FOREIGN CAPITAL AND AFRICA’S ECONOMIC PROGRESS:
FACTS FROM NIGERIA AND SOUTH AFRICA

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ABSTRACT
Foreign capital inflow is usually believed as a means of supplementing domestic capital. The paper examined the influence of foreign capital on Africa’s economic progress focusing on Nigeria and South Africa (1970-2004). Data sourced from IFS, CBN and others were analyzed with econometric techniques. Empirical facts from cointegration and Granger casualty tests are as follows: There is a long-run relationship between foreign capital and economic progress in South Africa but in Nigeria it is short-run oriented; Foreign capital Granger-causes economic progress in South Africa, while in Nigeria casualty runs on the reverse; a bi-directional causality exists between economic progress and domestic capital in South Africa, for Nigeria it is uni-directional running from domestic capital to economic progress; Labour force in both countries Granger-causes their economic progress. In the light of the above, foreign capital should be promoted in South Africa to enhance her economic progress while in Nigeria polices that can reduce the level of capital flight (e.g. dependable institutional framework etc) are essential for foreign capital to have long-run influence on her economic progress. The need for the countries to rely more on domestic capital is equally suggested as viable factors for their economic progress.

Keywords: African countries; Causality; Cointegration; Economic progress; Foreign capital.
JEL Classification: F 21; F43; G15.
1.0 INTRODUCTION

Africa has experienced series of fluctuations in many macroeconomic variables as well interjections of military and civilian autocratic leadership in many of her nations. Though, some of the countries have started embracing various reform agenda as panacea to revamping their slow growth economies through the following measures: exchange rate stability, campaign for inflow of foreign capital (FK\(^1\)) which involves foreign direct investment-FDI and portfolio investment-PI, stability of export prices, diversification of the export base, and development of new markets (United States Trade Representative-USTR, 2007). The aforementioned objectives were designed to align their economies to the realities and opportunities in global market.

The believe is that when a country opens up to FK, trade, flow of factors, technology among others, such inflow would stimulate the rate of her economic progress-growth (Aryeetey and Fosu, 2005). This inclination usually involves the integration of domestic economies with the rest of world (Obadan, 2004). The argument for FK is usually the need to augment the level of domestic savings that can supply the needed resources (financial, technical and managerial) for investment. Inflow of FK is an important means of supplementing domestic investment that can induce capital formation in the domestic economy. It could expedite domestic investment via connection in the productive processes, as multinational corporations-MNCs and other foreign firms procure local inputs and supply producers’ goods to home firms. It can also increase the host country’s export base and thereby increasing her foreign exchange earnings. It is equally capable of creating job opportunities for the citizenry of the host country as well as enhancing technological transfer, which will boost the level of economic progress.

\(^1\) Only private commercial capital is being referred; foreign aids are excluded.
In spite of the possible benefits of FK in the host economy, it is worrisome that Africa has not attracted sufficient dose of it. For instance, the inflow of FDI to Africa was a paltry average of 1.8% of the total world inflows (1986-1990), which even declined to 0.8% (1999-2000) though it increased to 2.5% (2002-2003). Thus, Africa has not been a major beneficiary of FK flows and could be one of the reasons for lagging behind other regions; even other developing countries had average of 22% (Dupasquier and Osakwe, 2005). Governance styles, socio-political atmosphere, policy mal-alignment, weak institutional framework in most African countries have not helped matters. The case of Zimbabwe with estimated government’s budget deficit of more than 50% of gross domestic product-GDP and predicted inflation rate of about 4000% by the end of 2007 is a ready example (USTR, 2007).

Some empirical studies (usually cross-country) on FK and economic growth seem to conclude that inflow of FDI have positive influence on economic progress (Kohpaiiboon, 2004; Olusi and Folorunso, 2007). Yet others (e.g. Lipsey, 2000; Frimpong and Oteng-Abayie, 2006) found FK to influence economic progress negatively for some countries. It is apparent therefore that relating FK comparatively on country-basis in Africa has not been adequately done, which informed the present study. Hence, the study explores some empirical facts on the influence of FK on Africa’s economic progress. The above aim will be achieved using two African countries (Nigeria and South Africa) with a promising economic resurgence and relevance, capable of becoming the continent’s growth pole. The paper has five sections, next to this is literature review followed by methodology. Analysis of data and conclusion are in the last two sections.

