Does Foreign Direct Investment Enhance Economic Growth? Evidence from 30 Leading Global Economies

Andy Titus Okwu¹
Isiaq Olasunkanmi Oseni²
Rowland Tochukwu Obiakor¹

Abstract
Investment expenditure is a major component of aggregate macroeconomic variables in any economy, irrespective of the development status. This article employed relevant econometric methodology on panel data environment to analyze the effects of foreign direct investment (FDI) inflows on economic growth of 30 leading global economies during the period between 1998 and 2017. Other variables considered in the analysis were domestic credit to private sector (DCPS), gross fixed capital formation (GFCF), inflation–consumer prices index (INFPC), trade openness (TOPNESS), and youth unemployment (UEMPYT). The results showed mixed growth effects of the variables in general. Specifically, FDI exerted positive and significant effect on economic growth of the countries during the period. Therefore, this article concluded that FDI inflows enhanced economic growth and emphasized the need to foster more FDI-attracting policies as well as adequate GFCF to complement FDIs for sustainable economic growth potentials.

Keywords
FDI inflows, growth model, stationarity, panel data sets, random and fixed effects

JEL Classification: C23, C33, C51, F21, F43, O47.

Introduction
Like consumption, investment constitutes a major component of aggregate expenditure in any economy irrespective of its phase of development. Therefore, investment is vital to the economic growth of any

¹Department of Economics, Babcock University, Ilishan-Remo, Nigeria.
²Department of Economics, Olabisi Onabanjo University, Ago-Iwoye, Nigeria.

Corresponding author:
Andy Titus Okwu, Department of Economics, Babcock University, Ilishan-Remo, Nigeria.
E-mail: okwua@babcock.edu.ng
country through increase in employment and productivity levels. In recent years, fiscal and monetary authorities in the developing countries have come to realize that foreign direct investment (FDI) is required to boost the economic growth of their respective economies. Political leaders have realized that FDI can create employment, increase technological development in the host country, and improve the economic condition in general (Abbas et al., 2011; Adewumi, 2006; Adofu, 2010; Fabienne, 2007; Falki, 2009; Saibu & Keke, 2014). Available literature indicates that inadequate domestic financial resources constitute a major hurdle in the process of long-term investment for sustainable economic growth and development of many countries of the world, especially the developing countries of Africa, Asia, and Latin America (Juma, 2012; Kosack & Tobin, 2006; Maku, 2015; Michalowski, 2012; Miraskari et al., 2014). The problem is compounded by the inability of most countries to attract FDI, which could help them to overcome the challenges that are inherent in the processes of economic growth and development (Faroh & Shen, 2015; Kudaisi, 2014; Mona, 2015; Sichei & Kinyondo, 2012).

Inability to attract FDI has grave consequences in Africa and other developing countries, especially in the face of escalating poverty exacerbated by extremely low domestic savings and income being channeled mainly to consumption expenditure (Kudaisi, 2014; Sichei & Kinyondo, 2012). This has serious implications as FDI is very critical in economic growth and development processes in Africa and other developing countries (Demirhan & Masca, 2008). FDI provides a major source of capital that encourages the use of advanced technology. Therefore, foreign capital, in the form of FDI, is sine qua non for infrastructure development to enhance both micro- and macroeconomic activities of the less-developed countries (Ebekozien et al., 2015). Obviously, the developed countries and emerging market economies have leveraged on the benefits of foreign capital to stimulate and harness development prowess inherent in their economies. Therefore, the countries have achieved commensurate economic transformation, sustainable growth, and development. These are encapsulated in positive externalities such as beneficial general knowledge transfers, unique technologies in production and distribution, as well as industrial upgrading, work experience for the labor force, and the introduction of modern management and accounting methods (Antwi et al., 2013).

