Foreign resources and economic growth in English speaking ECOWAS countries

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Abstract

This paper sets to determine the causality between foreign resource inflows and economic growth within the English Speaking ECOWAS using data between 1970 and 2014. The individual country unit root and panel unit root tests were carried out to test for the stationarity of the variables used as a method. The result shows that human capital development can stimulate the inflows of foreign resource in ESECOC countries and thereby accelerate economic growth. We, therefore, conclude that a foreign resources-led growth assumption holds for ESECOC countries, irrespective of the time frame of the causality.

Keywords: resources, causality, economic, growth, flow.
Recursos extranjeros y crecimiento económico en países de ECOWAS de habla inglesa

Resumen

El artículo establece la causalidad entre las entradas de recursos extranjeros y el crecimiento económico en la CEDEAO de habla inglesa, utilizando datos entre 1970 y 2014. Se llevaron a cabo pruebas de raíz de unidad por país individual y de raíz de unidad por panel para probar la estacionariedad de las variables utilizadas como método. El resultado muestra que el desarrollo del capital humano puede estimular la afluencia de recursos extranjeros en los países ESECOC y, por lo tanto, acelerar el crecimiento económico. Por lo tanto, concluimos que un supuesto de crecimiento dirigido por recursos externos se aplica a los países de ESECOC, independientemente del período de tiempo de la causalidad.

Palabras clave: recursos, causalidad, económico, crecimiento, flujo.

1. INTRODUCTION

Since the beginning of the twenty-first century, studies on the flows of foreign resource in the form of foreign direct investment (FDI), portfolio investment, and foreign assistance and aid, especially from developed to less developed nations and regions have given some attention in the literature. Due largely to suppose benefits (within the gospel of globalization) of cross-border investments, the desirability of foreign capital inflows has been accepted as an alternative antidote in achieving sustainable growth/development. Mainstream economists supported the view that inflow of capital into economies would benefit
developing countries by increasing the availability of capital, which will positively impact on the production processes and the general economic well-being of the host countries. The flow of foreign resources, as stressed by IMF (2010) cited in Siddiqui (2014), allow countries with limited savings to attract finance for productive investment projects, foster the diversification of investment risk, promote inter-temporal trade, and contribute to the development of financial markets.

Foreign resources are sets of resources in the form of managerial skills, capital, machines, portfolio investment, aid, grant, and technological resources that come along with foreign interventions, investors and Multi-Nationals Corporations (MNCs) which aid their productivity in the host countries (Becker, 1962). The proponents of globalization adduced that foreign resource inflows have the potential of transferring technology, managerial skills, capital and knowledge to the host countries through technological and organizational spillovers and consequently could raise the productivity and competitiveness of the host economy through the aforementioned channels (Dunning and Hamdani, 1997; Todd, 2004; Siddiqui, 2014; Eric & Kien, 2016). Within the view of the protagonists, investment funds should move unimpeded from industrialized countries to developing countries where they are most needed (Anowor et al., 2013b). After all, if investment in physical capital in developing countries is constrained by the low level of domestic savings, then any addition to domestic resources should help growth (Prasad et al., 2006). More so, it is perceived, as noted in Anowor et al.
(2013a), that inflow of foreign resources has the ability to deal with major obstacles such as shortages of financial resources, capital, technology, marketing, skills, know-how and fostering linkages needed to help jumpstart an economy.

On the contrary, the critics argued that foreign firms can introduce inappropriate technology and products, and aggravate balance of payments problems due to high remittances and capital flows (Siddiqui, 2014). It seems a conscious effort by the developed economies to deliberately force some of their economic policies that may not be favorable to the receiving economy with the aim of perpetually contributing to the under-development of the less developed countries; hence, as Ojoh (2005) puts it, another form of post-colonialism strategy which does not promote self-reliance, self-determination and indigenization.

A look at the records shows that the global capital inflows increased by 16 % in 2010 to $1524 billion up from $1309 billion in 1991; meanwhile emerging economies continued to attract nearly half of global inflows of capital (UNCTAD, 2012). The reason for this, as opined by Siddiqui (2014), is that foreign investors who experienced easy monetary conditions because of expansion policies found the developing countries to be more profitable and less risky than their own markets in developed countries.