2.0 LITERATURE REVIEW

The growth enhancing (or otherwise) influence of FK inflows tend to vary from one country to another. Some empirical studies on cross-country have reached the conclusion that inflow of FK can influence economic growth positively in some countries and regions (Borensztein et al, 1998; Jenkins and Thomas 2002 etc). However for some countries FDI have been found to affect economic growth negatively (Lipsey, 2000; Xu, 2000). For example, Frimpong and Oteng-Abayie
(2006) found that the impact of FK negatively affected Ghana’s economy for the period 1970-2002, using bounds testing and autoregressive distributed lag cointegration procedure method.

In another study, Asiedu (2002) noted that with substantial adjustments for countries’ peculiarities (in terms of their economic size, political attitudes towards FK, stability and so on), the magnitude of FK inflows and its effects in inducing economic progress will be higher in countries with export promotion strategy than those with import substitution approach in the long run. This implies that the level to which FK can enhance rate of economic progress in the host economy largely depends on specific prevailing factors in the country. Other studies shared this line of thought that African countries are unable to attract satisfactory level of FK inflows due to political tumult, insufficient infrastructures, poor governance, macroeconomic instability, and antagonistic regulations (Dupasquier and Osakwe, 2005).

In the same line of envisaging, Ezike (2007) recently (though theoretically) classified the factors that affect FK inflows in Nigeria into two-motivators (open policy regimes, hospitable regulatory structure, large markets and favourable economic and political milieu) and deterrents (regulatory restrictions like tariff, quotas, taxes, instability, infrastructural deficiencies and uncertain political stability). Earlier observation has been made by Onyeiwu and Shrestha (2004) that the factors which influence the level of FK inflows include level of economic growth, availability of natural resources, international reserves, openness, and inflation; while political rights and infrastructures were found to be immaterial.

Other authors have equally observed that a conducive environment (involving openness to trade) will likely attract higher level of FK inflows that will translate to economic progress (Jenkins and Thomas, 2002 etc). FK has also been found to improve efficiency in resource allocation and wage rate in the host country due to competition that usually occurs when foreign investors enter industries (or sectors) with entry barriers which falters the fetters of local monopoly (Goldberg, 2007). In this respect, FK inflows and trade in productive sectors like manufacturing will boost economic growth with adequate linkage effects. However, Frimpong and Oteng (2006) observed that uneven distribution of FK flows in favour of the mining sub-sector and trade in predominantly import-substituted goods in Ghana did not result in desired economic linkages that could expedite economic progress.
Analyzing the policy implications of FK inflows in some Sub-Saharan African- SSA countries (Ghana, Kenya, Malawi, Tanzania and Uganda), Shibata and Morrissey (2002) indicated that FK inflows influence exchange rate, money supply, inflation rate and interest rate. And they gave a caveat that if FK inflows are connected with increased demand for imports it may worsen the nations’ progress. These fallouts from the literature make it imperative that the impact of FK inflows on economic progress at any given period be assessed at country-specific level in order to inform proper policy recommendation. Thus, this study draws empirical facts from Nigeria and South Africa.

The choice of Nigeria and South Africa

Nigeria occupies more than half of the West African population, with her population of about 128.71 million and entire region’s of about 254.53 million in 2004, and more than one-seventh of the entire continent of about 840 million, which is a significant market. It is equally rich in diverse resources (International Financial Statistics-IFS; Osabuohien, 2007). South Africa on the other hand, has vast natural endowments (especially gold, diamond etc) with population of about 47.28 million in 2004, is equally prominent in the southern part of the continent (IFS).

