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AN EMPIRICAL STUDY ON FACTORS INFLUENCING FOREIGN DIRECT INVESTMENT INFLOWS IN SIERRA LEONE

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Abstract

A good number of research have put forward that foreign direct investment can lead to technology transfer, create employment opportunities and promote economic growth in both developed and developing countries. This research is therefore to theoretically and empirically analyze the performance of foreign direct investment in Sierra Leone over the period 1980 – 2015. In doing so, time series data were collected from the world development indicators. The collected data were analyzed using recent econometric techniques; by employing the Johansen's test of co-integration, the long run result reveals that natural resources endowment and the economy openness to trade exert positive and statistically significant relationships with foreign direct investment whereas inflation, market size and political instability(war dummy), exert negative relationships. The data findings analyzed from the short run also show that foreign direct investment is greatly influenced by natural resources endowment followed by economy openness, inflation and political instability respectively. Among the policy recommendations, Policy makers in Sierra Leone should adopt china's strategy towards foreign direct investors especially towards natural resource-seeking foreign investors.

Keywords: Foreign Direct Investment, Unit Roots, Co-integration, Error Correction, Sierra Leone

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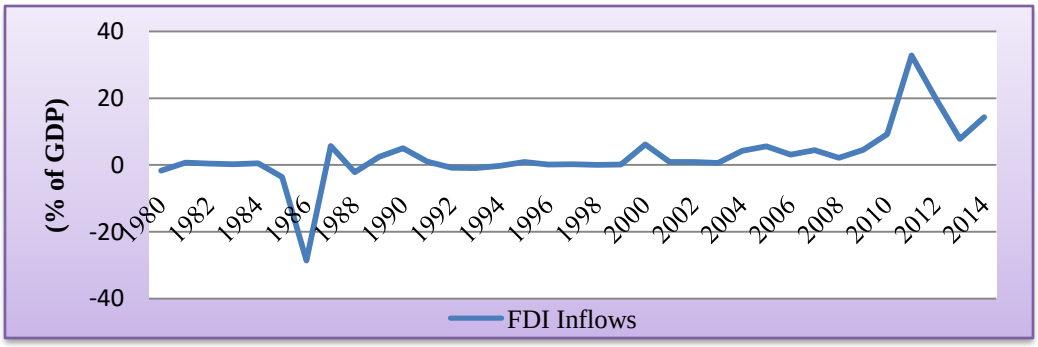
INTRODUCTION

Nowadays, foreign direct investment (FDI) is playing a great role for economic development in both developed and developing countries. The host country will benefit as FDI creates employment opportunities, promotes economic growth, and facilitates technology transfer (UNCTAD 2010, Agrawal and Khan 2011). In addition to these, the foreign direct investment is seen to fill the gap between domestic investments and savings in most developing countries as their income and savings are very low (Odenthal 2001, Mottaleb and Kalirajan 2010). To gain the benefit most developing countries are trying to attract FDI by framing different policies such as trade liberalization and creating an attractive investment environment (UNCTAD 2004). Recent trends show that FDI can be an important and stable source of private capital for developing economies, particularly countries that are able to create a hospitable environment for new foreign investments. The ongoing processes of integration of the world economy and liberalization of the economies in many developing countries have led to a fierce competition for inward FDI in these countries. The controls and restrictions over the entry and operations of foreign firms in these countries are now being replaced by selective policies aimed at FDI inflows, like incentives, both fiscal and in kind. The selective policies not only improve the fundamentals of the economy but they aim at attracting more foreign investments in the country.

However, the global economic slowdown will impact investment flows, making it even more challenging for Sierra Leone to increase FDI inflows in the near future. While this short-term impact is unavoidable, Sierra Leone should continue with its reform agenda. This would enable the country to be better positioned for the period of economic recovery and would also be useful in maintaining current levels of FDI. Even though major legal reforms began in 2000, the limited institutional capacity made it difficult to adequately and effectively sequence and implement the proposed measures (UNCTAD, 2010). Below is an illustration showing foreign direct investment inflows to Sierra Leone, the figure in percentage of gross domestic product (GDP). This graph actually depicts the low level and fluctuation of FDI inflows to Sierra Leone. It is because of this reason that researcher want to conduct a research that would explore the potential influential factors of FDI in the country and bring them to the limelight.

Figure 1. FDI inflow to Sierra Leone; Source WDI (2015)



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The inflow of foreign direct investment to Sierra Leone is very low compared to other part of the world. The question is why it is very low and what are the factors that influence FDI inflows to Sierra Leone? By doing time series data analysis, it is important to find out which influential factors are the most significant.The broader objective of the research is therefore to theoretically and empirically analyze the performance of foreign direct investment in Sierra Leone over the period 1980 – 2015. More specifically the study will seek:

1. To analyze the trend of Foreign Direct Investment flows to Sierra Leone
2. To examine the relationship between FDI and economic variables in Sierra Leone
3. Recommend some policies that will help to attract and retain Foreign Direct Investment in Sierra Leone.

