

DOMESTIC PRIVATE CAPITAL ACCUMULATION AND ECONOMIC DEVELOPMENT IN NIGERIA 1970 -2010

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Abstract

This study empirically examine the relationship between Domestic Private Capital Accumulation and Economic Development in Nigeria from 1970-2010. The variables PCGDP, PINV, PUINV, RIR, and INFLA attained stationarity after first differences. The Johansen co integration test of trace and maximum Eigen value statistics was used to establish long run equilibrium relationship among the variables in the model. We also estimated the over parameterized and parsimonious ECM to account for short run dynamic adjustment required for stable long run equilibrium relationship among the variables in the model. All the independent variables (PUINV,PINV, RIR,INFLA) impacts positively on economic development .Public and Private investment conform to apriori expectations while inflation and real interest rate contradicts apriori expectations. The analysis suggest a high degree of macroeconomic stability and a low and predictable inflation rates have a paramount importance to ensure a strong response to Private investment to economic incentives. The overall harmony of macroeconomic policies and stability in the country is essential for the promotion of Private investment. Also proactive measures are required to ensure macroeconomic stability in the country.

1. Introduction

Domestic private capital accumulation is the expansion of the productive potential of the economy necessitated by indigenous entrepreneurs. Uremadu (2006), Adegbite and Owuallan (2007) in their studies posits that although FDI is beneficial to host countries by speeding up the process of economic growth and development, its repercussory effect is greater. Developing countries should depend greatly on domestic savings and investment. FDI should at best complement domestic private investment.

It is frankly stated in the First National Development Plan that, it has always been the objective of government policy to stimulate the vigorous growth and development of the private sector. The system adopted has been to ensure that the various proposals by Government are consistent with the development of the private sector (First Plan, 1962). It is

obvious from all these that the major plan of the State's intervention in the economy is to facilitate the development of the private sector, whose role could determine the level of economic development of a country.

For example, the expected Investment boom after the Structural Adjustment Programme (SAP) commenced in 1986 seems not to have materialized. Private Investment share of the GDP is still below 10 per cent. There was an initial rise in Private Investment share of GDP just after the SAP was adopted, but the ratio has since declined from 8.6 per cent to 13.7 per cent (Akpokodje, 1998). Nigeria continues to implement far-reaching trade policy reforms with the hope that Private Investment share of GDP will improve and non-oil exports will boom, the results have been disappointing.

Studies have been carried out to examine the determinant of private investment behaviour in Nigeria; here too the results have been controversial and hence inconclusive. Attention has been focused on the traditional determinants of Private Investment such as output, relative prices, and credit/liquidity and so on. It is interesting to note that domestic credit to the Private Sector has continued to expand and relative prices tend to favour investment in such sectors as agriculture and manufacturing. However, the expected investment associated with such favourable environment has not been attained. It seems that some other factors are driving the response of the private sector to investment spending beyond relative prices and current profitability. The study therefore will examine the impact of domestic private capital accumulation on economic development in Nigeria.

This may well explain why, despite far reaching reforms implemented, private investment has responded unimpressively. For policy purposes, it is important to know how private sector perception of trade policy reforms affects investment. This will help in the design of more appropriate strategies to stimulate capital accumulation in Nigeria.

The rest of the paper is organised as follows: section two is a review of relevant literature. Section three is theoretical framework underlying the study. Methodology and data sources are discussed in section four. Section five contains empirical model specification. The empirical results and discussion of findings are in section six, while section seven discussed policy implications and recommendation. Section eight concludes the paper.

2. The Literature

From the policy viewpoint, an extremely important form of uncertainty faced by investors is the credibility of policy reforms. Investment-friendly reforms raise expected returns, but may increase uncertainty if investors believe that the reform measures could be reversed. In such a situation, investor's perception about the probability of policy reversal becomes a key determinant of the investment response.

The above issues are explored by Rodrik (1991) using a model in which investment involves sunk cost of entry and exit. He shows that a reform favourable to capital, but regarded as less than fully credible, will fail to trigger an investment response unless the return on capital is high enough to compensate investors for the losses they would incur should the reversal take place.

Similar qualitative conclusions are reached by Qyejide, Ogunkola and Ndunga (2002) who considers the case of a trade reform suspected to be only temporary. An economic policy reform enjoys credibility to the extent that relevant actors, such as domestic and foreign

investors, believe the government will implement and sustain the programme of reforms that it has announced. The identity of relevant actors may vary across time and space, but the issue of credibility seems inescapable, given the sequential nature of economic decision making.

