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Growth effects of capital inflows and investment in Nigeria

International Journal of Management, Economics and Social Sciences (IJMESS)

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International Journal of Management, Economics and Social Sciences (IJMESS)

Suggested Citation: Ikpesu, Fredrick (2019): Growth effects of capital inflows and investment in Nigeria, International Journal of Management, Economics and Social Sciences (IJMESS), ISSN 2304-1366, IJMESS International Publishers, Jersey City, NJ, Vol. 8, Iss. 1, pp. 5-19, https://doi.org/10.32327/IJMESS/8.1.2019.2

This Version is available at: https://hdl.handle.net/10419/195961

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# Growth Effects of Capital Inflows and Investment in Nigeria

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The aim of this study was to ascertain the growth effects of capital inflows using investment as a transmission channel between the periods 1981 to 2016 in Nigeria. The study employed the least square regression method to analyse the data. The outcome of the research indicates that capital inflows have a positive and significant effect on the growth of the Nigeria economy. This imply that foreign capital inflows have contributed to the economic growth of the country. Furthermore, the research output also showed that domestic investment has a positive and significant effect on Nigerian economic growth. From the findings of the study, it is concluded that capital inflow and domestic investment has positively contributed to the growth of Nigeria economy. The findings of this study posed significant policy direction. Firstly, the study emphasized the need for government and policy-makers to attract more inflow of foreign capital into the country but the detrimental effect of huge capital inflow into an economy should also be considered. Secondly, the government should determine the optimal capital inflow that would propel investment and growth in the country. Thirdly, the government should strengthen the macroeconomic fundamentals by deepening structural reforms so as to ensure sustainable capital inflows into the country. Finally, the government should create an enabling environment by providing the needed infrastructural facilities in a bid to attract foreign investors and encouraging domestic investment in the country.

Keywords: Capital inflow, investment, growth, augmented solow growth model, Nigeria

JEL: F21, P33

The role of foreign capital in promoting and enhancing growth has been established in the extant literature. Several strands of literature have shown that through capital inflow developing economies can supplement their domestic capital by providing the needed developmental project that will aid growth and eradicate poverty among the populace. Majority of the developing economies face savings and foreign exchange constraints and relie on the inflow of foreign capital in closing the gap. The theoretical underpinning for the justification of foreign capital is the two–gap model (Nwokoma, 2013) which was developed by Chenery and Strout (1966). According to this model, foreign capital is required in closing the savings and investment gap and the foreign exchange gap faced by developing

Manuscript received October 19, 2018; revised February 15, 2019; accepted March 2, 2019. © The Author(s); CC BY-NC; Licensee IJMESS

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economies.

Capital inflow is most desirable having played a great role in less developed economies where domestic resource is insufficient (Nwokoma, 2013) and in the development of industrialized economies (Obadan, 2004). Similarly, research findings by Reinhart (2005) show that through capital inflow, recipient economies can finance developmental projects that will ensure growth and eradicate poverty enhancing donor economies welfare since capital outflow smoothen the consumption pattern of the donor countries which thus aids them in achieving higher consumption in the long-run.

However, some studies questioned the exact role of capital inflow in promoting the growth of developing economies (Akinlo, 2004; Ali, 2014; Rajan and Subramanian, 2005; Sakyi, 2011). In addition, studies have shown that huge capital inflow can cause a problem in the management of the economy (Obadan, 2013; Okojie, 2013). Research findings by Obadan (2013) revealed that huge capital inflow has been the major cause of financial crisis. For instance, the 1994–1995 Mexican financial crisis, the 1997–1998 East Asian and Russian crisis, the Turkey crisis in 2000–2001 and the 2001–2002 Argentina crisis were all caused by the huge amount of capital inflow into their economies. In addition, high capital inflow into an economy can cause overheating of the macroeconomic, inflationary pressure and exchange rate appreciation which affect the competitiveness of the export of an economy in the international market (Dagnachew, 2014; Nwokoma, 2013; Obadan, 2013; Obiechina and Uzodinma, 2013; Okojie, 2013).