In addition, South Africa and Nigeria accounted for 53.6 percent of SSA’s total exports of about $177.3 billion in 2005. South Africa’s exports grew by 13.2 percent to $51.6 billion, while Nigeria’s grew by 30.5 percent to $43.5 billion in 2005 (USTR, 2007). Both countries were also the first two among the top five FDI recipient countries in SSA in 2005: South Africa had $6.4 billion and Nigeria about $3.4 billion (USTR, 2007). However, petroleum was a major factor for FDI flows in Nigeria but in South Africa it was due to the purchase of the South African bank ABSA by an international banking group, as well as higher commodity prices that attracted investment into her minerals and mining sector. Thus, these two countries portend vital growth poles that would be a major pivot on which the economic progress of Africa could possibly evolve. In sum, the two nations could be seen as strong catalysts that will expedite the growth of other neighbouring countries and the African continent especially in this 21\textsuperscript{st} century via possible linkages effects.
3.0 METHODOLOGY AND SOURCES OF DATA

3.1 Theoretical framework and Model Specification.

Investment (i.e. capital) generally has been found to be positively related to economic growth (Fosu, 1996; Strauss and Thomas, 1998; Abdulai and Jaquet, 2002; Ige, 2007). An assessment of how FK can influence economic progress can be viewed in these ways: first FK can be regarded as investment, and as such its increase is expected to enhance the level of economic progress. More so, FK has positive externalities that will trickle down to the improvement of other sectors of the host economy through research and development (R&D) which accelerates technological progress and managerial efficiency.

Possible theoretical relationship between FK and economic progress can exist which could be growth promoting (or otherwise). The study models an aggregate production function as framework, which has been used in econometric studies (e.g. Abdulai and Jaquet, 2002; Frimpong and Oteng, 2006) to estimate the impacts of capital on economic progress especially in less developed countries-LDCs. The framework—a build up from the conventional Harrod-Domar and Solow (1956) augmented model\(^2\), presupposes that in addition to the traditional labour (L) and capital (K) inputs in the neoclassical production function, other components (like FK) may be included to capture their influence on economic progress. Thus, the model can be specified below:

\[
Y_t = AL_t^{\lambda_1} K_t^{\lambda_2} \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots (1a)
\]

Assuming capital is broken down into two specific types (Domestic Capital-DK and FK); equation (1a) can be rewritten as:

\[
Y_a = AL_a^{\lambda_1} DK_a^{\lambda_2} FK_a^{\lambda_3} u_a \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots (1b)
\]

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\(^2\) The Harrod-Domar and Solow’s neoclassical growth models were faulted because the former relies on a nonflexible production function where substitution between labour and capital is not always possible, while the latter assumes other possible determinants (excluding labour and capital) of economic growth to be exogenous.
Adopting a log-linear transformation, equation (1b) becomes:

\[ \log y_t = \lambda_0 + \lambda_1 \log l_t + \lambda_2 \log dk_t + \lambda_3 \log fk_t + e_t \]  \hspace{1cm} (1c)

Where:
- \( y \) = real GDP capturing economic progress
- \( l \) = labour force
- \( dk \) = real gross fixed capital formation, a proxy of domestic capital
- \( fk \) = real foreign capital given as total FK inflow

‘t’s represent time dimension; ‘i’s the respective countries; \( \lambda_0 = \log A; \lambda_1 \) and \( \lambda_3 \) are the coefficients to be estimated and \( e = \log u \).

### 3.2 Granger Causality Model

The conventional method of determining causality between two variables is Granger Causality approach (Granger, 1969). In this method, to know whether a particular variable (e.g. \( X \)) influences another variable (e.g. \( Y \)) is to observe how much of the current value of \( Y \) can be explained by past values of \( Y \) and then to see whether adding lagged values of \( X \) can improve the explanation. \( Y \) is said to be ‘Granger-caused’ by \( X \) if \( X \) helps in forecasting \( Y \), that is if the coefficients on the lagged \( X \)’s values are significant. The test for causality has the following formulation:

\[ Y_t = c_1 + \sum_{i=1}^k \alpha_{i1}Y_{t-i} + \sum_{i=1}^k \beta_{i1}X_{t-i} + \nu_{1t} \]  \hspace{1cm} (2a)

\[ X_t = c_2 + \sum_{i=1}^k \delta_{i2}X_{t-i} + \sum_{i=1}^k \chi_{i2}Y_{t-i} + \nu_{2t} \]  \hspace{1cm} (2b)