Available literature suggests that, hitherto, the studies have not analyzed FDI-economic growth nexus in the context of the 30 leading (L30) global economies. Therefore, focus of this article is on the L30 world economies ranked on the basis of economy size by the World Development Indicators database of the World Bank (2017). Analyzing the economic growth effects of FDI in the L30 countries, within the context of panel data framework, provoked the curiosity and interest of this article, and, thus, fosters the innovative point of departure from previous research efforts. Consequently, the main objective of this article is to determine whether or not FDI enhances growth of the L30 world economies and thus contribute to the available literature on FDI-economic growth nexus. The analysis covers the period of 20 years from 1998 to 2017. This article is structured into sections, starting with the introduction and review of literature. Next the study design, data sources, and method of analysis are discussed. This is followed by the analysis and discussion of results and finally conclusion and policy implications for the L30 economies in particular, and FDI-recipient countries in general are presented.

**Literature Review**

**Conceptual Issues**

FDI enables a firm in home country to acquire the ownership of the assets of another firm in host country where it can exercise control over the production, manufacturing, distribution, and all activities of the firm (Wajid & Zhang, 2017). FDI facilitates capital flows between countries by setting up subsidiary or
associate company in a foreign country, acquiring the shares of overseas company or by creating a merger or joint venture (Urbach Hacker Young [UHY] International, 2018). It engenders cross-border mergers and acquisitions arrangements. The foreign investor must own at least 10 percent of the ordinary shares in the enterprise operating in an economy other than that of investor (International Monetary Fund [IMF], 1993; OECD, 2005; UNCTAD, 2007; World Bank, 2016). FDI may variously be undertaken by individuals as well as by business entities (Maitena, 2003).

Dunning (1993), Sichei and Kinyondo (2012), and Madura and Fox (2014) explain that several factors increase in FDI inflow, which include the strategic drive for international market penetration, efficiency of resources and operations, increased revenue base, profit level, firm value, and shareholders’ wealth.

**Theoretical Issues**

FDI has remained the largest form of capital flow over the last couple of decades for augmenting portfolio equity investment, private loans, and official development assistance in developing countries (Wajid & Zhang, 2017). Theories on FDI are based mainly on push and pull hypotheses. The push hypothesis situates within Vernon’s (1966) theory, which explains that US FDI manufacturing firms are attracted to the Western Europe because of its conduciveness. Rugman (1980) applauded the theory for adequacy while rejected it for its inability to sufficiently explain foreign operations of FDI firms in their host countries. The pull hypothesis, anchored on Bukley and Casson’s (1976) and Hymer’s (1976) theories, posits that conducive domestic economies attract FDI inflows. Some FDI theories are contextualized within the framework of market size, currency areas, oligopolistic reaction function, ownership and locational advantage, extent of financial market development, and institutional quality and macroeconomic conditions (Jorgenson, 1963; Aliber, 1970; Knickerbocker, 1973; Dunning, 1973; Denisia, 2010). Yet, other variants of FDI theories hinged on differences in rate of return (Popkin, 1965), liquidity or internal financing (Walter, 1956), and the imperfect market or industrial organization (Hymer, 1976). Moosa (2010, p. 485) explains that “the liquidity hypothesis is most appropriate in explaining FDI in developing nations because they are characterized by restrictions on the movement of funds and the prevalence of inefficient financial markets.”

**Empirical Studies**

Recent empirical works suggested that the condition for FDI to facilitate the attainment of desired macroeconomic performance is the presence of absorption capacities in the recipient country. Various studies on FDI-economic growth nexus in the developing countries and emerging market economies as well as the developed countries have shown mixed results (Abbas et al., 2011; Adams, 2009; Adewumi, 2006; Adofu, 2010; Almfragi & Almsafir, 2014; Asong, 2014; Awolusi, 2012; Bengoa & Sanchez-Robles, 2003; Fabienne, 2007; Falki, 2009; India Habitat Centre, 2002; Jilenga et al., 2016; Juma, 2012; Maku, 2015; Michalowski, 2012; Miraskari et al., 2014; Mona, 2015; Nath, 2005; Omri & Kahouli, 2014; Saibu & Keke, 2014; Wajid & Zhang, 2017).

