

# Effect of Foreign Direct Investment on Economic Growth: The Role of Natural Resources and Trade Openness in Ghana.

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DOI: <https://dx.doi.org/10.47772/IJRISS.2024.803099>

Received: 28 February 2024; Accepted: 07 March 2024; Published: 09 April 2024

## ABSTRACT

This study examined the determinants of foreign direct investment in Ghana over the period 1980 – 2017 to highlight the need for FDI to reduce our growing debt levels by reducing replacing public loans. To estimate the empirical model, the study controlled for exchange rate and inflation rate as measures of macroeconomic instability, as well as the growth rate of citizen's income. The study employed time series analysis considering the nature the variables be annual series. Using the Augmented Dickey-Fuller (ADF) approach, the study tested for the presence of unit root adopted the Johansen Cointegration test for long run associations among the variables. The VAR and VECM models were finally estimated to achieve the objective of the study. Outcome indicated a positive relationship between natural resource availability and FDI inflows in the short-run and long-run in Ghana. Trade openness was also revealed to have a positive impact on FDI inflows in the country in both time periods. Measures of macroeconomic uncertainties such as exchange rate and inflation rate exert negative impacts on FDI inflows. Results of the study holds several policy implications including the need to achieve a sustainable economic outlook thus achieving and sustaining lower levels of inflation that will less deterrence to foreign investors. Also, the exchange rate needs to be managed in order to achieve an appreciation of the Ghana-Cedi against the US-dollar to encourage foreign direct investment and trade amongst Ghana's trade partners. Again, further trade restrictions that are deemed unproductive can be reviewed to allow free trade, especially the Africa Continental Free Trade Area (AfCFTA).

**Keywords:** Foreign Direct Investment (FDI), Gross Domestic Product (GDP), Vector Error Correction Model (VECM), Auto-regressive Distributed Lag (ARDL), Natural Resources

## INTRODUCTION

Achieving a sustainable economic growth that would translate into increase in living standards, reduction in poverty levels and improvement in infrastructure has been prime goals for governments over the world. The process to achieve this macroeconomic stability has been the challenge leaders have been facing. Whereas lower inflation rate has helped certain economies achieved economic growth like the United States, other economies have made use of their foreign direct investments. Indeed, globally, foreign direct investment been recognized as a vital determinant to achieving a sustained economic growth, theoretically and practically.

According the Organization for Economic Cooperation and Development (OECD), the United States is the top recipient of FDI of US\$ 86 billion, followed by Ireland with US\$ 37 billion and then the United Kingdom (UK) which received US\$ 36 billion in Q3 of 2022. The general acceptance of FDI as a necessity for international investment has seen the global rise of FDI to US\$1,237,834 million (World Investment Report, 2022) and further rise to US\$ 1,582,310 in 2021 (World Investment Report-WIR, 2022).

Indeed, Ghana has been characterized with regular inflow of FDI since 1970 until now except for few periods of decline in the inflow of FDI. There has been a moment that the country became the destination for foreign investment in Africa. In 1970s, the FDI was mainly in import-substitution manufacturing in the

country (UNCTAD, 2003). The FDI however, picked up momentum following Economic Recovery Program (ERP) in 1983 in which the country adopted a market economy from an administrative system of economic management. The surge in FDI was further enhanced in 1986 when Ghana adopted certain policies to attract investment into the natural resource sectors.

Foreign direct investment in Ghana has created direct capital financing, technology transfer from advanced economies, generated managerial skills and increased productivity. For instance, the privatization drive of state-owned enterprises, since 1988, that were unproductive brought competitiveness among the service and manufacturing sectors such the privatization of Ashanti Goldfields Corporation. Annual FDI inflows have been less than US\$ 1 billion from 1970 to 2006 except 2007 where Ghana received US\$ 1.4 billion worth of FDI. The trend has not been constant with the highest FDI of US\$ 3.9 billion being recorded in 2019 (WIR, 2022).

Ability to attract foreign direct investment depends on several factors mainly economic, and political factors. Mostly, economic factors have explained the extent of FDI receivable. Countries with stable economic stability have continuously been the destination of FDI such as stable and lower inflation rate, a stable exchange rate. Other factors include the presence of natural resources and the extent to which trade policies favour foreign trade. This study therefore takes a cue from this and investigates the very factors that influence the inflow of FDI to Ghana.

Reviewing literature, several studies employed a measure of FDI that is theoretically necessary but insufficient to determine the full impact of FDI. These studies used measured net inflows as percentage of GDP. This is problematic because anytime GDP increases, FDI will be underestimated. For instance, FDI was recorded as US\$ 0.14 billion in 2004 expressed as a percentage of GDP to be 1.5%. Yet in 2005 where FDI increased to US\$ 0.145 (World Bank WDI), it was expressed as percentage of GDP as 1.3% (World Bank WDI), lower than the previous year's. To avoid this misinterpretation and to present full measure of FDI, the study adopts the nominal values of FDI measured in billions of US dollars.

## **LITERATURE REVIEW**

### **A. Theoretical Review**

#### **1) The Neoclassical Theory**

The neoclassical view on international capital flows was based on the assumption that capital flows among countries is largely motivated by interest rates differentials. Also, the differences in interest rates according to the theory occur under the conditions of perfect competition in the capital market. That is, foreign investors' decision to undertake FDI is driven by the prevailing interest rates in the destination nations in which there is full information as well as the existence of free entry and exit (Adenutsi, 2007). The theory opined among others that under unconstrained condition of capital flows, there can exist positive welfare impacts for receiving countries of capital flows (host countries) as well as for exporting countries of capital (home countries). This implies that international capital mobility has desirable effects on participating countries, host and home countries alike.

