


“Effects of foreign direct investment on economic growth in Ghana: the role of institutions”

AUTHORS	Evans Kulu Samuel Mensah Prince Mike Sena
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S. KUZNETS KHNUUE



Founder

Simon Kuznets Kharkiv National
University of Economics, Nauky
avenue, 9-A, Kharkiv, 61166,
Ukraine
<http://www.hneu.edu.ua/>

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Prince Mike Sena, 2021

Evans Kulu, Mphil in Economics,
Department of Economic Studies,
University of Cape Coast, Ghana.

Samuel Mensah, Mphil in
Economics, Department of
Economic Studies, University of
Cape Coast, Ghana.

Prince Mike Sena, Mphil in
Economics, Department of Applied
Economics, University of Cape
Coast, Ghana.



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Evans Kulu (Ghana), Samuel Mensah (Ghana), Prince Mike Sena (Ghana)

EFFECTS OF FOREIGN DIRECT INVESTMENT ON ECONOMIC GROWTH IN GHANA: THE ROLE OF INSTITUTIONS

Abstract

The role of institutions in both the inflow and the impact of foreign direct investment is of great importance. The quality of institutions in a country can direct investment towards improving growth. This paper analyzes the individual and combined effect of foreign direct investment and institutions on economic growth in Ghana. The paper used the Auto Regressive Distributed Lag (ARDL) technique for secondary data obtained from 1995 to 2019. All data series, except for the quality institution index, were drawn from the World Bank Development Indicators. Institutional Quality Index data was obtained from the Heritage Foundation's Economic Freedom Index website. The results of the ARDL model indicate that foreign direct investment and a quality institutional index together have a significantly positive effect on a country's economic growth compared to their individual effects in both the short and long run. The study recommends that government policies should be aimed at attracting foreign direct investment while strengthening institutions and regulations to enhance output growth.

Keywords

foreign direct investment, institutional quality, economic growth, Ghana, aggregate production function, ARDL

JEL Classification

F43, E02, O43

Еванс Кулу (Гана), Самуель Менса (Гана), Принц Майк Сена (Гана)

ВПЛИВ ПРЯМИХ ІНОЗЕМНИХ ІНВЕСТИЦІЙ НА ЕКОНОМІЧНЕ ЗРОСТАННЯ В ГАНІ: РОЛЬ ІНСТИТУТІВ

Анотація

Роль установ як з точки зору припливу, так і впливу прямих іноземних інвестицій має велике значення. Якість інституційного середовища в країні може спрямувати інвестиції на прискорення зростання. У статті аналізується індивідуальний і сукупний вплив прямих іноземних інвестицій та інститутів на економічне зростання в Гані. Використано метод авторегресійного розподіленого лагу (ARDL) для вторинних даних, отриманих з 1995 по 2019 рік. Усі ряди даних, за винятком індексу якості інститутів, взято зі щорічної доповіді Світового банку «Показники світового розвитку». Дані про індекс якості інституційного середовища отримано з веб-сайту Індексу економічної свободи Heritage Foundation. Результати моделі ARDL свідчать про те, що прямі іноземні інвестиції та індекс якості інституційного середовища разом мають суттєвий позитивний вплив на економічне зростання країни порівняно з їх індивідуальним ефектом як у короткостроковій, так і в довгостроковій перспективі. У дослідженні рекомендується, щоб державна політика була спрямована на залучення прямих іноземних інвестицій при одночасному зміцненні інститутів і нормативних актів для прискорення зростання виробництва.

Ключові слова

прямі іноземні інвестиції, інституційна якість, економічне зростання, Гана, сукупна виробнича функція, авторегресійний розподілений лаг

Класифікація JEL

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INTRODUCTION

Achieving economic growth is a macroeconomic objective that most economies seek to accomplish. Over the years, a variety of channels through which this objective will be realized have been implemented by different countries. Investment being a key component of aggregate expenditure in any economy, is vital to growth through improved productivity levels and employment (Okwu, Oseni & Obiakor, 2020). Most developing countries are using the attraction of Foreign Direct Investment as a means to enhance economic growth. Some significant reforms have been undertaken regarding terms of legal, governance, political and regulatory frameworks in the attempt to provide an enabling investment for investors (Bissoon, 2011). In 1983, the introduction of the Economic Recovery Programme (ERP) in Ghana comprised the attraction of FDI as another core objective. The Ghana Privatization Programme introduced in the 1990s as well as the establishment of the Ghana Investment Promotion Centre in 1994 are all significant efforts to magnetize investors (Yakubu, 2020). In the quest to position itself as a hub in West Africa for foreign investors, Ghana hosts summits annually known as the Ghana Investment Summit.