Some scholars like Eregha (2011), Abdullateef & Waheed (2012), Alege & Ogundipe (2013) have estimated the impact of some of
these variables on economic growth and concluded that foreign resources influence economic growth negatively. While others like Borensztein et al. (1998), Todd (2004), Njoku et al. (2011) showed a positive relationship between foreign resources and economic growth in developing nations. Cáceres (1995) presents an analysis of the impact of external resources on the growth of our Central American countries: Guatemala, El Salvador, Honduras, and Costa Rica use a trans-log production model which expresses the gross domestic product as a function of domestic and external savings and of a time trend; the results indicated that technical change (represented by the time trend) is the main source of economic growth in these countries, that domestic savings have a perceptible impact on growth while external resources' impact is negative. In spite of such findings, policymakers in the Economic Community of West African States (ECOWAS) countries seem to be keeping the faith that economic growth in their economies is totally dependent on the inflow of foreign resources. But the question still remains: “why is the West African Sub-region still among the less developed regions of the world”? It is against this backdrop that the study aimed at investigating the causal relationship between foreign resource and economic growth in the English Speaking ECOWAS Countries (ESECOC). The ESECOC include: The Gambia, Ghana, Liberia, Nigeria, and Sierra Leone. The ESECOC share the same official language (English), political history (Britain as former colonial master), and membership of socio-economic-political organizations like ECOWAS, African Union (AU), Commonwealth, United Nations, and some others.
Though there are several types of foreign investment available to recipient’s countries as stated in the literature, this study considerably concentrated on the contribution of FDI and foreign aid/grants to the economic growth of ESECOC. Our study contributes to the existing literature by focusing on selected English speaking ECOWAS countries of Ghana and Nigeria, which other studies did not. Our choice of the two countries (Ghana and Nigeria) among others is justified by several reasons. Firstly, the two countries as at 2016 have been considered as the leading economies contributing a combined nominal GDP of $519 billion (98.67%) of $526 billion of ESECOC; a combined $1,209 billion purchasing power parity (98.6%) of $1,226 billion of ESECOC; a combined population of 209.6 million (94.18%) of 222.6 million of ESECOC. Secondly, the commercial policy measures undertaken by both countries show similarity at different levels. Thirdly, both countries have ratified most important trade agreements between themselves within the same period. Fourthly, both countries share common characteristics geographically and are jointly occupying 1,162,301 kilometers square (85.64%) of ESECOC sum total area of 1,357,265 kilometers square (see Appendix).

However, they also have some degrees of differences between them, for instance, Nigeria has a much higher population (182 million) than Ghana (27 million) making Nigeria to have a larger market size and purchasing power advantage. Also in terms of availability of natural resources, Nigeria has more of natural resources than Ghana.
1.1 Data Description

We used five different variables in this study. Economic growth (EGR), Foreign Resources (FRS), degree of openness (OPN), and domestic capital stock (DCAP), beside the above listed variable we considered other variables such as human capital development (HCD) in the model. The choice of the series followed the assumption made by Ayanwale (2007) and Alege&Ogundipe (2013) that the stimulating effect of foreign direct investment on economic growth is not automatic; as several countries specific effects such as the absorptive capability of human capital, domestic capital formation, trade liberalization, among others enhances the stimulation of foreign resources in economic growth.

Table 1. Data Sources and Measurement

<table>
<thead>
<tr>
<th>Variables</th>
<th>Description</th>
<th>Measurement</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>EGR</td>
<td>Economic growth</td>
<td>US Dollars at current prices and current exchange rates in millions</td>
<td>WDI</td>
</tr>
<tr>
<td>FRS</td>
<td>Foreign Resources proxied by sum of Foreign Direct Investment And Net Official Development Assistance divided by GDP</td>
<td>At Current US Dollars</td>
<td>WDI</td>
</tr>
<tr>
<td>OPN</td>
<td>Degree of openness proxied by Sum of total export and import divide by GDP</td>
<td>US Dollars at current prices and current exchange rates in millions</td>
<td>WDI</td>
</tr>
<tr>
<td>HCD</td>
<td>Human Capital Development proxied by Education index and Health index</td>
<td>We apply the traditional measurement of human capital development index (Todaro&amp; Smith, 2011,PP: 47 - 49)</td>
<td>WDI</td>
</tr>
<tr>
<td>DCAP</td>
<td>Gross Fixed Capital Formation as proxy for domestic capital.</td>
<td>US Dollars at current prices and current exchange rates in millions</td>
<td>UNCTAD</td>
</tr>
</tbody>
</table>

Source: Research Computation
2. METHOD OF THE STUDY

2.1 Unit Root Test

The individual country unit root and panel unit root tests were carried out to test for the stationarity of the variables used in the model specification. The tests are necessary in order to avoid spurious regression and guide to adopt appropriate estimation techniques.