Based on time-series data for the entire continent and data for 11 countries within the continent, Adewumi (2006) used graphical and regression analysis to examine the contribution of FDI to economic growth in Africa during 1970–2003. The results showed that the contribution in most countries was positive but not significant. National Bureau of Economic Research (NBER, 2006) and Alfaro et al. (2010) analyzed the linkage effects of financial markets on FDI to promote economic growth. The study
found that economies with well-developed financial markets experience greater FDI-economic growth effects than economies with underdeveloped financial markets. The study also found such local conditions as market structure and human capital to be important for the effect of FDI on economic growth. Panel data analysis by Fortanier (2007) showed that depending on the host country characteristics, the growth effect of FDI differs by country of origin. This finding is supported by Bitzenis and Vlachos (2010) for the economy of Bulgaria. Outtara and Blin (2009) found highly significant positive effect of FDI on economic growth in Mauritius during 1975–2000. The study by Awolusi (2012) found long-run relationship and short-run bidirectional causality between FDI and economic growth in Nigeria during 1970–2010. A related study by Soltani and Ochi (2012) showed that FDI had long-run relationship and boosted the process of economic growth in Tunisia during 1975–2009. Anchored on endogenous growth theory, Ongo (2014) found that during 1980–2010, FDI variously affected economic growth in CEMAC countries except Congo. Findings by Ndiaye and Xu (2016) showed that FDI had a positive impact on economic growth in West African Economic and Monetary Union (WAEMU) countries in addition to facilitating trade and liberalization, economic cooperation, and increasing jobs and wealth via improved business environment. Similarly, Simelyte et al. (2017) found that inflow of FDI from Scandinavia promoted economic growth of the Baltic States during 2000–2016.

Jilenga et al. (2016) used autoregressive distributed lag model and bounds test approach to investigate the impacts of external debt and FDI on growth of Tanzanian economy. The findings showed that debt enhanced economic growth in the long-run while FDI exerted a negative impact. The findings indicate no directional causality between debt and economic growth as well as between FDI and economic growth. A study by Seng (2017) established positive growth effect of FDI in Columbia during 1980–2014. Wajid and Zhang (2017) analyzed the contributions of FDI in economic growth in Pakistan. The study found long-run significant positive effect of FDI on economic growth in Pakistan. Based on the co-integration test, the study also found that growth of the economy and FDI were related in the long run and that FDI significantly affected labor force. But there was no significant effect in the short run, owing to adverse political conditions and policies that generate uncertainties in the economy as well as for returns on investment. Studies by Maji and Odoba (2011), Umoh et al. (2012), Olusanya (2013), Adeleke et al. (2014), Akanegbu and Chizea (2017), and Ozekhome (2017) found that economic growth is positively related to FDI inflow into Nigeria while Saibu et al. (2011) showed that financial development and FDI have negative effects on economic growth in Nigeria.

**Methodology**

**Design, Data, and Source**

This article uses data sets on relevant variables for 30 countries over the period of 20 years (1998–2017). The countries are the L30 global economies based on the World Bank’s (2017) economy size ranking. The countries are from various regions and income groupings of the world (see Table 1). Therefore, this article is analyzed using panel data. Data on variables used for the analysis are FDI inflows, gross fixed capital formation (GFCF), and domestic credit to the private sector (DCPS), all measured in millions of US dollars (USD), annual growth rate of gross domestic product (GrGDP), youth unemployment (UEMPYT) as percentage of total labor force, annual percentage of inflation in terms of consumer prices (INFPC) and sum of export and import to GDP ratio as indicator of trade openness (TOPNESS) of the FDI recipient countries. The data sets are sourced from World Bank’s (2017) World Development Indicators database. Subsequently, the data sets are log-transformed to conform for analysis in this article.
Table 1. Country, Region, and Income Grouping