The main sectors that attract FDI in Ghana are the mining and oil exploration sectors. The World Investment Report, (2020) presents that between 2018 and 2019, the flows of FDI in Ghana have reduced from 3 mln USD to 2.3 mln USD. Some challenges that impaired investment were identified. They include corruption, weak productivity, and unskilled labor, cumbersome administrative processes. Other main issues include inadequate water and power supply as well as the minimal protection given to investors. The identified challenges will be well addressed if institutions are made to work. The effective functioning of institutions directly or indirectly linked to investment helps to improve the inflows of FDI and accelerate its perceived positive effect on growth. In stimulation of investments and fostering of socioeconomic growth, the institutions noted for these roles include property rights, political stability, and quality of bureaucracy (Knack & Keefer, 1995).

Primarily, literature existing indicates a direct influence of institutions on economic growth. However, a cautious review of the literature leads to the conclusion that the effect of institutions on economic growth differs from country to country (Feddeke & Klitgaard, 2013; Nawaz et al., 2014). Various factors such as social norms, community rules of a particular group as well as individual's perception about institutions contribute to the positive functioning of institutions. This reechoes the fact that studies on institutions at best, need to be done at the country level in order to avoid biases from the noise introduced by some influential countries. In Sub-Saharan Africa countries especially Ghana, weak institutional quality is largely the contributor of the recorded unimpressive economic performance (Akpalu et al., 2017).

1. LITERATURE REVIEW

The growing debate on the FDI-growth relationship has attracted several studies in this area. Using 30 leading global economies for the period 1998 to 2017. Okwu et al. (2020) analyzed how the flow of FDI affects economic growth. Controlling for variables such as consumer price index, trade openness, unemployment gross fixed capital formation, and credit to the private sector, the findings from the econometric analysis showed that during the period under study, there is a positively significant influence of FDI on economic growth. Again, Melnyk et al. (2014) in their analysis used data on macroeconomic variables obtained from the European Bank of Reconstruction and Development (EBRD) for 12 years (1998 to 2010) period. The study that aimed at investigating the impact of FDI on the economic growth of post-communism transition economies, found a significant and positive FDI effect on the host countries' economic growth.

The effect of FDI on a host country's economic growth is argued to be dependent on the sector (agriculture, services, and manufacturing, and so on) in which FDI is directed (Again, Melnyk et al., 2014). For instance, Alfaro (2003) studied the relationship between FDI flows and economic growth for the period 1981 to 1999 using 47 countries. The econometric analyses were made using both the primary and manufacturing sectors separately. It was revealed that the flow of FDI into the primary sector affects economic growth negatively while FDI flows into the manufacturing sector influence economic growth positively. Aitken and Harrison (1999) argue that there is little spillover effect in the agriculture and mining sectors hence, the flows of FDI are of minimal efficiency. Even

in the same sector, the nexus between FDI and economic growth has not been obvious. The direction of an impact sometimes varies with time. As found by Gui-Diby (2014). Thus, the effect of FDI on economic growth in Africa was analyzed for the period 1980 to 2009. The system generalized method of moment (SYS GMM) estimators was used and found that the flows of FDI significantly impacted the economic growth of the 50 host Africa countries. The study further found that the low level of human resources did not affect FDI and that for the period 1980 to 1994, the impact of FDI on economic growth was negative while the impact was positive for the period 1995 to 2009.

Yabi (2010) settled that FDI flows do not affect economic growth all the time. Thus, estimations based on a panel of 57 developing countries for the period 1980 to 1999 showed that countries with high economic growth observed the direct influence of FDI but this was not found in countries with low economic growth, owing to the heterogeneity of countries. The results were obtained with the inclusion of instrumental variables and some control variables that influence economic growth such as government consumption, the number of telephone lines per thousands of people, inflation, local investment.

The role of institutions on both the inflow and effect of FDI is of much importance. Based on time series data for Ghana between the period 1985 and 2016, a positive and statistically significant effect of institutional quality on FDI was found by Yakubu (2020). The estimations using the autoregressive distributed lag (ARDL) approach also found that inflation significantly affects FDI in both the short run and long run while variables such as trade and growth in per capita GDP significantly affect FDI in the short run. Also, Nawaz et al. (2014) investigated the effect of institutions in promoting economic growth. The study used both static and dynamic panel systems. Generalized Method of Moments (GMM) on data for Asian economies for the period 1996 to 2012. The findings revealed that institutions play a significant role in promoting economic growth in Asian economies. The effect identified is explained to differ across economic development hence the Asian economies. Thus, it was found that in developed Asia, institutions are more effective than in developing Asia.