In the literature, majority of the studies both at the country level and across countries focused on the effect of capital inflows on growth (Dagnachew, 2014; Gomanee *et al.*, 2005; Odhiambo, 2011; Ogbechie and Anetor, 2016; Osinubi and Amaghionyeodiwe, 2010; Sethi, 2013; Soto, 2000). The literature, however, remains salient on the link between capital inflow, investment, and growth despite the increasing significance of capital inflows, and investment in the economic prosperity of nations. Hence, the motivation for the study. Another motivation for the study is the quest for foreign capital in the country because of the wide gap that exists between the capital inflow required and the one mobilized by the country for investment purpose. Hence, the basic research question this study

attempt to address is to investigate the growth effect of capital inflows in Nigeria using investment as a transmission channel.

Furthermore, the study provides evidence on the existence and nature of the dynamic relationship between capital inflows and growth by including investment as the specific channel through which capital inflow may affect growth. The inclusion of the investment in the model is motivated by the fact that capital inflows alone would not be adequate in stimulating growth. Hence, the inclusion of investment as transmission channels in the analysis enhances the influence of capital inflows on Nigerian growth. This study explores the aggregate impact of capital inflows on growth using investment as a transmission channel within the augmented Solow growth model employing data spanning from 1981 to 2016.

The contribution of the study to the empirical literature is that, the study provides some empirical evidence about aggregate capital inflows to Nigeria that can can spur growth using investment as a transmission channel. The research outcome of the study indicates that capital inflows have a positive and statistically significant impact on Nigeria growth as do domestic investment. The findings from the study suggest that capital inflows and domestic investment play a key role in the economic growth of the country.

The remainder of this paper is organized as follows: section two presents the review of theory and empirical literature while section three presents the econometric issues and model. Section four presents the empirical result and discussion. Section five presents the conclusion and policy implications of the study while section six focus on the limitation of the study.

## LITERATURE REVIEW

According to the two-gap model developed by Chenery and Strout (1966), developing economies are faced with savings and foreign exchange gap which prevents them in embarking on developmental projects that will enhance productivity and promote growth. The savings gap is the gap between savings and investment while the foreign exchange gap is the gap between export and import. The th-

eory advocates the need for the inflow of foreign capital in relieving the savings and foreign exchange constraint. In addition, the theory posits that with the inflow of foreign capital, developing economies can attain the target growth needed to ensure sustainable development. Furthermore, according to the neoclassical growth theory, the inflow of foreign capital enables developing economies to acquire the needed technology that will enhance productivity, stimulate growth and ensure sustainable development (Adegbite and Adetiloye, 2013; Obadan, 2013; Reinhart, 2005; Tahir *et al.*, 2015).

However, empirical studies on the effect of capital inflows on growth in the literature have shown a mixed result. A possible reason for this is that capital inflows may lead to an appreciation of exchange rate which thus affects the competitiveness of the export of a country and this may have a negative impact on the growth of such economies. Several empirical evidences have shown that capital inflows influence growth positively (Bailliu, 2000; Ekwe and Inyiama, 2014; Gomanee *et al.*, 2005; Odhiambo, 2011; Ogbechie and Anetor, 2016; Osinubi and Amaghionyeodiwe, 2010; Sethi, 2013; Soto, 2000; Udoidem and Udofot, 2014).

In addition, Ajayi and Oke (2012) findings showed that capital inflow has a negative effect on growth. Ayadi and Ayadi (2008) while comparing the effect of capital inflow on growth between Nigeria and South Africa revealed that capital inflow promotes growth in Nigeria whereas, in South Africa, capital inflow retards growth. Also, following studies (Akinlo, 2004; Ali, 2014; Rajan and Subramanian, 2005; Sakyi, 2011) revealed that capital inflow retards growth.

Furthermore, empirical studies in the literature have also shown the link between domestic investment and growth. Bakari (2017) using a vector error correction model (VECM) approach concluded that in the long-run, domestic investment affects growth negatively, while in the short-run, domestic investment affects growth positively in Algeria. Adopting a VECM technique Bakari (2017) revealed that in Malaysia, there is no link between domestic investment and growth in the short-run, whereas in the long-run, domestic investment affects growth positively. Similarly, Chidoko and Sachirarwe (2015) revealed that in Zimbabwe, domestic investment affects growth positively. Ullah *et al.* (2014) concluded that domestic investment and economic growth are co-integrated in Pakistan. T-

heir result further revealed that domestic investment Granger cause economic growth. Mndeme (2015) documented that in Tanzania, the relationship between domestic investment and growth is evident in long-run.

