EXTERNAL CAPITAL FLOWS AND ECONOMIC GROWTH IN NIGERIA

Abidemi C. Adegboye
Department of Economics and Statistics, University of Benin, Benin City, Nigeria

Agustine O. Ogbebor
Department of GNS, Ogun State Institute of Technology, Ogun State, Nigeria

Monday I. Egharvba
Department of Economics, Adeyemi College of Education, P.M.B. 520, Ondo, Nigeria
E-mail: cornabi@gmail.com +2347033227614

Abstract
For a developing economy like Nigeria, a positive net inflow of external capital is of optimum relevance. In this study, dynamic effects of external capital inflow on the Nigerian economy are investigated using the Vector Error Correction Mechanism (VECM) technique. Using quarterly data covering the period 1981 to 2012, the VECM procedure is employed to empirically show the dynamic relationships existing between economic growth and the foreign capital factors of foreign direct investment (FDI), external debt and short term capital inflows. The relevance of external capital to development efforts in a domestically starved economy like Nigeria is well established in the study. Results from the empirical analysis show that the categorization of foreign capital inflows into direct and portfolio has significant relevance in terms of their effects on economic growth in Nigeria. It is also shown that external debt has the strongest impact on economic growth in Nigeria among the foreign capital factors.

Keywords: External capital, economic growth, portfolio, direct investment

Introduction
The long run development of an emerging economy like Nigeria’s would require persistent and massive investment expenditures that can match the dire need for capital. However, starting with Chenery and Strout (1966), economists have come to realize that a massive savings-investment gap exists in developing countries. This has led to the arguments that external financing is critical if not inevitable for the sustained growth of countries like Nigeria. The main arguments in this direction is that if these countries gain access to world financial markets and other donor financing, the savings gap could be overcome by financing domestic (excess) investment out of the savings from high income countries i.e. by capital imports. These capital imports can take the form of concessional lending abroad, foreign direct investment (FDI) inflows and portfolio investment by foreigners (Easterly, 1999).

Indeed, the key component of the movement towards economic globalization or integration by the world economy is foreign capital flows. The need for foreign capital to complement domestic resources in the economic growth process has been welcomed as a catalyst of development, since it is considered as the central element of the process of economic growth. Its origin does not matter. In the face of resource deficiency in financing long term development, the capital-deficient economies have heavily resorted to foreign capital as the primary means to achieve rapid economic growth. Unfortunately, the growth experience of many of the economies has not been very satisfactory. Hence, they accumulate huge external debt in relation to gross domestic product and face with serious debt servicing problems in terms of foreign exchange flow and also wallowing in abject poverty. Conversely, the experience of a small number of fast growing East-Asian newly industrialized nations has strengthened the belief that foreign capital is the central element of the process of economic development since it could bridge the resource gap of these economies and...
avoid further build up of debt while tackling the causes of poverty directly (Prasad et al, 2007).

Most of the empirical studies on foreign capital and growth nexus have tended to disaggregate the foreign capital sourcing for easy identification of their effects. Oyinlola (1995) disaggregated foreign capital into; foreign loans, direct foreign investments and export earnings. Using Chenery and Stout’s two-gap model, he observed that FDI has a negative effect on economic development in Nigeria. In the same vein, Adelegan (2000) examined the impact of FDI on economic growth in Nigeria in a seemingly unrelated regression and found out that FDI is pro consumption and pro-import and negatively related to gross domestic investment. Akinlo (2004) in his study revealed that foreign capital has a small and not statistically significant effect on economic growth in Nigeria. Ayanwale (2007) also analysed the empirical relationship between non-extractive FDI and economic growth in Nigeria. Using OLS estimates, he observed that FDI has a positive link with economic growth but cautioned that the overall effect of FDI on economic growth may not be significant. Okodua (2009) examined the sustainability of the FDI-growth relationship in Nigeria. Using the Johansen cointegration framework and a multivariate VAR within a vector error correction model. He observed a long-run equilibrium relationship between economic growth and FDI inflows. The study also revealed a unidirectional causality from FDI to economic growth.