#### **2) Industry Organization Theory**

This theory generally assumed that foreign investors, more particularly foreign firms have some degree of oligopoly power in the host countries. The industry organization theory postulates that the international capital markets operate under imperfect conditions in which there are barriers to entry and exit. The theory assumed further that the capital markets are characterized by certain unique financial features such as product technology, managerial skills and economies of scale. These features according to Adenutsi (2007)

enable foreign firms to exercise certain powers over their local counterparts in the capital market.

### 3) The Portfolio Choice Theory

The portfolio choice theory is generally concerned about the risks and uncertainties related to capital flows from one country to another. Investors would consider not only the rate of return on their investment but also the risks that accompany such investments. According to the theory, the fluctuations in the rates of return in the flows of capital within a country are entirely different from fluctuation in the rate of return between countries. This means that foreign investors attempt to reduce risks associated with their investment by engaging in diversification of investment portfolios. Thus, the amount of capital flows and the destination of such flows are largely dependent on the composition and location of current investment portfolio held (Adenutsi, 2007).

### 4) Trends in FDI inflows in Ghana

Under this section of the study, the FDI inflows are illustrated graphically to show trends in its flow over the study period. Also, the section illustrated, graphically the inflows in FDI and natural resources as well as between FDI inflows and trade openness.

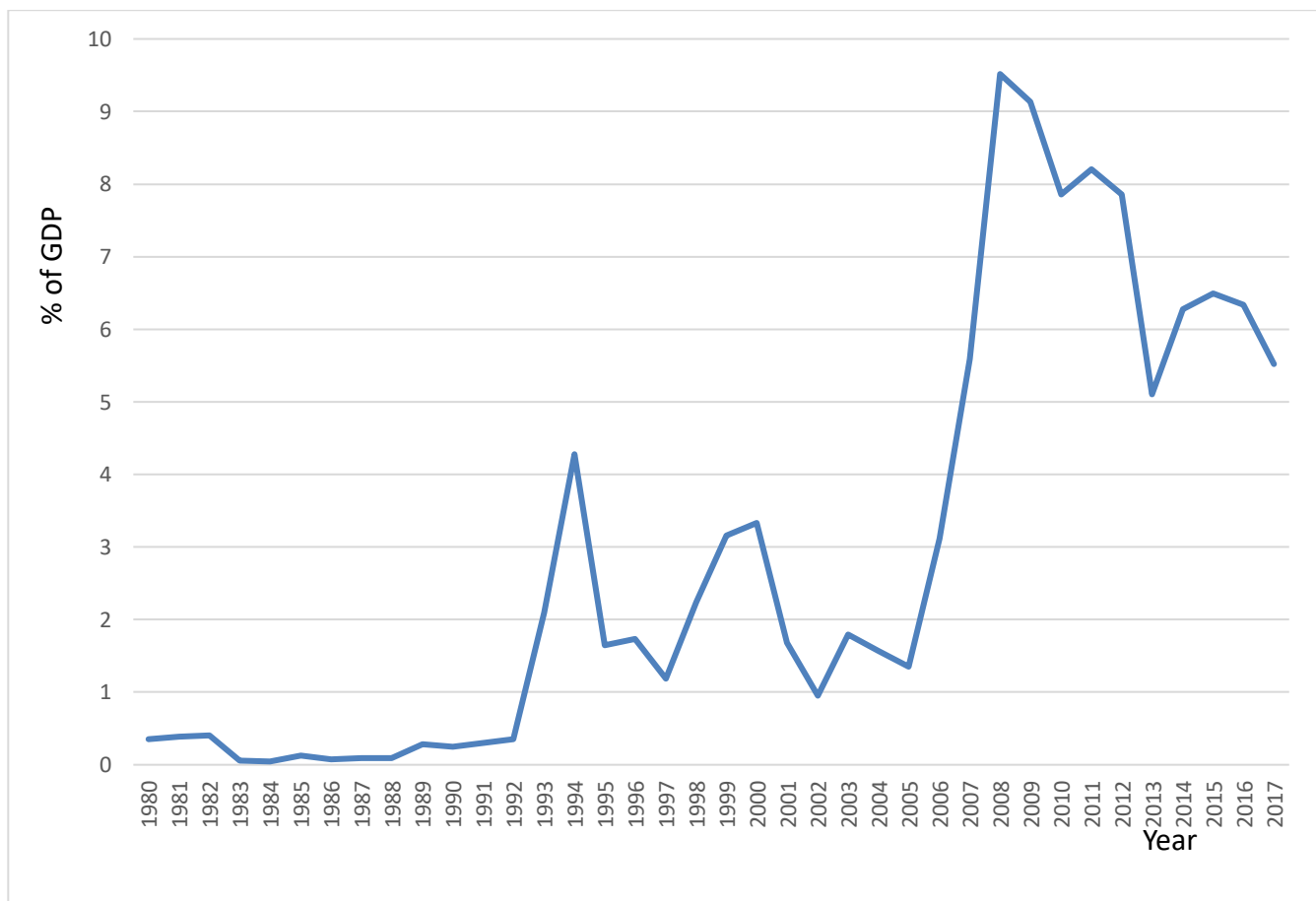


Figure: 2.1 Trend of FDI in Ghana

Source: Author’s construct

The pictorial relationship between FDI inflows and natural resources is shown in figure 2.2. The relationship does appear positive, implying a positive response of foreign investors to natural resource endowments in the country. A similar relationship is shown between FDI inflows and trade openness in figure 2.3 in Ghana,

consistent with empirical findings on the subject matter (see Janicki & Wunnava, 2006 and Yakubu & Mikhail, 2019).