Research Hypotheses

The hypothetical framework entails a collection of the independent variables in explaining their interplay with the dependent variable. The framework has however accounted for inflation, market size, natural resources endowment, political instability and economy openness and how they interact with foreign direct investment.

Hypothesis 1: Inflation and foreign direct investment: In The framework, it is assumed that a negative relationship exists between inflation and foreign direct investment. When the rate of inflation increases, foreign direct investment will decrease. It is hypothesized that the change in inflation will cause a change in FDI inflows

H_1: $\Delta FDI_{t+i} = -\lambda_1 \Delta INF_t + \varepsilon_t$

Where, FDI denotes foreign direct investment, INF, denotes inflation, λ_1 denotes the slope, i denote the time for FDI to react to the change and ε_t denotes an error correction factor. All other factors that can influence FDI are assumed to be included in this error correction factor. Therefore it can be hypothesized that this is a negative relationship i.e. λ is negative.

Hypothesis 2: Market size and foreign direct investment: In The framework, it is assumed that a positive relationship exists between market size and foreign direct investment. It is therefore hypothesized that the change in market size will cause a change in FDI

H_2: $\Delta FDI_{t+i} = \lambda_1 \Delta MS_t + \varepsilon_t$

MS, denotes market size, λ_1 denotes the slope. Therefore it can be hypothesized that this is a positive relationship i.e. λ is positive.

Hypothesis 3: Natural resources endowment and Foreign direct investment: In the framework, it is assumed that a positive relationship exists between natural resources availability and foreign direct investment. It is therefore hypothesized that the change in natural resources availability will cause a change in FDI

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H_3: $\Delta FDI_{t+i} = \lambda_1 \Delta NRA_t + \varepsilon_t$

NRA, denotes natural resources endowment, λ_1 denotes the slope. Therefore it can be hypothesized that this is a positive relationship i.e. λ is positive.

Hypothesis 4: political instability and Foreign direct investment: In the framework, it is assumed that a negative relationship exists between political instability and foreign direct investment. It is therefore hypothesized that the change in political instability will cause a change in FDI

H_4: $\Delta FDI_{t+i} = -\lambda_1 \Delta PI_t + \varepsilon_t$

PI, denotes political instability, λ_1 denotes the slope. Therefore it can be hypothesized that this is a negative relationship i.e. λ is positive.

Hypothesis 5: Economy openness and Foreign direct investment: In the framework, it is assumed that a positive relationship exists between economy openness and foreign direct investment. It is therefore hypothesized that the change in economy openness will cause a change in FDI

H_3: $\Delta FDI_{t+i} = \lambda_1 \Delta OPEN_t + \varepsilon_t$

OPEN, denotes openness of the economy to international trade, λ_1 denotes the slope. Therefore it can be hypothesized that this is a positive relationship i.e. λ is positive.

The paper is divided into five sections following the introduction, that is section one, the rest of the paper is structured as follows: Section two provides a review of the theoretical and empirical literatures that focus on factors influencing Foreign Direct Investment in developing countries, while section three presents the methodology that focuses on the factors that influence FDI in Sierra Leone and examines their statistical properties, including parameter constancy. Section four provides analysis of the empirical results and discussion and section five offers conclusions and policy suggestions.

LITERATURE REVIEW

Theoretical Literature

Hymer FDI Theory

This theory was put forward by Stephen Herbert Hymer (1976). In his theory he explained by comparing and contrasting the differences and similarities between foreign direct investment and portfolio investment. According to him, the basis of the portfolio investment theory is the interest rate. Each investor will maximize his profits by investing where returns are the highest, under the assumption that there are no barriers in capital movement, no risks, uncertainties. Capital will move from countries where the interest rate is low to countries where the interest rate is high until interest rates are equal everywhere. Nevertheless, Hymer argued that theory of portfolio investment doesn't give details of control (Hymer 1976). In portfolio investment,

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investors who invest in foreign countries don't have a right to control enterprises in which they invest their capital.

According to Hymer there are two reasons why investors seek control i.e multinational companies control foreign enterprise to make sure their investment is protected and to get rid of competition in foreign countries. Hymer further stated that multinational companies are motivated to invest in foreign countries because of certain advantages that they get through control of the enterprises. He also explained the advantage of the foreign firms over host firms. These advantages are getting factors of production at a lower cost, capital and patent, know how etc. Where market imperfection exists (barrier of market entry, high transaction cost) multinational companies prefer to engage in direct investments.

Product life cycle theory

The product life cycle theory was developed by Reymond Vernon (1966). This theory has contributed significantly in the analysis of foreign direct investment. Vernon analyzed four production stages commencing with invention of new product. Vernon's product life cycle theory gives insight why and how export is replaced by foreign direct investment. He based his work on US enterprises that were producing for domestic market and later on for international market. Vernon tried to comprehend the shift of international trade and international investment. At the first stage, the enterprises are more focused on the domestic market. And then in the next stage, when the product matures, enterprises start exporting to developed countries. At this stage the innovating enterprises enjoys the profit of the sales of newly invented product until rival enterprises copy and produce the same product. Later when the demand for the product increases the product will be standardized.

