Foreign Private Capital Accumulation and Economic Development in Nigeria 1970 - 2010

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Abstract

This study empirically examine the relationship between foreign private capital accumulation and economic development in Nigeria from 1970 – 2010. The stationarity and non-stationarity of the data series were examined using Group Unit Root Test. The variables attained stationarity after first differences. We established long-run equilibrium relationship among the variables (PCGDP, IEC, INFLA, FPI) using Johansen cointegration test . The short-run dynamic adjustment required for stable long-run equilibrium relationship was carried out using the error correction technique. It shows that the system adjust to long run equilibrium in both the over parameterized and parsimonious error correction model. FPI both in the current and one lag period in the parsimonious model impact positively on economic development. Its impact on economic development in the one lag period was positive and statistically significant while in the current period was positive and insignificant. The stable political environment couple with huge investment opportunities offered by Nigeria government to foreign investors may be responsible for this positive relation. We therefore recommend that Policies that will increase foreign private investment should be pursued vigorously as our results revealed a strong and statistically significant relationship with economic development. It is noteworthy that this will greatly benefit the manufacturing sector especially in the form of technology transfer. To optimally raise the level of foreign private capital accumulation in Nigeria, government has to maintain a steady supply of energy (power) and other infrastructural supplies. We cannot raise Gross Domestic investment and national productivity level without maintaining adequate supply of energy to all facets of our industrial machinery. Deliberate effort should be made by the Public and Private Sectors to develop indigenous technology through increase investment on Research and development [R&D] to solve the peculiar problems of developing countries.

1. Introduction

The decision to invest by an enterprise domiciled in an industrialized country in a developing country is often motivated by higher expected profits in comparison to the alternative investment possibilities at home or in other industrialized countries (Chete, 1998). The relative advantage of such investments is a function of both economic and political factors (Ogamba, 2003). Even if prevailing economic condition seems favourable and the outlook for the future promising, it is entirely possible that investment may not materialize due to prevailing unstable political conditions.

Foreign private investments are investment carried out by large multinational corporations with headquarters in the developed nations as well as portfolio investment in the form of equity capital , either share or bond holding, in ventures in developing countries. . There is a growing consensus that an increase in foreign private investment, especially, inflow of foreign direct investment would complement domestic savings to meet investment requirements in a particular LDC country (Uremadu, 2006). Conceptually, foreign investments should contribute to the development needs of the host economies and for this reason, substantial flows of FPI are usually desired.

Consequently, the benefits derivable from FPI are good but they neither substitute for the aids of official development assistance flows (Aremu, 1997). To this extent, a high inflow of FPI would lead to an increase in gross domestic investment.

Beyond the foregoing, the large share of foreign investment in the economy has created its own problem as the three types of capital (public, domestic private and foreign private capital) are sometimes locked in contradictory alignment. For example, foreign investors generate additional capital resources within the national economy but only to repatriate them abroad as profits. According to the United Nations Centre on Transnational Corporations (UNCTC), between 1975 and 1985, there was a net transfer of capital from Nigeria to the advanced capitalist countries, of approximately $3.2 billion. Similarly, during 1970-1980, there was a net outflow of capital from the country of $2.7 billion.

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

In the late 1970s and early 1980s, Nigeria like most developing countries of Africa experienced unprecedented and severe economic crisis. These crises manifested in several ways such as persistent macroeconomic imbalances, widening saving-investment gap, high rates of domestic inflation, chronic balance of payment problems and huge budget deficits (Akpokodje, 1998). Although different reasons have been advanced for the slowdown of these economies, Greene and Villannueva (1991) attribute the problem to the decline of investment rates in the affected economies. In Nigeria, for example, Akpokodje (1998), maintained that domestic investment as a ratio of Gross Domestic Product (GDP) declined from an average of 24.4 per cent during the 1973-1996 period to 13.57 per cent between 1982 and 1996.

The average rate of investment of 13.57 per cent during the 1982-1996 period implied that the country barely replaced its depreciating capital. In the same vein, private investment rate depreciated from 8.6 per cent in 1973-1981 periods to 4.2 per cent in the 1982-1996 era. To the extent that investment determines the rate of accumulation of physical capital (otherwise called capital formation), it is a vital factor in the growth of productive capacity of the nation in particular and contributes to economic development generally. It is in the light of this that prominence is being attached to increasing the magnitude of real asset investment in the economy.

Central to the less than satisfactory growth registered by countries of sub Saharan Africa is low level of investment as a result of low domestic saving. Attracting foreign investment is therefore crucial from a number of standpoints and of course, there is never shortage of theoretical arguments (Chete, 1998). First, consistent and regulated inflow of foreign investment provides an important source of foreign exchange earnings needed to supplement domestic savings and raise investment levels. Second, import substituting investment would serve to reduce the import bills as investment in export industries could directly increase the country's foreign exchange earnings.