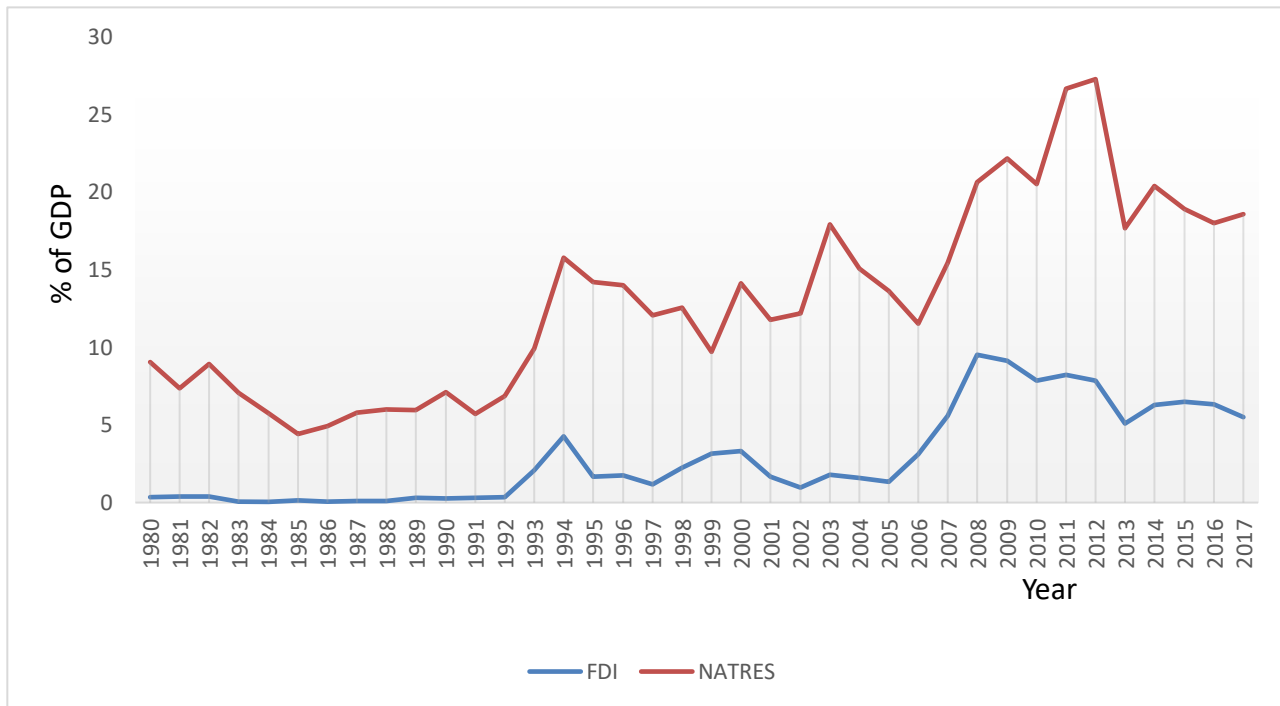


Figure 2.2: A line plot of FDI inflows and natural resources endowment in Ghana.

