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# Global FDI Inflow and Its Implication across Economic Income Groups

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**Abstract:** Foreign direct investment (FDI) as a driver of growth is important in today's globalized economy. It is extremely difficult for economies to grow sustainably without economic interactions outside their borders. However, there has been a debate on the impact of FDI inflow on economic expansion. Hence, this study investigated the influence of FDI on economic growth for a selection of 200 economies around the world for the period 1990–2018. We subdivided the sample into World Bank income group clusters to aid comparison across income blocs. The study employed panel estimation techniques including pooled ordinary least squares (POLS), dynamic panel estimation with fixed-effects and random-effects and generalized method of moments (GMM). The study found that FDI, debt stock and official development assistance are promoters of growth in the selected countries—although debt stock weakly impacts economic growth. In contrast, trade openness and exchange rates had a mixed (negative and positive) influence on economic growth. The study suggests that the creation of a conducive business environment and economic policies will attract FDI inflows. Additionally, borrowing from external sources could be minimized despite its perceived positive influence on growth to achieve financial independence.

**Keywords:** economic growth; external debts; foreign direct investment; official development assistance; trade openness

**JEL Classification:** F15; F43; F3; 014

## 1. Introduction

Generally, it is an established assertion that investment is a key component of economic growth in every economy as stated by the classic theory of economic growth. This means that for an economy to attain its desired growth and subsequent development, priority must be given to long-term investments. This could be either direct or indirect investment as well as local or foreign. Foreign direct investment (FDI) according to Joshua et al. (2020a) is the investment of foreign resources presumed to be a panacea for economic growth through its complementary role for the recipient country, particularly developing economies, which normally suffer from limited domestic resources. Developing economies receive the benefit of the spillover effect of FDI in the form of technology transfers and human capital development. The FDI received is expected to strengthen the domestic capital to match the total resources required for investment in the economy. This means that the level of domestic investment depends in part on the level of FDI inflow achieved in the recipient country.

However, while a considerable number of studies have been carried out on the association between FDI and economic growth, the impact of FDI on economic growth and how FDI projects economic growth remains equivocal. More importantly, Rjoub et al. (2017) avow that attracting FDI alone

may not represent a wide-ranging panacea for generating economic growth. FDI inflow recently started experiencing a continuous fall across the global economies, which in effect is presumed to affect economic growth as reported by the United Nations Conference on Trade and Development [UNCTAD (2018)]. For instance, in 2000, FDI inflow rose to US\$1.569 trillion and sharply dropped to US\$737.213 billion in 2003. From 2004, FDI inflow began to record recovery and kept rising to the highest peak ever achieved in 2007, amounting to US\$3.136 trillion. This peak could not be sustained for long as global crises set in by 2008 leading to a drastic fall in FDI to US\$1.447 trillion in 2009. In 2011, FDI inflow witnessed another rise to US\$2.366 trillion and kept fluctuating until a significant increase was achieved in 2015, which amounted to US\$2.676 trillion. Unfortunately, from 2016 through 2017 to 2018, FDI inflow continuously trended downward at US\$3.471 trillion, US\$2.498 trillion, and US\$1.632 trillion, respectively. The amount of FDI dropped from US\$2.676 trillion in 2015 to US\$1.35 trillion in 2018.

Consequently, the UNCTAD (2018) asserts that developed economies experienced a higher rate of fall in FDI inflow than developing countries. In 2016, FDI inflow into developed countries fell by 10%, amounting to US\$671 billion relative to 2015. Africa continued to witness a drastic fall from 2016 by 21%, amounting to US\$42 billion, while Asia, which is the highest recipient in the world, witnessed stability of FDI inflow equivalent to US\$476 billion. This could not be sustained over time, however, as global crises continued to loom. Interestingly, the economic recovery that Latin America and the Caribbean witnessed in 2016 assisted in attracting an increase in FDI inflow by 8% in 2017, amounting to US\$151 billion. Emerging economies recorded an increase in FDI inflow by 3%. For instance, Africa recorded a 6% increase, Asia experienced an increase of 5%, and developed economies witnessed a 37% decline amounting to US\$712 billion relative to 2015. FDI inflow to the United States declined by 18%, while Canada recorded a decline of US\$38 billion between 2017 and 2018. While several studies have examined FDI economic growth nexus, the authors are not aware of any study investigating the global FDI inflow crises and economic growth relationship across income groups, particularly in the recent past during global crises. In view of this background, this study contributes to the literature by investigating the influence of FDI on economic growth in selected countries. Our study contributes to the existing literature by examining not only the FDI-led nexus among the income groups for the first time but also foreign aid as a control variable.

Consequently, this study set out to investigate the influence of FDI inflow on economic growth among the World Bank income clusters to achieve the following two specific objectives: first, to ascertain the level of the impact of FDI inflow on economic growth in the context of the global crises, and second, to reaffirm the validity of the modernization theory, which asserts that FDI inflow benefits emerging economies more than their developed counterparts. In short, the study aims to establish which of the World Bank income clusters are consistent with the assertion of the dependency or modernization theories.