Some other benefits might also accrue from increased foreign private investment. These include the creation or rather expansion of local industries to supply inputs to the newly established plants; a rise in the overall level of domestic demand to boost incomes and through taxation, state revenues; and the transference of labour (human capital) skills and technology. Yet another set of benefits arises from the forecasting of efficiency in the domestic economy, an effect that might even occur prior to the anticipated investment flows (Chete, 1998).

Most probably due to these overwhelmingly attractive theoretical arguments in support of foreign investment, government authorities in Nigeria have often articulated a plethora of incentives aimed at attracting foreign investment. For example, the New Industrial Policy published in 1989 embodies some Foreign Direct Investment (FDI) provisions which represent a dramatic departure from the past policy. Besides, the need for external capital inflow arises when desired investment exceeds actual savings. They are necessary owing to investments with long gestation period that generates non-monetary returns, growing government expenditures that are not tax-financed and when actual savings are lower than potential savings owing to repressed financial markets, and even the volatility and unpredictable nature of capital markets might result to capital market flight (Ogamba, 2003).

Several variables which create dependence on foreign capital have been identified in the literature. They could be classified into fluctuating variables such as exports, imports; offsetting variables like debt service and reserve creation, and rigid variables which include minimum level of imports, stage of economic development and exportable surplus (Ogamba, 2003; Iyoha, 2000; Oyeranti, 2003; Asiedu, 2002, 2004; Bloomstrom and Kokko, 2003). External capital flows could also be non-debt creating flows (as in official transfers or grant in aids and direct investment flows), debt creating flows (as in official development finance), commercial bank loans and international bond offerings; or a hybrid, for example, foreign portfolio investments and international equity offerings. Of late, Nigeria has embarked upon several trade liberalization policies so as to free Foreign Direct Investment (FDI) flows into the country (Adegbite and Owuallah, 2007).

Many developing countries have over the years depended very much on the inflow of financial resources from outside in various forms, official and private capital flows as well as direct foreign investment, as a means of speeding up their economic development (Odozi, 1995; Ekpo, 1997; Fischer, 2001; IMF, 2001; Obadan, 2001a; Uremadu, 2006). However, these countries have shown preference for direct foreign investment because they regard it as a means of counteracting the sluggish trend in official and private portfolio capital flows.

Generally, capital from outside can be very helpful in speeding up the pace of economic development and can act as a catalytic agent in making it possible to harness domestic resources particularly in a developing country. However, foreign capital, no matter how large the inflow cannot absolve a recipient country from the task of mobilizing domestic resources. Foreign inflows can at best be complementary to domestic savings (Gorg and Greenaway, 2004; De Backer and Sleuwaegen, 2003; Collier and Pattilo, 2000; Victor, 2003; Igudia, 2003; Moses, 2003).

In developing economies, experience has shown that foreign capital alone cannot create any permanent basis for higher standards of living in the future. Rather, it complements domestic savings. Therefore greater dependence on internal sources of finance facilitates the successful implementation of any planned economic development in a country (Uremadu, 2006; Obadan, 2001d; Uwatt, 2003). The preponderance of empirical studies that have explored quantitatively the determinants of foreign direct investment have concentrated more on economic than other factors such political and social. Each of the authors, in his regression equations included those determinants which are considered personally appealing. In what follows, we survey some of these empirical investigations.

A leading proponent of the economic approach to the determinants of foreign direct investment is (Dunning, 1977). On the strength of the studies by scholars based on international production, he identified three sets of influences on foreign direct investment, as follows: market factors such as the size and growth of the market measure by the Gross National Product (GNP) of the recipient country; cost factors such as the availability of labour, low labour costs and inflation; the investment climate as measured by the degree of foreign indebtedness and the State of the balance of payments (Chete, 1998).

The unpredictability of autonomous FDI flows has made it difficult for research to determine with a high degree of specificity which factors are the major determinants of FDI flow. Researches on the industry-specific and host-country determinants of FDI flow have resulted to a non-consensus among scholars. Banga (2003) has argued that until recently there was a strong consensus in the literature on why Multinational Corporations (MNCs) invest in specific locations. Banga (2003) found that FDI is attracted to those economic fundamentals like large market size; low labour cost, in terms of efficiency wages taking into account the productivity of labour; availability of high skill levels captured by secondary enrolment ratio in the economy; lower external debt reflecting the financial health of the economy; and extent of electricity in the economy.