This paper focuses on two types of unit root test in the case of individual country and panel data such as Augmented Dickey-Fuller (ADF), validated by the method developed by Phillips-Perron (PP) and Levin, Lin & Chu (LLC), (2002) validated by the method developed by Fisher-Type test using Augmented Dickey Fuller ADF (F.ADF) (Maddala&Klu, 1999) respectively.

In the case of panel unit root we chose Levin, Lin and Chu (2002) and Augmented Dickey Fuller over Im et al. (2003), because, Levin, Lin & Chu (2002) generalize the Quah’s model which allows for heterogeneity of individual deterministic effects (constant or linear time trend) and heterogeneous serial correlation structure of the error terms assuming the presence of homogeneous first order autoregressive parameters. The test assumes that both $T$ and $N$ tend to infinity but $T$ increase at a faster rate, such that $N/T$ tends to zero (Levin et al, 2002).
Table 2: Unit Root and Stationarity Tests

<table>
<thead>
<tr>
<th>Variables</th>
<th>Ghana</th>
<th>Nigeria</th>
<th>Panel</th>
</tr>
</thead>
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<tr>
<td></td>
<td>ADF</td>
<td>PP</td>
<td>ADF</td>
</tr>
<tr>
<td>EGR</td>
<td>I(0)</td>
<td>I(0)</td>
<td>I(0)</td>
</tr>
<tr>
<td>FRS</td>
<td>I(1)</td>
<td>I(1)</td>
<td>I(0)</td>
</tr>
<tr>
<td>OPN</td>
<td>I(0)</td>
<td>I(0)</td>
<td>I(1)</td>
</tr>
<tr>
<td>lnDCAP</td>
<td>I(1)</td>
<td>I(1)</td>
<td>I(0)</td>
</tr>
<tr>
<td>lnHCD</td>
<td>I(1)</td>
<td>I(1)</td>
<td>I(0)</td>
</tr>
</tbody>
</table>

Notes: Significant level is based at 0.1 levels or 10%.

The optimal lag used for conducting the ADF test statistic was selected based on Schwarz information criterion. To conduct the causal relationship between economic growth and foreign resources in both countries, long-run causality test developed by Toda & Yamamoto (1995) was applied. Their approach avoids the problems of the order of integration of unit root and co-integration tests associated with Granger causality. Table 2 shows that the series employed in the model by both countries are associated with the different order of integration and as such in consonance with Zapata & Rambaldi (1997) Granger causality test will produce an inappropriate estimate.

2.2 Toda & Yamamoto (1995) Model

The long-run causality test developed by Toda & Yamamoto (1995) follows the estimation of a vector autoregressive (VAR) model in level. Toda & Yamamoto (1995) model ignores any possible non-
stationarity or cointegration between series by this avoiding the problems associated with Granger causality test, this they do by minimizing the risks associated with incorrect identification of the order of integration of the individual time series and co-integration among the variables and falsely augments the proper order of the VAR and ensures that the usual test statistics for Granger causality have the standard asymptotic distribution (Wolde-Rufael, 2005). In simple words, Toda-Yamamoto is considered if the series to be estimated are of different orders of integration (say I(0) and I(1) or I(2) series).

To develop Toda-Yamamoto (1995) version of the Granger non-causality test, we sum up the egr-frs-lnicap-opn-lnhcd (where, egr = EGR; frs = FRS; lnicap = lnDCAP; opn = OPN and lnhcd = lnHCD) models in the following system of VAR:

2.3 Model for Toda-Yamamoto Causality Test

\[
egr_t = \alpha_0 + \alpha_{11} egr_{t-1} + \sum_{k=1}^{d_{\text{max}}} \phi_k egr_{t-k} + \alpha_{21} frs_{t-1} + \sum_{k=1}^{d_{\text{max}}} \phi_k frs_{t-k} + \sum_{k=1}^{d_{\text{max}}} \alpha_{3k} opn_{t-k} + \sum_{k=1}^{d_{\text{max}}} \phi_k opn_{t-k} + \sum_{k=1}^{d_{\text{max}}} \alpha_{4k} lnicap_{t-k} + \sum_{k=1}^{d_{\text{max}}} \phi_k lnicap_{t-k} + \sum_{k=1}^{d_{\text{max}}} \alpha_{5k} lnhcd_{t-k} + \sum_{k=1}^{d_{\text{max}}} \phi_k lnhcd_{t-k} + \epsilon_t \]

(1)

Eq. (1), Granger causality from \( egr_t \) to \( frs_{t}, opn_{t}, lnicap_{t} \) and \( lnhcd_{t} \) implies causality from economic growth to the rest of the variables in the model

d_{\text{max}} = \text{the highest order of integration in the model}; K = \text{the optimal Lag length}; i and j starts from 1 and end at k; and r = k+1. K+1 is the additional order of integration properties in the system.
Eq. (2), Granger causality from foreign resources to the rest of the variables in the model

d_{max} = the highest order of integration in the model; K = the optimal Lag length; i and j starts from 1 and end at k; and r = k+1. K+1 is the additional order of integration properties in the system.