Lean and Tan (2011) showed that domestic investment affects growth in Malaysia in the long-run. Ilegbinosa *et al.* (2015) found that private investment affects growth in Nigeria positively. Iya and Aminu (2015) also concluded in their research findings that domestic investment has positively impacted the growth of Nigerian economy. Emeka *et al.* (2017) findings revealed that a long-run relationship exists between domestic investment and growth. In addition, their research outcome further showed that domestic investment Granger cause growth in Nigeria. In the same line, Omoregie and Ikpesu (2017) concluded that domestic investment affects growth positively in Nigeria.

From the above review of the literature, while scholars agree on the positive role of domestic investment on growth, there seems to be no consensus on the role of capital inflow on growth. This study fills the gap in the literature by investigating the growth effect of capital inflows in Nigeria using investment as a transmission channel. Also, the study employs the use of aggregate capital inflow (private and public flow) unlike previous studies. See Appendix–IV for literature review summary.

# **METHODOLOGY**

In estimating the growth effect of capital inflow and investment, the study adopts the augmented solow growth model which was developed by Mankiw *et al.* (1992). The reasons for using the specification model is because of the aim of the study and also in the model, there is an inclusion of human capital which promotes growth and productivity of labor.

Following theoretical postulations, review of extant literature, similar studies and taking into consideration the variables of interest (capital inflow, and domestic investment), and control variables, the study empirical model is expressed by adopting a standard growth equation:

$$Yit = \alpha_i + \beta CAPIt + \partial INVt + \theta Xt + \varepsilon t \qquad (3.1)$$

Where Yit is GDP per capita at time t,  $\alpha i$  shows the coefficient. CAPIt is capital inflow (comprising fo-

reign borrowing, portfolio investment, workers remittance, official development assistance, and foreign direct investment) at time t, INVit is domestic investment at time t, X is the vector of control variables (life expectancy at birth (LE), population growth (POPGR), secondary school enrolment (EDU), real exchange rate (REXR), inflation (INF) and money supply (M2). The life expectancy at birth, secondary school enrolment, and population growth was included in the model to capture the impact of human capital while real exchange rate, money supply, and inflation were used as a proxy for macroeconomic stability. The  $\epsilon t$  is the error term while  $\beta$ ,  $\delta$  and  $\theta$  are the parameter coefficients to be estimated in the study.

#### -Data and Variables Definition

Annual data covering the period 1981 to 2016 were employed in this study. The covering period in the study was based on the availability of data. The data were sourced from World Bank Development Indicator and Central Bank of Nigeria (CBN) Statistical Bulletin. The dependent variable used in the study is GDP per capita (PCY) while the independent variable is the domestic investment (INV). In line with previous studies, a set of control variables, usually employed in the growth equation, were also included in the study model. Table 1 (see Appendix-I) shows the variables, definitions, and sources of all the variables used in the study.

## **RESULTS**

The study first examined the stationarity property of the variables prior to investigating the growth effects of capital inflow and investment. Results (see Table 2, Appendix-II) revealed that all the variables are stationary at level. This implies that the variables do not have a unit root. Hence, the null hypothesis of the presence of a unit root is rejected.

Table 3 (Appendix-III) shows the result of the least square estimate. The result revealed that capital inflow has a positive and significant effect on economic growth. This implies that capital inflow has contributed positively to the growth of Nigerian economy. The research finding supports the research work of Ekwe and Inyiama (2014), Ogbechie and Anetor (2016), Saibu (2014) and Udoidem and Udo-

fot (2014). The results further revealed that domestic investment has a positive and significant effect on growth. This suggests that in the country, domestic investment influenced the growth of Nigerian economy. This corroborates the findings of Bakari (2017), Iya and Aminu (2015), Omoregie and Ikpesu (2017) and Ullah *et al.* (2014).

The results in Table 3 also showed that real exchange rate has a positive and significant effect on growth. This implies that an appreciation in the real exchange rate will lead to the growth of the Nigerian economy. In addition, the result also revealed that population growth affects economics growth positively while life expectancy at birth and secondary school enrolment affect economics growth negatively. Furthermore, the money supply was shown to affect economic growth positively. The adjusted *R*-square of 0.998 or 99 percent indicates that the explanatory variables were robust in explaining the variation in economic growth. It also shows that the model has a good fit. The significance of the *f*-statistic showed that the whole regression model was significant. The Durbin-Watson result revealed that the model was free from serial correlation.