Nunnenkamp (2002) and Kokko (1994) agreed with Banga (2003) that the non-consensus among scholars on the determinants of FDI is a recent phenomenon. Nunnenkamp (2002) has argued that the determinants of and motivations of FDI in developing countries have changed recently in the process of globalization. Kokko (1994) agrees that as a result of globalization, it would no longer be sufficient to offer promising markets in order to induce FDI inflows. Part of the reason explaining the inability of researchers to arrive at consensus on the determinants of FDI flows is the fact that countries (both supplying and receiving FDI) may be structurally diverse. Sometimes the value definitions and choice of corporate executives (of investing companies) may influence the choice of locations and may determine whether economic, political or some other factors are given consideration in the choice of host countries.

Within the reality of this non-consensus, we try to identify which factors are likely to determine the inflow of FDI, especially to Nigeria. In this regard, the study by the Overseas Development Initiative, ODI (1997), Broadman and Sun (1997), Singh and Jun (1995), Asiedu (2002), Bhinda et al (1999), and Pfefferman (1996), Chete (1998), Ekpo A.H (1997) among others were found useful. These studies takes into consideration a wide range of factors influencing FDI such as size of domestic market, per capita income, output, fiscal deficit, openness, debt service, inflation, exchange rate, uncertainty, credibility, government expenditure as well as institutional and political factors.

Lewis (1979), laid emphasis, to some extent, on political factors too. He tested the dual hypotheses that economic considerations are the prime determinants of foreign investment flows and that political variables are of secondary importance. His model uses a step-by-step regression for 25 developing countries from three continents: Africa, Asia and Latin America to establish that economic variables are more important than the political ones (see Stasavage 2001). All these studies except, Dunning (1981) were pre-occupied with the determinants of foreign direct investment in developing countries.

Many studies have also been conducted for developed countries particularly for the United States and the European Community (Scapelanda and Balough, 1988, Serven 1998, 2002 Stasavage 2001). The authors established similar findings. In Nigeria, effort has gone into the study of the role of foreign direct investment in the economy. For instance, Oyaide (1977), provides an excellent documentation of studies conducted under the umbrella of Nigerian Economic Society (NES). Summary of Oyaides' work is reported in (Chete, 1998). For the developed countries study revealed similar behaviour with the developing countries. FDI is attracted to those economic fundamentals like the size of the domestic market, openness, credibility regarding the sustainability of government trade policy, political stability, debt overhang, inflation etc.

The preoccupation of Konings (2001), was on the effect of Foreign Direct Investment on Domestic Firms, evidence from Firm level panel data in Emerging Economies. Specifically, he contends that foreign investment induces the inflow of capital, technical know-how and managerial capacity which interactively will accelerate the pace of economic development, while attenuating the pains and uncertainties that come with it.

Furthermore, Konings observed that foreign direct investment could be counter-productive if the linkages they spur are neither needed nor affordable by the host country. He suggests that a good test of the impact of such investment on Emerging economies is how rapidly and effectively it fosters local enterprises to innovation. In a related study, (De Backer and Sleuwagen 2003), argued that foreign direct investment has both benefits and repercussions in the context of Nigeria's economic development. While FDI could accelerate growth through the infusion of new techniques and managerial efficiency, she, however, warns that it could worsen the balance of payments position. they stopped short though, of elaborating the channels through which this can be actualized.

Foremost, Olakampo (1962), alluded to this negative fall-out of FDI when he argued that foreign aid in the form of direct investment and portfolio investment generally imposes a burden of repayment in form of capital outflows on the recipient country. Oyaide (1977), concluded, using indices of dependence and development as mirror of Nigeria's economic performance, that direct foreign private investment (DFPI) engineers both economic dependence and economic development. Direct Foreign Private Investment (DFPI) according to Oyaide continuously causes and catalyses a level of development that would have been impossible without such investment albeit, at the cost of economic dependence. Olopoenia (1998), explored the role of foreign capital inflow in the development processes of underdeveloped countries via its impact on savings. He fails, however, to reach unambiguous conclusion by contending that the effect of foreign investment on saving depends on the savings hypothesis used.

The proportion of national income saved (savings ratio) which is a fixed proportion of national output and the total new investment is determined by the level of total savings. For example if we assume that national capital-output ratio is say,3 and the aggregate savings ratio is 6% of Gross National Product (GNP). It means that the country in question can grow at a rate of 2% per year. To achieve an annual growth rate of 5%, net national savings must be increased from 6% to say, 15% through increase taxes, foreign aids, borrowing, and foreign direct investment. Countries that saves more of their GNP could grow at a much faster rate and be self sustaining than those countries that saves less (ceteris paribus). Savings – investment gap that result from low savings could be filled through either foreign aid or foreign private investment.