At advanced stage, when the product is standardized, the enterprises would think less developed countries could be good production place. Economies of scale, transportation and labor cost are the determinant factor for location choice. Since less developed countries are rich in labor, the products which will be produced are labour intensive products. This is made mentioned of in Hecksher-Ohlin theorem. Though, according to Vernon the low cost location hypothesis is not the only reason leading entrepreneurs to decide and invest in other countries. He further argues that any threat to the enterprises can be seen as motivating force for the action.

Generally, a government which imports the product structure import substitution policy in order to increase employment and enhance growth. This could be a threat for the exporting enterprises. So the entrepreneurs prefer to go and invest in this country. Vernon put the threat as ''galvanizing force'' for international investment. He stated that ''an international investment

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by the exporter therefore becomes a prudent means of forestalling the loss of a market. In this case, the yield on the investment is seen largely as the avoidance of a loss of income to the system''. In the fourth stage, the home countries will be an importer since the production decreases. Nevertheless, this theory is criticized as some enterprises skip export in the process and go directly to invest.

Eclectic FDI theory

The British economist John Dunning is one of the famous scholars on the issue of foreign direct investment. He developed a framework in which he described three firms' advantages of foreign direct investment, these are: Ownership advantages, Location-specific advantages and Internalization advantages. Ownership advantages comprise patents, trade-marks and goodwill. This will help the firms to compete easily in the host country. It would have been difficult to get this advantage in home country. Location-specific advantages contain all things which make the firm more profitable to produce and sell in the host country, instead of producing at home and export to other country. In view of the fact that the firms will be planted in host countries it saves the trouble of trade barriers like tariffs, quotas, transport cost. Accessing the market will be easy. Internalization advantage refers to the advantage of multinational enterprises (MNEs) caused by ownership advantage inside the host country.

Dunning and Lundan (2008) disaggregated multinational enterprises activity in to Market seekers, Natural resource seekers, Efficiency seekers and Strategic asset or capability seekers to give a clear reason behind foreign production.

1 Market Seekers: multinational enterprises (MNEs) engaged in a market seeking investment in order to get access to large market and hoping that the market grows in the future. This includes accessing domestic market and neighboring countries' market. The good things of market seeking FDI are reduced production and transaction costs, easily adopt local taste and preferences, they can be familiarized with the local language, business culture, legal requirement and market procedures. And there will be no trade barriers such as tariffs.

2 Natural resource seekers: these are multinational enterprises (MNEs) which are searching for natural recourses at a lesser cost compared to their country (if they have the resources) to take the advantage of making more profit out of it. The main motive of these enterprises is getting high quality resources at a lesser (lower) cost to be more profitable and competitive in markets where they offer their products for sale. Resource seeking FDI is also disaggregated into three. Foremost are multinational enterprises (MNEs) which are engaged in primary production and manufacturing that look for raw materials and physical resources. They are mainly motivated by plentiful and low cost resources.

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The major resources that most multinational enterprises are seeking are minerals, fuels, agricultural products and metals. Some resources are 'location bound', which can be found only in host countries. This is location-specific advantage that MNEs enjoys by investing in host countries which are rich in resources. The second resource seeking FDI are those enterprises which are searching for cheap unskilled or semiskilled labor. This is known as ''labor seeking investment''. Normally when the labor cost of the home country increase MNEs may shift to other countries where there are low labor costs. The third types of resource seeking FDI are those multinational enterprises that want to gain access to technology, organizational and managerial skills, information and marketing know-how.

3 Efficiency Seeker: These are the MNE's which invest in different countries to take the advantage of both resource endowment and economies of scale. For e.g. to invest in developing countries to produce labor intensive goods and to invest in developed countries to produce capital intensive goods ''the intension of efficiency seeker MNE is to take the advantage of factor endowments, cultures, institutional arrangements, demand patterns, economic policies and market structures through the focusing of production in a few number of places to supply numerous markets'' (Dunning and Lundan, 2008)

4 The strategic asset seeker: The major aspire of strategic asset seeker multinational enterprises (MNEs) are to sustain and reinforce their competitiveness to dominate global market.

EMPIRICAL LITERATURE

The study of Pravin Jadhav (2012) look at the role of economic, political and institutional factors in attracting foreign direct investment (FDI) in BRICS economy and the relative extent of these factors in attracting FDI. They had used ten years panel data (2000-2009) for them to study the major determinants of FDI in BRICS. In the analysis panel unit-root test and multiple regressions were used. Their study took into account, natural resources Trade openness, Market Size as economic determinants and Inflation Rate, Political stability, Effectiveness of Government, Regulatory Quality, Corruption control, accountability, Rule of Law as prospective institutional and political determinants of FDI. His findings indicated that institutional and political factors are less significant than economic factors in BRICS economies. The results also indicated that market size measured by real GDP is a major determinates of FDI. Analysis of empirical data on his study also showed that openness to trade, natural resource availability, accountability and rule of law are statistically significant. The coefficients of, openness to trade and market size are positive which implied that they have positive outcome on inward FDI.