At least in principle, a government that dismantles protectionism today can restore it tomorrow, just as a government that cuts taxes now can increase them later. The record of trade liberalization in developing countries is fraud with examples of governments that promise one policy but deliver another, or implemented reforms that were subsequently retracted (Michael et al., 1991, for a detailed discussion of this issue).

If investors doubt the lasting of free trade, for example, they may decide not to shift resources from inefficient, import-substitution industries to more dynamic, export oriented ones. The deterrence to investment arises because exporting involves costs that would be difficult to recover if the government reinstated protectionism. For example, physical capital is typically expensive to install and uniquely appropriate to a particular industry.

Likewise, investments in human capital perform best in the activity for which they were designed. Firms will avoid making export related investments in client networks and physical and human capital, unless they believe that public authorities will persist in keeping the economy open. If investors anticipate a policy reversal, then commercial liberalization will hurt import-competitors without stimulating the growth of exports, and the liberal policy will become unsustainable (Rodrik, 1992).

This uncertainty regarding the sustainability of the trade liberalization might discourage private investment and the allocation of resources. In particular, it is argued that if sustainability of the liberalization is uncertain, the entrepreneurs will delay investment decision because they do not want to commit resources to a particular sector. Consequently, capital accumulation might slow down, hindering economic growth and development.

One important factor determining the potential success of economic reform programmes is the extent and pace at which Private investment responds to the policy changes. Since the expansion of Public Investment is usually constrained as part of fiscal austerity measures embodied in a structural reform programme, the required recovery of investment has to come largely from the private sector. The behaviour of private investment has therefore been a major focus of attention in assessing the reform outcome.

The existing evidence across a wide spectrum of developing countries generally points to a decline or stagnation of private investment during the immediate post reform years (Harigan and Mosley, 1991; Greenaway and Morrissey, 1992; Gunning, 1994; Collier, 1995; Dehn, 2000; Lemi and Asefa 2001). This was as a result of perceived lack of credibility and sustainability of government trade policy reforms by private investors (likelihood of policy reversal). Thus making private investors to delay investment decisions even though the outlook of the future is promising and profitability expectations are high. This is because developing countries are fond of formulating sound investment friendly policies to attract foreign investors and only to reverse it later. For example Nigeria moved from the era of regulatory control to deregulation and to guided deregulation.

The perceived risk of Investment can be reduced in several ways. Consistent and credible policy formation that minimizes the likelihood of policy reversal maximizes its predictability. Credibility is crucial to capital accumulation, economic growth and over all success of a macroeconomic policy (Chung, 2000; Konings, 2001; Sousa, 2001; Javorcik and

Spataranu, 2004). The credibility issues relating trade and exchange rate policy reforms to Private Investment has been lacking in Nigeria.

The literature is replete with evidence that private investment in most developing countries is more directly related to growth than public investment (Akpokodje, 1998; Serven and Salimano, 1992a; Mamatzakis, 2001; Rashid, 2005). Accordingly, it is now widely accepted that the expansion of private investment should be the added impetus for economic growth in developing economies (Chhibber and Dailami, 1990).

Foreign exchange shortage is also widely acknowledged as a potent constraint to private investment. (Akpokodje 2009, Serven 2002) notes that since the bulk of capital goods and raw materials used in the industrial sectors of most developing countries are imported, then, foreign exchange shortages will impinge adversely on private investment. Bilborrow (1977), in his study on Colombia, introduced a foreign exchange variable defined as the sum of international reserves in the previous period and export earnings in the current year. His results show a significant direct correspondence between foreign exchange availability and private investment. Similarly, Fry (1988), in a study of a group of 61 developing countries, used two variables to mirror foreign exchange availability namely foreign exchange receipts and import capacity. For both, he found a significant positive relationship with private investment.

In recent times, the foreign exchange issue has been examined from a slightly different perspective. A key component of economic reform programmes is the real devaluation of the domestic currency. In the short-run, a real devaluation will depress private investment through its contraction impact on domestic absorption. The main demand side effects are a contraction in private sector wealth and expenditure due to the induced rise in the general price level.

The slump in general economic activity will compel private investors to roll back investment activity. On the supply side, the effect of real devaluation is, however, ambiguous. A real devaluation will induce a rise in foreign prices measured in domestic currency, thereby boosting investment in the tradeable sector while shrinking same in the non-tradeable sector. On balance, a real devaluation is expected to have a negative impact on private investment as a substantial proportion of capital and intermediate goods are obtained offshore.