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Country</th>
<th>Region</th>
<th>Income Grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>United States of America</td>
<td>North America</td>
<td>High income OECD</td>
</tr>
<tr>
<td>2.</td>
<td>China</td>
<td>East and Pacific</td>
<td>Upper middle income</td>
</tr>
<tr>
<td>3.</td>
<td>Japan</td>
<td>East and Pacific</td>
<td>High income OECD</td>
</tr>
<tr>
<td>4.</td>
<td>Germany</td>
<td>Europe and Central Asia</td>
<td>High income OECD</td>
</tr>
<tr>
<td>5.</td>
<td>United Kingdom</td>
<td>Europe and Central Asia</td>
<td>High income OECD</td>
</tr>
<tr>
<td>6.</td>
<td>India</td>
<td>South Asia</td>
<td>Lower middle income</td>
</tr>
<tr>
<td>7.</td>
<td>France</td>
<td>Europe and Central Asia</td>
<td>High income OECD</td>
</tr>
<tr>
<td>8.</td>
<td>Brazil</td>
<td>Latin America</td>
<td>Upper middle income</td>
</tr>
<tr>
<td>9.</td>
<td>Italy</td>
<td>Europe and Central Asia</td>
<td>High income OECD</td>
</tr>
<tr>
<td>10.</td>
<td>Canada</td>
<td>North America</td>
<td>High income OECD</td>
</tr>
<tr>
<td>11.</td>
<td>Russia Federation</td>
<td>Europe and Central Asia</td>
<td>High income non-OECD</td>
</tr>
<tr>
<td>12.</td>
<td>Korea Republic</td>
<td>East Asia and Pacific</td>
<td>High income OECD</td>
</tr>
<tr>
<td>13.</td>
<td>Australia</td>
<td>East Asia and Pacific</td>
<td>High income OECD</td>
</tr>
<tr>
<td>14.</td>
<td>Spain</td>
<td>Europe and Central Asia</td>
<td>High income OECD</td>
</tr>
<tr>
<td>15.</td>
<td>Mexico</td>
<td>Latin America and Caribbean</td>
<td>Upper middle Income</td>
</tr>
<tr>
<td>16.</td>
<td>Indonesia</td>
<td>East Asia and Pacific</td>
<td>Lower middle Income</td>
</tr>
<tr>
<td>17.</td>
<td>Turkey</td>
<td>Europe and Central Asia</td>
<td>Upper middle Income</td>
</tr>
<tr>
<td>18.</td>
<td>The Netherlands</td>
<td>Europe and Central Asia</td>
<td>High income OECD</td>
</tr>
<tr>
<td>19.</td>
<td>Saudi Arabia</td>
<td>Middle East and North Africa</td>
<td>High income non-OECD</td>
</tr>
<tr>
<td>20.</td>
<td>Switzerland</td>
<td>Europe and Central Asia</td>
<td>High income OECD</td>
</tr>
<tr>
<td>21.</td>
<td>Argentina</td>
<td>Latin America and Caribbean</td>
<td>High income non-OECD</td>
</tr>
<tr>
<td>22.</td>
<td>Sweden</td>
<td>Europe and Central Asia</td>
<td>High income OECD</td>
</tr>
<tr>
<td>23.</td>
<td>Poland</td>
<td>Europe and Central Asia</td>
<td>High income OECD</td>
</tr>
<tr>
<td>24.</td>
<td>Belgium</td>
<td>Europe and Central Asia</td>
<td>High income OECD</td>
</tr>
<tr>
<td>25.</td>
<td>Thailand</td>
<td>East Asia and Pacific</td>
<td>Upper middle Income</td>
</tr>
<tr>
<td>26.</td>
<td>Iran Islamic Republic</td>
<td>Middle East and North Africa</td>
<td>Upper middle Income</td>
</tr>
<tr>
<td>27.</td>
<td>Austria</td>
<td>Europe and Central Asia</td>
<td>High income OECD</td>
</tr>
<tr>
<td>28.</td>
<td>Norway</td>
<td>Europe and Central Asia</td>
<td>High income OECD</td>
</tr>
<tr>
<td>29.</td>
<td>United Arab Emirates</td>
<td>Middle East and North Africa</td>
<td>High income non-OECD</td>
</tr>
<tr>
<td>30.</td>
<td>Nigeria</td>
<td>Sub-Saharan Africa</td>
<td>Lower middle income</td>
</tr>
</tbody>
</table>

Source: World Bank’s World Development Indicators database (April 11, 2016 and July 1, 2018).