Where \( Y_t \) and \( X_t \) are the variables to be tested, and \( \nu_{1t} \) and \( \nu_{2t} \) are mutually uncorrelated white noise errors. From equation (2a), if \( X \) Granger-causes \( Y \), then the coefficient \( \beta_{1i} \) will be significant when the lagged \( Y \) and \( X \) are regressed on \( Y_t \). If there is a bi-causal (bi-directional) relationship between \( Y_t \) and \( X_t \) then both \( \beta_{1i} \) and \( \chi_{2i} \) will be significant. If both \( \beta_{1i} \) and \( \chi_{2i} \) are insignificant, it means there is no causal relationship between the two (\( x \) and \( y \)) variables.
The models specified above, would be used to empirically achieve the objective of the study.

3.3 Sources of Data

The study employs secondary data in its analyses for the period 1970-2004. The sources include International Financial Statistics (IFS) of the IMF, Central Bank of Nigeria-CBN and others\(^3\). The variables were converted to US dollars to ensure compatibility. Empirical analyses of the data were carried out using econometric technique with E-views software to estimate the formulated models.

4.0 DATA ANALYSIS AND RESULTS

4.1 Stationarity and Cointegration Tests

In recent econometric modeling, the estimations usually start off with unit root (stationarity) test. This is to avoid spurious results because most variables may not be stationary at levels (Engle and Granger, 1987). The stationarity test of variables is usually done using Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) methods. The main difference between the two methods is that the latter takes into cognizance the time series distinctiveness of the variables in the presence of structural change and also takes less restrictive nature of the error process into accounts; as such it is more powerful than the former (Abdulai and Jaquet, 2002; Idowu, 2005). Thus, a variable that is stationary at a given order using PP, will always be stationary using ADF (Osabuohien, 2007). For this study, the PP test (for intercept with and without trend) was used and reported in Table 1.

From Table 1, it is apparent that all the variables are I(1) series, implying that they became stationary after first difference. A linear combination of all these series may result in cointegration among the variables. Variables are said to be cointegrated when a long-run relationship exists among them, which implies that they will move together in the long-run.

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\(^3\) Nigeria’s FK and Labour force were obtained from CBN (2004) statistical bulletin and World Bank reported in Iyoha (2004:260) respectively; for South Africa the employment level was used as proxy for labour force (the figures were unavailable for most of the years in IFS).
Table 1: Stationarity Test for the Series using PP*

| Variable | NIGERIA | | | NIGERIA | | | | SOUTH AFRICA | | | | SOUTH AFRICA |
|----------|---------|---|---|---------|---|---|---------|---|---|---------|---|---|---------|
|          | Intercept & Trend | Remarks | Intercept & Trend | Remarks | Intercept & Trend | Remarks | Intercept & Trend | Remarks |
| logy     | 0.4676 -1.4970 | I(1) | 0.5139 -2.1043 | I(1) | 0.5139 -2.1043 | I(1) |
| dlogy    | -6.1160 -6.6526 |  | -4.8409 -4.7757 |  | -4.8409 -4.7757 |  |
| logrdk   | -0.1948 -1.7848 | I(1) | -1.2778 -1.6028 | I(1) | -1.2778 -1.6028 | I(1) |
| dlogrdk  | -4.9324 -5.1001 |  | -5.2298 -5.1896 |  | -5.2298 -5.1896 |  |
| logrfk   | 0.0277 -3.5040 | I(1) | -1.8015 -1.6028 | I(1) | -1.8015 -1.6028 | I(1) |
| dlogrfk  | -12.5234 -14.2640 |  | -4.8305 -4.7275 |  | -4.8305 -4.7275 |  |
| logl     | 1.3762 -2.7442 | I(1) | -1.8365 -1.8730 | I(1) | -1.8365 -1.8730 | I(1) |
| C.V 5%   | Level | -2.9286 | -3.5136 |  |  |  |
|          | 1st Diff | -2.9303 | -3.5162 |  |  |  |

*The critical values (C.V) for rejection of hypothesis of a unit root were from MacKinnon (1991) as reported in Eviews: a variable is stationary when PP value is greater than the C.V. The optimal lag length for the series was 3 as suggested by Newey-West values.