Source: Author’s construct

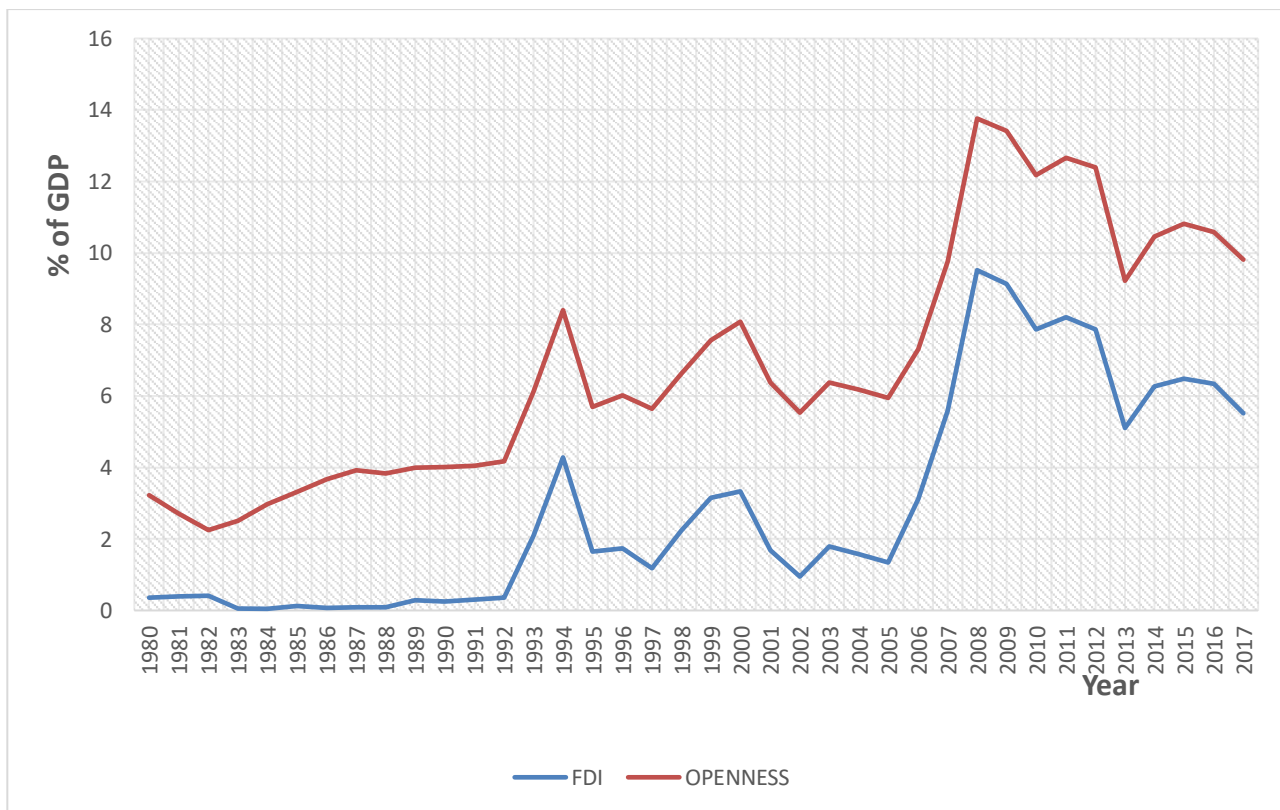


Figure 2.3: A plot of FDI inflows and trade openness in Ghana

Source: Author’s construct

## B. Empirical Review

There exist a lot of studies on FDI and more particularly, its determinants. Most of the various cross country and country-specific studies that have been conducted especially have reviewed in this section of the study. It presents some of these studies and highlighted their key findings as well as research methods adopted in each one of them.

Abebreseh et al. (2017) conducted a study to assess empirically the role that infrastructural development and natural resources play in attracting inflows of FDI into Ghana. Based on a yearly data from 1975 to 2014, the authors argued that infrastructural development and natural resources in Ghana are key drivers of FDI inflows into the country. This means that efforts to improve and expand infrastructure as well as effective explorations of natural resources in Ghana will be of immense benefit to the country in terms of attracting FDI inflows. They also arguably noted that FDI inflows in Ghana are significantly influenced by several other factors, including the lending rate, GDP growth rate and market size.

Djokoto (2012) studied investment promotion in relation to inflows of FDI into Ghana. He compares investment promotion with other macroeconomic variables such as inflation rate, exchange rate, GDP growth rate and trade openness in determining FDI inflows in the country. The empirical results based on ARDL approach indicated that inflation impacts were significantly negative whilst that of trade openness exerted a positive impact. He did not find any significant impact of exchange rate and GDP growth rate on FDI inflows in Ghana. Thus, efforts to attract and increase FDI flows must be focused on ensuring economic stability especially general price stability.

Asiedu (2013) identified the role natural resources play in determining FDI when he empirically examined its impact on FDI in developing countries. The study used the system GMM estimator concluded that natural resources, against a prior expectation, exerts adverse impact on FDI flows in developing countries. This implies that natural resource availability does not promote FDI flows in developing economies, contrary to the evidence of resource-seeking FDI in most empirical studies (Abebreseh et al., 2017).

Using a secondary data from the period 1980 to 2003, Babatunde (2011) attempted to estimate empirically the linkage between infrastructural development, trade openness, foreign direct investment and economic growth in Sub-Saharan Africa. The conclusion of the author showed that trade openness and GDP per capita growth in Sub-Saharan Africa were important drivers of FDI inflows. In addition, when trade openness was interacted with infrastructure, there was a slight increase FDI inflow. This is an indication of positive impact of trade openness and infrastructural development as well as economic growth, measured by per capita GDP growth is important in terms of FDI attraction in Sub-Sahara African countries.

Janicki and Wunnava (2004) critically studied the bilateral foreign direct investments between members of the European Union and central and east European candidate. They argued that size of the host economies, risks and uncertainties in host economies, costs of labor in host countries and trade openness are among the factors driving FDI inflows. This implies that countries especially developing countries could boost FDI inflows into their economies if they improve upon those variables. This will increase the attractiveness of potential foreign investors and donor countries to want to undertake FDI in these economies.

Also, Osei (2014) investigated the determinants of UK foreign direct investment in the Ghanaian economy using a mixed research methodology. A total of 286 UK companies operating in Ghana were selected during the survey on the basis of convenience sampling method and analysis done using SPSS. He argued that the selected UK companies are much stronger in terms of brands, products, management and marketing know-how. This clearly means that Ghana can do well in terms of retaining and attracting more direct investment from the UK if the country is able to improve infrastructure, increase market size, and above all maintain



political stability.

## METHODOLOGY

### A. Theoretical Framework

#### 1) Hecksher-Ohlin Model

FDI inflows into a country are generally explained by the Hecksher-Ohlin theory. According to this theory, whereas resource availability influence resource-seeking FDI, it deters the non-resource seeking FDI in an economy. According the theory, countries are endowed with same amount of capital and labor – resources. There are with more capital resources and others with more labor endowment than capital. In this case, countries which are more capital resources endowed, with scarce labor, tend to produce and export capital-intensive products whilst they import more products which are rather labor-intensive. On the basis of the work by Eli Filip Heckscher (1879–1952), Bertil Ohlin (1899–1979) developed this theory.