Apart from Nigeria, the relationships have been examined for other country groups. Chakraborty and NunnenKamp, (2006) analyzed the effect of foreign direct investment and economic reforms in India. The study centered on industry specific FDI and its growth, by using Granger Causality and panel cointegration. Their results showed that the growth effects of FDI vary widely across different sectors.

Also, Mutascu (2011) also examined the relationship between economic growth and FDI for Asian countries using Panel data approach. The sample period comprises 1986 to 2008, and they analyzed data of 23 countries. Hence, they observed that both foreign direct investment and exports enhances the growth process. Also that, labor and capital also play a significant role in economic growth. Hameed et al, (2008) in their analysis examined the impact of external debt on economic and business growth in Pakistan for the period 1970-2003. They applied cointegration and error correction model on the annual data. Their results showed that debt servicing has a negative relation with labor and capital, hence affects economic growth adversely. It was also observed that a negative relationship exists between debt servicing and GDP, which reduces the debt servicing ability of the country in the long run.

The main aspects of this study focus on growth-enhancing financing through foreign capital inflow (from international capital markets and foreign debt). The effects of these capital imports are demonstrated in studies by Chenery and Strout (1966), Easterly (1999) and Bender and Löwenstein (2005). The aim of the study is to examine the effects of various forms of foreign capital inflow on economic growth in Nigeria using a dynamic framework. With this background, this paper seeks to answer the question for the Nigerian case by providing an analysis of the nature of causalities between foreign capital inflows and economic growth and as well the impact of foreign capital inflows on economic growth in Nigeria during the sample period.

Methodology and model
Framework and method
The model adopted in this study extends the familiar neoclassical approach to economic growth by using an augmented financial gap model framework which allows a simultaneous analysis of the interactions between growth and foreign capital inflow dynamics. As Bender and Löwenstein (2005) show, this type of framework overcomes the weaknesses of Harrod-Domar-type development gap models by demonstrating that if external capital goes into investment one by one this can lead to a higher level of per capita income and may provide a way of attaining steady state growth in the economy. The analytical method employed in this analysis is the Vector Error Correction modeling (VECM) technique. The VECM model provides a systematic way to capture rich dynamics between the variables under study. Sims (1981) argued that VECM held out the promise of providing a coherent and credible approach to data
description, forecasting, structural inference and policy analysis. VARs have proven to be powerful and reliable tools because VARs involve current and lagged values of multiple time series, and their ability to capture co-movements that cannot be detected in univariate or bivariate models. Furthermore, standard VAR summary statistics like Granger-causality test and variance decompositions are well-accepted and widely used methods for portraying these co-movements.

The vector autoregression (VECM) is commonly used for forecasting systems of interrelated time series and for analyzing the dynamic impact of random disturbances on the system of variables. The VAR approach sidesteps the need for structural modeling by modeling every endogenous variable in the system as a function of the lagged values of all of the endogenous variables in the system.

**Model specification**

The study will employ a vector autoregressive (VAR) model to estimate and provide empirical evidence on the dynamic nature of the effects of foreign investment on economic growth in Nigeria. The mathematical form of a VAR is

$$y_t = A_1 y_{t-1} + \ldots + A_p y_{t-p} + B x_t + \varepsilon_t (3.3)$$

where $y_t$ is a $k$ vector of endogenous variables, $x_t$ is a $d$ vector of exogenous variables, $A_1, \ldots, A_p$ and $B$ are matrices of coefficients to be estimated, and $\varepsilon_t$ is a vector of innovations that may be contemporaneously correlated with each other but are uncorrelated with their own lagged values and uncorrelated with all of the right-hand side variables.

In the study of the impact of the capital market on economic growth, the VAR model specified in the study is specified as:

$$y_t = [\text{RGDP}, \text{EXDT}, \text{FDI STC}]$$

(3.4)

where  

- RGDP = real GDP  
- EXDT = external debt  
- FDI = foreign direct investment  
- STC = short term capital

The VAR model is therefore specified in its econometric form as:

$$Y_t = A_i \sum_{i=0}^{p} Y_t$$

(3.5)

**Empirical analysis**

In this chapter we perform the analysis that forms the basis for the empirical evaluation of the study. This is done through the presentation and analysis of the estimated results based on the model specified in chapter three. The first set of analysis involves the estimation of the relationship between stock market volatility and its specified driving factors analysis with the use of the Vector Error Correction Method (VECM) methodology. In order to conduct a comprehensive VECM analysis preliminary unit roots tests are performed on the data along with the causality tests with respect to the cause-effect relationship that exists among the pertinent variables. The VECM analysis includes the presentation of Impulse Response Functions (IFRs) and the Forecast Variance Error Decomposition (FEVD).