Nasiru Musa Yauri (2006) investigates the effect of FDI on technology transfer to Nigerian manufacturing firms using firm level data that covered a period of eleven years (1990-2000). The result showed a significant positive relationship between FDI firms and employment of technology. Thus that FDI firms receive technology is an indication that those firms in Nigeria that partner with or are subsidiaries to foreign firms benefit from technology spillover through FDI. For domestic non FDI firms that compete with FDI firms, competition may as a matter of necessity force them to improve upon their current technology or become edged out of the market. He concludes that FDI could serve as a source of technology for Nigerian manufacturing firms and could facilitate the process of technology transfer in Nigeria. He further recommended that the Nigerian government should encourage the inflow of FDI at the macro level because it comes along with some positive effect, on firms performance in Nigeria.

Olaniyi (1988) investigated the impact of direct foreign capital on domestic investment to ascertain its overall contribution to the enhancement of the domestic savings capacity in Nigeria. His model of domestic savings and investment financing in Nigeria empirically tested the impact of FDI on the level of domestic savings and investment. His results confirmed that domestic savings were by far more relevant in determining investment growth than foreign capital inflows in Nigeria. At best the latter complemented the former (See De Baker and Sleuwaegen, 2003; Sousa, 2001; Gorg and Greenaway, 2003, for a study of this and related matters). Countries that rely on FDI for their development objectives may fail on the event of global financial crisis or business failure which might lead to closure of business or lay off of workers thereby impacting negatively on the domestic economy in terms of revenue loss to government, unemployment of workers. Thus impeding on the successful implementation of National Development Plans. This view has also been confirmed by the works of both Uremadu, (2006) and Adegbite and Owuallan (2007).

Evidently, from the Nigerian studies viewed so far there seems to be lack of consensus on the determinants of foreign private investment or the impact of FPI on economic growth. On determinant of FPI each author includes those variables in the model that are personal appealing. No convincing reason rooted in theory was advanced for the inclusion or exclusion of other variables. Also, the impact of FPI on economic growth is controversial. Most authors recommend that developing countries should rely on FPI because of savings-investment and foreign exchange gap that exist. Other authors argue that reliance on FPI would hinder the successful implementation of a country's development plan in event of external shock or crisis that would lead to business failure. At best FPI should complement domestic savings. These contradicting views on the impact of foreign private capital on economic development create room for further contributions on the subject matter.

3. Theoretical Framework

Foreign private investment (FPI) is a major component of International capital flows. According to Thirwal (1994) FPI refers to investment by multinational companies with headquarters in developed countries. Growth in neoclassical theory is brought about by increase in the quantity of factors of production and in the efficiency of their allocation. In a simple world of two factors, labour and capital, it is often presumed that low income countries have abundant labour but less capital. This situation arises owing to shortage of domestic savings in these countries which places constraint on capital accumulation and hence growth.

Even where domestic inputs in addition to labour are readily available and hence no problem of input supply, increased production may be limited by scarcity of imported inputs upon which production processes in low-income countries are based. International capital flow in the form of foreign private investment readily becomes an important means of helping developing countries overcome their capital shortage problem.

Economic theory suggest that capital will move from countries where it is abundant to countries where it is scarce. This pattern of movement will be informed by the return on new investment opportunities which are considered higher where capital is limited. The resultant capital relocation will boost investment in the recipient country.

The two gap theory was developed by McKinnon in 1973. The model postulates that given the importance of financial capital in economic development, developing countries may be constrained by the unavailability of adequate resources to prosecute its development programmes. It identified two gaps that may exist, namely, savings gap and the foreign exchange gap. Because of low income and hence low savings (once this occur) savings rate will lag behind a target rate

Due to the high debt burden of LDCs and their dependence on primary exports characterized by price instability or quantity instability or both, a foreign exchange gap may result because the country does not have enough foreign exchange earnings to pay for its imports. Foreign capital inflows in the form of Foreign Direct Investment (FDI) appears to be the more viable option to finance the gap.

A theory that attempt to integrate the various theories of Foreign Direct Investment was postulated by Dunning (1977) and is known as the Eclectic theory. It attempt to offer a complete analysis of the determinants of FDI. The eclectic theory is usually referred to as OLI paradigm which indicate the enabling conditions that must exist in order to attract FDI.

The OLI is an acronym meaning Ownership, Location and Internationalization advantages. Ownership gains includes, technology, management skills, size and diversification and access to and control of raw materials, access to finance and cordial relationship of foreign investors with the government of their country.

Location advantages includes transport cost, raw materials, import restrictions and the ease of operation in the host countries, profitability considerations, factor endowment in other countries. Others are tax policies in the home and host countries, political stability in the host countries.

Political stability and appropriate tax incentives have been identified as factors that encourage FDI. Internationalization gains considers factors such as elimination of market imperfection which promote profitable transactions within the firm. Dunning eclectic theory further argued that all the three enabling conditions must be present before FDI may be attracted, this implies all three factors are necessary and sufficient for FDI.