In countries that have relatively more capital than labor, each labor tends to access to capital-labor-ratio which affords the labor high amounts of equipment and machinery for work. Furthermore, in terms of wage rate, these capital-intensive countries have high wage rates of due to scarcity. As such it will be costly to produce labor-intensive goods in labor-scarce countries. It becomes obvious that capital intensive products, produced in countries with abundant capital resources, are usually less expensive. The theory then suggests that countries which have more capital resources should produce capital intensive goods which will be inexpensive, export them and rather import goods that require more labor from labor abundant countries.

The fundamental of the Heckscher-Ohlin theory, is the rate of capital-worker but not only the amount of capital resources. Comparing India to Luxemburg for instance, Luxemburg although has lesser capital stock than India, yet it has greater capital-per-worker ratio than India, and so it exports capital-intensive goods to India. Foreign direct investment is therefore undertaken on the premise of this theory. Countries with less capital therefore allow FDI into capital intensive sectors of the economy and vice versa.

### B. Model Specification

Empirically, Vijayakumar et al. (2010), Asiedu (2006), Dunning (2000 &1993) adopted a widely used multiple regression analysis to study the determining factors that determine FDI in Ghana. The existing regression model in most literature has the following general form:

$$y_i = \beta_0 + \beta X_i + \varepsilon_i \dots \dots \dots (1)$$

Where  $y_i$  represents the response variable; “ $i$ ” captures the time dimension of their analysis.  $\beta_0$  is the constant term and  $\beta$  represents the coefficients of the predictors;  $X_i$  is the vector of regressors for Ghana at time “ $t$ ” and “ $\varepsilon_i$ ” is the error term assumed to be identical and independently distributed (i.i.d). In the study of Asiamah et al. (2019), FDI was a function of inflation, interest rate, exchange rate, gross domestic product, electricity production and

To empirically examine the role of natural resource endowments and trade openness on FDI inflows, the study adapted a framework presented by Cantah et al. (2013) and Abebreseh et al. (2017):

$$FDI_t = \alpha_0 + \theta_1 NR_t + \theta_2 OPEN_t + \beta_1 GDP_t + \beta_2 INFL_t + \beta_3 EX_t + \varepsilon_t \quad (2)$$

Where  $FDI_t$  is inflows of foreign direct investment at time  $t$ ,  $NR_t$  denotes natural resources,  $OPEN_t$  represents trade openness,  $GDP_t$  is gross domestic product,  $INFL_t$  denotes inflation rate,  $EX_t$  represents

exchange rate and  $\alpha_0$  and  $\epsilon_t$  are the intercept term and error term respectively.

### **C. Data Source and Description**

#### **1) Dependent variable**

##### **Foreign direct investment (FDI)**

According to Abebreseh et al. (2017), foreign direct investment can be defined as the source of acquisition of managerial control by a business entity of a foreign country over a business entity in the domestic country. Owusu (2019) defined foreign direct investment as an investment used to acquire controlling interest of at least 10% of voting rights in a business operating in a country outside of the investor's country. This study measured FDI as the net inflows of FDI as a percentage of Ghana's GDP. This is consistent with most empirical studies on the subject matter (Owusu, 2019; Poelhekke & Ploeg, 2010 and Kandiero & Chitiga, 2006), who also measured FDI inflows as FDI net inflows as a percentage of GDP. Net FDI inflow was sourced from the World Bank's World Development Indicator database.

#### **2) Explanatory variables**

##### **Natural resources**

The study employed the total natural resources as a percentage of GDP as a measure of natural resource availability in the country. The expected sign of natural resources is indeterminate and was sourced from World Bank's World Development Indicator database.

##### **Trade openness**

Trade openness can be defined as a summation of exports plus imports as a ratio of GDP. Abebreseh et al. (2017) adds that trade openness of a country shows the extent to which the country's regulatory framework allows for business investment by foreign nationals. The study measured trade openness as total exports plus imports divided by GDP. It is expected to pose a positive sign and was sourced from the World Bank's World Development Indicator database.

##### **Inflation rate**

It is defined as the persistent increase in the general price level of goods and services in an economy. High prices may not necessarily imply inflation if they remain constant without any appreciable change overtime. Thus, for inflation to occur there must be a continuous increase in the general price level of goods and services. In the broadest understanding, higher inflation can serve as an indication of macroeconomic instability and as a result, discourage FDI inflows. Its expected coefficient is negative and equally sourced from World Bank's World Development Indicator database.

##### **Exchange rate**

It is the price of one currency in relation to another over a period of time. Generally, an increase in exchange rate (i.e. depreciation of a currency) can lead to an increase in inflation due to high demand for imported goods and services in the domestic economy. On the contrary, Djokoto (2012) observed that exchange rate depreciation can make the currency of host countries much cheaper for foreign investors to engage in FDI since. Thus, the expected coefficient of exchange rate is positive and the variable was also sourced from World Bank's World Development Indicator database.

## D. Estimation Technique

Considering the fact that all the variables included in the study are yearly data, a time series analysis is determined to be an appropriate estimation strategy. Practically, every time series analysis is preceded by the unit root test to determine stationarity and avoid the potential of running spurious regressions, estimating results that are invalid which cannot be used for forecasting. Among the Augmented Dickey-Fuller (ADF) and Philip Peron’s (PP) tests, the ADF was adopted to determine the extent of stationarity whether or not the variables evolve around the mean.