De Melo and Tybout (1986) found a positive but insignificant relationship between the real exchange rate and private investment for Uruguay, while Oshikoya (1994), on the strength of a study of selected African countries, reported a positive and significant effect for middle-income countries and a negative but significant impact for low-income ones.

Until the early 1970s, it was generally believed that low interest rates on bank loans and deposits would promote private investment spending- a notion with the Keynesian and neo-classical analyses. But McKinnon, (1973) and Shaw (1973) challenged this conventional theory. They argued that raising interest rates increase the amount people are willing to hold as financial assets by decreasing their holdings on non-financial assets. Thus making it possible for financial institutions to extend more loans to the investors.

They further argued that the existence of very low real interest rate would result in the support and expansion of unproductive projects and the channeling of funds into consumption rather than investment, which would be detrimental to private capital formation. They advanced the hypothesis that private investment in developing countries is positively related to the accumulation of real money balance.

3. Theoretical Framework

The Neo-Classical approach to investment founded by Jorgenson (1963) was mainly spurred by the desire to address the shortcoming of the Harod Domar formulation, particularly in its simplistic assumptions, this approach introduces factor substitution in the derivation of the demand for capital from the firm's cost minimization problems. Consequently, the desired capital stock is shown to depend on the rental cost of capital (which, in turn, depend on the price of capital goods, the real interest rate and the depreciation rate) and the level of output.

The neoclassical theory of investment provided another explanation for investment expenditure in addition to changes in output. Inducement to invest may also be simulated by favourable changes in relative prices where downward shifts in the real user cost of capital services imply that the firm has to restore equilibrium by cutting down the marginal productivity of capital stock (Jorgensen, 1963). Jorgensen model is based on the theory of optimal capital allocation.

Solow's model of economic growth postulates a continuous production function linking output to the inputs of capital and labour which are substitutable. Solow's basic assumptions are: one composite commodity is produced; output is regarded as net output after making allowance for the depreciation of capital; constant returns to scale; the two factors – labour and capital are paid according to their marginal physical productivities; flexibility of prices and wages; full employment of the available stock of capital. Given these assumptions, Solow shows in his model that, with variable technical coefficient, there will be tendency for capital - labour ratio to adjust itself through time in the direction of equilibrium ratio.

The Solow neoclassical growth model uses a standard aggregate production function in which $y = k^a (AL)^b$, where $y = \text{GDP}$, $k = \text{stock of capital}$ which may include human as well as physical capital. $L = \text{labour}$ and $A = \text{efficiency parameter}$.

4. Methodology and Data

In estimating the model for the study, we used three steps methodology. These steps includes;

- i. Univariate Statistical Analysis of time series (Test for unit root using Group Unit Root Test by Levin, Lin and Chu and individual unit root process by Im, Pesaran and Shin Test) to ascertain the stationarity or non stationarity status of the data series.
- ii. Multivariate Cointegration Analysis and the estimation of the long run equilibrium models of public capital accumulation using Johansen (Trace and Max-Eigen Statistics) cointegration test.
- iii. To obtain the parsimonious short run dynamic models of public capital accumulation through the error correction mechanism which has been shown to better capture the short run dynamics of the relationships.

Data for the study were obtained from various CBN Bulletins, Annual Reports and Statement of Accounts, National Bureau of Statistics [NBS] which cover the period 1970-2010.

5. Empirical model Specification

The augmented Solow neoclassical model is use in estimating the role of domestic private capital accumulation in economic development.

The Solow neoclassical growth model uses aggregate production function in which

$$Y = AK^\alpha L^{1-\alpha} \dots\dots\dots (1)$$

$$Y/L = AK^\alpha L^{1-\alpha}/L \dots\dots\dots (1.1)$$

$$y = AK^\alpha L^{1-\alpha-1} \dots\dots\dots (1.2)$$

$$y = AK^\alpha L^{-\alpha} \dots\dots\dots (1.3)$$

$$y = AK^\alpha / L^\alpha \dots\dots\dots (1.4)$$

$$y = Ak^\alpha \dots\dots\dots (2)$$

where

Y/L = y = real per capita GDP

A = efficiency parameter

k = stock of physical capital

In the augmented Solow neoclassical model, the efficiency parameter (A) is expanded to include inflation and real interest rate. Inflation is included as an independent variable in the model because high rate of inflation has harmful effects on the efficient allocation of resources being particularly detrimental in creating distortions in investment patterns and thus discourages investment generally. High rate of inflation is a sign of macroeconomic instability and government's inability to manage the economy effectively. K is expanded to include public and private capital.

