi(\chi)} K_{FS}^{\upsilon + \varphi(\chi)} K_{FV}^{\tau + \varphi(\chi)} \qquad (6)$$

Substituting $\lambda = H^z$ and taking logarithms and time derivatives of equation (6), we generate the following dynamic production function:

$$\ln Y_t = \ln A_t + z[\alpha + \varphi(\chi)]\ln H_t + [\alpha + \varphi(\chi)]\ln L + [\beta + \varphi(\chi)]\ln K_D$$

$$+ [\upsilon + \varphi(\chi)]\ln K_{FS} + [\tau + \varphi(\chi)]\ln K_{FV} \qquad (7)$$

Equation (7) implies that given υ, φ and $z > 0$; and $\tau < 0$, additional inflows of foreign capital will augment the elasticities of output with respect to labour force, domestic capital and human capital by factor $\varphi(\chi)$ while increase in volatility of foreign capital flows will retard economic growth. Consequent to equation (7), the estimated derived equation is:

$$\ln Y_t = \delta_0 + \delta_1 \ln H_t + \delta_2 \ln L_t + \delta_3 \ln K_{D_t} + \delta_4 \ln K_{FCF_t} + \delta_5 \ln K_{VCF_t} + \mu_t \qquad (8)$$

From equation (8) *Y* is real gross domestic product per capita (*GDPPC*); *H* is human capital proxied by investment in health and education (*IHD*); *L* is labour force (*LAB*); K_D is domestic capital stock proxied by gross fixed capital formation (*GFC*); *FCF* is net foreign capital flows proxied by net aggregate foreign capital flows (*TFC*) and its compositions (net foreign direct investment (*FDI*), net foreign portfolio investment (*FPI*); and net other investment flows (*OIF*)). Volatility in capital flows (*VCF*) is proxied volatility in net aggregate foreign capital flows (VT*FC*) and its compositions (volatility in net foreign direct investment (V*FDI*), volatility in net foreign portfolio investment (V*FPI*); and volatility in net other investment flows (V*OIF*)). From the above and introducing control variables (trade openness (*OPNX*) and inflation rate (*IFR*)), equation (8) becomes:

$$GDPPC_t = \delta_0 + \delta_1 \ln IHD_t + \delta_2 \ln LAB_t + \delta_3 \ln GFC_t + \delta_4 \ln FCF_t$$

$$+ \delta_5 VCF_t + \delta_6 OPNX_t + \delta_7 IFR_t + \mu_t \qquad (9)$$

To analyse equation (9) this study employs the Autoregressive Distributed Lag (ARDL) co-integration approach by Pesaran, Shin and Smith. (2001). This estimation approach is used for the following reasons. Firstly, the ARDL approach of co-integration analysis is unbiased and relatively more efficient in small or finite sample data sizes such as the present study (Oteng-Abayie & Frimpong, 2006; Narayan & Narayan, 2003). Secondly, the ARDL approach does not require the pre-testing of variables in the model for unit roots unlike other co-integration techniques such as the Engel and Granger (1987) two-step residual-based procedure and Johansen's (1988) system-based reduced rank regression approach. A common feature of these procedures is the emphasis that the variables included in the estimating model must be integrated of order one (Narayan & Narayan, 2003). The ARDL co-integration approach is utilizable irrespective of whether the regressors in the estimating model are purely I(0), purely I(1)) or mutually integrated. However, the procedure crashes in the presence of I(2) series (Oteng-Abayie & Frimpong, 2006).. Thirdly, both the long-run and short-run components of the model can be estimated simultaneously, thereby eliminating problems associated with omitted variables and autocorrelations (Narayan & Narayan, 2003). Finally, Banerjee and Newman (1993) noted that a dynamic error correction model (ECM) can be derived from a modified ARDL model through a simple

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linear transformation. The ECM integrates the short-run dynamics with the long-run with losing long-run information (cited in Shahbaz et al., 2008).