The observed gap in the studies reviewed is that an external force that could affect the role of FDI in economic growth has been given limited attention. The influence of institutional quality on the FDI-economic growth relationship is worthy to be investigated. Also, judging from the conclusion of Nawaz et al (2014) that different countries need a varied set of institutions in promoting long term growth coupled with the fact that institutions and FDI inflows affect the economic growth of countries differently, a country-specific analysis will reveal the true relationship better as compared to a panel analysis.

2. METHODOLOGY

2.1. Data Description and Sources

The paper utilized an annual time series data covering the period 1995 to 2019. All data series, except for the institutional index, are taken from World Bank Development Indicators. These variables include Gross Domestic Product, Foreign direct investment, Capital, Labor, and real exchange rate. The depend-ent variable, economic growth was measured as annual real GDP per capita, Foreign Direct Investment was measured by FDI net inflows, the capital was measured by gross fixed capital formation, labor was measured by population and the real exchange rate was measured as the Ghanaian cedi per United State dollar. The measurement for all the variables were based on empirical literature and has been wide-ly employed in the growth literature. Data on the institutional index was obtained from the Heritage Foundation index of economic freedom website. We considered the Open markets index category of economic freedom which is the average of trade freedom, investment freedom, and financial freedom. Economic freedom advances economic opportunity, economic security, and individual empowerment and prosperity (Meierrieks & Renner, 2017; Justesen, 2008). Eldomiaty, Al Qassemi, Mabrouk and Abdelghany (2016) also maintained that a high degree of economic freedom can be described as an indicator of high institutional quality and vice versa.

2.2. Model Specification

The paper considered the Aggregate Production Function (APF) in modeling economic growth in Ghana. The APF indicates that growth can be achieved when capital and labor are augmented by various inputs in the production function. The APF is given below:

$$Y_t = A_t K_t^{\beta_1} L_t^{\beta_2}, \quad (1)$$

where Y_t is the output, A_t represents the Total Factor Productivity, K_t represents capital while L_t is labor. While β_1 and β_2 are the coefficients for capital and labor respectively. It is significant to note that the Total Factor Productivity (A_t) is not fixed. Following Asiedu (2013), Ayibor (2012), Quaicoe, Aboagye and Bokpin (2017), Seth and Kalyanaraman (2017) a growth equation for Ghana is estimated utilizing other macroeconomic factors as regressors which enter into equation (1) through the Total Factor Productivity (A_t). The empirical model is specified in equation 2 as:

$$\ln EG_t = \beta_0 + \beta_1 \ln GDP_t + \beta_2 \ln FDI_t + \beta_3 \ln INST_t + \beta_4 (\ln FDI * \ln INST)_t + \beta_5 \ln K_t + \beta_6 \ln L_t + \beta_7 \ln RER_t + \varepsilon_t, \quad (2)$$

where EG is economic growth, GDP is Gross Domestic Product, FDI is Foreign Direct Investment, $INST$ is the institutional quality index, $FDI * INST$ is Foreign Direct Investment * Institutional quality index, K is Capital, L is Labor and RER is the Real exchange rate.

2.3. The Autoregressive Distributed Lag (ARDL) Model

To empirically establish the effects of foreign direct investment on economic growth, we employed the ARDL cointegration technique as introduced by Pesaran, Shin, and Smith (2001). The ARDL cointegration technique was adopted since it is most efficient in a small sample size as in the case of this paper and largely due to the different order of integration of the variables. Thus, the ARDL model is expressed as follows:

$$\begin{aligned} \Delta \ln EG = & \varphi_0 + \varnothing \ln EG_{t-1} + a_1 \ln GDP_{t-1} + a_2 \ln FDI_{t-1} + a_3 \ln INST + a_4 \ln(FDI * \\ & INST)_{t-1} + a_5 \ln K_{t-1} + a_6 \ln L_{t-1} + a_7 \ln RER_{t-1} + \sum_{i=1}^{\rho} \beta_1 \Delta \ln EG_{t-i} + \\ & \sum_{i=1}^{\rho} \beta_2 \Delta \ln GDP_{t-i} + \sum_{i=1}^{\rho} \beta_3 \Delta \ln FDI_{t-i} + \sum_{i=1}^{\rho} \beta_4 \ln INST_{t-i} + \sum_{i=1}^{\rho} \beta_5 \ln(FDI * INST)_{t-i} + \\ & \sum_{i=1}^{\rho} \beta_6 \Delta \ln K_{t-1} + \sum_{i=1}^{\rho} \beta_7 \Delta \ln L_{t-i} + \sum_{i=1}^{\rho} \beta_8 \Delta \ln REER_{t-i} + \varepsilon_t, \end{aligned} \quad (3)$$