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Natural resource availability has negative effect on total inward FDI; this result proved that FDI is not aggravated by resource-seeking purpose in these economies.

Steve Loris Gui-Diby (2014) examined the impact of foreign direct investments on economic growth in Africa and presented estimations based on panel data of 50 African countries during the period 1980 to 2009, and the system generalized method of moment (SYS-GMM) estimators were used. He founds that FDI inflows had a significant impact on economic growth in Africa in the period of study. He also found that while the low level of human resources did not limit the impact of FDI, and that the impact of FDI on economic growth was negative during the period from 1980 to 1994 and positive during the period from 1995 to 2009. His study suggested that the negative impact of FDI for the period1980 to 1994 may be linked to the implementation in many African countries of structural adjustment programs, including privatization, the orientation of FDI in resource-seeking activities, weak economic links between multinational enterprises and local firms, and the low capacity of local enterprises to mobilize adequate resources to launch production. The positive impact for the period 1995 to 2009 was found to be partially explained by the improvement of the business environment and the contribution of resource-based industries to economic growth due to the export of commodities. He concluded by recommending Policy makers to design policies aimed at attracting foreign investors. He further stated while human capital has not been found to be a contingency to the impact of FDI on economic growth, maximizing the benefits from FDI would still require governments to improve the availability of a well trained workforce, and to improve the business environment.

Chor Foon Tang, Chee Yin Yip, Ilhan Ozturk (2014) attempted to analyze the determinants of inward FDI in the electrical and electronic industry in Malaysia using bounds test approach for the 1980–2008 period. It was found that GDP, exchange rate, corporate income tax, financial development, macroeconomic insecurity and social insecurity factors significantly affect inward FDI in electric and electronic sector in Malaysia. Empirical results indicated that GDP, exchange rate, macroeconomic insecurity and financial development are positively related to inward FDI in electric and electronic sector in the long run. However, social insecurity and income tax were found to have a negative impact on inward FDI in electric and electronic sector. Furthermore, the Granger causality results also indicated that all explanatory variables Granger-cause FDI in the long-run, but in the short-run only macroeconomic and social insecurities Granger-cause FDI. The impact of social insecurity was found to be greater than macroeconomic uncertainty. Thus, foreigners that invest in electric and electronic sector appear to be more worried about the level of social security when deciding their investment destination. Their findings suggested that those in authority should provide a stable economic

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growth, reduce the exchange rate volatility, increase the competence of the financial institutions, make use of tax incentives and reduce social insecurity to attract more FDI and foreign investors to the country.

Obida Gobna Wafure and Abu, Nurudeen (2010) investigated the determinants of foreign direct investment in Nigeria. The error correction method was used to investigate the relationship between foreign direct investment and its determinants. The results revealed that deregulation, political instability, market size and exchange rate depreciation are the main determinants of foreign direct investment. They recommend the following policies among others: expansion of the country's GDP via production incentives; further deregulation of the economy through privatization and reduction of government interference in economic activities; strengthening of the political institutions to sustain the then ongoing democratic process; gradual depreciation of the exchange rate; and increased investment in the development of the nation's infrastructure.

Oba, Unoiza Oregwu and B. Chima Onuoha (2013) looked at some factors that influence the foreign direct investment in Nigeria, and their impact on the economy. The data used in their study covered a period of ten years (2001 -2010) and considered variables such as real GDP, inflationary levels, openness of trade, electricity consumption, transport and communication. Econometric model and regression analysis were employed to analyze the data. The results based on the value of high F-statistics and high co-efficient of determination (R2) which revealed that the model was well specified and that the explanatory variables were sufficient to explain the inflow of FDI to Nigeria. The negative impact of variables such as inflation, real GDP and electricity consumption called for policy suggestions. Based on their findings, the following recommendations were made, among others: that electricity supply should improve greatly; fiscal regulation should be followed strictly; should continue the war against corruption and transparency; government should straighten the institutional and regulatory systems in the country; and all the efforts should work towards reducing costs of establishing business in the country, which are among the highest in the world.

Elizabeth Asiedu (2002) in her paper explored whether factors that affect Foreign Direct Investment (FDI) in developing countries affect countries in Sub-Sarahan Africa differently. She selected 71 countries for this study of which 32 were Sub-Saharan African countries and 39 were non Sub-Saharan African countries. She used Cross sectional data for the period 1988 to 1997. OLS method was used to analyze the data. The variable Foreign Direct Investment was used as dependent variable and return on investment, infrastructure development, openness of the host country, political risk, financial depth, size of government, inflation rate, and GDP growth rate were used as independent variables. The study result discovered that openness to

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trade has positive impact on both non-Sub-Saharan and Sub-Saharan Africa. Though, Sub-Saharan Africa received less FDI than non Sub- Saharan African. She argued that this was so because Sub-Saharan Africa countries are less open than other regions. While the development of infrastructure has no significant effect on the FDI inflow in sub-Saharan Africa, it has a positive impact on non sub-Saharan Africa. She concluded by suggesting that policies that has been successful in other regions cannot be equally successful in Africa.