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

In specifying the model for FPI we used two gap theory as discussed in the theoretical framework. The model is expressed as follows.

$$\Delta PCGDP = f(\Delta FPI, INFLA, \Delta IEC)$$

The econometric model estimation is of the form

$$\Delta LPCGDP = \delta_0 + \delta_1 \Delta FPI + \delta_2 INFLA + \delta_3 \Delta IEC + \varepsilon \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

$$\delta_1 > 0, \delta_2 < 0, \delta_3 > 0,$$

Where:

ΔLPCGDP	=	Change in log of growth rate of real per capita gross domestic product, a measure of economic development.
ΔFPI	=	change in foreign private investment
INFLA	=	inflation rate
ΔIEC	=	change in index of energy consumption
ε	=	Error term

6.0 Results of foreign private capital accumulation and economic development model

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

Group unit root test: Summary
Series: LPCGDP, FPI, IEC, INFLA

Method	Statistic	Prob.**	Cross- sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	0.31581	0.6239	4	182
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	0.10865	0.5433	4	182
ADF - Fisher Chi-square	28.2694	0.0016	4	182
PP - Fisher Chi-square	51.4042	0.0000	4	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, FPI, IEC, INFLA

Method	Statistic	Prob.**	Cross-Sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-11.8506	0.0000	4	175
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-14.1114	0.0000	4	175
ADF - Fisher Chi-square	131.662	0.0000	4	175
PP - Fisher Chi-square	149.774	0.0000	4	187

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

Source: Authors Computation

Tests for stationarity was conducted. The group unit root test of all the variables LPCGDP, FPI, DIEC, INFLA was carried out using group unit root test by Levin, Lin and Chu tests (i.e. the assume common unit root process) and individual unit root process of all variables using Im, Pesaran and Shin W-stat, ADF-Fisher Chi-square, PP-Fisher Chi-square. This is presented in section 6.1.

The result revealed that all variables attained stationarity after first differences meaning variables are integrated of the order one i.e. 1(1). This implies that the null hypothesis of non-stationarity for all the variables is rejected, after first differences. The next step is to perform the Johansen co-integration test for the variable of interest. This is presented in section 6.2 below.

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

Series: LPCGDP IEC INFLA FPI
Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.832525	104.8950	69.81889	0.0000
At most 1	0.430715	40.56573	47.85613	0.2029
At most 2	0.320643	20.28425	29.79707	0.4038
At most 3	0.153184	6.366355	15.49471	0.6522
At most 4	0.010516	0.380579	3.841466	0.5373

Trace 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

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.832525	64.32923	33.87687	0.0000
At most 1	0.430715	20.28148	27.58434	0.3220
At most 2	0.320643	13.91789	21.13162	0.3718
At most 3	0.153184	5.985777	14.26460	0.6150
At most 4	0.010516	0.380579	3.841466	0.5373

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 Johansen cointegration test is also implemented with linear deterministic trend. The Trace and Max – Eigen Value tests show the existence of one cointegrating equation(s) each at the five percent level of significance. The conclusion drawn from the result is that there exist a unique long-run relationship among LRPCGDP, IEC, INFLA, FPI. The null hypothesis of no co-integration relationship among the variables in the model is rejected at the five percent level of significance.

Since there is one cointegrating vector, an economic interpretation of the long run RPCGDP can be obtained by normalizing the estimates of the unrestricted cointegrating vector for the long run on RPCGDP. The normalized cointegrating equation suggest that there is a negative long run relationship between RPCGDP, ΔIEC, and INFLA and a positive long run relationship between RPCGDP and FPI. All variables in the long run model except ΔIEC are statistically significant at the five percent level. The identified cointegrating equation(s) was used as an error-correction term (ECM) in the error correction model. This series forms the error correction variable.

The error correction model was estimated and it shows how the system adjusts to the long run equilibrium implied by the cointegrating equation. ECM_{t-1} is the lagged error correction term, that is the fitted residuals from the cointegrating equation. The over parameterized model was estimated and it deals with problems of model misspecification. This is presented in section 6.3.

In the over parameterized model the error correction variable ECM(-1) is highly significant; that is an indication of RPCGDP adjustment to any disequilibrium in the short run.

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

Dependent Variable: ΔLPCGDP

	Coefficient	Std. Error	t-Statistic	Prob.
C	0.007169	0.029552	0.242583	0.8100
ΔFPI	2.20E-07	2.99E-06	0.073721	0.9417
ΔFPI(-1)	6.41E-06	2.84E-06	2.349764	0.0462
ΔINFLA	0.005532	0.001877	2.947745	0.0063
ΔINFLA(-1)	0.001749	0.001964	0.890105	0.3807
ΔIEC	-0.002675	0.001527	-1.751490	0.0904
ΔIEC(-1)	9.41E-05	0.001434	0.065590	0.9482
ECM(-1)	-0.682402	0.120316	-5.258753	0.0000
R-squared	0.645091	Mean dependent var		-0.001820
Adjusted R-squared	0.559423	S.D. dependent var		0.251879
S.E. of regression	0.167187	Akaike info criterion		-0.550592
Sum squared resid	0.810598	Schwarz criterion		-0.202285
Log likelihood	18.18595	Hannan-Quinn criter.		-0.427797
F-statistic	7.530149	Durbin-Watson stat		1.898014
Prob(F-statistic)	0.000035			