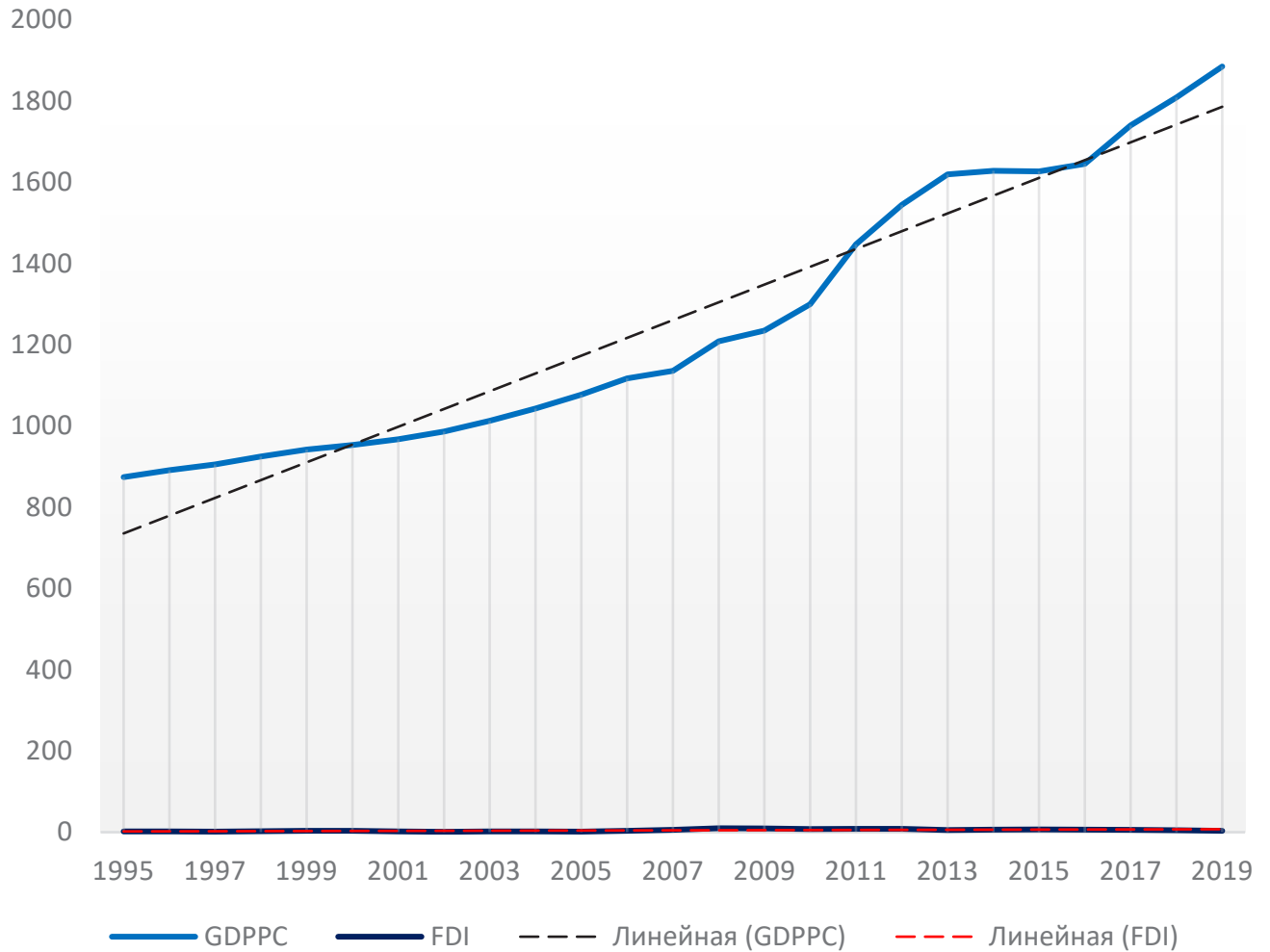
where \varnothing and a_i are the long-run elasticities while β_i represents the short-run elasticities. We employed the bounds testing approach to establish cointegration among the variables before estimating the results. The Error Correction Model (ECM) (ECM) is thus specified to estimate the short-run adjustments to equilibrium in equation (4) as follows:

$$\begin{aligned} \Delta \ln EG = & \varphi_0 + \sum_{i=1}^{\rho} \beta_1 \Delta \ln EG_{t-i} + \sum_{i=1}^{\rho} \beta_2 \Delta \ln GDP_{t-i} + \\ & \sum_{i=1}^{\rho} \beta_3 \Delta \ln FDI_{t-i} + \sum_{i=1}^{\rho} \beta_4 \ln INST_{t-i} + \\ & \sum_{i=1}^{\rho} \beta_5 \ln(FDI * INST)_{t-i} + \sum_{i=1}^{\rho} \beta_6 \Delta \ln K_{t-1} + \\ & \sum_{i=1}^{\rho} \beta_7 \Delta \ln L_{t-i} + \sum_{i=1}^{\rho} \beta_8 \Delta \ln REER_{t-i} + \delta ECM_{t-1} + \varepsilon_t, \end{aligned} \quad (4)$$

where, δ is the speed of adjustment of the parameter to long-run equilibrium following a shock to the system and ECM_{t-1} is the error correction model.

3. RESULTS AND DISCUSSION

A trend analysis between economic growth and foreign direct investment is plotted in Figure 1, followed by a presentation on the statistical characteristics of the variables employed in the study presented in Table 1 and the state of stationarity of the variables was also tested using the Augmented Dickey-Fuller and Phillip-Perron tests. The subsequent section presents the estimated model using the ARDL model.



Source: Author's construct from WDI Database.

Figure 1. Trend Analysis of FDI and Economic Growth

Figure 1 above shows an analysis of the trend between foreign direct investment and economic growth over the sample period. It can be observed that FDI inflow has been relatively stable over the study period while economic growth measured by GDP per capita witnessed some increasing trend with periods of high and low growth.

Table 1. Descriptive Statistics

Variable	Observations	Mean	Std. Dev.	Min	Max
LNGDPPC	25	7.1068	0.2570	6.7730	7.5413
LNFDI	25	1.2566	0.7186	-0.0453	2.2478
LNNDEX	25	5.6243	1.5393	3.0838	7.6019
FDINDEX	25	3808.802	4117.505	35.9772	12684.50
LNK	25	3.0453	0.2595	2.4651	3.3758
LNL	25	4.2817	0.0342	4.2370	4.3274
LNREER	25	4.5685	0.2303	4.1688	4.9928

Note: Std. Dev. Denotes standard deviation, Min. represents minimum and Max. represent maximum.

The descriptive statistics presented in Table 1 above shows the statistical properties of the variables employed in the study over the sample period. A careful look at the statistics shows that the study employed 25 total observations. All variables used for the study also recorded positive mean values and there exists a minimum deviation of the variables from their average values.

3.1. Unit Root Test

To check the stationarity properties of the series used for the study, the Augmented Dickey-Fuller (ADF) and Phillips Perron (PP) test of unit root both with constant only and with constant and trend options were used. The unit root test was performed to guarantee that none of the variables were integrated of order above one before applying the ARDL bounds testing approach to cointegration. The null hypothesis that the series has unit root was rejected at the various levels of significance as specified in Table 2.

Table 2. Unit Root Test

Source: Computed by Author using E-views 10 package.

Variable	Level		First difference		Order of Integration
	Constant	Trend	Constant	Trend	
ADF TEST					
LnGDPPC	0.432	-2.350	-2.865*	-2.982*	I(1)
LnFDI	-1.548	-1.456	-3.854***	-3.347**	I(1)
LnINST	-1.897	0.380	-3.737***	-4.130***	I(1)
FDI*INST	0.932	-2.007	-3.461***	-3.368*	I(1)
LnK	-2.614*	-2.579	-3.907***	-3.807**	I(0)
LnL	-1.560	-2.427*	-1.906	-1.849	I(0)
LnREER	-1.110	-2.615*	-4.572***	-4.451***	I(0)
P-P TEST					
LnGDPPC	0.862	-1.887	-2.866*	-2.982*	I(1)
LnFDI	-1.641	-1.456	-3.783***	-3.753**	I(1)
LnINST	-1.828	0.350	-3.791***	-4.131***	I(1)
FDI*INST	-1.001	-1.758	-3.461***	-3.368*	I(1)
LnK	-2.041	-2.010	-3.835***	-3.725**	I(1)
LnL	-0.354	-2.048*	-1.948	-1.849	I(0)
LnREER	-1.153	-2.615*	-4.669***	-4.523***	I(0)

Note: ***, ** and * denotes the rejection of the null hypothesis at 10%, 5% and 1% significance level.