To verify whether the variables are cointegrated, the Johansen (1995) multivariate cointegration test was used. This approach (Johansen’s) was preferred to Engle-Granger (1987) test, because the latter usually estimates the regression equation and test for stationarity which might be biased and it also assumes one cointegrating vector in the systems with more than two variables. The cointegration results are presented in Table 2 for the two countries.

Table 2: Johansen’s Multivariate Cointegration Test

|          | NIGERIA | | | NIGERIA | | | | SOUTH AFRICA | | | | SOUTH AFRICA |
|----------|---------|---|---|---------|---|---|---------|---|---|---------|---|---|---------|
|          | Eigenvalue | Likelihood Ratio | Eigenvalue | Likelihood Ratio | 5% C.V |
| H_0      | None    | 0.423428 | 35.92993 | 0.561666 | 88.15986* | 47.21 |
|          | ≤ 1     | 0.284153 | 17.75830 | 0.481598 | 53.51934* | 29.68 |
|          | ≤ 2     | 0.175994 | 6.726751 | 0.283691 | 25.92519 | 15.41 |
|          | ≤ 3     | 0.010212 | 0.338712 | 0.243647 | 11.91213 | 3.76 |

* Reject H_0 at 5% significant level, i.e. when Likelihood Ratio is greater than CV. The C.V are given by Osterwald-Lenum (1992) and tabulated in EViews.

The Likelihood Ratios in Table 2 show that the null hypotheses of no cointegration and at most one cointegrating equation is accepted at 5% significant level for Nigeria but rejected for South Africa. This implies that a long-run relationship exits between the variables for South Africa but the

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5 The test was used to establish if FK has long-run impact on the countries’ economic progress, hence error correction was not carried out for South Africa after cointegration, perhaps in further study this can be examined as well as FK determinants.

contrary holds for Nigeria. The fact to be drawn from here is that FK and economic progress move together in the long-run for South Africa but in Nigeria their relationship is short-run oriented. This may be that foreign investors in Nigeria invest mainly in the short-run and then repatriates their profit to their home countries—the issue of capital flight. It could also mean that the level of FK is not substantial enough in Nigeria to induce desired economic progress in the long-run.

4.2 Granger Causality Test

To further achieve the objective of the study, the Granger causality test was carried out and reported accordingly in Table 3 for the two countries.

Table 3: Pairwise Granger Causality Tests Nigeria and South Africa.

<table>
<thead>
<tr>
<th>Null Hypothesis (H_o)</th>
<th>NIGERIA</th>
<th>SOUTH AFRICA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F-Statistic</td>
<td>Probability</td>
</tr>
<tr>
<td>lnRfk does not Granger Cause lnY</td>
<td>0.67849</td>
<td>0.51553</td>
</tr>
<tr>
<td>lnY does not Granger Cause lnRfk</td>
<td>2.71128</td>
<td>0.08388^c</td>
</tr>
<tr>
<td>lnRdk does not Granger Cause lnY</td>
<td>2.34678</td>
<td>0.02722^b</td>
</tr>
<tr>
<td>lnY does not Granger Cause lnRdk</td>
<td>0.26513</td>
<td>0.76851</td>
</tr>
<tr>
<td>lnL does not Granger Cause lnY</td>
<td>4.66307</td>
<td>0.01545^b</td>
</tr>
<tr>
<td>lnY does not Granger Cause lnL</td>
<td>1.48214</td>
<td>0.23999</td>
</tr>
<tr>
<td>lnRdk does not Granger Cause lnRfk</td>
<td>3.63028</td>
<td>0.03964^c</td>
</tr>
<tr>
<td>lnRfk does not Granger Cause lnRdk</td>
<td>1.49193</td>
<td>0.24228</td>
</tr>
<tr>
<td>lnL does not Granger Cause lnRfk</td>
<td>3.11711</td>
<td>0.05995^c</td>
</tr>
<tr>
<td>lnRfk does not Granger Cause lnL</td>
<td>0.06499</td>
<td>0.93722</td>
</tr>
<tr>
<td>lnL does not Granger Cause lnRfk</td>
<td>3.33502</td>
<td>0.04630^b</td>
</tr>
<tr>
<td>lnRdk does not Granger Cause lnL</td>
<td>0.73798</td>
<td>0.48480</td>
</tr>
</tbody>
</table>

Note: a, b and c means reject H_o at 1, 5 and 10 % respectively. The lag length used was 2. Ln denotes logarithm operator.