The rest of this paper includes the empirical review, which follows this section. Data and methods, presentation of results and interpretation, and the conclusion and recommendations are presented in Section 3, Section 4, and Section 5, respectively.

## 2. Literature Review

It is traditionally believed that acquiring external capital such as FDI inflow and external loans will help augment domestic resources to meet domestic investment demands, thereby promoting the economic growth of home economies, particularly developing economies, as asserted by the modernization theory. However, this assertion is strongly opposed by the dependency theory, which argues against FDI inflow, a practice regarded as exploitative, especially for developing economies. For the sake of emphasis, the modernization theory originated from Max Weber (1864–1920) and was popularized by Talcott Parsons (1902–1979) (see Joshua et al. 2020b). The theory argues that traditional societies will experience development as they adopt more modern practices. On the other hand, the dependency theory credited to Hans Singer and Rauf Prebisch argues that resources flow from a

“periphery” of underdeveloped and poor economies to a “core” of rich economies, enriching the rich economies at the expense of the poor economies (see [Joshua et al. 2020b](#)).

In support of the modernization theory are studies such as [Asongu and Odhiambo \(2020\)](#) and [Shahbaz et al. \(2019\)](#). Buttressing their claim, they examined the FDI-induced hypothesis in Sub-Saharan Africa and found that FDI inflow promotes economic growth significantly. Similarly, [Joshua et al. \(2020\)](#) investigated the interaction between the said variables for the South African economy and found that FDI drives economic expansion in the country of study as supported by [Shahbaz et al. \(2019\)](#) and [Joshua \(2019\)](#). [Sarkodie and Strezov \(2019\)](#) estimated the relationship between FDI and economic development in developing nations. Their result proved that FDI inflow will contribute to emission in Indonesia, which is a threat to achieving economic development in the country. The study of [Güngör and Ringim \(2017\)](#) is similar to previous studies such as [Shahbaz et al. \(2019\)](#). [Güngör and Ringim \(2017\)](#) validated the FDI-induced nexus in Nigeria and concluded that FDI is a contributing factor to the course of economic growth. In a related study, [Joshua \(2019\)](#) adopted the autoregressive distributed lag (ARDL) approach to examine the interaction between GDP, FDI, and government expenditure in Nigeria. The empirical evidence shows that FDI inflow is essentially needed to complement the domestic resources to achieve economic advancement. Furthermore, [Shahbaz et al. \(2019\)](#) found that FDI inflow possesses a spillover effect, which is potent enough to transform the economic growth rate, concretizing the findings of [Balcilar et al. \(2019\)](#).

[Masipa \(2018\)](#) used the vector error correction procedure for the economy of South Africa. The result confirmed a positive interaction between FDI inflow and both economic growth and exchange rates. [Rjoub et al. \(2017\)](#) examined the impact of FDI inflow on economic growth in the landlocked economies of Sub-Saharan Africa from 1995 to 2013. The result proved that FDI inflow exhibits a significant positive impact on economic growth. Further evidence proves that FDI does not demonstrate a crowding out effect on domestic investment. Instead, FDI inflow and domestic investment play a substitution role in the region. This is supported by the work of [Rjoub et al. \(2017\)](#). They found a significant positive interaction between FDI inflow and economic growth in the Latin American countries.

[Agrawal \(2015\)](#) examined FDI-induced growth in Brazil, Russia, India, China, and South Africa by adopting panel cointegration and causality tests. The result confirmed the expected hypothesis. [Duarte et al. \(2017\)](#) aimed to empirically link economic growth, FDI inflow, and financial development in Cabo Verde using the dynamic ARDL for cointegration and the Granger causality test. The outcome validated that the FDI-led growth nexus is two-fold. First, the ARDL result shows that FDI exhibited a positive impact on economic growth coupled with the existence of long-run equilibrium. Secondly, only FDI inflow was found to exhibit a causal effect on economic growth.

[Pegkas \(2015\)](#) examined a similar case for the Eurozone economies using the dynamic ordinary least squares (DOLS) and the fully modified ordinary least squares (FMOLS) methods. The result proved a long-run cointegration between the series and that FDI significantly promotes economic growth in the study area. [Iamsiraroj \(2016\)](#) carried out a panel study on the FDI-led growth hypothesis. The outcome shows that FDI inflow positively influenced the economic growth of the study region. Further findings indicate a causal feedback effect between the variables. The study of [Simionescu \(2016\)](#) examined the interaction between FDI inflow and economic growth in the European Union from 2008 to 2014 during the economic recession. The result was a mixed outcome where FDI inflow acted as an agent of economic growth in some countries and did not in other countries. However, the overall result invalidated the FDI-led growth hypothesis. [Shahzad et al. \(2016\)](#) investigated the interaction between FDI inflow, terrorism, and economic growth in Pakistan. The result confirmed the long-run equilibrium link between the variables. Further findings showed a feedback causality. [Shahbaz and Rahman \(2012\)](#) studied a similar case for Pakistan and confirmed the case of long-term co-movement between the series. A further revelation proved that FDI inflow positively and significantly strengthens the path of economic growth. In a similar study, [Gungor and Salih \(2010\)](#) examined the said hypothesis and found evidence of an FDI-led nexus for Turkey, corroborated by [Güngör and Ringim \(2017\)](#). Similarly,