The presence of serial correlation was further tested by carrying out the Breusch-Godfrey serial correlation Lagrange Multiplier test and the result revealed that the model was free from serial correlation. Furthermore, the heteroscedasticity test was also carried out using the Breusch-Pagan-Godfrey test. The result of the test indicates that the model was free from heteroscedasticity. Figure 1 shows the stability test (see Appendix-V) which was carried out using Cumulative Sum (CUSUM) test and CUSUM of square test. Both test statistics (the blue line) fall within the lower and upper limits (red dotted lines) indicating that the estimated coefficient is reliable and stable for analysis purpose.

# CONCLUSION AND POLICY IMPLICATIONS

The study investigates the growth effect of capital inflow using investment as a transmission channel between the periods 1981 to 2016 in Nigeria. Data employed in the study were sourced from the world development indicators and the Central Bank of Nigeria (CBN) statistical bulletin. The dependent variable of the study is economic growth which is measured as GDP per capita while the independent variables are capital inflow (private flows and public flows) and investment. In line with previous

empirical studies, a list of control variables (inflation rate, real effective exchange rate, money supply, population growth rate, life expectancy at birth and secondary school enrolment) was included in the study.

The empirical findings from the study reveal that the variables are co-integrated i.e. the variables have a long-run relationship. The outcome of the research further shows that capital inflow and domestic investment has a positive and significant effect on Nigerian growth. Hence, the study concludes that capital inflow and domestic investment has positively contributed to the growth of Nigerian economy.

The findings of this study pose significant policy directions. Firstly, the study emphasizes the need for government and policy-makers to attract more inflow of foreign capital into the country but taking into consideration the detrimental effect of huge capital inflow into the economy. Secondly, the government should determine the optimal capital inflows that would propel investment and growth in the country. Thirdly, the government should strengthen the macroeconomic fundamentals by deepening structural reforms so as to ensure sustainable capital inflows into the country. Fourthly, the government should create an enabling environment by providing needed infrastructural facilities in a bid to attract foreign investors and encouraging domestic investment in the country.

Finally, according to the two-gap model, developing economies require capital inflows so as to close the savings and foreign gap. Also, the neoclassical growth theory lends credence to the significance of capital inflows in enabling developing economies in acquiring the needed technology that will enhance productivity and promote growth. The result from the study is in line with theory, however, the country should be cautious in allowing huge capital inflows into the economy because it can cause detrimental effects in the management of the economy based on past experience of countries who allowed huge capital inflow into their economy as revealed in the literature.

## LIMITATIONS AND FUTURE DIRECTIONS

The study uses aggregate capital inflow (public and private inflow) instead of its components. Future

studies can disaggregate the capital inflow. Also, the study sample was a single country, future studies can focus on the growth effect of capital inflow and investment using a cross-country data.

The dynamic interaction among growth, capital inflow, and investment can also be investigated.

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# Appendix-I

Variable	Definition	Source	
Dependent variable			
PCY	GDP per Capita	World Development Indicator	
Independent variable			
CAPI	Capital inflow	World Development Indicator, CBN statistical bulletin	
INV	Domestic Investment	World Development Indicator	
Macroeconomic stability variables			
INF	Inflation which is rate of change in	World Development Indicator	
REXR M2	price level Real exchange rate Money supply	World Development Indicator CBN statistical bulletin	
Human and physical capital variable			
POPGR LE	Population growth rate Life expectancy at birth	World Development Indicator World Development Indicator	
EDU	Secondary school enrollment	World Development Indicator	

Table 1. Variable, Definition and Source

# Appendix-II

Group Unit Root Test: Summary						
Level						
Series: LOG(GDPPC), LOG(CAPI), LOG(INV), REXR, INF, LOG (M2), POPGR, LE, EDU,						
Method	Statistic	Prob.				
Levin, Lin & Chu t*	-7.05133	0.0000***				
Im, Pesaran and Shin W-stat	-2.70441	0.0034***				
ADF - Fisher Chi-square	51.1536	0.0001***				
PP - Fisher Chi-square	17.3344	0.5002				

<sup>\*\*\*,</sup> and \*\* shows the rejection of the null hypothesis of the existence of a unit root at 1%, and 5%