The ADF tests stationarity with the null hypothesis of unit root in the variable. Based on the result of the test, a rejection of the null hypothesis will imply that the variable is stationary at levels. If the result does not present enough evidence to reject the null hypothesis, then the variable is described to be non-stationary at levels. Then the variable needs to be differenced before it is tested again for stationarity with the differenced variable. This study tested for stationarity for all levels and found the variables non-stationary at levels and then differenced each variable to perform another ADF test. The variables were then identified to be difference stationary.

Thereafter, the Johansen Cointegration test was undertaken to determine the presence of long-run relationship among the series. A long association among variables imply that a shock in the short run can cause two or more variables to drift away from each other, but will converge in the long-run, all other things being equal. Finally, the Vector Auto-regressive (VAR) model is estimated to identify determinants of FDI in the short-run in Ghana, whilst the Vector Error Correction (VECM) was followed up to determine the factor of FDI in the long-run in Ghana.

## DATA ANALYSIS

### A. Descriptive Statistics

The table 4.1 provided a summary of the descriptive statistics of the variables used in the study over the period 1980 – 2017. The summary included the mean, the standard deviation, minimum and maximum values of all the research variables selected and used in the model.

Table 4.1: Summary statistics of the variables

	Obs.	Mean	Std. dev.	Min.	Max.
FDI	38	2.112	1.624	-3.09	2.253
NATRES	38	2.247	0.382	1.456	2.966
OPENNESS	38	3.966	0.689	1.844	4.754
GDP	38	1.633	0.370	0.779	2.642
INFL	38	3.059	0.666	1.964	4.811
EX	38	-2.01	2.816	-8.20	1.470
Source: Author’s computation					

As shown in table 4.1, the mean inflows of FDI as a share of GDP is approximately 2.11% over the study period (1980 – 2017). This indicates the average inflows of FDI into the country and it is used in making future investment decisions. This is because potential investors may make references to previous FDI inflows into a particular country to guide their investments decisions. The government of the host country can also take investment decisions in terms of incentives to attract FDI inflows based on previous inflows. It



has a standard deviation of 1.62%. The maximum (minimum) inflows over the study period is about 2.25% (-3.09%). The average trade openness measured as export plus import as a share of *GDP* is 3.97% with a standard deviation of 0.69%.

This seems to suggest that trade openness is not so volatile over the study period since its standard deviation is less than the mean value. Its maximum and minimum values are 4.75% and 1.84% respectively. The mean of natural resources is approximately 2.24%, implying an average total natural resource rent as a percentage of *GDP* over the study period. The standard deviation is 0.382% and far less than the average value, suggesting less volatility in natural resources. Its maximum and minimum values are 4.75% and 1.84% respectively.

**B. Results of Unit Root Test**

The study first tested for the presence of unit root using Augmented Dickey-Fuller (*ADF*) test. The test results are depicted in table 4.2. The results revealed that all research variables are non-stationary in their levels form (i.e. has unit root), but obtained stationarity after first-differenced. This implies that the variables are integrated of order one, *I* (1) and thus, Johansen approach to cointegration can produce appropriate estimates as argued by Sargan and Engle-Granger (1984).

Table 4.2: Results of Unit Root Test

Variable	<i>ADF</i> Model	<i>ADF P-Values</i>	<i>ADF P-values</i> in 1 <sup>st</sup> difference	Order of Integration
ln <i>FDI</i>	Trend	0.795	0.000	I(1)**
ln <i>NATRES</i>	Trend	0.514	0.005	I(1)**
ln <i>OPENNESS</i>	Trend	0.087	0.000	I(1)**
ln <i>GDP</i>	Trend	0.130	0.001	I(1)**
ln <i>INFL</i>	Trend	0.211	0.000	I(1)**
ln <i>EX</i>	Trend	0.124	0.000	I(1)**

Source: Author’s construct

**C. Correlation Matrix**

The table 4.3 provides the correlation matrix for all the research variables used in the study to clearly illustrate the linear associations that exist between the variables.

Table 4.3: Correlation matrix for variables

	(1)	(2)	(3)	(4)	(5)	(6)
(1) <i>FDI</i>	1					
(2) <i>NATRES</i>	0.8	1				
(3) <i>OPENNESS</i>	0.8	0.71	1			
(4) <i>GDP</i>	0.1	0.21	-0.02	1		
(5) <i>INFL</i>	-0.5	-0.29	-0.47	-0.1	1	
(6) <i>EX</i>	0.8	0.82	0.84	0.1	-0.6	1

Source: Author’s construct

The linear association between *FDI* inflows and trade openness is positive over the study period as clearly

shown in table 4.3. That is, as the country become more open to trade through eliminations of trade barriers, FDI become attractive and thus, increase in the country. This means that trade liberalization is an effective tool to attract and increase inward FDI in Ghana. For example, Babatunde (2011) observed that trade openness is a key driver of FDI inflows in most countries especially in the developing economies. The correlation between FDI inflows and natural resources is also obviously positive, implying a positive relationship between the two variables.

This implies that as endowments in natural resources increase in the country, FDI inflows also increase in Ghana. This could be attributed partly to the resource-seeking behaviors of most investors. The availability of natural resources in a country can allow for easy and cheaper access to raw materials needed for production by certain companies.