Tshepo (2014) and Ahmad et al. (2015) subscribed to the FDI-induced growth hypothesis as supported by one of the early studies of the subject matter by Borensztein et al. (1998). The submission of Borensztein et al. (1998) maintained that FDI inflow influences economic growth faster than its domestic counterpart. This submission is supported by Shahbaz et al. (2019), Almfraji and Almsafir (2014), Omri and Kahouli (2013), Shahbaz and Rahman (2012), and Berthélemy and Demurger (2000). Berthélemy and Demurger Nair-Reichert and Weinhold (2001) submitted that FDI inflow is more effective in an open economy than a close one. Tang et al. (2019) found a unidirectional flow from FDI to domestic investment in China as well as a non-feedback link from FDI inflow to growth.

Additionally, Ayanwale (2007) and Joshua (2019) examined the interaction linking FDI inflow and economic growth, which indicates a positive but weak link between the series. Chakraborty and Nunnenkamp (2008) investigated the said hypothesis and found that FDI inflow impacts economic growth more through the service sector of China. Azman-Saini and Law (2010) maintained that to achieve the full potential effect of FDI inflow, a minimum financial improvement is required. Wang (2009) investigated the interaction connection between FDI inflow and the manufacturing sector. The results showed that FDI inflow positively influences economic growth via its effect on the manufacturing sector for the economies of twelve aligned Asian regions. This finding validates the work of Yao (2006) for China. Omri and Kahouli (2013) studied the subject matter for three regions and found a mutual link connecting economic growth with FDI inflow in the corresponding regions. This finding also validates Hermes and Hermes and Lensink (2003). A similar study for South Africa found evidence for the FDI-led growth hypothesis where FDI was noticed to serve as a complementary factor to its domestic counterpart (Fedderke and Romm 2006). Prasanna (2010) studied the causal link associated with FDI inflow and economic growth in India. The result shows that the direct influence of FDI inflow on domestic investment is positive and significant.

Similarly, the dependency theory asserts that external capital such as FDI inflow acts as an agent for capital flight, thereby affecting economic growth negatively. This view is supported by empirical studies such as Adams (2009). Abdouli and Hammami (2017) examined the FDI-led growth hypothesis in the Middle East and North Africa region. The outcome revealed that FDI inflow exhibits negative influence over economic growth in two economies, Egypt and Lebanon, among the MENA economies. The work of Adams (2009) found that FDI inflow weakens the path of economic growth in the short-term through its negative impact on domestic investment. Stanisic (2015) reviewed the relevant existing literature on the relationship between FDI inflow and economic growth in the Southeastern emerging countries. The outcome shows non-linkage between the two variables. Temiz and Gökmen (2014) investigated the impact of multi-national company investment on economic development in Turkey. The outcome indicates that these companies have no empirical link with economic development in Turkey both in the short and long run. Tang et al. (2019) found a unidirectional flow from FDI to domestic investment in China as well as a non-feedback link from FDI inflow to growth.

Other related studies reveal uncertainty as regards the potency of FDI inflow. For instance, Mohamed et al. (2017) investigated the said relationship in Malaysia. The study reveals the absence of causal interaction, similar to the work of Prasanna (2010). Prasanna (2010) found the uncertainty of the influence of FDI inflow over domestic investment in India. Fedderke and Romm (2006) studied the said hypothesis and revealed that FDI inflow promotes the process of capital flight from domestic economies confirming the work of Belloumi (2014) for Tunisia. The result further showed that the presumed influence of FDI inflow is controversial and a fallacy in Tunisia, corroborating the view Alfaro et al. (2009). Pandya and Sisombat (2017), Flora and Flora and Agrawal (2014), and Mehic et al. (2013) also subscribed to the negative impact of FDI inflow in their respective study areas. The study of Goh et al. (2017) supports the dependency theory, as does the study of Bezuidenhout (2009), confirming the studies of Khobai et al. (2017) and Mah (2010). On the same path, Joshua and Alola (2020) invalidated the causal link between FDI inflow and economic expansion in South Africa. Goh et al. (2017) submit that the potency of FDI inflow is uncertain, as supported by Joshua et al. (2020a, 2020b) contrasted the assertion that FDI drives economic advancement.