Eq. (3), Granger causality from trade liberalization to the rest of the variables in the model

d_{max} = the highest order of integration in the model; K = the optimal Lag length; i and j starts from 1 and end at k; and r = k+1. K+1 is the additional order of integration properties in the system.
Eq. (4), Granger causality from $\text{indcap}_t$ to $\text{egr}_t, \text{frs}_t, \text{opn}_t$ and $\text{lnhcd}_t$ implies causality from domestic capital formation to the rest of the variables in the model.

d_{\text{max}} = \text{the highest order of integration in the model}; K = \text{the optimal Lag length}; i and j starts from 1 and end at k; and $r = k+1$. K+1 is the additional order of integration properties in the system.

\begin{equation}
\text{indcap}_t = \alpha_1 + \sum_{i=1}^{k} \alpha_{1i} \text{egr}_{t-i} + \sum_{i=k+1}^{k+d_{\text{max}}} \Phi_{1i} \text{egr}_{t-i} + \sum_{j=1}^{k} \alpha_{2j} \text{frs}_{t-j} + \sum_{j=k+1}^{k+d_{\text{max}}} \Phi_{2j} \text{frs}_{t-j} + \sum_{i=1}^{k} \alpha_{3i} \text{opn}_{t-i} \\
+ \sum_{r=k+1}^{k+d_{\text{max}}} \Phi_{3r} \text{opn}_{t-r} + \sum_{j=1}^{k} \alpha_{4j} \text{indcap}_{t-j} + \sum_{j=k+1}^{k+d_{\text{max}}} \Phi_{4j} \text{indcap}_{t-j} + \sum_{i=1}^{k} \alpha_{5i} \text{lnhcd}_{t-i} \\
+ \sum_{r=k+1}^{k+d_{\text{max}}} \Phi_{5r} \text{lnhcd}_{t-r} + \epsilon_t \tag{4}
\end{equation}

Eq. (5), Granger causality from $\text{lnhcd}_t$ to $\text{egr}_t, \text{frs}_t, \text{indcap}_t$ and $\text{opn}_t$ implies causality from human capital development to the rest of the variables in the model.

d_{\text{max}} = \text{the highest order of integration in the model}; K = \text{the optimal Lag length}; i and j starts from 1 and end at k; and $r = k+1$. K+1 is the additional order of integration properties in the system.

\begin{equation}
\text{lnhcd}_t = \alpha_1 + \sum_{i=1}^{k} \alpha_{1i} \text{egr}_{t-i} + \sum_{i=k+1}^{k+d_{\text{max}}} \Phi_{1i} \text{egr}_{t-i} + \sum_{j=1}^{k} \alpha_{2j} \text{frs}_{t-j} + \sum_{j=k+1}^{k+d_{\text{max}}} \Phi_{2j} \text{frs}_{t-j} + \sum_{i=1}^{k} \alpha_{3i} \text{opn}_{t-i} \\
+ \sum_{r=k+1}^{k+d_{\text{max}}} \Phi_{3r} \text{opn}_{t-r} + \sum_{j=1}^{k} \alpha_{4j} \text{indcap}_{t-j} + \sum_{j=k+1}^{k+d_{\text{max}}} \Phi_{4j} \text{indcap}_{t-j} + \sum_{i=1}^{k} \alpha_{5i} \text{lnhcd}_{t-i} \\
+ \sum_{r=k+1}^{k+d_{\text{max}}} \Phi_{5r} \text{lnhcd}_{t-r} + \epsilon_t \tag{5}
\end{equation}
The most important models in this paper are those presented as equation 1 and 2. That is the causality of economic growth to foreign resources and foreign resources to economic growth.

3. EMPIRICAL RESULTS AND DISCUSSION

Table 3: Granger non-causality testegr-frs-lnDCAP-opn-lnhcd
The VAR order \((k)\) was selected using the Schwarz Bayesian information criterion. Chi-Sq. Statistics are in bracket. The board cases indicate bidirectional causality.