$$\Delta PCGDP = f(\Delta PINV_t, \Delta PUINV_t, \Delta RIR_t, INFLA_t)$$

The multivariate specification of the equation for estimate in our model is given as $\Delta LPCGDP = \beta_0 + \beta_1 \Delta PINV_t + \beta_2 \Delta LPUINV_t + \beta_3 \Delta RIR_t + \beta_4 INFLA_t + \Phi \dots\dots\dots (3)$

$$\beta_1 > 0, \beta_2 > 0, \beta_3 > 0, \beta_4 < 0$$

Where

$\Delta LPCGDP_t$ = Change in log of growth rate of real per capita gross domestic product, a measure of economic development

$\Delta PINV_t$ = change in Private investment

$\Delta LPUINV_t$ = change in log of Public investment

ΔRIR_t = change in Real interest rate

INFLA_t = inflation rate

Φ = Error term

6.0 Results of domestic private capital accumulation and economic development model

6.1 Results of unit root test for domestic private capital accumulation and economic development model

LPCGDP = F(PRINV, LPUINV, RIR, INFLA)

Group unit root test: Summary LEVEL

Series: LPCGDP, LPUINV, PRINV, RIR, INFLA

Method	Statistic	Prob.**	Cross-Sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	0.50318	0.6926	5	182

Null: Unit root (assumes individual unit root process)

Method	Statistic	Prob.	Cross-Sections	Obs
Im, Pesaran and Shin W-stat	-3.73375	0.0001	5	182
ADF - Fisher Chi-square	44.2979	0.0000	5	182
PP - Fisher Chi-square	16.1240	0.0961	5	190

** Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Group unit root test: Summary FIRST DIFFERENCE OF VARIABLES

Series: LPCGDP, LPUINV, PRINV, RIR, INFLA

Method	Statistic	Prob.**	Cross-Sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-4.93970	0.0000	5	175
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-10.2799	0.0000	5	175
ADF - Fisher Chi-square	104.682	0.0000	5	175
PP - Fisher Chi-square	152.783	0.0000	5	185

** Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Note: L Implies Natural Logarithm

Source: Authors Computation

The unit root result shows that all variables LRPCGDP, LPUINV, PINV, RIR, INFLA are stationary after first difference. We therefore reject the null hypothesis (Ho) of non-stationarity for all variables, after first differences.

The next step is to perform the Johansen cointegration test for the variables of interest. However, since the Johansen cointegration method is so sensitive to the lag order selection, automatic selection using Bartlett Kernel, selection of maximum lag, based on SIC, Kewey-West bandwidth selection was used. Johansen cointegration test is also implemented with linear deterministic trend. The series are LRPCGDP, LPUINV, PINV, RIR, INFLA. Johansen cointegration test result is presented in section 6.2.

The Johansen cointegration Test revealed that the Trace and Maximum Eigen Value Statistics show the existence of two and one cointegrating equation(s) respectively at the five percent level significance. The conclusion drawn from this result is that there exist a unique long-run relationship between LRPCGDP and the regressors (LPUINV, PINV, RIR, INFLA). Since there is one cointegrating vector, an economic interpretation of the long-run LRPCGDP can be obtained by normalizing the estimates of the unrestricted cointegrating vector for the long-run

on the LRPCGDP. The normalized cointegrating equation suggests that there is a negative long run relationship between RPCGDP and the regressors. Interests rate and inflation maintain apriori expectations and are statistically significant. PUIINV and PINV are wrongly signed and statistically insignificant.

6.2 Results of Johansen cointegration test for domestic private capital accumulation and economic development model

Series: LPCGDP LPUINV PINV RIR INFLA

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.671042	96.38573	69.81889	0.0001
At most 1 *	0.532654	56.35997	47.85613	0.0065
At most 2	0.388813	28.97527	29.79707	0.0620
At most 3	0.267698	11.25059	15.49471	0.1965
At most 4	0.000954	0.034351	3.841466	0.8529

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.671042	40.02576	33.87687	0.0082
At most 1	0.532654	27.38470	27.58434	0.0530
At most 2	0.388813	17.72468	21.13162	0.1405
At most 3	0.267698	11.21624	14.26460	0.1437
At most 4	0.000954	0.034351	3.841466	0.8529

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Source: Authors Computation

The identified cointegrating equation was used as an error – correction term (ECM) in the error correction model. This series forms the error correction variable. Thus, the null

hypothesis that there is no co-integration relationship among the variables in the model is rejected at the five percent level of significance.