### 3. Data and Methods

#### 3.1. Data

The yearly information used in this study covers the period 1990–2018 for 200 countries clustered according to World Bank income clusters (Appendix A). The variables considered include GDP (constant 2010 US\$), trade openness (% of GDP), foreign direct investment (BOP, current \$), external debt stocks (DOD, current 2010 US\$), official exchange rates (LCU per US\$, period average), and net official development assistance received (constant 2015 US\$). All data are sourced from the [World Bank Development Indicators \(2020\)](#). The choice of these variables was informed by theory and previous studies (See [Cambazoğlu and Karaalp 2013](#); [Latief and Lefen 2018](#); [Rjoub et al. 2017](#)). Following [Rotimi and Ngalawa \(2017\)](#), exchange rate means the expression of the prices of country-specific currencies in US dollars. The choice of the US dollar was informed by the fact that the US dollar is the most traded currency among all currencies (see [Rotimi and Ngalawa 2017](#)). Exchange rate (EXR) was included as a monetary instrument. Debt, according to [Rotimi et al. \(2019\)](#) is the sum of money owed, and GDP is an inflation-adjusted measure of all the goods and services produced at constant national prices for each country annually in a given base year. The inclusion of FDI, debt (DBT), official foreign development aid (ODA), and trade openness (TRO) was to examine the relationship of the selected countries with their business counterparts (see [Joshua et al. 2020b](#)).

#### 3.2. Model and Methods

To achieve the objectives of this study, we analyzed a regression equation on the determinants of growth. The growth regression equation is functionally given as:

$$RGDP = f(FDI, DBT, EXR, ODA, TRO) \quad (1)$$

$$LRGDP_{it} = \beta_0 + \vartheta LRGDP_{it-1} + \beta_1 FDI_{it} + \beta_2 DBT_{it} + \beta_3 EXR_{it} + \beta_4 ODA_{it} + \beta_5 TRO_{it} + \mu_{it} \quad (2)$$

where  $\beta_0$  is intercept;  $\vartheta$ ,  $\beta_1$ ,  $\beta_2$ ,  $\beta_3$ ,  $\beta_4$ , and  $\beta_5$  are the respective parameters for the determinants ( $LRGDP$ ,  $FDI$ ,  $DBT$ ,  $EXR$ ,  $ODA$ , and  $TRO$ ) for growth; and  $\mu_{it}$  is the error term.  $LRGDP_{it-1}$  is a one period lag operator (previous year GDP growth);  $FDI$ ,  $DBT$ ,  $EXR$ ,  $ODA$ , and  $TRO$  are foreign direct investment, debts, exchange rates, official foreign development aid, and trade openness, respectively.

All variables were converted to natural log. The panel of 200 countries was subdivided along with the four World Bank country income clusters: low-income, lower-middle-income, upper-middle-income, and high-income countries. The study employed a dynamic model to effectively establish the significance of the FDI inflow in economic growth. The fixed-effects (FE) and random-effects (RE) models were employed in this study. This was because they both allow for panel heterogeneities. Furthermore, the procedure complements the pooled ordinary least squares (POLS) method. [Van Bon \(2019\)](#) notes that dynamic characteristics similar to Equation (2) reveal that the country-specific fixed effects can be serially correlated with the lagged dependent variable, and some explanatory variables may be endogenous, hence resulting in estimation bias and inconsistency or spurious OLS. The dynamic specification removes the temporal autocorrelation in the residuals and prevents a spurious regression, which may lead to inconsistent estimators. However, to overcome the heterogeneity problem, the study employed the system generalized method of moments (Sys-GMM) dynamic model of [Arellano and Bond \(1991\)](#). The GMM model accounts for serial correlation endogeneity issues inherent in the regression (see [Ullah et al. 2018](#); [Akande and Kwenda 2017](#); [Saini and Singhania 2018](#); [Van Bon 2019](#)). Buttressing this, [Fiordelisi et al. \(2015\)](#) avow that it is necessary to account for endogeneity issues in a regression to avoid issues like reverse simultaneity, causality, and variable omission regardless of the inclusion of a few control variables in the regression. This ensures the validity and robustness of the regression results (see [Akande and Kwenda 2017](#)).

This study pooled cross-sectional time series data of the sampled income group countries under consideration using GMM. This procedure is in line with [Ullah et al. \(2018\)](#). The choice of panel

data analysis was informed by various benefits of the panel technique. For instance, a benefit that panel data estimation technique offers, identified by Baltagi (2008), is that panel data analysis accommodates the creation and analysis of more difficult behavioral models. Moreover, the technique provides for additional degrees of freedom, leads to better efficiency when compared to time series and cross-sectional data, and offers more explanatory analysis. Panel analysis generally means more variability, limited collinearity, and controlled heterogeneity within individual data (Baltagi 2008).

#### 4. Results and Discussion

Most time macroeconomic variables fluctuate due to disturbances in economic activities. To avoid spurious analysis, data are subjected to stationarity tests to determine their stability. This study adopted different robust unit roots of Levin, Lin, and Chu (LLC) and Im, Pesaran, and Shin (IPS). The results as presented in Tables 1–4 indicate a mixed order of integration for all the regions under investigation.