3.2. Bounds Test for Cointegration

This section deals with the estimation of the combined effect of foreign direct investment and institutions on economic growth as well as the individual effect of foreign direct investment and institutions on economic growth in Ghana. In this light, the long-run relationship (cointegration) between these variables using bounds testing approach to cointegration was tested. The test involves the comparison of the F-statistics against the critical bounds as specified by Pesaran, Shin, and Smith (2001). The regressors on one hand are purely I(1) and on the other purely I(0) variables by the the two sets of asymptotic critical values assumption. The bounds test from Table 3 which was estimated in an Unrestricted Error Correction model was 7.38. This exceeds both the upper and lower bounds of the critical values showing that there is the presence of a long-run relationship among the variables under study.

Table 3. Bound Test

Source: Authors' construct using Eviews 10 package.

90% level		95% level		99% level	
I(0)	I(0)	I(0)	I(0)	I(0)	I(0)
1.99	2.94	2.27	3.28	2.88	3.99
Dependent Variable				F-Statistic	
FLNGDPPC (LNGDPPC LNFDI, LNINST, FDI *INST, LNK, LNL, LNREER)				7.3810	

The model revealed an existence of error correction mechanism as indicated by the presence of a long-run relationship between the variables. Subject to this idea, this work further estimated the long-run coefficients and short-run coefficients for the model using the ARDL model

Table 4. Estimated Long Run and Short Run Results in the ARDL Model

Source: Authors' construct using Eviews 10 package.

Variable	Short Run	Long Run
LNGDPPC(-1)	-0.4288** (0.0919)	
LNFDI	-0.1572*** (0.0108)	-0.3218*** (0.0440)
LNFDI(-1)	0.0351*** (0.0046)	
LNINST	0.2086*** (0.0181)	0.4628*** (0.0695)
LNINST(-1)	-0.0860*** (0.0130)	
FDI*INST	0.00001*** (0.000001)	0.00003** (0.000006)
LNK	-0.0313** (0.0071)	-0.1599** (0.0554)
LNK(-1)	0.0291** (0.0092)	
LNL	-0.1250 (1.0058)	6.4231* (2.3588)
LNL(-1)	6.3618*** (0.8946)	
LNREER	0.0352* (0.0124)	0.8099*** (0.1664)
LNREER(-1)	-0.2284*** (0.0280)	
CONST		-25.8738* (10.6295)
ECT(-1)	-0.7440 (0.0530)	

Note: ***, ** and * denotes 1%, 5%, and 10% level of significance respectively.

3.3. Presentation of Results

3.3.1. Long-run Results

Table 4 presents the estimated long-run and short-run results using the ARDL estimation approach. Long run estimates show that foreign direct investment negatively affects economic growth over the study space and this is statistically significant at a 1%. Specifically, the results show that an increase in foreign capital inflows will result in a 0.32 units decline in the economic growth of the country.

Results on the institutional index showed that institutions present a positive effect on economic growth over the study period recording a statistical significance of 1%. This means that a rise in institutions within the economy will result in an approximately 0.46 units increase in the economic growth of the country.

An observation of the joint effect of foreign direct investment and quality institutional index on economic growth revealed that they jointly pose a significantly positive effect on the economic growth of the country and this joint effect is significant at 5% level of significance. Specifically, the results from the net effect computation of the

interaction (see, Appendix A) reveal that both foreign direct investment and quality institutions jointly affect economic growth by 0.4628 units. That is, an increase in quality institutions within the economy given that there is foreign direct investment will improve economic growth by approximately 0.46 units in the country.

Results on capital also reveal that capital stock exerts a significantly but a negative effect on economic growth over the sample period. Specifically, it was revealed that capital stock increases will exert a diminishing growth effect of 0.1599 units. This is statistically significant at 5%.

A careful look at labor also shows that labor exerts a positive effect on economic growth over the period with an effect rate of about 6.4231. This is statistically significant at 10%. This means that an increase in the labor force of the country will result in about 6.42 rise in the economic growth in the economy in the long run.

Finally, a cursory look at the real effective exchange rate reveals that it has a positive and statistically significant influence on economic growth. Specifically, a real effective exchange rate was found to significantly influence economic growth by 0.8099 in the long run at 1% level of significance. This implies that an increase in the real effective exchange rate will result in about 0.81 rise in the economic growth of the economy.