The error correction model was estimated and shows that the system adjust to long run equilibrium. ECM_{t-1} is the lagged error correction term. The over parameterized model usually deals with problems of model misspecification. This is presented in Section 6.3.

In the over parameterized model, the error correction term $ECM(-1)$ is -0.736169 is correctly signed, that is an indication of RPCGDP adjustment to any disequilibrium in the short run. The speed of adjustment is the coefficient of the error correction variable $ECM(-1)$. The coefficient of the ECM is the speed of adjustment from short run to long run equilibrium. It means that about 74 percent departure from previous year's disequilibrium adjust back to the equilibrium in the current year. The speed of adjustment is high. The $ECM(-1)$ is statistically significant and satisfy apriori expectation. The over parameterized model further shows that RPCGDP is influenced by both current and one lag period of $\Delta PINV$, $\Delta LPUINV$, $INFLA$ and RIR .

Private investment in the current and one lag period impact positively and insignificantly on RPCGDP. Inflation in the first lag is negative and insignificant. This satisfy apriori expectations because inflation is properly signed.

6.3 Results of the over-parameterized error correction for domestic private capital accumulation and economic development model

Dependent Variable: $\Delta LPCGDP$

	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.760519	1.193354	-1.475270	0.1517
$\Delta LPUINV$	4.834954	2.177493	2.220422	0.0350
$\Delta LPUINV(-1)$	1.890049	2.368765	0.797905	0.4319
$\Delta PINV$	3.85E-06	3.72E-06	1.035448	0.3096
$\Delta PINV(-1)$	1.73E-06	5.49E-06	0.314548	0.7555
ΔRIR	-0.011828	0.180477	-0.065540	0.9482
$\Delta RIR(-1)$	0.266558	0.180464	1.477067	0.1512
$\Delta INFLA$	0.127065	0.048064	2.643666	0.0135
$\Delta INFLA(-1)$	-0.019521	0.050376	-0.387504	0.7014
$ECM(-1)$	-0.736169	0.181462	-4.056874	0.0004
R-squared	0.520281	Mean dependent var		0.013514
Adjusted R-squared	0.360375	S.D. dependent var		5.591470
S.E. of regression	4.471865	Akaike info criterion		6.058948
Sum squared resid	539.9345	Schwarz criterion		6.494331
Log likelihood	-102.0905	Hannan-Quinn criter.		6.212441
F-statistic	3.253665	Durbin-Watson stat		1.693330
Prob(F-statistic)	0.008355			

Source: Authors Computation

This means that in the first lag, a one percent rise in inflation would result to a 0.019 percent reduction in RPCGDP. In the current period inflation impact positively and significantly on economic development. This means that high rates of inflation in the current period increases economic development. Also in the over parameterized model Real interest rate (RIR) in the current period is properly signed and satisfy apriori expectations. It has negative and insignificant impact on RPCGDP. A one percent change in interest rate result to 0.0118 percent fall in RPCGDP. Thus RIR has a negative and insignificant relationship with RPCGDP. The impact of one lag period of RIR on RPCGDP is positive and insignificant. The result showed that a one percent change in RIR in the one lag period brings about a 0.266558 per cent reduction increase in Economic Development. High interest rate would increase the cost of capital and therefore dampens investment. This result conform with the Keynesian and neoclassical theories of investment but is in conflict with financial repression hypothesis of McKinnon (1973) and Shaw (1973) which hypothesized that low interest rate discourages voluntary savings and reduce the amount of investment funds in the financial intermediation process.

The result is consistent with the findings by (Hermes and Lensink, 2001) that high interest rate may discourage investment more especially when government deficit is financed with banking sector loan. PUINV in the first lag impact positively on RPCGDP but statistically insignificant at the five percent level. The PUINV in the current period positively and significantly impacts on economic development. This means that a one percent change in Public Investment in the current period brings about a 4.8349 per cent increase in Economic Development, but in the one lag period, a unit change in PUINV results to a 1.89 per cent increase in Economic Development.