**Table 1.** Levin, Lin, and Chu (LLC) and Im, Pesaran, and Shin (IPS) panel unit root tests for the low-income group.

Variable	Levin, Lin, and Chu Unit Root Test (Individual Intercept)		Im, Pesaran, and Shin Unit Root Test (Individual Intercept)	
	Order of Integration	p-Value	Order of Integration	p-Value
GDP	I(1)	0.0000 ***	I(0)	0.0000 ***
FDI	I(0)	0.0000 ***	I(0)	0.0000 ***
DEBT	I(1)	0.0000 ***	I(1)	0.0000 ***
TRO	I(0)	0.0000 ***	I(0)	0.0021 ***
ODA	I(1)	0.0000 ***	I(1)	0.0000 ***
EXR	I(1)	0.0000 ***	I(0)	0.0000 ***

Source: Authors' computation using E-views 10.0 Statistical Package. "\*\*\*\*" represents 1% significance level.

**Table 2.** LLC and IPS panel unit root tests for lower-middle income.

Variable	Levin, Lin, and Chu Unit Root Test (Individual Intercept)		Im, Pesaran, and Shin Unit Root Test (Individual Intercept)	
	Order of Integration	p-Value	Order of Integration	p-Value
GDP	I(1)	0.0000 ***	I(0)	0.0000 ***
FDI	I(0)	0.0000 ***	I(0)	0.0000 ***
DEBT	I(1)	0.0000 ***	I(1)	0.0000 ***
TRO	I(0)	0.0000 ***	I(0)	0.0021 ***
ODA	I(1)	0.0000 ***	I(1)	0.0000 ***
EXR	I(1)	0.0000 ***	I(0)	0.0000 ***

Source: Authors' computation using E-views 10.0 Statistical Package. "\*\*\*\*" represents 1% significance level.

**Table 3.** LLC and IPS panel unit root tests for upper-middle income.

Variable	Levin, Lin, and Chu Unit Root Test (Individual Intercept)		Im, Pesaran, and Shin Unit Root Test (Individual Intercept)	
	Order of Integration	p-Value	Order of Integration	p-Value
GDP	I(0)	0.0000 ***	I(1)	0.0000 ***
FDI	I(0)	0.0054 ***	I(0)	0.0037 ***
DEBT	I(0)	0.0566 ***	I(0)	0.0550 **
TRO	I(0)	0.0000 ***	I(0)	0.0104 ***
ODA	I(0)	0.0000 ***	I(0)	0.0015 ***
EXR	I(1)	0.0000 ***	I(1)	0.0879 *

Source: Authors' computation using E-views 10.0 Statistical Package. "\*\*\*\*", "\*\*\*", and "\*\*" represents 1%, 5%, and 1% significance levels.

**Table 4.** LLC and IPS panel unit root tests for high-income.

Variable	Levin, Lin, and Chu Unit Root Test (Individual Intercept)		Im, Pesaran, and Shin Unit Root Test (Individual Intercept)	
	Order of Integration	p-Value	Order of Integration	p-Value
GDP	I(1)	0.0000 ***	I(0)	0.0000 ***
FDI	I(0)	0.0000 ***	I(0)	0.0000 ***
DEBT	I(1)	0.0000 ***	I(1)	0.0000 ***
TRO	I(0)	0.0000 ***	I(0)	0.0021 ***
ODA	I(1)	0.0000 ***	I(1)	0.0000 ***
EXR	I(1)	0.0000 ***	I(0)	0.0000 ***

Source: Authors' computation using E-views 10.0 Statistical Package. "\*\*\*\*" represents 1% significance level.

The pooled regression results for country clusters according to the World Bank income groups are presented in Table 5. Evidence from the results shows that FDI increases economic growth significantly across regions under investigation. A 1% rise in FDI increases growth by 0.062%, 0.17%, 0.12%, and 0.68% in the low, lower-middle, upper-middle, and high-income countries. It appears that FDI drives growth best in high-income economies compared with low-income clusters, which may be connected to an improved and friendly business environment in developed countries. It is a fact that developed countries enjoy a relatively more stable economic and political environment than their emerging economy counterparts. This is strong enough to sustain investment visibility and profitability, thereby resulting in economic growth.