Model for the Analysis

The literature suggests a version of the endogenous growth models that allows the use of several variables. This article adapts the following theoretical model specified by Mankiw et al. (1992):

\[
Y_t = K_t^a H_t^a (A_t L_t)^{1-a-\beta}
\]  

(1)
where \( Y \) is output growth, \( K \) is capital input, \( H \) is human labor input, \( \alpha \) and \( \beta \) are the output elasticities with respect to physical capital and human labor inputs, \( AL \) is efficiency parameter and \( 1-\alpha-\beta \) is output elasticity with respect to the efficiency parameter.

Linearizing the model for analytic suitability gives the following specification:

\[
\ln(Y) = \alpha \ln(K) + \beta \ln(H) + \theta \ln(AL) + \varepsilon \ln(L)
\] (2)

where \( \theta = 1 - \alpha - \beta \) and \( \varepsilon = 1 - \alpha - \beta \).

The following model is specified for analysis in this article by incorporating the time-series and cross-sectional attributes of the data sets on FDI and other variables, on the one hand, and considering that effects of the principal and latent variables manifest on economic growth after some time lag on the other hand:

\[
\text{Gr}\text{GDP}_{i,t} = \lambda_0 + \lambda_1 \ln\text{FDI}_{i,t} + \lambda_2 \ln\text{GCFC}_{i,t} + \lambda_3 \ln\text{DCPS}_{i,t} + \\
\lambda_4 \ln\text{INFCP}_{i,t} + \lambda_5 \ln\text{UEMPYT}_{i,t} + \lambda_6 \ln\text{TOPNESS}_{i,t} + \mu_{i,t}
\] (3)

where \( \text{GrGDP} \), FDI, GCFC, DCPS, INFCP, UEMPYT, and TOPNESS are as defined earlier. “\( \ln \)” defines the logarithmic transformation of the data sets that are in different units of measurements, i.e., millions of USD and \( d \) captures lags since effects of the variables on economic growth are not instantaneous. \( \mu \) is the white noise error term, \( i \) depicts the respective countries, and \( t \) denotes the respective time periods. \( \lambda_0 \) is the model intercept while the coefficient \( \lambda_j \) (\( j = 1, 2, \ldots, 6 \)) is the measure of the effects of the respective explanatory variables on economic growth.

**Stationarity Tests for the Data Sets Time-Series Values**

Testing for stationarity or order of integration via common unit root process is peculiar to panel data sets (Barbieri, 2006). This is because of the bias associated with econometric techniques such as panel least squares (PLS) when applied to panel data sets that have either individual or common unit root process. In such instances, the PLS actually estimates common trends instead of the underlying relationships between two or more variables. Therefore, the estimates are actually meaningless and insignificant though they may appear to be significant and plausible (Barbieri, 2006). The series in the panel set are appropriately transformed (e.g., by logging and differencing) to ensure common stationarity in the case of non-stationary panel data sets. Subsequently, appropriate estimation technique such as PLS can be used (Baum, 2013; McManus, 2011). Breitung panel unit root tests (with Levin, Lin, and Chu \( t \)-critical values) are conducted to determine the order of integration in the common processes of the data time-series values. Hausman test was used to decide on the choice between random and fixed effects. The test proved the appropriateness of cross-sectional random and fixed period effects.

**Analysis and Discussion**

**Descriptive Statistics of the Variables**

Summary of the descriptive statistics of variables used for analysis is shown in Table 2.
Table 2. Descriptive Statistics of the Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Standard Deviation</th>
<th>Skewness</th>
</tr>
</thead>
<tbody>
<tr>
<td>GrGDP</td>
<td>3.0621</td>
<td>-13.1267</td>
<td>33.7358</td>
<td>3.6221</td>
<td>0.8301</td>
</tr>
<tr>
<td>FDI</td>
<td>4.24E+10</td>
<td>2.99E+10</td>
<td>7.34E+11</td>
<td>7.6E+10</td>
<td>3.7160</td>
</tr>
<tr>
<td>DCPS</td>
<td>80.6429</td>
<td>8.8059</td>
<td>221.2885</td>
<td>51.6806</td>
<td>0.44472</td>
</tr>
<tr>
<td>GFCF</td>
<td>5.57E+11</td>
<td>19.4292</td>
<td>5.13E+12</td>
<td>7.24E+11</td>
<td>4.0828</td>
</tr>
<tr>
<td>INFCP</td>
<td>6.8308</td>
<td>-1.3696</td>
<td>84.6413</td>
<td>11.4958</td>
<td>3.1746</td>
</tr>
<tr>
<td>UNEMPYT</td>
<td>15.9204</td>
<td>2.4000</td>
<td>55.4800</td>
<td>8.6586</td>
<td>1.4039</td>
</tr>
<tr>
<td>TOPNESS</td>
<td>0.6739</td>
<td>0.1419</td>
<td>1.7675</td>
<td>0.3623</td>
<td>1.0674</td>
</tr>
</tbody>
</table>