The theories above underscore results that could offer investors and policy makers worldwide a persuasive platform for ever-increasing and improving on their investment reforms and stimulate their economic growth through FDI activities. This is because; they could provide a rational for investors and policy makers if they are sufficiently analyzed and the assumptions behind them are sufficiently implemented in line with the local business and investment environment while at the same time enhancing on their national productive pool of resources especially in developing countries.

Finally, it could be concluded that a friendly FDI regime still remains essential and cornerstones to attracting investors especially for most developing countries like Sierra Leone. This is because contemporary investors are seeking those regions and locations that are viable and prepared to enforce suitable competition laws, transparent rules for private and public businesses with sustainable incentive frameworks and productive pool of resources to fuel their economic growth.

RESEARCH METHODOLOGY

The Data

The study envisages the collection of consistent and reliable secondary data for the period 1980-2015 from World Development Indicators (WDI) database on the World Bank. Data were collected on variables that were believed to have the potentials in influencing foreign direct investment in Sierra Leone which was based largely on the characteristics of the economy. The research will be a practical mean, not only for academic purpose. Its findings, if implemented will cause for sure a boost of foreign direct investment in Sierra Leone.

Research design

The ordinary least square (OLS) estimation is used. The choice of this model is based on the fact that OLS is best suited for testing specific hypothesis about the nature of economic relationship (Guajarati 2004). The time series properties of the variables are examined in the process. The methodology involves estimating an econometric model where the factors that influence foreign direct investment in Sierra Leone are investigated. In this study we employ a

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multiple linear regression model to estimate the relationship between FDI and its influential factors.

Following FDI theories such as the one put forward by Dunning and Lundan (2008), it is clearly vision that Natural resource is an important factor that influences foreign direct investment. Our empirical model specification for estimating the factors that influence FDI specifies natural resource availability and other key determinants of FDI as commonly suggested in the FDI literature. Thus, in deriving our empirical model for estimating this relationship for Sierra Leone, we posit that:

$FDI = F(N, Q)$ (1)

Where, FDI denotes foreign direct investment inflows and N and Q are vectors of Natural resource and other FDI influential variables respectively as found in the empirical literature, and which are crucial for attracting foreign investors. Their model in particular emphasizes in general the importance of market size and policy for promoting FDI inflows. On this basis, the above theoretical model motivates the general empirical FDI model for the time series regression, which is specified as follows:

$FDI_t = \alpha + \beta N_t + \gamma Q_t + \varepsilon_t$ (2)

Where, FDI is foreign direct investment inflows, and N and Q are as previously defined. $\boldsymbol{\varepsilon_t}$ is the error term, while subscript t, denotes time.

Critical influential factors of FDI of developing countries like Sierra Leone comprise trade openness and market size.

Thus $Q = F(Open, MS)$ (3)

Where open denotes openness of trade to the rest of the world which is calculated as import plus export scaled up by GDP and MS denotes market size which is a proxy of GDP. This assumes that open, which constitutes import and export and market size, are critical sources of FDI in addition to natural resource endowment that can attract foreign investors.

As found in the literatures, other FDI determinants considered as control variables are:

$R = F(Policy, PI)$ (4)

Where 'policy' denotes macroeconomic policy which is proxies of the rate of inflation (INF), and PI denotes political instability (the period of war, where 1991-2001=1 and 0 otherwise). Hence, substituting equation (3) and (4) in (2), provides our detailed empirical FDI model as:

$FDI_t = \alpha + \beta(NRA, open, MS)_t + \gamma(INF, PI)_t + \varepsilon_t$ (5)

Simplifying and rearranging yields:

$FDI_t = \beta_0 + \beta_1 INF_t + \beta_2 MS_t + \beta_3 NRA_t + \beta_4 PI_t + \beta_5 Open_t + \varepsilon_t$ (6)

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Natural logarithm has been taken for each variable to estimate the elasticity (degree of responsiveness) of FDI with respect to inflation, market size, natural resource endowment, political instability and economy openness:

$$\ln FDI_t = \beta_0 + \beta_1 \ln INF_t + \beta_2 \ln MS_t + \beta_3 \ln NRA_t + \beta_4 \ln PI_t + \beta_5 \ln Open_t + \varepsilon_t \quad (7)$$

Where, β_0 is a Constant and β_1- β_5 are coefficients to be estimated. The A priori expectation signs of the coefficients are that β_2, β_3, β_5, $\alpha 5$, > 0 and β_1, and β_4< 0 and $\boldsymbol{\varepsilon_t}$ is the stochastic error term. The E-views 7.2 software is used to estimate the model.