**Table 5.** Pooled OLS for comparative analysis across the four World Bank income clusters.

	Low-Income	Lower-Middle-Income	Upper-Middle Income	High-Income
Sub-regions' pooled OLS results (dep. variable: RGDP, log)				
LDBT	0.425 ** (0.0389)	0.705 ** (0.0242)	0.796 ** (0.0243)	−0.125 (0.110)
LEXR	−0.0144 ** (0.0130)	−0.0161 *** (0.0065)	0.0132 ** (0.0107)	0.110 ** (0.0465)
LODA	0.408 *** (0.0325)	0.132 *** (0.0281)	0.0524 *** (0.0173)	0.0623 * (0.0513)
LTRO	−0.152 * (0.0779)	−0.251 *** (0.0410)	−0.752 *** (0.0719)	−0.783 (0.130)
LFDI	0.0628 *** (0.0183)	0.175 *** (0.0160)	0.128 *** (0.0260)	0.686 *** (0.0827)
Constant	4.491 (0.6900)	2.883 (0.4600)	5.905 (0.5790)	13.95 (1.8410)
Year Dummies	Yes	Yes	Yes	Yes
Observations	614	1008	1132	128
R-squared	0.776	0.898	0.908	0.888

Authors' computation. Notes: Robust standard errors in parentheses; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Debt stock drives economic growth in all country clusters except for high-income countries, where it demonstrates negative but insignificant influence over economic acceleration. Specifically, a 1% rise in debt increases economic growth by 0.42%, 0.70%, and 0.79% in low-income, lower-middle-income, and upper-middle-income economies, respectively. Furthermore, as indicated by the findings, upper-middle-income countries benefit more from external debt than lower-middle-income regions. For the high-income economies, the result shows that debt could retard economic growth, as asserted by the modernization theory.

Changes in exchange rates impede growth significantly in low-income and lower-middle-income countries, while it is favorable for growth in upper-middle-income and high-income.

Consequently, official development assistance boosts economic acceleration in all the income clusters. Specifically, a 1% increase in official development assistance induces growth by 0.40%, 0.13%, 0.052%, and 0.062% in low, lower-middle, upper-middle, and high-income countries, respectively. Development assistance provides supplementary income to support economic activities in the receiving countries, particularly the low-income economies as expected.

Trade openness demonstrates anti-economic growth in all four income clusters. A 1% increase in openness leads to a fall in growth by 0.15%, 0.25%, 0.75% and 0.78% in the low, lower-middle, upper-middle, and high-income countries, respectively. The findings prove that upper-middle countries suffer most from trade openness compared to other regions.

To account for heterogeneities in the model, this study adopted FE and RE estimation as presented in Table 6. Results from FE and RE investigation show that FDI acts as an influencer of economic expansion among all income clusters. However, FDI boosts growth mostly in high-income economies, as this cluster demonstrates the highest FDI growth elasticity of 0.68% followed by lower-middle-income countries with an elasticity between 0.034% to 0.044% and 0.025% to 0.062%, and the least elasticity is within 0.021% to 0.027% for upper-middle-income economies. Surprisingly, FDI inflow influences economic growth negatively in a significant way for the high-income economies with the FE approach of 0.016%, whereas external debt, though weakly, boosts economic growth in all the income clusters except the high-income countries where the impact is negative and insignificant.

Furthermore, exchange rate works against growth in all the income-classified regions except for the high-income economies.

Official development assistance, as shown by the FE method, exhibits a positive influence on economic growth only in the lower-middle-income economies, while the RE method proves that the official development assistance influenced growth positively in the low, lower-middle, and high-income economies. The results indicate that low-income countries derive more benefits from the foreign assistance than developed economies.

The coefficient for trade openness demonstrates mixed results for the low-income countries considering the result from the FE method, which is positive, while RE shows a negative impact. The findings further indicate an unfavorable outcome for high-income countries. However, a negative influence on growth is demonstrated within the high-income economies. The implication is that trade openness benefits emerging economies more than developed countries, which validates the modernization theory.

Table 7 presents the regression outcome for the full sample of 200 countries using the pooled OLS, fixed-effects (FE), random-effects (RE), and generalized method of moments (GMM) estimators. The outcome proves to be significantly consistent with the findings from the previous techniques.

The results show that FDI has a positive influence on growth in all 200 countries as expected. All estimates in the table show a significantly positive coefficient for FDI. A consistent flow of FDI into the world economy entails the availability of resources to complement the domestic ones for the expansion of ongoing economic activities in various countries. FDI attracts highly skilled manpower into host countries, which helps boost labor productivity and consequently economic growth as supported by studies such as Adams (2009) for 42 Sub-Saharan African countries and Pegkas (2015) for 18 countries in the Eurozone.

Consequently, the results show that debt stock is an important determinant of growth in all 200 countries as demonstrated by its positive significant coefficient. This confirmed the theoretical assertion that external borrowings are mainly injected into the productive stream of the economy, thereby yielding a maximum result that will assist in promoting economic growth (Bakar and Hassan 2008).