Volatility series of foreign capital flows (*FCF*) is obtained using the Exponential Generalize Autoregressive Conditional Heteroeskedaticity (EGARCH) [1 1]. The EGARCH process is described as follows:

$$FCF_t = \psi + FCF_{t-1} + \mu_t \qquad\qquad (10)$$

The following AR[1]-EGARCH [1 1] model is estimated for foreign capital flows:

$$ln\sigma^2 = \omega + ln\sigma^2_{t-1} + \alpha \left|\frac{\mu_{t-1}}{\sigma_{t-1}}\right| + \gamma \left|\frac{\mu_{t-1}}{\sigma_{t-1}}\right| \qquad\qquad (11)$$

In the equations (10) μ_t is residual and in equation (11) σ denotes the conditional variance obtained from equation (10). The estimate of the conditional variance for foreign capital flows is volatility series and is used in equation (9). The data on real gross domestic product (*Y*), domestic capital stock (*GFC*), foreign capital flows (*FCF*), government expenditure on health and education (*IHD*), trade openness (*OPNX*) and inflation rate (*IFR*) were obtained from the Central Bank of Nigeria (CBN) statistical bulletin 2018 edition while data on labour force (*LAB*) is obtained from World Development Indicator (WDI) bulletin, 2018 edition.

4. Result and Discussion

The stationarity property of the variables was conducted using the Phillip-Perron test and the result presented on table 1 below. The unit root test showed that all variables were integrated of order 1 with exception to volatility in foreign direct investment (VFDI), other investment flows (VOIF) and total capital flows (VTFC). VFDI, VOIF and VTFC were integrated of order zero, that is, the variables were stationary at level. Other variables were stationary at first difference. The result of the unit root test further provided justification for the use of the Auto-regressive Distributed Lag (ARDL) estimate technique. As noted above The ARDL approach is applied irrespective of whether the regressors in the estimating model are purely I(0) or purely I(1) series.

Table 1. Phillips-Perron (PP) Unit Root Test

Variable	Level	First Difference	Order of Integration
LRGDP	1.0225	-3.2646*	I(1)
LIHD	-1.9518	-9.9097*	I(1)
LLAB	-2.0738	-4.4339*	I(1)
LGFC	-2.5528	-4.7239*	I(1)
FDIGDP	-1.4208	-6.7094*	I(1)
FPIGDP	-2.0504	-7.3563*	I(1)
OIFGDP	-2.4053	-6.0663*	I(1)
TFCGDP	-1.7840	-4.8991*	I(1)
VFDI	-4.1573*	-	I(0)
VFPI	-2.2516	-4.0019*	I(1)
VOIF	-4.7118*	-	I(0)
VTFC`	-3.1390**	-	I(0)
OPNX	-0.9033	-5.0227*	I(1)
INF	-2.6494	-3.2646*	I(1)

Source: Authors' Computation using e-views 9, 2020.

4.2. Regression Estimate on Size/Level of Foreign Capital Flows and Economic Growth in Nigeria

The regression estimate on the impact of the size/level of capital flows on economic growth is presented on table 2 while the impact of the volatility of foreign capital flows and economic growth is presented in 3. The results on the impact of aggregate capital stock on economic growth presented on the second column of table 2 showed that investment in human capital (LIHD) and trade openness (OPNX) had insignificant impact on economic growth. The insignificant effect of investment in human capital reflects the poor yearly budgetary allocation to the human capital sectors (education and health) in Nigeria. Labour force (LLAB), domestic capital stock (LGFC) and total/aggregate capital flows as a ratio of GDP (TFCGDP) had significant and positive impact on economic growth in Nigeria. The result also showed that inflation rate had negative and significant effect impact on economic growth in Nigeria which is consistent with Kyriakos (2019). With respect to the impact of the components of capital flows on economic growth, it was observed that foreign direct investment as a ratio of GDP (FDIGDP) and foreign portfolio investment as a ratio of GDP (FPIGDP) had positive and significant impact of economic while other investment flows as a ratio of GDP was insignificant in influencing economic growth in Nigeria.