**Unit root tests**

The Augmented Dickey Fuller (ADF) test is employed in order to analyze unit roots. The results are presented in levels and first difference. This enables us determine, in comparative terms, the unit root among the time series and also to obtain more robust results. Table 1 presents results of ADF test in levels without taking into consideration the trend in variables. The reason for this is that an explicit test of the trending pattern of the time series has not been carried out. Given the critical ADF value of -.891, it can be seen from the table that three of the variables, including the RGDP, are integrated of order one. In other words, these variables attained stationarity after differencing. This implies that the variables possess unit roots. The other variable of STC is stationary in levels, indicating that it is not time dependent. However, these variables are also stationary in first difference, hence it can be included in the ECM analysis.
Table 1: Unit Root Test for Variables

<table>
<thead>
<tr>
<th>Series</th>
<th>Level</th>
<th>Difference</th>
<th>Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>LRGDP</td>
<td>0.739</td>
<td>-3.962</td>
<td>I[1]</td>
</tr>
<tr>
<td>LEXDT</td>
<td>-1.076</td>
<td>-4.592</td>
<td>I[1]</td>
</tr>
<tr>
<td>LPDI</td>
<td>-2.062</td>
<td>-14.113</td>
<td>I[1]</td>
</tr>
<tr>
<td>LSTC</td>
<td>-3.884</td>
<td>-12.745</td>
<td>I[0]</td>
</tr>
</tbody>
</table>

** Indicates the rejection of the null hypothesis of a unit root at the 5% significance level. The critical value at the 5% significance level is -2.891, with constant and trend.

Having established that the series in the analysis are all I(1) variables, possessing unit roots, we move on to determine if they are cointegrated. The results from the multivariate cointegration test are presented in Table 2 below. As can be seen from the table, the trace test statistic shows that there are at least 2 cointegrating relations while the λ-max statistic indicate that there is one significant cointegrating vector among the variables since the hypothesis of no cointegrating vector (r=0) is to be rejected. Apparently, the number of cointegrating relations or vectors (indicated by r) is at least one. Thus, the hypothesis of no cointegration among the variables is rejected. The implication of this is that a long run relationship exists among the variables.

Table 2: Johansen Multivariate Cointegration Tests Results.

<table>
<thead>
<tr>
<th>Trace Test</th>
<th>Maximum Eigenvalue Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Null Hypothesis</td>
<td>Test Statistic</td>
</tr>
<tr>
<td>r = 0*</td>
<td>82.03</td>
</tr>
<tr>
<td>r ≤ 1*</td>
<td>32.98</td>
</tr>
<tr>
<td>r ≤ 2</td>
<td>12.27</td>
</tr>
<tr>
<td>r ≤ 3</td>
<td>0.876</td>
</tr>
</tbody>
</table>

*(***) denotes rejection of the hypothesis at 5% (1%) significance level.

The dynamic analysis

Granger causality tests

The macroeconomic outlook of the variables used in the analysis may imply simultaneity among them. Hence, the Granger causality test, which is a preliminary aspect of an endogenous vector-based analysis, is used to provide the background for estimating dynamic relationships. The results of the Granger causality tests are reported in Table 3 below. The hypothesis of causality running from external debt to RGDP is rejected but the reverse could not be rejected.
This implies that though external debt as a capital inflow factor does not Granger cause real GDP growth, real GDP growth Granger causes external debt. It seems that the rate of economic growth determines whether external borrowing will take place or not. Periods of economic prosperity, especially with rising oil revenue, are usually accompanied by rapid reduction in external borrowing and repayments.

Foreign direct investment on the other hand does not have any Granger Causality relationship with economic growth. This result is rather appalling since FDI is expected to be a major supplier of the much needed capital for technological and industrial growth in the economy. The issue is generally pliable in the case of Nigeria where FDI has focused primarily on the oil sector, leaving out other sectors that can help to generate growth enhancing multipliers in the economy.