The coefficient of determination (adjusted R^2) at 0.360375 used to measure the goodness of fit of the model indicates that about 37 per cent of variations of the dependent variable (RPCGDP) is explained jointly by all the regressors in the model. The adjusted R^2 value shows that the overall goodness of fit of the model is not satisfactory. The AIC, SIC and HQ, information criteria shows that the model is correctly specified. The F statistics of 3.2536665 measuring the joint significance of all the regressors in the model is statistically significant at the five percent level. The equations standard error of 4.447 implies that about two-thirds of the time, the predicted value of RPCGDP would be within 447 per cent of the actual value.

The parsimonious model derived from step wise elimination of jointly insignificant variables in the over parameterized model is presented in Section 6.4.

The result reveals that, ECM(-1) is correctly signed and statistically significant. The negative sign depicts the existence of cointegration relationship among the variables in the model while the statistically significant coefficient of the ECM(-1) implies disequilibrium on the long run. The coefficient of the ECM(-1) is -0.6877 which implies that about 69 per cent departure from long run equilibrium is corrected in the short run. It also means that 68 per cent departure from equilibrium in the previous year adjust back to equilibrium in the current year. The speed of adjustment is high.

6.4 Results of parsimonious error correction for domestic private capital accumulation and economic development model

Dependent Variable: Δ LPCGDP

	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.192371	0.883338	-1.349847	0.1868
Δ LPUINV	4.443988	2.010570	2.210313	0.0346
Δ PINV	3.51E-06	3.35E-06	1.047553	0.3029
Δ RIR(-1)	0.257688	0.159392	1.616693	0.1161
Δ INFLA	0.123144	0.045250	2.721394	0.0106
ECM(-1)	-0.687716	0.149000	-4.615531	0.0001
R-squared	0.503116	Mean dependent var		0.013514
Adjusted R-squared	0.422974	S.D. dependent var		5.591470
S.E. of regression	4.247406	Akaike info criterion		5.877887
Sum squared resid	559.2541	Schwarz criterion		6.139117
Log likelihood	-102.7409	Hannan-Quinn criter.		5.969983
F-statistic	6.277770	Durbin-Watson stat		1.803243
Prob(F-statistic)	0.000394			

Source: Authors Computation

The adjusted R^2 of 0.422794 implies that about 42 per cent variations in the dependent variable is explained jointly by all the regressors in the model. The explanatory power of the model is not satisfactory. The F statistics which measure the joint significance of all the regressors in the model is statistically significant and is a good fit.

The Durbin Watson statistics of approximately two (i.e. 1.803243) means absence of serial correlation. The AIC, SC, and HQ, information criteria shows that the model is correctly specified. The model passes the diagnostic and normality test. We therefore reject the null hypothesis that the error terms are not normally distributed at the five percent level of significance. The error term is properly signed and statistically significant. This means that the ordinary least square estimation is unbiased, has minimum variance, consistent and follow a normal distribution.

All the independent variables (Δ PUINV, Δ PINV, Δ RIR(-1) and INFLA) impacts positively on economic development. Public investment (Δ PUINV) and INFLA are significant while Δ PINV and Δ RIR are insignificant. PUIINV and PINV conform to apriori expectations, while INFLA and Δ RIR(-1) contradicts apriori expectations. High inflation and high interest rate increases RPCGDP.

The results showed that a one percent change in PUIINV brings about a 4.43 988 per cent increase in Economic Development. Similarly, a unit change in PINV brings about a 0.00000351 per cent increase in Economic Development. Also a unit change in RIR in the one lag period brings about a 0.257688 per cent increase in Economic Development. A unit rise in

inflation rate results to a 0.123144 per cent increase in Economic Development. The assertion that high interest rate impact positively on investment leading to economic growth is in line with the Mackinnon (1973) and Shaw (1973) financial repression hypothesis. The assertion that high interest rate encourages voluntary savings and makes fund available for investment through the financial intermediation process by banks. This is in conflict with neoclassical and Keynesian theories of investment which advocate for low interest rate.

6.5 Analysis of the result of domestic private capital accumulation and economic development model

The significant positive impact of public investment on RPCGDP is consistent with Wagner's law of rising public investment as national economy grows. Also Ranjan and Sharma (2008) in their study on Government Expenditure and Economic Growth evidence from India, formulated a model that posit a positive relationship between public sector expenditure and economic growth. Government spending rises on the long run thereby causing the economy to grow. Islam (2001) in his study on Wagner's law revisited also found a long-run positive relationship between government expenditure and GNP per capita.