Source: Authors’ computations (2018). Number of observations: 566.

On the aggregate, as shown in Table 2, the countries experienced average annual economic growth rate of 3.0621 during 1998–2017. The countries attracted an average of about US$42,400 million in FDI during the period. DCPS of the countries was average of US$80.6429 million. On the average, the GFCF was US$357,000 million. Inflation in countries was 6.8308 on the average, with a corresponding average UNEMPYT rate of 15.9204% and average TOPNESS of 0.6739. The minimum and maximum annual growth rates of economies of the countries were 13.1267% and 33.7358%, respectively, on the aggregate. Minimum and maximum FDI to the countries were US$29,900 million and US$734,000 million, respectively. This shows US$76,800 fluctuations in the FDI inflows during the period covered in this analysis. The 3.7160 positive skewness indicates more increases than decreases in FDI inflows. DCPS was average of US$80.6429 million, with minimum and maximum of US$8.8059 and US$221.2888 million, respectively, which fluctuated by US$51.6808 million as the standard deviation value indicates. Similarly, GFCF averaged US$357,000 million with minimum of US$19.4292 million and maximum of US$5,130,000 million, with increasing fluctuation of USD$724,000 million as shown by the 4.0828 skewness. Values of the relevant descriptive statistics indicate that the countries experienced differing mean values of inflation and unemployment rates, and trade openness.

Graphical Analysis of the Variables

Figures 1a and 1b show graphical analysis of FDI inflows into the countries and the other variables, respectively, during 1998–2017.

![FDI INFLOW TO THE COUNTRIES (1998 - 2017)](image)

**Figure 1a.** Trends of FDI inflows to the countries during 1998–2017

Source: Authors’ analysis (2018).
As seen in Figure 1a, there were fluctuations in both FDI inflows and the other variables during the period. Figure 1a shows that France received more FDI inflows than any of the other countries during 2005–2007. However, during 2008 till mid-2010, the FDI declined to amounts less than those received by China and the USA. FDI inflow to the country slightly exceeded the inflows to China and the USA from mid-2010 till 2013. Obviously, FDI inflows to all the countries exhibited differing fluctuations, just like values of the other variables as shown in Figure 1b.

**Time-Series Properties of the Panel Data Sets**

Results of the Breitung panel unit root tests (with Levin, Lin, and Chu t-critical values) are presented in Table 3.

**Table 3. Summary of Panel Unit Root Tests Results**

<table>
<thead>
<tr>
<th>Series/Variable</th>
<th>Breitung t-Statistic</th>
<th>Levin, Lin, and Chu (LLC) Critical Value at 5%</th>
<th>Probability</th>
<th>Order of Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>D(GrGDP)</td>
<td>-12.3429</td>
<td>-15.1089</td>
<td>0.0000</td>
<td>I(1)</td>
</tr>
<tr>
<td>D(FDI)</td>
<td>-7.4356</td>
<td>-8.8947</td>
<td>0.0000</td>
<td>I(1)</td>
</tr>
<tr>
<td>D(DCPS)</td>
<td>-2.9333</td>
<td>-3.2098</td>
<td>0.0017</td>
<td>I(1)</td>
</tr>
<tr>
<td>D(GFCF)</td>
<td>-5.1332</td>
<td>-9.0192</td>
<td>0.0000</td>
<td>I(1)</td>
</tr>
<tr>
<td>D(INFCP)</td>
<td>-8.2100</td>
<td>-13.9435</td>
<td>0.0000</td>
<td>I(1)</td>
</tr>
<tr>
<td>D(UNEMPYT)</td>
<td>-4.1970</td>
<td>-6.8108</td>
<td>0.0000</td>
<td>I(1)</td>
</tr>
<tr>
<td>D(TOPNESS)</td>
<td>-9.5514</td>
<td>-13.0949</td>
<td>0.0000</td>
<td>I(1)</td>
</tr>
</tbody>
</table>