The result also rejects the null hypothesis that short term capital flow does not Granger cause RGDP. However, the reverse hypothesis cannot be rejected because of the insignificant F-value. Thus, it is seen that short term capital inflow can produce growth tendencies for the economy, perhaps, in the short run, but the pattern of economic growth does not determine the flows of short term capital inflows. The economy responds to its movements but STC does not feel impulses from changes in economic aggregates. Perhaps, short term foreign investment in the economy is not quite related to shocks in the aggregates. This makes its inflow unpredictable when using market instruments to gauge, thus guaranteeing its capacity to perpetuate persistent instability in the market. This is similar to the argument by Singh (2009) who argued that short term capital inflows in form of FPI are highly susceptible to generating stock market bubbles since the probability of an abrupt and sudden reversal is higher.

Another important aspect of the result is the causality running from short term capital inflow to external debt accumulation. It is clear that external debt in Nigeria is acquired from institutions that provide short term capital which makes debts to be in form of capital inflow to the country (Iyoha, 2003).

Table 3: Causality test results

<table>
<thead>
<tr>
<th>Direction of Causality</th>
<th>$F$-statistics</th>
<th>Direction of Causality</th>
<th>$F$-statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXDT $\rightarrow$ RGDP</td>
<td>1.641</td>
<td>RGDP $\rightarrow$ EXDT</td>
<td>3.239*</td>
</tr>
<tr>
<td>FDI $\rightarrow$ RGDP</td>
<td>1.608</td>
<td>RGDP $\rightarrow$ FDI</td>
<td>1.951</td>
</tr>
<tr>
<td>STC $\rightarrow$ RGDP</td>
<td>4.443**</td>
<td>RGDP $\rightarrow$ STC</td>
<td>1.069</td>
</tr>
<tr>
<td>FDI $\rightarrow$ EXDT</td>
<td>0.712</td>
<td>EXDT $\rightarrow$ FDI</td>
<td>0.123</td>
</tr>
<tr>
<td>STC $\rightarrow$ EXDT</td>
<td>4.027**</td>
<td>EXDT $\rightarrow$ STC</td>
<td>0.242</td>
</tr>
<tr>
<td>STC $\rightarrow$ FDI</td>
<td>0.122</td>
<td>FDI $\rightarrow$ STC</td>
<td>0.848</td>
</tr>
<tr>
<td>EXRT $\rightarrow$ ML</td>
<td>0.931</td>
<td>ML $\rightarrow$ EXRT</td>
<td>0.268</td>
</tr>
</tbody>
</table>

$^*$-$F$-statistic significant at the 5% level; $^{**}F$-statistic significant at the 1% level.

The Vector error Correction Mechanism

The existence of cointegration among the variables allows us to implement the Vector Error Correction Modeling (VECM) technique, which describes the systematic disequilibrium adjustment process and the short-run transmission mechanism. The endogenous variables in the system include lagged variables of the real GDP growth, external debt, FDI and short term capital inflows as well as the error correction term from the cointegrating equation. The use of lags is expected to internalize the implications of expectations among the variables. The result of the VECM is presented in Table 4 below.

Several interesting transmission patterns emerge from the examination of Table 4. We observe that the estimated lagged error-correction terms
(ECM\textsubscript{t-1}) for three of the relevant variables (RGDP, EXDT, and STC) are all insignificant, though that of FDI has a pervasive positive sign. The ECM term therefore emerges as an important channel of influence. The statistically insignificant error-correction terms, cannot confirm the existence of long run relationships between stock returns and all the macroeconomic variables. In other words, the series may not adjust to eliminate any deviations from the long-run equilibrium relationships that they may share with each other. However, such adjustments slow and unwieldy because the ECM coefficients are small for each of the series.