Estimation Procedure

Unit Root Tests

In compliance with recent development in macroeconomic time series modeling, unit root tests of the variables in the model were executed to determine their time series properties. The order of integration of each series was established using the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests. The ADF test equation is given as:

$$\Delta x_t = \alpha + \delta x_{t-1} + \ldots \sum_{i=1}^{k} \delta_i \Delta x_{t-1} + \ldots \delta_m \Delta x_{t-m} + \varepsilon_t \quad (8)$$

$$\Delta x_t = \alpha + \beta_t + \delta x_{t-1} + \ldots \sum_{i=1}^{k} \delta_i \Delta x_{t-1} + \ldots \delta_m \Delta x_{t-m} + \varepsilon_t \quad (9)$$

Equation (8) includes an intercept and no trend, while equation (9) includes intercept and time trend α_0 is a constant, δ is a coefficient of autoregressive process, Δ is the difference operator, t is a time trend, x_t is the variable under consideration, k is the number of lags and ε_t is the stochastic error term. The lagged differences of the variables are augmented to the test model in order to mitigate autocorrelation problems in the disturbance term. The Akaike Information Criterion (AIC) and Schwarz Bayesian Criterion (SBC) are used to determine the optimal lag length k in the above equations.

The Phillip-Perron test equation is similar to the Augmented Dickey-Fuller test but the lag m, is omitted to adjust for the standard error in view to correct for heteroskedasticity and autocorrelation. Consequently The PP test equation is specified as:

$$\Delta x_t = \alpha + \delta x_{t-1} + \ldots \sum \delta_i \Delta x_{t-1} + \ldots \delta_m \Delta x_{t-m} + \varepsilon_t \quad (10)$$

The tests rely on rejecting the null hypothesis of a unit root (the series are non-stationary) in favor of the alternative hypothesis of no unit root (the series are stationary). If the absolute values of the ADF and PP test statistics are greater than the critical values, we reject the null hypothesis of non-stationary and conclude that the series is stationary. On the other hand, if the absolute values of the ADF and PP statistics are less than the critical values, we fail to reject the null hypothesis and conclude that the series is non-stationary.

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Cointegration Tests

After validating that the series are integrated of order one denoted as I(1), it is now feasible to check for cointegration between foreign direct investment and its influential factors via the Johansen's multivariate framework. The Johansen cointegration test is carried out in view of a vector autoregressive model (VAR) of the form:

$\Phi(Z)X_t = \Psi_t$ (11)

Where, $X_t = [Q_t, R_t]'$, $\Phi(Z)$ denotes the long run multiplier matrix, Φ denotes coefficients of the short run dynamics and Z denotes a lag operator. When two or more series are non-stationary, it is imperative to examine whether their linear combination is stationary. This observable fact is known as cointegration test. The presence of cointegration implies that there exists a long run relationship among the variables in the model. The idea behind the presence of cointegration is that even though foreign direct investment and its influential variables may develop over time, a stable cointegration equilibrium relationship must exist between them. Particularly FDI inflows will be sustainable if the variables do not drift too far apart over the long run. In other words, the variables can deviate from each other over the short run but policy and/or market forces restore them back over the long run.

In determining the number of co integrating vectors in the regression model, we utilize the Johansen likelihood ratio (LR) test procedure. This technique enables us to test for the presence of non-unique cointegration relationships. The use of two statistical tests i.e. the trace test and the maximum eigen value test statistics were suggested. The trace test ($\boldsymbol{\lambda}_{trace}$) is defined as:

$$\lambda_{\text{trace}}(r) = -T\sum_{j=i+1}^{n} \ln(1-\hat{\lambda}_i) \quad (12)$$

Whereas the maximum eigen value tests ($\boldsymbol{\lambda}_{max}$) is defined as:

$$\lambda_{\max}(r, r+1) = -T\ln\left(1-\hat{\lambda}_{r+1}\right) \quad (13)$$

Where, T = number of usable observations

$\boldsymbol{\lambda}_i$ = Eigen values or estimated characteristics root

$\boldsymbol{\lambda}_{trace}$ test the null hypothesis

r = 0 against the alternative of r > 0

$\boldsymbol{\lambda}_{max}$ test the null hypothesis

r = 0 against the alternative of r =1

Put in another way, the trace statistics test the null hypothesis of (r) co-integrating relation against the alternative of k co-integrating equation. On the other hand, the maximum Eigen value statistics test the null hypothesis of (r) co-integrating vector against the alternative of (r

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+1) co-integrating relation. If the null hypothesis of no co-integrating vector is rejected, it indicates that there is a long run relationship among the variables in the model.

Error Correction Model (ECM)

The vector error correction model (VECM) is a restrictive vector auto regressive (VAR) that can be use to estimate non-stationary time series that were identified to be co-integrated. It is designed in such a way that it restricts the long-run behavior of the independent variables to meet to their co-integrating relationship and at the same time allow for short-run correction.