3.3.2. Short-run Results

The short-run estimates of the ARDL model are shown in Table 4 with the error correction term. Results showed that foreign direct investment has a statistically negative effect on economic growth in the short run. Specifically, FDI records about 0.1572 effects on economic growth over the sample period. This means that a unit increase in FDI inflows will result in 0.16 units decline in the economic growth of the country. This result is consistent with the long run estimates and significant at 1% level of significance. But a one-period lag of FDI shows that FDI has a statistically positive link with growth.

The institutional variables also show that the quality of institutions poses a positive and statistically significant effect on economic growth over the period under review. Precisely, institutions recorded a positive effect of 0.2086 units on growth. This means that an increase in the quality of institutions will result in a 0.21 units increase in the economic growth of the country. This positive result is consistent with the result of the long run and it is significant at 1% level of significance. This notwithstanding, a period lag of institutional index revealed a statistically negative effect on economic growth.

An observation of the combined effect of foreign direct investment and institutions reveals a statistically positive relationship exists on economic growth significant at 1% significance level. Specifically, the results show that foreign direct investment and institutions jointly influence growth by 0.2086 units. This means that an increase in quality institutions given there are foreign direct investment flows will cause economic growth to increase by 0.21 units in the short run as attested to by the net effect computations in Appendix A.

Consistent with the long run results, capital recorded a negative but statistically significant effect of 0.0313 on economic growth at 5% level of significance. The coefficient of the current value of capital shows that an increase in capital stock in the economy will result in a decline in economic growth by 0.03 units. Contrary to this, the one-period lag of capital shows a positive effect of 0.0291 units on economic growth in the country.

Contrary to the long run results on the labor force, labor recorded a negative influence on economic growth in the short run but this result is statistically insignificant. But a look at the previous value of the labor force shows a positive and statistically significant effect of 6.3618 units on economic growth for the country.

The real effective exchange rate recorded a positive effect of 0.0352 units on economic growth over the study period and this result is significant at a 10% level of significance. This means that an increase in the effective exchange rate will result in a 0.04 rise in economic growth in the short run. This result is consistent with the positive result seen for real effective exchange rate in the long run. But a look at the lag or the previous value of real effective exchange rate shows that it has a statistically significant and negative influence on economic growth.

Finally, the error correction model from the ARDL estimation reveals that the speed of adjustment to equilibrium in the dynamic model after a disturbance is -0.7440. This implies that when there is a shock to the model, about 74 percent of deviations from the long run economic growth caused by previous periods disturbance converges back to long run equilibrium in the current period. The equation of the ECM is present as follows:

$$ECM = LNGDPPC - (-0.3218LNFDI + 0.4628LNINST + 0.00003FDI * INST - 0.1599LNK + 6.4231LNL + 0.8099LNREER - 25.8738). \quad (5)$$

3.4. Discussion of Results

The following section provides a discussion of the findings based on the results presented in Table 4. From the results of the ARDL model presented in Table 4, foreign direct investment inflows were found to be negative contributors to economic growth in Ghana over the study period. This unfavorable effect of foreign direct investment on economic growth can be attributed to the fact that income inflows from the foreign direct investment are not channeled into productive uses in the country hence leading to crowding out of local industries and poor absorptive capacities as well as unproductive industrial competitions (Carkovic & Levine, 2002). This result agrees with the works of Saqib et al. (2013) and Nath (2004) who found FDI inflows to negatively influence growth but contrary to the work of Melnyk et al. (2014) and Asafu-Adjaye (2005). Theoretically, this relationship confirms the Pollution Haven Hypothesis (PHH). Thus, FDI adversely affects economic growth through the less stringent measures (instituted by weakened institutions) governing it.

Consistent with the literature, the study found institutions to be economic growth-enhancing for Ghana over the study period. One possible reason is that the more the quality of institutions in the country the ease with which they can channel investment into growth improving avenues. This result is consistent with the works of Yakubu (2020) and Nawaz et al. (2014) who found quality institutions to be growth-boosting.

The result of the combined effect of foreign direct investment and quality institutions revealed that they positively contribute to economic growth. This is attested to by the net effect computation of the joint effect of foreign direct investment and institution (see, Appendix). The result implies that the existence of the flow of foreign direct investment without the necessary institutions within the economy to translate the inflows into investment leading to growth will be detrimental to the economic health of the country. It also tells us that the right institutions coupled with the inflow of foreign capital will lead to favorable growth outcomes like an increase in the productive capacity of local industries, leading to increases in investment which also results in a rise in economic growth of the economy.