The insignificant positive impact of private investment on RPCGDP conform with apriori expectation. There is need to invigorate the growth of the private sector through package of incentives so as to make the positive impact greater or significant.

Thus summing up: the null hypothesis of non stationarity of the variable is rejected at the five percent level of significance because all variables are integrated of the order one $I(1)$ and attained stationarity after first differences. The null hypothesis of no cointegration relationship among the variables is rejected at the five percent level of significance. This is because of the result revealed by Johansen, Trace and Maximal Eigen value test that identified a long run equilibrium relationship among the variables in the model.

The error correction term $ECM(-1)$ has the correct sign and statistically significant, thus satisfying the normality assumption. We therefore reject the null hypothesis that the error term is not normally distributed at the five percent level of significance. Private investment does conform to apriori expectations but insignificant. The null hypothesis of no significant positive relationship between private investment and economic development is therefore rejected at the five percent level of significance.

7. Policy implications and recommendation

- i. In an import dependent economy like Nigeria, cost of imported inputs rises with devaluation and depreciation of the naira. This contributes to high inflation rates which hinder export growth by reducing international competitiveness and profitability of existing investment and discourage new and potential investment in the export sector. The implication of the above is that there is need to achieve a stable exchange rate that when combine with export incentives will promote all categories of non-oil export in Nigeria.
- ii. The negative impact of real interest rate on private investment poses very important qualitative implications for financial sector efficiency. The monetary authority needs to be proactive in the management of interest rate. Effort should be made to see that

interest rate do not derail the target of increasing investment to about 30 per cent of GDP required to unleash a poverty reduction of at least 7 – 8 per cent by 2015.

8. Conclusion

Macroeconomic variables like inflation, interest rate, size of the public and private sectors etc. plays a prominent role in domestic private capital accumulation in Nigeria. Incentives aimed at boosting domestic private capital accumulation must be given to indigenous entrepreneurs to enhance their contribution to economic development. The study revealed that Nigeria's private sector is growing and need to be encouraged to play the leading role in economic development. The ongoing Privatization of public owned enterprises and the establishment of Local Content Development Board (LCDB) should be sustained.

The present trend in national economic management globally where private sector should be the leading sector be vigorously pursued in Nigeria . Public goods required for private sector participation should be provided by government. Gradual and systematic disengagement of the public sector in some preferred sectors of the economy be encouraged. This will inevitably result to public sector investment playing a complementary role to private sector investment.

In the event of uncertainties in the business environment (Business failure), Foreign Private Investment would vanish but domestic private capital vanish no where. It stays and remains with us. Drawing from the analysis presented in this study, macroeconomic policies should have micro foundation so that the impact of the individual components that make up the aggregate will be considered in policy formulation and implementation.

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APPENDIX 1

Private Investment, Public Investment, Real GDP, Real Interest Rate and Inflation Rate (1970-2010)

Year	GDP Per Capita	Public Investment (=N=Million)	Real Interest Rate (%)	Private Investment (=N=Million)	Inflation Rate (%)
1970	125.7	187.8	8.0	1045.6	13.8
1971	151.7	173.6	10.0	1,259.8	15.6
1972	154.6	451.3	10.0	1,171.4	3.2
1973	176.1	565.7	10.0	2,326.7	5.4
1974	365.5	1,223.5	10.0	2,365.2	13.4
1975	405.2	3,207.7	9.0	1,336.7	33.9
1976	480.3	4041.3	10.0	4,019.7	21.2
1977	543.5	5004.6	6.0	4,218.4	15.4
1978	570.9	5,200.0	11.0	3,854.5	16.6
1979	674.8	4219.5	11.0	4,585.1	11.8
1980	767.1	10163.4	9.50	6,054.7	9.9
1981	712.9	6567.0	10.0	11,515.8	20.9
1982	717.4	6417.2	11.75	9,103.8	7.7
1983	751.2	4885.7	11.50	7,892.9	23.2
1984	816.7	4,100.1	13.00	4,514.9	39.6
1985	899.5	5464.7	11.75	3,005.1	5.5
1986	887.6	8526.8	12.00	325.1	5.4
1987	1,307.1	6372.5	19.20	8,176.1	10.2
1988	1,671.7	8340.1	17.60	7,876.5	38.3
1989	2,553.6	15034.1	24.60	11,352	40.9
1990	3,085.9	24048.6	27.70	15,608.4	7.5
1991	3,527.0	28340.9	20.80	15,047.3	13.0
1992	5,852.9	39763.3	31.20	22,776.8	44.5
1993	7,267.5	54501.8	36.09	9,419.2	57.2
1994	9,299.9	70918.3	21.00	33201.6	57.0
1995	19,429.3	121138.3	20.79	15,914.8	72.8
1996	26,414.4	158678.3	20.86	42,638.3	29.3
1997	26,632.2	269651.7	23.32	-32,482.9	8.5
1998	25,034.0	309015.0	21.34	-279,851	10.0
1999	28,571.6	498027.6	27.19	-268,145	6.6
2000	39,768.5	239450.9	21.55	88,258.8	6.9
2001	39773.5	438696.5	21.34	-69,937.9	16.5
2002	56,584.7	321378.1	30.19	170,096.6	12.1
2003	67,561.1	241688.6	22.88	611,132.3	23.8
2004	81,013.7	351259.9	20.82	491,904	10.0
2005	110,840.8	519510.0	19.49	259,009.6	11.6