Engel and Granger (1987) have shown that any co integrated series has an error correction representation that covers both long run equilibrium and short run adjustment process. This underscores an important correspondence existing between co-integration and error correction mechanism. Error correction mechanism represents a systematic disequilibrium adjustment process through which X and Y are prevented from "drifting too far apart". The error correction model (ECM) can be presented thus:

$y_t = \beta_0 + \beta_1 X_t$ (14)

$y_t - \beta_0 - \beta_1 X_t = 0$

$Z_t = y_t - \beta_0 - \beta_1 X_t$

Where, Z_t is the ECM variable in

$\Delta y_t = \delta_1(L)\Delta y_{t-1} + \text{Ↄ}_1(L)\Delta X_t + \gamma_1 Z_{t-1} + \varepsilon_{1t}$ (15)

The ECM variable is tested for the significance of Z_{t-1}: i.e. $\gamma_1 < 0$

Substituting equation (7) into equation (15) in incorporating the error correction term to reflect the short run dynamics yields:

$$\Delta \ln FDI_t = \beta_0 + \sum_{i=1}^{q} \beta_1 \Delta \ln INF_{t-1} + \sum_{i=1}^{q} \beta_2 \Delta \ln MS_{t-1} + \sum_{i=1}^{q} \beta_3 \Delta \ln NRA_{t-1} + \sum_{i=1}^{q} \beta_4 \Delta \ln PI_{t-1} + \sum_{i=1}^{q} \beta_5 \Delta \ln Open_{t-1} + \lambda ECM_{t-1} + \varepsilon_t \quad (16)$$

Where, Δ is the first difference operator, q is the lag length, $\boldsymbol{\lambda}$ is the speed of adjustment and ECM_{t-1} is the lagged error term and all other variables are as previously defined.

Diagnostic and Stability Test

To ascertain the robustness of the model used, standard practice calls for Stability and diagnostic test. The aim of this test is to investigate the stability of the coefficient estimate as the sample size increases. We want to find out whether the estimates will be different in enlarge samples and whether they will remain stable over. The diagnostic test is based on serial correlation, Autoregressive Conditional heteroscedasticity (ARCH), normality of the residual, functional form misspecification and heteroscedasticity test statistics.

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The Breusch-Godfrey Lagrange multiplier test is an F-form test used to determine whether there is residual autocorrelation under the null hypothesis that there is no autocorrelation in the model's errors. Testing for ARCH is also an F-form tests where residuals are assumed to follow in more generalize process under the null hypothesis that the ARCH effects do not characterized the model's errors. The Jarque-Bera test is used to determine whether the error terms are normally distributed. The Heteroscedasticity test is based on the Breush-Pagan-Godfrey test under the null hypothesis that the errors are homoscedastic and the alternative hypothesis that the unconditional variance of the errors depend on the repressors and the square.

The test for functional form is based on the Regression Specification Test (RESET) proposed by Ramsey (1969). The null hypothesis under the RESET test is that the original model is correctly specified while the alternative specified that the original model is wrongly specified.

The stability of the estimated model is also examined using the methodology of Cumulative Sum (CUSUM) and the Cumulative Sum of Squares (CUSUMQ) test proposed by Brown et al (1975). Unlike the Chow test that requires break point(s) to be specified, the CUSUM test can be used if we do not know the structural break point. The tests are applied to the residuals of the model. The CUSUM test is based on the cumulative sum of residuals based on first set of n observations. It is updated recursively and is plotted against the break points. If the plot of CUSUM stays within 5% significance level (portrayed by two straight lines whose equations are given in Brown *et. al* (1975), then the coefficient estimates are said to be stable. Similar procedure is used to carry out the CUSUMSQ which is based on the squares recursive residuals. Graphical representations of these two tests for the above model are provided in the next chapter.

ANALYSIS AND DISCUSSION OF RESULTS

This section analyses the regression results. The empirical investigation commences with an analysis of a correlation matrix. In an attempt to detect the problem of multicollinearity in the model, a correlation matrix was done to determine the degree of correlation among the variables under investigation.

Correlation explains the changes that occur in one variable due to change in other variable. If a high correlation is found between variables, it can lead to multicollinearity. The table below shows the result from the matrix.

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Table 1. Pair-wise Correlation matrix (E-views output)

	FDI	INF	MS	NRA	PI	OPEN
FDI	1	-0.244369	0.205662	-0.377466	-0.167885	0.481515
INF	-0.244369	1	-0.301110	0.320685	0.132832	0.078691
MS	0.205662	-0.301110	1	-0.236953	-0.390765	0.007594
NRA	-0.377466	0.320685	-0.236953	1	0.483611	0.000464
PI	-0.167885	0.132832	-0.390765	0.483611	1	0.013128
OPEN	0.481515	0.078691	0.007594	0.000464	0.013128	1

The rule of thumb is that if multicollinearity among two variables is 70% and above, then it is a cause of concern. However, the current study does not show any severe case of multicollinearity between the variables as the highest value of correlation is 48.3% between natural resource availability and political instability. This confirms the absence of multicollinearity among the variables in the model.