**Source**: Authors’ computations (2018), using E-Views version 8.

**Notes**: Null-unit root (assumes common unit root process). Level of significance at 5%.
The unit tests results in Table 2 show that the panel data sets are integrated of order one, \( I(1) \). Therefore, PLS technique is used for the estimation in this article.

**Results of the Panel Regression Analysis**

Estimates of intercept and coefficients, with relevant evaluation statistics and \( p \)-values, for the panel regression model specified in equation (3) are presented in Table 4.

The results shown in Table 3, with the coefficients estimates substituted in the model, reveal some interesting findings about the effects of FDI and the other macroeconomic variables on economic growth of the countries during the period 1998–2017. At the level of 5% significance, the effect of FDI on economic growth of the countries is positive and significant (coefficient = 0.33462; \( t \)-statistic \( p \)-value = 0.0059 < 0.05). Similarly, the GFCF has positive and significant growth effect in the countries (coefficient = 10.00705; \( t \)-statistic \( p \)-value = 0.0000 < 0.05). GFCF has greater positive growth effect than FDI (coefficient = 10.00705 > 0.33462). INFPC exerts more significantly negative growth effect than domestic credit to private sector (DCPS), as indicated by the coefficients -0.07380 and -1.44620 with \( t \)-statistic \( p \)-values 0.0001 and 0.0004. UEMPYT and TOPNESS have positive but not statistically significant effects (coefficients = 0.01641 and 1.83708; \( t \)-statistic \( p \)-values = 0.5354 and 0.0934 > 0.05) on economic growth of the countries, though TOPNESS has greater positive growth effect than UEMPYT (1.83708 > 0.01641). The countries can sustain positive and significant economic growth rate (intercept = 7.60285; \( t \)-statistic \( p \)-value = 0.0000) at zero levels of FDI, DCPS, GCFC, INFPC, UEMPYT, and TOPNESS. Obviously, the regressors jointly exert statistically significant effect on economic growth (\( F \)-statistic = 16.78997; \( p \)-value = 0.0000). The regressors also explain about 53 percent of the total variations in economic growth (adjusted \( R \)-squared = 0.52501). Closeness of the mean and standard deviation of the dependent variable (3.20699 and 3.58859) provide statistical evidence of no wide fluctuations in economic growth rate of the countries. The Durbin–Watson statistic value (D-W = 1.93480) indicates that there is no statistical evidence of serial correlation and endogeneity problems either among the regressors or between the regressors and the error term. That is, the regressors are neither highly linearly correlated among themselves nor with the residual term.

**Table 4. Estimates of the Panel Regression Model**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient (( \lambda ))</th>
<th>Standard Error</th>
<th>( t )-Statistic</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant (( \lambda_0 ))</td>
<td>7.60285</td>
<td>1.80699</td>
<td>4.20120</td>
<td>0.0000</td>
</tr>
<tr>
<td>D(FDI)</td>
<td>0.33462*</td>
<td>0.12100</td>
<td>2.76552</td>
<td>0.0059</td>
</tr>
<tr>
<td>D(DCPS)</td>
<td>-1.44620*</td>
<td>0.40905</td>
<td>-3.53548</td>
<td>0.0004</td>
</tr>
<tr>
<td>D(GFCF)</td>
<td>10.00705*</td>
<td>0.73333</td>
<td>13.64601</td>
<td>0.0000</td>
</tr>
<tr>
<td>D(INFCP)</td>
<td>-0.07380*</td>
<td>0.01872</td>
<td>-3.94221</td>
<td>0.0001</td>
</tr>
<tr>
<td>D(UEMPYT)</td>
<td>0.01641</td>
<td>0.02645</td>
<td>0.62030</td>
<td>0.5354</td>
</tr>
</tbody>
</table>