Source: Authors Computation

The speed of adjustment is the coefficient of the error correction variable. This indicates that 68 percent departure from the long run equilibrium is corrected in the short run. The ECM(-1) is highly significant. The coefficient of ECM –0.682402 suggest fast adjustment. Nearly 68 percent of the disequilibrium of the previous years shock adjust back to the long run equilibrium in the current year.

The over parameterized results in section 6.3 further reveals that RPCGDP is influenced by one lag period of INFLA, FPI, IEC and current period of FPI, ΔIEC and INFLA. The first lag of FPI satisfy apriori expectations that is positive and significant while FPI in the current period is positive but not significant. The results revealed that a unit change in the current period of FPI brings about a 0.00000022 per cent increase in Economic Development, while a one percent change in the one lag period of FPI result to a 0.00000641 per cent increase in Economic Development. Inflation in the current and one lag periods has wrong signs. INFLA in the current period is positive and statistically significant at the five percent level of significance while in the one lag period its impact on RPCGDP was positive but insignificant. The result showed that a one percent change in inflation rates in the current period result to a 0.005532 per cent increase in Economic Development, while a one percent change in the one lag period of inflation rates brings about a 0.001749 per cent rise in Economic Development. This negates apriori expectations.

Index of Energy Consumption (IEC) has the opposite sign in the current period and so does not satisfy apriori expectations. Its impact on RPCGDP is negative and statistically insignificant. The result showed that a one percent change in IEC in the current period brings about a 0.002675 per cent reduction in Economic Development , while a one percent change in IEC in the one lag period brings about a 0.0000941 per cent reduction in Economic Development. Infrastructure proxied by index of energy consumption is a major determinant of economic growth. Its efficiency will create conducive environment for investors (both domestic and foreign).

In most developing countries including Nigeria, the inefficient power supply reduces returns on investment and this discourages potential investors from investing in the country. The end result would be fall in GDP. ODI (1997), AFDB (2004), have admitted that the decline in the relative position of industrial class arose because of their reduced dependence on public electric power supply as they acquired stand by generating set to minimize production losses that would result from power outages.

The coefficient of determination (adjusted R^2) of 0.56 used in measuring the goodness of fit of the model indicates that about 56 percent of variations of the endogenous variable is explained jointly by all the regressors. The high value of adjusted R^2 shows that the overall goodness of fit of the model is satisfactory. The Akaike, Schwarz, and Hanan-Quinn information criterion shows that the model is correctly specified. The F statistics (7.530149) measuring the joint significance of all the regressors in the model is statistically significant at the five percent level.

The equation's standard error of 0.167 implies that about two-thirds of the time, the predicted value of RPCGDP would be within 16.7 per cent of the actual value. The Durbin Watson statistics of 1.898014 implies the absence of serial correlation. The model passes the diagnostic test. The ECM variable is properly signed and statistically significant at the five percent level of significance. Therefore, we reject the null hypothesis that the error terms are not normally distributed. This suggests that the ordinary least square estimation is unbiased, has minimum variance, consistent and follows a normal distribution.

In the parsimonious model which was derived from a step wise elimination of jointly insignificant variables in the over parameterized model is presented in section 6.4.

The results showed that the error correction term ECM(-1) is correctly specified. Its satisfy apriori expectations and statistically significant at the five percent level. The negative sign confirms our earlier conclusion that RPCGDP and its regressors are indeed cointegrated, and the statistical significance of the error correction term implies disequilibrium in the long run. The coefficient of the ECM(-1) is -0.693242 and it implies high speed of adjustment from shocks in the short run to long run equilibrium. It also means that 69 percent of the disequilibrium in the previous year adjust back to equilibrium in the current year.

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

Dependent Variable: ΔLPCGDP

	Coefficient	Std. Error	t-Statistic	Prob.
C	0.005106	0.028711	0.177824	0.8600
ΔFPI	1.28E-06	2.60E-06	0.492237	0.6260
ΔFPI(-1)	6.76E-06	2.70E-06	2.653296	0.0584
ΔINFLA	0.005690	0.001825	3.118194	0.0039
ΔIEC	-0.002519	0.001449	-1.738289	0.0921
ECM(-1)	-.693242	0.184158	-5.936442	0.0000
R-squared	0.635388	Mean dependent var		-0.001820
Adjusted R-squared	0.576579	S.D. dependent var		0.251879
S.E. of regression	0.163900	Akaike info criterion		-0.631728
Sum squared resid	0.832759	Schwarz criterion		-0.370498
Log likelihood	17.68696	Hannan-Quinn criter.		-0.539632
F-statistic	10.80437	Durbin-Watson stat		1.982594
Prob(F-statistic)	0.000004			

Source: Authors Computation

The adjusted R^2 used in measuring the goodness of fit of the model is satisfactory. About 58 per cent of the variation in the dependent variable (RPCGDP) is explained by the joint effect of all the regressors (FPI, ΔIEC, INFLA) in the model and is a good fit. The explanatory power of the model is satisfactory.