The impact of foreign direct investment (with coefficient value of 0.71) was higher than the impact of foreign portfolio investment (with coefficient value of 0.008); implying that foreign direct investment contributes more to economic growth than foreign portfolio investment. The finding of this study on the impact of components of capital flows on economic growth is consistent with Adeniyi et al. (2015), Kyriakos (2019) and Aizenman, Jinjarak and Park (2011) but contrary to Edu et al. (2015), Choong et al. (2010) and Shen et al. (2010). Finally, the coefficients of the error correction term (***ecm-term***) from both models were correctly signed and statistically significant. The coefficient estimate of the error correction terms of -1.14 and -0.73; implied that the models corrects its short-run disequilibrium by 1.14 and 0.73 percent speed of adjustment in order to return to the long-run equilibrium respectively. In

addition, the negative sign of the error correction terms indicated a backward move towards the equilibrium.

Table 2. Estimate on Level of Foreign Capital Flows and Economic Growth in Nigeria

Independent Variable	Estimated Models	
	Total Foreign Capital Flows	**Component Capital Flows**
LIHD	0.0024(0.305)	0.0080(1.006)
LLAB	14.301(3.120)*	0.9883(2.409)**
LGFC	1.3387(4.677)*	0.2873(3.426)*
TFCGDP	0.1440(2.760)**	-
FDIGDP	-	0.712(3.145)*
FPIGDP	-	0.008(2.053)**
OIFGDP	-	-0.0054(-1.378)
OPNX	0.8895(1.824)	0.0465(2.231)**
IFR	-1.2796(-2.869)**	-0.0476(-4.047)*
ecm-term	-1.138(-3.373)*	-0.734(-3.264)*
R-Square	0.90	0.89
F-Statistics	8.79	15.09
D-W Sta.	2.08	1.69

Source: Author's Computation using e-views 9, 2020. The values in bracket () are the t-values.

4.3. Regression Estimate on Volatility of Foreign Capital Flows and Economic Growth in Nigeria

The results on the impact of volatility of foreign capital flows on economic growth are presented on table 3. The result from the aggregate model presented on the second column of the table showed that volatility in aggregate/total capital flows (TFCGDP) had negative and significant impact on economic growth in Nigeria. The result also showed that investment in human capital (LIHD), domestic capital stock (LGFC) and inflation rate (IFR) were insignificant in influencing economic growth while trade openness had a positive and significant impact on economic growth in the aggregate volatility model. This finding of this study on the negative and significant impact of volatility in total capital flows on economic growth in Nigeria is consistent with Kyriakos (2019).

The positive effect of trade openness on economic growth in the aggregate volatility model reflects the ease of capital movement to and from the Nigerian economy which are subject to sudden surges, stops, or reversals of capital flows (Mercado and Park, 2011). On the impact of the volatility of the components of aggregate capital flows on economic growth, the result on column three of table 3 showed that although volatility in foreign direct investment as a ratio of GDP (FDIGDP) affected economic growth negatively but this effect was insignificant. The result further showed that volatility in foreign portfolio investment as a ratio of GDP and other investment flows as a ratio of GDP (OIFGDP) had negative and significant impact on economic growth in Nigeria. This finding is contrary to Kyriakos (2019). The magnitude of the impact of other investment flows (OIFGDP) is more than that of the foreign portfolio investment (FPIGDP), suggesting that volatility other investment flows impede

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economic growth more than volatility in both foreign direct investment and foreign portfolio investment.

The negative-significant effect of other investment flows (which include trade credit and loans) and foreign portfolio investment on economic growth can be attributed to the fact that these capital flows are more susceptible to variations in short term interest rate and macroeconomic conditions of the host economy such as institutional quality, financial development and political and economic stability. These deteriorating macroeconomic conditions in Nigeria have created investment uncertainty for the capital flows and may have accounted for the high volatility in these flows with adverse consequence on the growth of the economy. The insignificant effect of foreign direct investment on economic growth is attributed to the inherent stable and less volatile nature of foreign direct investment which is associated with ownership and control investment resources.