Looking at the variables of interest, the results in Table 3 reveal that causality runs from real GDP to real FK for Nigeria but for South Africa it runs on the reverse. This means that the past values of real GDP can help in predicting the future value of real FK in Nigeria but in South Africa, the past values of real FK help in predicting future level of real GDP. For real domestic capital and real GDP, there is a bi-directional relationship for South Africa but for Nigeria, the former Grange-causes the latter. The implication is that domestic capital is a significant factor in determining the level of economic progress for both countries, however in South Africa increase in economic progress will equally lead to increase in domestic capital (bi-causal relationship). While for both countries, causality runs from labour force to real GDP, connoting that labour force is helpful for the economic progress.
The results from above suggest that in Nigeria, it is the level of economic progress that will determine the level of FK that can be attracted but for her South African counterpart, FK inflow is relevant in explaining the level of her economic progress. This denotes that FK is more significant for economic progress in South Africa than in Nigeria (which was first pointed out by the cointegration test earlier reported). Thus, two different views of economic proposition are being supported for the respective country. In Nigeria, economic progress determines the rate of FK inflow indicating that the more economically progressive a country: the more its attractiveness for foreign capital. While for South Africa, it is the level of FK inflow determines economic progress denoting that foreign capital has the ability of enhancing economic progress. This is usually the strength of country-specific study; it brings out the country’s peculiarities.

With respect to the relationship between real domestic capital and level of economic progress in the countries, the causality test reveals bi-directional relationship for South Africa and uni-directional relationship from real domestic capital to economic progress for Nigeria. What this suggests is that as the level of real capital formation in South Africa increases (*ceteris paribus*), it results to an inducement in her level of economic progress; and this increased economic progress will further result to greater level of real capital formation: and the process continues. On the other, the relationship is one dimensional in Nigeria, which shows that higher level of domestic capital will lead to greater level of her economic progress, however: this increased in economic progress does not translate to additional capital formation. In addition, the relationship between labour force and economic progress in both countries is one directional from the former to the latter. This implies that as the stock (quantity and quality) of labour force in these countries improves, it will lead to greater level of economic performance.

5.0 CONCLUSION.

There is a belief in growth analysis that when a country opens up to foreign capital; such inflow would promote the level of her economic progress (growth). But different views are held in the literature for different countries and regions. Hence, the need for country-specific studies to examine this position for a given country. This study investigated the influence of foreign capital and economic progress in Africa focusing on two supposedly dominant economies-Nigeria and South Africa. Secondary data that spanned through 1970-2004 were sourced from IFS and others, which were analyzed with econometric techniques.
The empirical facts drawn from the cointegration and Granger casualty tests that were carried out for both countries can be summarized below:

- There is the existence of a long-run relationship between foreign capital and economic progress in South Africa but for Nigeria only short run exist.
- Foreign capital was found to Granger-cause economic progress in South Africa but for Nigeria, the casualty runs on the reverse, indicating high possibility of capital flight in Nigeria.
- There is a bi-directional causality between economic progress and domestic capital in South Africa, while in Nigeria causality is uni-directional from domestic capital to economic progress.
- Labour force in both countries Granger-causes their economic progress.

Based on the above findings, the study made some recommendations that will expedite the level of economic performance in the countries. Firstly, foreign capital should be promoted in South Africa to enhance her economic progress while in Nigeria polices that can reduce the level of capital flight (such as making the country socio-economically conducive, development of infrastructures and dependable institutional framework) are essential to ensure that it will have significant and long run influence in her economic progress. There is also the need for both countries to rely more on domestic capital for their economic progress especially in Nigeria. Moreover, development of labour force capacity in the two countries will boost their economic progress.

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