(Table 4 continued)
(Table 4 continued)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient ($\lambda$)</th>
<th>Standard Error</th>
<th>t-Statistic</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>D(TOPNESS)</td>
<td>1.83708</td>
<td>1.09277</td>
<td>1.68113</td>
<td>0.0934</td>
</tr>
</tbody>
</table>

$R$-squared = 0.55826; $F$-statistic = 16.78997; mean-dependent variable = 3.20699; adjusted $R$-squared = 0.52501; prob($F$-statistic) = 0.00000; SD-dependent variable = 3.58859; Durbin–Watson statistic = 1.93480.

Source: Authors’ computations (2018), using E-Views version 8.

Note: *Significance level is considered at <0.05.

The estimates panel regression model is

$$ \text{GrGDP}_{i,t} = 7.60285 + 0.33462 \ln \text{FDI}_{i,t} + 10.00705 \ln \text{GFCF}_{i,t} - 1.44620 \ln \text{DCPS}_{i,t} - 0.07380 \ln \text{INFCP}_{i,t} + 0.01641 \ln \text{UEMPYT}_{i,t} + 1.83708 \ln \text{TOPNESS}_{i,t} + \epsilon_{i,t} \quad (3') $$

**Conclusion and Policy Implications**

This article has analyzed the effects of FDI and some other macroeconomic variables on economic growth of L30 global economies during the period of 20 years (1998–2017). Findings from the analysis show that inflows of FDI have positive and significant growth effect. GFCF has greater growth effect in the countries during this period. TOPNESS and UEMPYT also have positive but not significant growth effects. On the other hand, INFPC and DCPS have negative growth effects. The explanatory variables jointly exerted significant growth effect and showed moderately high power in explaining economic growth of the countries during this period. Based on the findings, this article concludes that FDI inflows, complemented by appropriate macroeconomic conditions, enhance economic growth of the countries. This is notwithstanding the evidence of fluctuations in FDI inflows and the other macroeconomic variables which differed across the countries during this period.

Therefore, the policy implications are that relevant authorities of the leading global economies must continue to articulate, strengthen, and implement policies that engender growth-enhancing inflows of FDIs for greater benefits which ensure that enhanced sustainable growth and development potentials of the economies translate into desired realities. Consequently, authorities and policy makers of the countries must foster policy mechanisms that engender greater TOPNESS as the channels for attracting increased inflows of FDI. Also, the countries must ensure adequate GFCF to complement FDI inflows so as to sustain the economic growth potentials of the economies.

This article has a limitation that it considers growth effect of FDI inflows into L30 global countries based on economy size ranking, with no consideration for other countries at the lower rungs of the global economy ranking ladder as well as the direction of causality. Therefore, similar studies may consider such other economies in the future, especially the developing countries that attract considerable inflows of FDI, and within the contexts of causality directions so as to validate or refute the FDI inflows—economic growth-led proposition suggested by the findings in this article.

**Declaration of Conflicting Interests**

The authors hereby declare that there are no potential conflicts of interest with respect to this article, authorship, and/or publication of this article.
Funding
The authors did not receive any financial support for the research paper, authorship, and/or publication of this article.

Statement of Public Interest
Many studies have provided empirical evidence of growth-enhancing effect of FDI on economic growth processes of receipt countries. Therefore, it is believed that FDI spurs economic growth in emerging markets and developing countries. Sequel to this, the developing countries need to implement appropriate policies to attract inflows of FDI so as to engender the processes of sustainable economic growth and development of their economies. In some countries, however, owing to peculiar socio-political and macroeconomic characteristics that foster unfavorable investment climate such as political instability, inadequate human capital, underdeveloped financial sector, and low level of TOPNESS, FDI does not seem to accelerate economic growth. But positive growth effect is established for the countries considered in this article. This provides empirical evidence that FDI is *sine qua non* for growth of economies of these and other developing countries as well as those of the emerging markets.

References


Fabienne, F. (2007). Foreign direct investment and host country economic growth: Does the investor’s country of origin play a role? *Transnational Corporations*, 16(2), 41–76.