Table 4: Dynamics between Stock Returns and Macroeconomic Variables

<table>
<thead>
<tr>
<th>Panel</th>
<th>Equation in the VECM</th>
<th>( \Delta RGDP )</th>
<th>( \Delta EXDT )</th>
<th>( \Delta FDI )</th>
<th>( \Delta STC )</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>( \Delta RGDP )</td>
<td>0.003</td>
<td>1.997**</td>
<td>-0.001</td>
<td>-0.002</td>
</tr>
<tr>
<td></td>
<td>( \Delta EXDT )</td>
<td>-0.095</td>
<td>1.517</td>
<td>0.795*</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>( \Delta FDI )</td>
<td>4.414**</td>
<td>381.3*</td>
<td>-0.189</td>
<td>0.054</td>
</tr>
<tr>
<td></td>
<td>( \Delta STC )</td>
<td>0.409</td>
<td>-59.54</td>
<td>3.476</td>
<td>0.017</td>
</tr>
</tbody>
</table>

* is significance at 5 percent; ** is significance at 1 percent

As can be seen in Panel A of Table 4, only the lagged RGDP coefficient is significant, implying that there is long run adjustment in the system. Both external debt and FDI possess negative signs though they both fail the significance test. For external debt coefficient, the result suggests that external debt has minimal negative impact on short run economic behaviour. STC has a positive sign, indicating that short term capital flows tend to exert marginal positive effect on short run economic growth in Nigeria. In panel B, external debt and STC are both significant. The high coefficient of external debt indicates fast adjustment to equilibrium. The coefficient of STC is negative, suggesting that rising short term capital inflows to the country tends to reduce external debt inflows in the short run.

In panels C and D, the short term behaviour of FDI and short term capital flows are presented. Real GDP growth and external debt both related to FDI inflows in the short run. The result shows that real DGP tends to stimulate FDI inflows in the short run while increase in external debt will lead to rise in FDI inflows. This result confirms the relevance of market size in FDI inflows (see Iyoha, 2003) and that external debt is part of capital inflows. For the short term capital inflows, the result indicates that its lagged value has a negative coefficient and also significant at the 5 percent level. Thus, there seems to be instability in the short term capital inflows because the negative coefficient indicates unstable adjustment mechanism.

Impulse response functions

In order to further conduct the dynamic analysis of the capital market volatility within the dynamic framework, the Impulse Response Functions (IRFs) based on the VECM results are examined first. Results are presented in the form of the dynamic impulse responses of the economic growth variable in the VECM (i.e. RGDP) to an increase in each relevant variable equivalent to the sample standard deviation. The charts are analysed succinctly in this section. These charts are designed to provide a visual presentation of the dynamic effects of shocks to the system. They reveal the proper ordering. In order to obtain better multiplier estimates in the dynamic framework, we focus on the impulse response function graphs in figures 1.

Figure 1 displays the impulse-response functions of RGDP in the VAR to a shock in all the other variables. It can be seen from the charts in the figure that the response of RGDP to shocks in each of the variables is rather interesting. A one standard deviation shock to FDI is shown to
cause RGDP to rise and continue in the path for a very long time. This implies that FDI inflows can cause long run growth in the economy in Nigeria. However, the response of RGDP to both EXDT and STC is negative. A shock to the variables tends to depress economic growth. The surprising issue is that the negative effect perpetuates itself for a very long time in the economy. Thus, care must be taken in handling external debt and short term capital inflows (such as foreign portfolio investment) to ensure steady state growth in the economy.

**Conclusion**

In this study, dynamic effects of foreign capital inflow on the Nigerian economy were investigated using the Vector Error Correction Mechanism (VECM) technique. Using quarterly data covering the period 1981 to 2011, the VECM procedure was employed to empirically show the dynamic relationships existing between economic growth and the foreign capital factors of foreign direct investment (FDI), external debt and short term capital inflows. In general terms, the relevance of external capital to development efforts in a domestically starved economy like Nigeria was well established in the study. Results from the empirical analysis show that the categorization of foreign capital inflows into direct and portfolio has significant relevance in terms of their effects economic growth in Nigeria. Short term capital flows emanating as a result of portfolio investments were shown to exert a less direct impact on economic growth than direct investments. Thus, uncoordinated inflow of foreign capital into the country should be avoided since this can create liquidity crises in the economy, especially in the short run. The study also showed that external debt has the strongest impact on economic growth in Nigeria among the foreign capital factors. Thus, well structured foreign debt regimes may yield more development benefits to the Nigerian economy than dependence on other forms of capital inflows.

**References**

97


98