2006	138,036.9	552385.8	18.70	952,669.9	8.5
2007	150,147.7	759,323.0	18.24	829,556.8	6.6
2008	169,405.8	965,900.0	21.18	1,744,752.3	15.1
2009	182,345.6	1,110,318	22.15	2,485,276	11.5
2010	210,465.3	2,059,615	20.50	3,215,478	13.5

Source: Central Bank of Nigeria (CBN) Statistical Bulletin (2010)

APPENDIX 1.1

Table of Variables for Domestic Private Capital Accumulation and Economic Development Model:

Dependent Variable = Δ LPCGDP

Year	Δ PCGDP	Δ PINV, (=N=Million)	Δ PUINV, (=N=Million)	Δ RIR (%)	INFIA (%)
1970	0.2	195.8	65	0	13.8
1971	0.3	214.2	-14.2	2.0	15.6
1972	0.1	-88.4	277.7	0.0	3.2
1973	0.4	1155.3	114.4	0.0	5.4
1974	16.8	38.5	657.8	0.0	13.4
1975	16.7	-1028.5	1984.2	-1.0	33.9
1976	1.7	2683	833.6	1.0	21.2
1977	2.2	198.7	963.3	-4.0	15.4
1978	-4.7	-363.9	195.4	5.0	16.6
1979	-0.1	730.6	-980.5	0.0	11.8
1980	0.9	1469.6	5943.9	-1.5	9.9
1981	3.6	5461.1	-3596.4	0.5	20.9
1982	-3.0	-2412	-149.8	1.75	7.7
1983	-0.1	-1210.9	-1531.5	-0.25	23.2
1984	-5.1	-3378	-785.6	1.5	39.6
1985	-0.3	-1509.8	1364.6	-1.25	5.5
1986	7.6	-2680	3062.1	0.25	5.4
1987	1.7	7851	-2154.3	7.2	10.2
1988	10.5	-299.6	1967.6	-1.6	38.3
1989	11.8	3475.5	6694	7.0	40.9
1990	0.9	4256.4	9014.5	3.1	7.5
1991	-3.4	-561.1	4292.3	-6.9	13.0
1992	-1.2	7729.5	11422.4	10.4	44.5
1993	-0.9	-13357.6	14738.5	4.89	57.2
1994	-1.7	23782.4	16416.5	-15.09	57.0

1995	1.4	-17286.8	50220.0	-0.21	72.8
1996	1.0	26723.5	37540	0.07	29.3
1997	0.4	-75121.2	110973.4	2.46	8.5
1998	-1.4	-247368.7	39363.3	-1.98	10.0
1999	-0.3	11706	189012.6	5.85	6.6
2000	2.7	356403.8	-258576.7	-5.64	6.9
2001	-0.8	-158,196.7	199,245.6	-0.21	16.5
2002	0.0	240,034.5	-117,318.4	8.85	12.1
2003	5.0	411,035.7	-79,689.5	-7.31	23.8
2004	-3.0	-119,228.3	109,571.3	-2.06	10.0
2005	-0.1	-232,894.4	168,250.1	-1.33	11.6
2006	-0.5	693,660.3	32,875.8	-0.79	8.5
2007	0.2	-123,113.1	206937.2	-0.46	6.6
2008	0.8	915,195.5	201,577.0	2.94	15.1
2009	0.6	740,523.7	154,418	0.97	11.5
2010	0.4	730,202	949,397	-1.65	13.5

Source: Authors Computation