Table 2. Stationarity Test

# Appendix-III

Dependent Variable		DPPC		
LOG(CAPI)		0.3761***		
		(0.0838)		
LOG(INV)		0.531***		
		(0.0756)		
REXR		0.0016*		
	(0.0008)			
INF		-0.00008		
		(0.0026)		
POPGR		2.5244**		
		(1.1826)		
		-0.1645***		
LE				
EDM		(0.0054)		
EDU	-0.6478			
T 0 0 0 10)		(0.5189)		
LOG(M2)	0.2547***			
		(0.0931)		
Constant	-19.7034***			
	(2.6208)			
Durbin Watson		2		
F-statistics				
		1654.243		
R-squared		0.999		
Adjusted R-squared		0.9984		
		Prob. Chi- Square	0.6174	
Heteroscedasticity Test: Breusch-Pagan-Godfrey	Obs*R-squared 6.266723	Prob. Chi- Square	0.8721	
Breusch-Godfrey Serial Correlation LM Test:	Obs*R-squared 0.273670			

Note: \*\*\* \*\* indicates significance at 1%, and 5% level respectively. The figure in bracket represent standard errors

Table 3. Least Square Regression Estimate

# Appendix-IV

Author(S) / Year	Country	Period Covered	Estimation Technique	Main Findings
Gomanee <i>et al</i> . (2002)	Sub-Saharan Africa (SSA) economies	1970-1997	Pooled OLS	Aid positively affects economic growth in SSA.
Ogbechie & Anetor (2016)	Nigeria	1986-2014	VAR	Capital inflows react positively to economic growth in Nigeria.
Bailliu (2000)	Forty developing economies	1975-1995	Generalized Method of Moments (GMM)	Capital inflows foster higher economic growth.
Udoidem & Udofot (2014)	Nigeria	1980-2008	Descriptive and Correlation	Capital inflows aid the activities of entrepreneurs and this, in turn, positively impact growth in the country
Soto (2000)	Forty four developing countries	1986-1997	Generalized Method of Moments (GMM)	Foreign direct investment (FDI) and portfolio investment (PI) has a positive and significant relationship with economic growth.
Akinlo (2004)	Nigeria	1970-2001	Error Correction Model (ECM)	Foreign direct investment might not be growth enhancing
Ekwe & Inyiama (2014)	Nigeria	1982-2012	OLS	Foreign capital inflow had a significant and positive effect on economic growth.
Sethi (2013)	India	1995-2011	Pairwise Granger causality test	Economic growth Granger causes FDI and PI
Ajayi & Oke (2013)	Nigeria		OLS	High level of debt led to the devaluation of the country currency.
Ali (2014)	Pakistan	1972-2013	Pairwise Granger causality test	The result revealed a negative effect of capital inflow on economic growth in the long-run
Osnubi & Amaghionyodiw e (2010)	Nigeria	1970-2005	ECM	Foreign private investment enhances growth positively.
Odhiambo (2011)	Tanzania	1980-2005	ARDL	Causality flowing from foreign capital inflows to economic growth.
Ayadi & Ayadi (2008)	Nigeria, South Africa	1994-2007	OLS, Generalized least square (GLS)	Negative effect of debt on growth was confirmed in South Africa and Nigeria.
Rajan & Subramanian (2005)	Thirty three developing countries		OLS	Aid inflows have a systematic effect on a country's competitiveness.
Sakyi (2011)	Ghana	1984-1990	ARDL	Foreign aid has a positive impact on growth.

Table 4. Summary of Literature

# Appendix-V

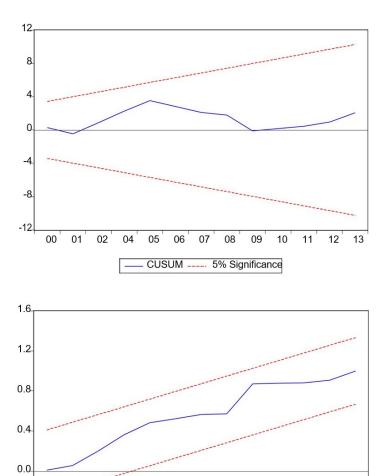


Figure 1. Stability Test

06 07

80

CUSUM of Squares ---- 5% Significance

12 13

-0.4

02

01

04 05