The F statistics of 10.80437 used in measuring the joint significant of all the independent variables in the model is statistically significant and is a good fit. The standard error value of 0.163900 means that about two-third, of the time, the expected value of the dependent variable will be within 16.4 per cent of the actual value. The model passes the diagnostic and normality test.

We therefore reject the null hypothesis that error terms are not normally distributed. This means that the ordinary least square estimator is unbiased, consistent and has minimum variance. The Durbin Watson Statistics of 1.982594 implies the absence of serial correlation. In the parsimonious model, FPI both in the current and one lag period impacts positively on economic development. Its impact on RPCGDP in the one lag period was positive and statistically significant while in the current period was positive and insignificant. FPI satisfies apriori expectations. The result indicates that a unit change in the current period of FPI brings about a 0.00000128 percent increase in Economic Development, while a one percent change in FPI in the one lag period result to a 0.00000676 percent increase in Economic Development. This may mean that the recent macroeconomic policies by government and the various incentives aimed at encouraging the inflow of FPI has paid well for our economic development. Apart from incentives, FPI is attracted to those economic fundamentals such as large market size (size of PCGDP) low labour cost, political stability, low crime rate such as armed robbery, kidnapping , assassination and low credit rating etc. which are prevalent in Nigeria may have contributed to positive impact of FPI on RPCGDP.

Inflation impacts positively and significantly on economic development. This is contrary to apriori expectations. This means a one percent rise in inflation rate will bring about 0.006 per cent rise in RPCGDP. Infrastructure proxied by index of energy consumption has insignificant negative impact on economic development. This contradicts apriori expectations. The result indicates that a unit change in IEC brings about a 0.002519 per cent reduction in Economic Development. The poor state of power supply in Nigeria is responsible for this negative impact. The current reforms in the power sector is a step in the right direction as this will stimulate the growth of all sectors of our economy. The positive and statistically significant coefficient of FPI on economic development leads to the rejection of the null hypothesis at the five percent level of significance that there is no significant positive relationship between FPI and economic development.

6.5 Analysis of the result of foreign private capital accumulation model

The impact of inflation on RPCGDP is positive and significant. This means the current year inflation rate is expected to stimulate growth of RPCGDP (Ceteris Paribus). There is significant positive relationship between FPI in the one lag period and RPCGDP. Its impact in the current period is positive and insignificant. Low debt services, low credit rating, credibility in government macroeconomic policies, political stability, large market size etc. may be responsible for the positive impact of FPI on RPCGDP. Schneider and Fry (1985) find an inverse relationship between FPI flow and political risk. Also Bhinda et al (1999) contended, however that stable government has encouraged investment in Tanzania, Uganda, South Africa and until recently Zimbabwe. The stable political environment coupled with huge investment opportunities offered by Nigerian government to the international community may be responsible for this positive relationship. This satisfies apriori expectations. We therefore reject the null hypothesis that there is no significant positive relationship between Foreign Private Investment and economic development in Nigeria.

7. Policy implications and recommendation

i. Policies that will increase foreign private investment should be pursued vigorously as our results revealed a strong and statistically significant relationship with economic development. It is noteworthy that this will greatly benefit the manufacturing sector especially in the form of technology transfer.
ii. To optimally raise the level of capital accumulation in Nigeria, government has to maintain a steady supply of energy (power) and other infrastructural supplies. We cannot raise Gross Domestic investment and national productivity level without maintaining adequate supply of energy to all facets of our industrial machinery.

Index of energy consumption has significant negative impact on economic development. This is evidence in the unstable power supply which adversely affects all sectors of the economy and may discourage domestic and foreign private investment.

8. Conclusion

The analysis suggest that a high degree of macroeconomic stability and low and predictable inflation rates have paramount importance to ensure a strong response of foreign private investment to economic incentives. The overall harmony of macroeconomic policies and stability in the country is essential for the promotion of foreign private investment. Also proactive measures are required to ensure macroeconomic stability in the country.