The result on capital shows that capital stock is not economic growth-enhancing over the study period in Ghana. This can be explained by the fact that although capital investment like machinery and equipment in the construction of roads, schools, offices, commercial and industrial buildings all contributes positively to the growth of output but are undermined by labor being displaced hence increasing the level of unemployment due to machinery replacing humans. This result is contrary to the findings of Asiedu (2013) and Ibrahim (2011) who found a positive and significant effect of capital on economic growth for Ghana.

The estimated ARDL model also shows that the labor force is growth-inducing both in the long run and short run. This agrees with the neoclassical growth theory that the growth of the labor force boosts production as wages for informal workers increases. This result is consistent with the works of Jayaraman and Singh (2007) and Ayibor (2012) but contrary to the arguments of Sakyi (2011) and Frimpong and Oteng-Abayie (2006).

Real effective exchange rate proved to be growth improving over the study period for the country. This can be attributed to the fact that real effective exchange rate changes lead to increases in the export of the country and this will result in increased economic growth. This outcome is consistent with the work of Prasad (2000) who found a positive effect of real effective exchange rate on economic growth.

3.5. Robustness Check for ARDL Model

Table 5. Model Diagnostics and Stability Tests

Source: Authors' construct using Eviews 10 package.

Test Statistic		F-statistics	Probability value
Normality	X^2_{Norm}	Not Applicable	0.5785
Serial Correlation	X^2_{Auto}	F(2, 1) 8.9837	0.2296
Heteroskedasticity	X^2_{BP}	F(19, 3) 0.5931	0.7963
Functional form	X^2_{Reset}	F(1, 2) 0.3366	0.6205

Table 5 presents the model diagnostics which test the robustness of the entire model. Tests such as normality test, Breusch-Godfrey test for serial correlation, Breusch-Pagan test for heteroskedasticity as well as Ramsey's Regression Specification Error Test (RESET) for functional form were conducted. Results, as shown in Table 5, attests to the fact that the model is devoid of issues of the non-normal distribution of parameter estimates, serial correlation, heteroskedasticity, and model misspecification. Additively, the cumulative sum of recursive residuals (CUSUM) and the cumulative sum of squares of recursive residuals (CUSUMSQ) were employed (see, Appendix) to test the stability of the model estimates over the sample period. The results show that the model estimates are stable and this was attested to by test results lying between the critical intervals at a 5% significance level. This means that there are no erratic parameters within the model.

CONCLUSIONS AND POLICY IMPLICATIONS

The study examined the effect of foreign direct investment on economic growth by examining the role of institutions. The main argument advanced by the paper is that the combined effect of foreign direct investment and quality institutions induces economic growth significantly compared to their individual effects on economic growth. An implication deduced out of the study is that government policies should be directed towards attracting foreign direct investment while at the same time strengthening the institutions and regulations to enhance output growth. Again, attracting FDI alone can also come with the problem of the country becoming a dumping site of externalities that multinational corporations avoid by setting up their subsidiaries in pollution haven countries. The study, therefore, recommends that policymakers should strengthen institutions and regulations as efforts to attract clean foreign direct investment.

AUTHORS CONTRIBUTIONS

Conceptualization: Evans Kulu.

Data curation: Evans Kulu, Samuel Mensah, Prince Mike Sena.

Formal Analysis: Evans Kulu, Samuel Mensah, Prince Mike Sena.

Methodology: Samuel Mensah.

Software: Prince Mike Sena.

Supervision: Evans Kulu, Prince Mike Sena.

Writing – original draft: Evans Kulu, Samuel Mensah, Prince Mike Sena.

Writing – review & editing: Evans Kulu, Samuel Mensah, Prince Mike Sena.

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APPENDIX

Net Effect Calculations (ARDL Model)

Long Run Net Effect

$$LN(GDPPC) = -0.3218LN(FDI) + 0.4628LN(NDEX) + 0.00003LN(FDINDEX) \cdot$$

$$\frac{dGDPPC}{dNDEX} = 0.4628 + 0.00003LN(FDI) \dots$$

$$\dots = 0.4628 + 0.00003(1.2566)$$

$$\dots = 0.4628 + 0.000038$$

$$\rightarrow \cdot = 0.4628\%$$

Short-Run Net Effect

$$LN(GDPPC) = -0.1572LN(FDI) + 0.2086LN(NDEX) + 0.00001LN(FDINDEX) \cdot$$

$$\frac{dGDPPC}{dNDEX} = 0.2086 + 0.00001LN(FDI) \dots$$

$$\dots = 0.2086 + 0.00001(1.2566)$$

$$\dots = 0.2086 + 0.000013$$

$$\rightarrow \cdot = 0.2086\%$$