**Table 6.** Fixed- and random-effects estimates for comparative analysis across the four World Bank income clusters.

(Dep. Variable: LRGDP, log)									
	Low-Income	Lower-Middle-Income	Upper-Middle Income	High-Income	Low-Income	Lower-Middle-Income	Upper-Middle Income	High-Income	
	Fixed Effects				Random Effects				
LDBT	0.0929 ** (0.0503)	0.0692 ** (0.0412)	0.128 ** (0.0274)	−0.0938 ** (0.0307)	0.425 * (0.0895)	0.138 ** (0.0448)	0.167 ** (0.0305)	−0.125 (0.221)	
LEXR	−0.0134 ** (0.0280)	−0.0305 * (0.0180)	−0.0132 *** (0.00816)	−0.128 *** (0.0305)	−0.0144 ** (0.0437)	−0.0281 ** (0.018)	−0.0155 * (0.00826)	0.110 * (0.0746)	
LODA	−0.019 ** (0.0439)	0.0309 ** (0.0240)	−0.0317 * (0.0173)	−0.0106 * (0.00514)	0.408 *** (0.0814)	0.0507 ** (0.0257)	−0.026 ** (0.0165)	0.0623 * (0.084)	
LTRO	0.0820 * (0.0867)	0.0729 *** (0.0202)	0.0227 * (0.0643)	−0.0559 ** (0.0598)	−0.152 (0.206)	0.0448 * (0.023)	−0.016 * (0.062)	−0.783 (0.254)	
LFDI	0.0258 ** (0.0112)	0.0349 *** (0.00814)	0.0212 *** (0.00703)	−0.0002 ** (0.0129)	0.0628 ** (0.0293)	0.0440 *** (0.008)	0.0272 *** (0.008)	0.686 *** (0.119)	
Constant	19.66 (1.395)	20.08 (0.955)	20.80 (0.669)	23.78 (0.145)	4.491 (2.150)	18.04 (1.091)	19.91 (0.888)	13.95 (2.644)	
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	614	1008	1132	128	614	1008	1132	128	
R-squared	0.825	0.890	0.858	0.948					
Country ID	26	42	48	15	26	42	48	15	

Authors' computation. Notes: Robust standard errors in parentheses; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table 7.** Results for main model estimation across several techniques compared with system GMM.

Main Results (Dep. Variable: RGDP, log)					
Variables	Pooled OLS	Fixed Effects	Random Effects	One-Step System GMM	Two-Step System GMM
LDBT	0.668 ** (0.019)	0.247 ** (0.019)	0.261 ** (0.019)	0.0003 *** (0.0005)	$1.24 \times 10^{-5}$ *** (0.0005)
LEXR	0.008 *** (0.006)	0.011 * (0.018)	0.010 * (0.0179)	$-8.87 \times 10^{-5}$ *** (0.0006)	$-7.12 \times 10^{-5}$ *** (0.0006)
LODA	0.177 ** (0.017)	0.026 ** (0.019)	0.036 * (0.019)	0.0077 *** (0.001)	0.007 *** (0.001)
LTRO	-0.388 ** (0.044)	0.124 ** (0.047)	0.105 ** (0.043)	-0.010 *** (0.004)	-0.0111 *** (0.0045)
LFDI	0.212 *** (0.018)	0.097 *** (0.009)	0.098 *** (0.009)	0.0106 *** (0.0030)	0.0105 *** (0.003)
Lower-Middle-Income	0.262 *** (0.039)		0.751 *** (0.238)		
Upper-Middle Income	0.623 *** (0.056)		1.073 *** (0.272)		
High-Income	12.88 *** (0.385)		5.513 *** (0.618)		
Constant	2.634 (0.389)	15.19 (0.526)	13.85 (0.520)	0.104 * (0.060)	0.105 * (0.059)
Year Dummies	Yes	Yes	Yes		
Instruments/Groups				866/131	866/131
AR (2) <i>p</i> -value				0.156	0.28
Hansen <i>p</i> -value				0.19	0.19
Hausman ( <i>p</i> -value)			0.0000		
Observations	2882	2882	2882	2714	2714
R-squared	0.866	0.628			
Country ID		131	131	131	131

Authors' computation. Notes: Robust standard errors in parentheses; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Exchange rates demonstrate a positive significant influence on economic growth for the selected countries as demonstrated by the OLS, FE, and RE estimators, while the GMM indicates a negative effect of exchange rates and economic growth.

On the other hand, official development assistance appears to be a driver of economic growth across 200 countries. This entails that official development assistance matters in the world economy, especially for developing countries, some of which have as much as between 5% to 10% development assistance as a share of GDP.

In confirmation of the previous findings, trade openness demonstrates a mixed outcome, where a negative and significant coefficient is estimated by the pooled OLS and GMM estimates, while the FE and RE estimates reveal a positive and significant coefficient for LTRO. Studies such as [Rigobon and Rodrik \(2005\)](#) for 242 countries concluded that openness harms growth. These mixed results reflect the work of [Das and Paul \(2011\)](#) for 12 Asian economies, which supported the negative impact of trade openness, while [Yeboah et al. \(2012\)](#) for 38 African countries agree that openness has a positive influence on growth.

## 5. Conclusions

The importance of global economic interactions in today's global economy cannot be overemphasized. FDI, debt, trade, and exchange rates have a significant influence on economic activities in almost all countries. However, debate still lingers on the impact of certain determinants of growth such as external debt and trade openness—as several policymakers differ on which position various countries should take. To contribute to the argument, this study carried out a study on the impact of FDI, external debt, trade openness, official development assistance, and exchange rates on economic growth for 200 countries spanning 1990 to 2018. These countries were subdivided into World Bank income clusters for comparative analysis. The study utilized panel estimations like the pooled OLS and dynamic panel estimations like the fixed-effects, random-effects, and GMM methods.