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Appendix 1

Foreign Private Investment, Index of Energy Consumption, Inflation and GDP Per Capita

Year	GDP Per Capita	Foreign Private Investment **(=N=Million)**	Inflation Rate (%)	Index of Energy Consumption
1970	125.7	121.6	13.8	23.6
1971	151.7	319.2	15.6	29.4
1972	154.6	248.3	3.2	21.5
1973	176.1	192.6	5.4	24.8
1974	365.5	483	13.4	29.0
1975	405.2	475.4	33.9	34.4
1976	480.3	46.3	21.2	44.1
1977	543.5	197.6	15.4	60.9
1978	570.9	331.8	16.6	69.8
1979	674.8	289.9	11.8	72.4
1980	767.1	467.0	9.9	86.0
1981	712.9	137.8	20.9	153.5
1982	717.4	1,624.9	7.7	156.4
1983	751.2	556.7	23.2	118.3
1984	816.7	534.8	39.6	102.3
1985	899.5	329.7	5.5	103.2
1986	887.6	2,499.6	5.4	106.5
1987	1,307.1	680.0	10.2	100.9
1988	1,671.7	1,345.1	38.3	94.9
1989	2,553.6	-439.4	40.9	90.9
1990	3,085.9	-464.3	7.5	100.0
1991	3,527.0	1,802.0	13.0	91.5
1992	5,852.9	8,629.1	44.5	91.5
1993	7,267.5	32,994.5	57.2	127.1
1994	9,299.9	1,455.6	57.0	107.4
1995	19,429.3	48,677.1	72.8	76.2
1996	26,414.4	2,731.0	29.3	74.3
1997	26,632.2	5,731.0	8.5	78.7
1998	25,034.0	24,079.7	10.0	97.7
1999	28,571.6	1,779.1	6.6	89.7
2000	39,768.5	3,347.0	6.9	89.2
2001	39773.5	3,377.0	16.5	169.2
2002	56,584.7	8,206.8	12.1	170.7
2003	67,561.1	13,055.0	23.8	171.2
2004	81,013.7	19,908.7	10.0	175.7
2005	110,840.8	25,881.2	11.6	176.7
2006	138,036.9	41,470.7	8.5	178.2
2007	150,147.7	53,924.8	6.6	181.7
2008	169,405.8	33,615.5	15.1	185.2
2009	180,352.7	30,578.1	11.5	190.7
2010	193,625.3	28,633.5	13.7	195.8

***Source**: Central Bank of Nigeria (CBN) Statistical Bulletin (2010)*
National Bureau of Statistics (NBS) Annual Abstract of Statistics (2010)

Appendix 1.1

Table of Variables for Foreign Private Capital Accumulation and Economic Development Model: Dependent Variable =∆LPCGDP

Year	∆RPCGDP	∆FPI, (=N=Million)	INFIA (%)	∆IEC
1970	0.2	47	13.8	3.6
1971	0.3	90.0	15.6	5.8
1972	0.1	198	3.2	-7.9
1973	0.4	-71.3	5.4	3.3
1974	16.8	-55.7	13.4	4.2
1975	16.7	-144.3	33.9	5.4
1976	1.7	427.1	21.2	9.7
1977	2.2	-429.1	15.4	16.8
1978	-4.7	151.3	16.6	8.9
1979	-0.1	134.2	11.8	2.2
1980	0.9	-41.9	9.9	13.6
1981	3.6	177.1	20.9	67.5
1982	-3.0	-329.2	7.7	2.9
1983	-0.1	1487.1	23.2	-38.1
1984	-5.1	-1068.2	39.6	-16.0
1985	-0.3	-21.9	5.5	0.9
1986	7.6	-205.1	5.4	3.3
1987	1.7	2169.9	10.2	-5.6
1988	10.5	-181.6	38.3	-6.0
1989	11.8	665.6	40.9	-4.0
1990	0.9	-1785	7.5	9.1
1991	-3.4	-24.9	13.0	-8.5
1992	-1.2	2266.3	44.5	0.0
1993	-0.9	6467.1	57.2	35.6
1994	-1.7	24725.4	57.0	-19.7
1995	1.4	-31538.9	72.8	-31.2
1996	1.0	47221.5	29.3	-1.9
1997	0.4	-45946.1	8.5	4.4
1998	-1.4	3000	10.0	19.0
1999	-0.3	18348.7	6.6	-8.0
2000	2.7	-22300.6	6.9	-0.5
2001	-0.8	30	16.5	80.0
2002	0.0	4829.8	12.1	1.5
2003	5.0	4848.8	23.8	0.5
2004	-3.0	6853.1	10.0	4.5
2005	-0.1	5972.5	11.6	1.0
2006	-0.5	15589.5	8.5	1.5
2007	0.2	12454.1	6.6	3.5
2008	0.8	-20309.6	15.1	3.5
2009	6.5	- 9.0	11.5	3.0
2010	7.4	- 6.4	13.7	2.7

Source: Authors Computation