Also, the result showed on table 3 columns 3 also revealed that investment in human capital (LIHD) and inflation rate (IFR) were insignificant in influencing economic growth while domestic capital stock (LGFC) and trade openness (OPNX) had positive and significant effect on economic growth in Nigeria. Finally, the coefficients of the error correction term (***ecm-term***) from both volatility models were correctly signed and statistically significant. The coefficient estimate of the error correction terms of -0.93 and -0.29; implied that the models corrects their short-run disequilibrium by 0.93 and 0.29 percent speed of adjustment in order to return to the long-run equilibrium respectively. In addition, the negative sign of the error correction terms indicated a backward move towards the equilibrium.

Table 3. Estimate on Volatility of Foreign Capital Flows and Economic Growth in Nigeria

Independent Variable	Estimated Volatility Models	
	Total Foreign Capital Flows	**Component Capital Flows**
LIHD	0.1141(0.596)	0.0047(0.203)
LLAB	9.6887(2.992)*	1.5670(3.402)*
LGFC	1.2856(0.235)	0.4028(3.035)*
VTFC	-0.0216(-2.942)*	-
VFDI	-	-0.0357(-1.302)
VFPI	-	-0.1665(-3.355)*
VOIF	-	-0.9532(-2.598)**
OPNX	0.4292(2.098)**	0.3289(2.273)**
IFR	-0.8813(-0.266)	0.0357(1.302)
ecm-term	-0.9295(-2.665)*	-0.2876(-2.408)*
R-Square	0.86	0.80
F-Statistics	23.98	31.9
D-W Stat.	1.72	1.55

Source: Author's Computation using e-views 9, 2020. The values in bracket ( ) are the t-values.

With respect to the focus of this study "the impact of volatility of capital flows on economic growth", the result showed that volatility in total capital flows, foreign portfolio investment and other investment flows were statistically significant in hindering economic growth while the effect of volatility in foreign direct investment was insignificant on economic growth. The implication of the above is that volatility in short term capital flows (foreign portfolio investment and other investment flows) hindered economic growth while volatility in long term capital flows does not. Also, an important observation from the

volatility result is that, in spite of the difference in the significance and magnitude of these variables (VTFC, VFDI, VFPI and VOIF) on growth; volatility in capital inflows (either aggregate or component) reduced economic growth (albeit that of VFDI was insignificant). These findings are consistent with Kyriakos (2019), Lensink and Morrissey (2006), Lensink et al. (1999) and World Bank (2001).

5. Conclusion and Policy Recommendations

This study contributes to existing literature by examining the relationship between volatility in capital flows and economic growth in Nigeria for the period 1986 to 2018. Specifically, this study address to research questions. (i) Does volatility in capital flows affect economic growth in Nigeria? and (ii) Does volatility in component of capital flows (foreign direct investment, foreign portfolio investment and other investment flows) affect economic growth differently? This study employed the Auto-Regressive Distributed Lag (ARDL) method and the result of the study showed that volatility in capital flows (measured in aggregate or component) negatively affected economic growth. The result of the study also showed that volatility of component of capital flows influenced economic growth differently in the following ways. (i) While volatility in foreign portfolio investment and other investment flows reduced economic growth in Nigeria, foreign direct investment was insignificant; and (ii) In terms of magnitude, other investment flows had higher negative and significant effect on economic growth compared to foreign portfolio investment and foreign direct investment. Drawing from the above results, this study concluded that volatility in capital flows played an important (albeit negative) role in influencing economic growth in Nigeria. Also, the study concluded that volatility in component of foreign capital flows (foreign direct investment, foreign portfolio investment and other investment flows) influence economic differently. Consequently, the study recommended the need for specific-policy management of the volatility of component of capital flows given their differential impact on economic growth in Nigeria, particularly at this time when the Nigerian economy is in great need of foreign capital flows owing to the continuous fall in international crude oil price and the recession facing the economic. Sound macroeconomic policy management such as effective monetary supervision and regulation capable of ensuring financial stability in both the banking and the capital markets will improve investors' confidence in Nigeria and reduce the volatility of capital flows. There is also the need for improve institutional quality such as political stability; improve judicial system and security of lives and properties among other. These factors are indispensable not only in attracting foreign capital but also contribute in reducing the high reversals/volatility of these capital flows.

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