* Significant at the 10% level.
** Significant at the 5% level.
*** Significant at the 1% level.

Chi-Square Statistics are in parenthesis

\(^a\) Ho: egr does not Granger-cause frs, opn, lndcap and lnhd
\(^b\) Ho: frs does not Granger-cause egr, opn, lndcap and lnhd
\(^c\) Ho: opn does not Granger-cause egr, frs, lndcap and lnhd
\(^d\) Ho: lndcap does not Granger-cause egr, frs, opn and lnhd
\(^e\) Ho: lnhd does not Granger-cause egr, frs, opn and lndcap

Before conducting Toda-Yamamoto causality test we test for stationarity of each series. Toda-Yamamoto causality test approach necessitates the series to be integrated of I(0), I(1) or I(2). The result in Table 2 indicates that the series are of different order of integration, which binds the researcher by applying Toda-Yamamoto causality test approach on the series for the two countries. Also, the models presented are robust after carrying diagnostic test for the presence of
possible serial correlation. We reject the null hypothesis for the presence of autocorrelation in all the models.

The findings indicate that no Granger causality is predominant in the case of Ghana even in the presence of country stimulating specific effects. While in the case of Nigeria our findings indicate the dominance of causality, our findings show that country stimulating specific effects (economic size, domestic capital, trade liberalization and human capital development) are the causes of foreign resources attraction in Nigeria. While the panel model shows that economic growth are stimulated by foreign resources, trade liberalization and domestic capital in ESECOC, foreign resources are attracted based on economic size and human capital development in ESECOC.

Few cases of unidirectional causality were noticing in foreign resource and domestic capital (gross capital formations). Also, we observed that human capital causes the inflow of foreign resource in the two countries, while domestic capital formation Granger causes economic growth in the two countries. From the results, we can deduce that human capital development can stimulate the inflows of foreign resource in ESECOC and thereby accelerate economic growth. The result is in line with the work of Borensztein et al. (1998), Ayanwale (2007), Alege&Ogundipe, (2013) and Edmore (2016).

4. CONCLUSION

We applied a modified version of Granger (1969) causality test developed by Toda-Yamamoto (1995) to test causality between
economic growth and foreign resources in two dominant ESECOC states over the period 1970–2014. The findings indicate that no Granger causality is predominant even in the presence of country stimulating specific effects, in the case of Ghana. These findings have deep policy implications for individual countries and for the ESECOC region at large. Specifically, the results show that it is countries specific effect that drives foreign resource inflows into the ECOWAS region of Africa, and not vice versa.

The study, therefore, recommends that ECOWAS countries’ policymakers should focus on policies and strategies that encourage country specific effects such as increased investment in the area of human capital development, especially education and other generic human capital like health, and encourage domestic saving to increase the level of domestic investment and boost economic growth in order to effectively attract foreign resource inflows into the region. Essentially, achieving a confident minimum level of educational attainment is principal to a country’s ability both to attract foreign resources and in maximizing the spill overs from the human capital enterprise.

REFERENCES


**APPENDIX**

**English speaking ECOWAS States**

<table>
<thead>
<tr>
<th>Country</th>
<th>Area (km²)</th>
<th>Population (thousands)</th>
<th>GDP (nominal) (millions USD)</th>
<th>GDP (PPP) (millions intl.$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gambia</td>
<td>11,295</td>
<td>1,991</td>
<td>939</td>
<td>3,344</td>
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<tr>
<td>Ghana</td>
<td>238,533</td>
<td>27,410</td>
<td>37,543</td>
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<tr>
<td>Liberia</td>
<td>111,369</td>
<td>4,503</td>
<td>2,053</td>
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<td>Nigeria</td>
<td>923,768</td>
<td>182,202</td>
<td>481,066</td>
<td>1,093,921</td>
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<tr>
<td>Sierra Leone</td>
<td>72,300</td>
<td>6,453</td>
<td>4,215</td>
<td>10,127</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1,357,265</td>
<td>222,559</td>
<td>525,816</td>
<td>1,226,563</td>
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</tbody>
</table>


**English speaking ECOWAS States of Ghana & Nigeria**

<table>
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<tr>
<th>Country</th>
<th>Area (km²)</th>
<th>Population (thousands)</th>
<th>GDP (nominal) (millions USD)</th>
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<td>1,162,301</td>
<td>209,612</td>
<td>518,609</td>
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