Since the variables are integrated of the same order,  $I(1)$ , the study then employed the Johansen approach to cointegration to estimate the long-run relationship among the variables. The results indicate evidence of cointegration among the variables based on the maximum Eigen-value statistic. As shown in table 4.4, the Max. statistics are greater than their respective critical values at 5% level of significance. Thus, the null hypothesis of no cointegration equation or vector is rejected at the 5% level of error. This implies the existence of a long-run relationship or equilibrium among the research variables in the empirical model, using inward FDI as the dependent variable.

Table 4.4: The long-run coefficients of Johansen Cointegration test

Maximum. Rank	Eigen-value	Max. statistic	5% critical value
r= 0*	–	393.201	94.15
r=1*	0.998	179.235	68.52
r=2*	0.948	87.774	47.21
r=3*	0.770	42.230	29.68

Source: Author’s construct

#### D. Results of Vector Error Correction Model (VECM)

After establishing cointegration or long-run relationship among the variables, the study estimated both the long-run and short-run coefficients using *ECM* as shown in the table 4.5 and table 4.6 respectively.

Table 4.5: Normalized Long-run Coefficients of Cointegration Test

Dependent variable: $FDI_t$				
Regressors	Coefficients	Standard errors	z-statistics	P-value
$\ln NATRES_t$	7.583**	0.1487	51.01	0.00
$\ln OPENNESS_t$	2.146**	0.0813	26.39	0.00
$\ln GDP_t$	2.484**	0.0619	40.11	0.00
$\ln INFL_t$	-2.063**	0.0946	-21.81	0.00
$\ln EX_t$	-0.447**	0.0448	-9.97	0.00

Source: Author’s construct

As shown in table 4.5, the coefficient of natural resources is positive and statistically significant at 5% level of error. This implies a long-run positive relationship between FDI inflows and natural resources in Ghana. That is, increase in the stock of natural resources in Ghana, will lead to about a 7.6% increase in FDI

inflows in the long-run, holding all other factors constant. This means that additional natural resources would effectively attract FDI inflows into the Ghanaian economy. This conclusion is supported by recent findings by Anarfo et al. (2017) and Asiedu (2013), who argued that natural resources drive FDI inflows in Ghana and Sub-Saharan Africa respectively. For instance, Ghana is among the largest producers of cocoa in the world and until recently, the country's major sources of revenue have been from cocoa and gold (GIPC, 2016).

The discovery of oil in 2007 had also provided huge investment opportunities in the oil and gas sector. Hence, the positive relationship indicates that Ghana's natural resources attract resource-seeking FDI into the country. Kandiero and Chitiga (2006) argued that among the many determinants of FDI inflows, natural resource availability is also a major driving force of FDI inflows. Also, Abebreseh et al. (2017) argued that natural resource availability has a significant impact on FDI inflows in most developing countries like Ghana.

The coefficient of trade openness is significantly positive, implying a positive relationship between trade openness and FDI inflows in Ghana. As trade openness goes up by one per cent, inflows of FDI increase by about 2.2 per cent in the long-run, *ceteris paribus*. This seems to suggest that trade liberalization provides a conducive atmosphere for FDI inflows in the country. This is because removal of trade barriers can encourage the entry of multinational companies.

This finding is consistent with most empirical findings (Yakubu & Mikhail, 2019 and Janicki & Wunnava, 2006), who argued that countries that are more liberal in their trade approach tend to export more, and that will create an attractive opportunity for foreign firms, especially those that are considered export-driven. Babatunde (2011) observed that trade openness is a key driver of FDI inflows in Sub-Saharan Africa. Interacting trade openness with infrastructure, the author revealed had a much higher significant impact on the FDI inflows in the Sub-Saharan Africa.

The positive coefficient of *GDP* growth (i.e. a proxy for market size) implies a positive relationship between FDI inflows and aggregate demand in the long-run. That is, an increase in market size leads to an increase in the prospect of producers and/or investors since the opportunity to increase revenue has now increase. This is because an increase in market size can raise the demand for goods and services due to an increase in per capita income of citizens (Anarfo et al., 2017). For example, a percentage rise in *GDP* growth will lead to about 2.5 per cent increase in FDI inflows in the long-run. Also, Babatunde (2011) concluded that an increase in *GDP* growth leads to an increase in the attractiveness of FDI inflows in the host countries. In other words, host countries with large market size can attract more FDI inflows compared to those host nations with smaller market size in terms of demand for goods and services.

The inflation and exchange rates are also important determinants of FDI inflows. Their coefficients are both negative and significant, indicating an inverse relationship with FDI inflows into Ghana in the long-run. A percentage increase in the general prices of goods and services will cause FDI inflows to fall by about 2.1 per cent in the long-run. This may be due to the fact that high inflation rate can serve as an indication of macroeconomic instability in the country. This is because during high inflation episodes, high rate of returns will be needed to salvage business operations and thus, discourage investments (Abebreseh et al., 2017). Also, the inflows of FDI will fall by approximately 0.5% in the long-run for a 1% increase in exchange rate (i.e. depreciation of the domestic currency).

This is in line with Tahir and Larimo (2005), who argued that a country can attract FDI inflows by depreciating its currency due to the gains investors will make from the weak currency of the host country. Djokoto (2012) also observed that exchange rate depreciation can make the currency of host countries much cheaper for foreign investors to engage in FDI since foreign (home) country's currency is now relatively

stronger and as a result, can afford more of the domestic goods and services.

The estimated short-run coefficients to capture the dynamic behaviors of the research variables in the short-run is presented in table 4.6 using the error correction model.