The findings revealed that FDI inflow, external debt, and official development assistance are key drivers of growth in all the 200 selected countries. However, the effect of FDI is more noticeable across emerging economies compared to developed economies. This validates the assertion of the modernization theory, which posits that FDI is a panacea for economic advancement, particularly among developing economies. Similarly, governments, especially from low-income countries, seek debt and development assistance from unilateral and multilateral agencies to boost domestic resources to match the investment demand. On the other hand, trade openness and exchange rate demonstrate a mixed effect (positive and negative) on economic growth with the latter proving to be insignificant.

This study suggests that to sustain economic growth through FDI, countries could adopt policies that will create an enabling political and economic environment suitable for businesses and economic activities to thrive. Such policy includes maintaining stable exchange rates and major infrastructural development. Strong financial and legal institutions are attractive scenes for foreign investors. On the other hand, except in critical circumstances, countries should minimize borrowing from foreign economies as a measure to avoid possible debt traps and their adverse effect on economic growth. Abstinance from debt would enable economies to achieve financial self-sustainability and independence. Furthermore, effort should be made towards mobilizing domestic resources to resolve economic challenges. This will build economies to a self-sustainable level of development, which is a major target of most global governmental authorities.

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## Appendix A

Table A1. List of countries in sample.

Low-Income	Lower-Middle-Income	Upper-Middle Income	High-Income
Afghanistan	Angola	Albania	Antigua and Barbuda
Benin	Bangladesh	Algeria	Aruba
Burkina Faso	Bhutan	Argentina	Australia
Burundi	Bolivia	Armenia	Austria
Central African Republic	Cabo Verde	Azerbaijan	Bahamas, The
Chad	Cambodia	Belarus	Bahrain
Congo, Dem. Rep.	Cameroon	Belize	Barbados
Eritrea	Comoros	Bosnia and Herzegovina	Belgium
Ethiopia	Congo, Rep.	Botswana	Bermuda
Gambia, The	Cote d'Ivoire	Brazil	Brunei Darussalam
Guinea	Djibouti	Bulgaria	Canada
Guinea-Bissau	Egypt, Arab Rep.	China	Cayman Islands
Haiti	El Salvador	Colombia	Chile
Korea, Dem. People's Rep.	Eswatini	Costa Rica	Croatia
Liberia	Ghana	Cuba	Cyprus
Madagascar	Honduras	Dominica	Czech Republic
Malawi	India	Dominican Republic	Denmark
Mali	Indonesia	Ecuador	Estonia
Mozambique	Kenya	Equatorial Guinea	Finland
Nepal	Kiribati	Fiji	France
Niger	Kyrgyz Republic	Gabon	French Polynesia
Rwanda	Lao PDR	Georgia	Germany
Sierra Leone	Lesotho	Grenada	Greece
Somalia	Mauritania	Guatemala	Hong Kong SAR, China
South Sudan	Micronesia, Fed. Sts.	Guyana	Hungary
Syrian Arab Republic	Moldova	Iran, Islamic Rep.	Iceland
Tajikistan	Mongolia	Iraq	Ireland
Tanzania	Morocco	Jamaica	Israel
Togo	Myanmar	Jordan	Italy
Uganda	Nicaragua	Kazakhstan	Japan
Yemen, Rep.	Nigeria	Kosovo	Korea, Rep.
	Pakistan	Lebanon	Kuwait
	Papua New Guinea	Libya	Latvia
	Philippines	Malaysia	Lithuania
	Sao Tome and Principe	Maldives	Luxembourg
	Senegal	Marshall Islands	Macao SAR, China
	Solomon Islands	Mauritius	Malta
	Sudan	Mexico	Netherlands
	Timor-Leste	Montenegro	New Caledonia
	Tunisia	Namibia	New Zealand
	Ukraine	Nauru	Northern Mariana Islands
	Uzbekistan	North Macedonia	Norway
	Vanuatu	Paraguay	Oman
	Vietnam	Peru	Palau
	West Bank and Gaza	Romania	Panama
	Zambia	Russian Federation	Poland
	Zimbabwe	Samoa	Portugal
		Serbia	Puerto Rico
		South Africa	Qatar
		Sri Lanka	San Marino
		St. Lucia	Saudi Arabia
		St. Vincent and the Grenadines	Seychelles
		Suriname	Singapore
		Thailand	Slovak Republic
		Tonga	Slovenia
		Turkey	Spain
		Turkmenistan	St. Kitts and Nevis
		Venezuela, RB	Sweden
			Switzerland
			Trinidad and Tobago
			United Arab Emirates
			United Kingdom
			United States
			Uruguay

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