Table 4.6: Short-run Coefficients of Error Correction Model Estimations

<b>Dependent variable:</b>				
<b>Regressors</b>	<b>Coefficients</b>	<b>Standard error</b>	<b>Z</b>	<b>P Value</b>
$\Delta \ln FDI_{t-1}$	-0.432**	0.2272	-1.9	0.06
$\Delta \ln NATRES_{t-1}$	2.258**	0.0320	2.19	0.03
$\Delta \ln OPEN_{t-1}$	2.676**	0.1243	2.15	0.03
$\Delta \ln GDP_{t-1}$	-0.004	0.3758	-0.0	0.99
$\Delta \ln INFL_{t-1}$	-0.163	0.3323	-0.5	0.63
$\Delta \ln EX_{t-1}$	-1.52***	0.849	-1.8	0.07
$ECT_{t-1}$	-0.31**	0.1064	-2.9	0.00
Constant	-0.23***	0.1377	-1.7	0.1

Source: Author's construct

The coefficient of natural resources retained its positive sign in the short-run as before in the long-run, suggesting a positive effect of natural resources on FDI inflows in the country. This implies that the discovery of natural resources also attracts FDI inflows into the Ghanaian economy even in the short-run. This conclusion is supported by recent findings by Anarfo et al. (2017) and Asiedu (2013), who argued that natural resources drive FDI inflows in Ghana and Sub-Saharan Africa respectively. The positive relationship between natural resources and FDI inflows in this study confirm the resource-seeking behaviors of foreign nations and investors. Kandiero and Chitiga (2006) argued that among the many determinants of FDI inflows, natural resource availability is also a major driving force of FDI inflows.

Also, Abebreseh et al. (2017) argued that natural resource availability has a significant impact on FDI inflows in most developing countries like Ghana. However, the responsiveness of FDI inflows to changes in natural resource endowments appear to be larger in the long-run (7.6%) than in the short-run (2.3%).

The coefficient of trade openness also maintained its positive sign in the short-run, implying a significant short-run positive impact of trade openness on inward FDI in Ghana. This finding is consistent with most empirical findings (Yakubu & Mikhail, 2019 and Janicki & Wunnava, 2006), who argued that countries that are more liberal in their trade approach tend to export more, and that will create an attractive opportunity for foreign firms, especially those that are considered export-driven. In a similar context, Babatunde (2011) observed that trade openness is a key driver of FDI inflows both in the short-run and long-run in developing countries including Sub-Saharan Africa.

The GDP growth is revealed to have an adverse impact on inward FDI in the short-run, suggesting that the demand for goods and services (market size) may not necessary attract inward FDI in the short-run in Ghana. This finding is contrary to the assertion that an increase in market size can raise the demand for goods and services due to an increase in per capita income of citizens (Anarfo et al., 2017). Also, Babatunde (2011) concluded that an increase in GDP growth leads to an increase in the attractiveness of FDI inflows in the host countries due to high demand for goods and services as income per capita of citizen increase.

The coefficient of inflation rate and exchange rate retained their respective signs in the short-run as before in

the long-run. This indicates that an increase in general prices of goods and services (inflation) will cause FDI inflows to fall by about 0.16 per cent in the short-run. The negative relationship could be attributed to the fact that high inflation rate signal macroeconomic instability and as a result, decrease investor's confidence in the economy. This is because during high inflation episodes, high rate of returns will be needed to salvage business operations and thus, discourage investments (Abebreseh et al., 2017). Also, the inflows of FDI will fall by about 1.52% in the short-run for a 1% increase in exchange rate (i.e. depreciation of the domestic currency).

This is in line with Tahir and Larimo (2005), who argued that a country can attract FDI inflows by depreciating its currency due to the gains investors will make from the weak currency of the host country. Djokoto (2012) also observed that exchange rate depreciation can make the currency of host countries much cheaper for foreign investors to engage in FDI since foreign (home) country's currency is now relatively stronger and as a result, can afford more of the domestic goods and services.

The coefficient of the error correction term (*ECM*) is negative and significant at 5% level of error in accordance with existing literature (see Abebreseh et al., 2017). This means that approximately 31% of the short-run disequilibrium in the previous period following shocks to the series converges back to the long-run equilibrium in the current period.

## CONCLUSION

This study examined the determinants of foreign direct investment in Ghana over the period 1980 – 2017. Based on existing studies on the subject matter, the study identified natural resources and trade openness as key drivers of FDI inflows. The natural resources and trade openness variables were also revealed to have a positive impact, each, on FDI inflows in the short-run using the vector error correction model.

The results of the study indicated that natural resources and trade openness exert significant positive impact on FDI inflows in Ghana. This implies that natural resources and trade openness can enhance and therefore should be protected with all necessary policies to attract and maintain FDI inflows into Ghana. Inflation and exchange rates, which are used as measures of macroeconomic instabilities exert significant negative impact on FDI inflows from the study and so policy interventions should be directed at lowering both rates that will rather encourage the inflow of FDI and trade openness.

There is possible pass-through effect of sustainable rates of inflation and exchange rates through an increase in trade openness that is needed to attract more FDI. This study considered FDI inflows in bulk. This study therefore recommends further studies to consider the behavior of FDI inflows into several sectors of the economy. It will be helpful to identify which sector of the economy receives great amount FDI in order to develop policies and frameworks suitable for that sector. This way, policy makers will identify which sectors receive less FDI as well to receive policy interventions.

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