Unit Root Test Results

The time-series properties of the variables of interest for the foreign direct investment (FDI) equation (see Table 2 & 3) are also analyzed. The augmented Dickey-Fuller (ADF) test and the Phillips-Perron test are used to determine the order of integration of data compiled for each variable. This is followed by an analysis of the co-integration results and short run dynamics. The diagnostics and stability tests results are also analyzed.

Table 2. Results of the Test of Stationarity using Augmented Dickey Fuller Unit Root Test

Variable	Augmented Dickey-Fuller Test Statistics				
	Level/∆level	Lag Length	With Intercept	With Intercept & Trend	Inference
LnFDI	Level	1	-3.602034	-4.949312	I(1)
	∆level	1	-8.642743**	-8.516596**	
LnINF	Level	1	-3.111826	-3.825775	I(1)
	∆level	1	-4.820218**	-4.840089**	
LnMS	Level	1	-4.519947	-4.727480	I(1)
	∆level	1	-8.595482**	-8.496765**	
LnNRA	Level	1	-3.573772	-3.733066	I(1)
	∆level	1	-7.914189**	-7.893589**	
LnPI	Level	1	-1.530621	-1.580440	I(1)
	∆level	1	-5.656854*	-5.673643*	
LnOPEN	Level	1	-3.788265	-3.883241	I(1)
	∆level	1	-8.675153**	-8.708860**	

Note *, and ** indicates that the variable is stationary at the 1 %, and 5% level of significance respectively. ∆ = first difference and I(1) = order of integration.

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The result of the ADF unit root test shows that all the variables are non-stationary in their levels but became stationary at their first difference. Thus the variables are integrated of order one, we denotes as I(1).

Table 3. Results of the Test of Stationarity: Using Phillips-Perron Test

Variable	Phillip-Perron Unit Root Test Statistics			
	Level/∆level	Intercept	Intercept & Trend	Inference
LnFDI	Level	-3.579922	-4.871700	I(1)
	∆level	-23.74596**	-26.4761**	
LnINF	Level	-3.026874	-3.721895	I(1)
	∆level	-10.59847**	-12.98372**	
LnMS	Level	-4.512892	-4.668666	I(1)
	∆level	-10.72711**	-10.39014**	
LnNRA	Level	-3.573772	-3.674483	I(1)
	∆level	-13.20899**	-17.71634**	
LnPI	Level	-1.609437	-1.607500	I(1)
	∆level	-5.656854*	-5.673483*	
LnOPEN	Level	-3.720264	-3.805299	I(1)
	∆level	-8.711295**	-8.755891**	

Note *, and ** indicates that the variable is stationary at the 1 %, and 5% level of significance respectively. ∆ = first difference and I(1) = order of integration.

The Phillip-Perron test in table 3 above also confirms the existence of unit root at first differencing. Thus the unit root test result for both the Augmented Dickey-Fuller and the Phillips-Perron test revealed that all the variables included in the model were found to be non stationary at level but became stationary after first differencing. Therefore the concept of co-integration is relevant since the co-integration test requires variables must be integrated of the same order.

Co-integration Results

The results of the Johansen's co-integration test are presented in table 4 and 5 below.

Table 4. Unrestricted Co-integration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.825258	136.0830	95.75366	0.0000
At most 1 *	0.596099	76.77199	69.81889	0.0125
At most 2	0.521305	45.94810	47.85613	0.0747
At most 3	0.308135	20.90057	29.79707	0.3639
At most 4	0.135846	8.376165	15.49471	0.4261
At most 5	0.095483	3.412023	3.841466	0.0647

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level **MacKinnon-Haug-Michelis (1999) p-values

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Table: 5. Unrestricted Co-integration Rank Test Result (Maximum Eigen value)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.825258	59.31105	40.07757	0.0001
At most 1 *	0.596099	30.82389	33.87687	0.1109
At most 2	0.521305	25.04753	27.58434	0.1021
At most 3	0.308135	12.52441	21.13162	0.4968
At most 4	0.135846	4.964141	14.26460	0.7464
At most 5	0.095483	3.412023	3.841466	0.0647

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

The values of both the trace statistics (136.0830) and the Max-Eigen statistic (59.31105) are greater than their critical values at 5% significant level of (95.75366) and (40.07757) respectively and their corresponding probability values are less than 5%, which implies that we fail to reject the null hypothesis of no co-integrating relationship at the 5% significant level. The co-integration test result for the trace test shows two co-integrating equations at the 5% significance level while the maximum Eigen test shows one co-integrating equation. Consequently, there exists long-run equilibrium relationship between foreign direct investment and the explanatory variables. We therefore fail to reject the null hypothesis of no long run equilibrium relationship between FDI and its influential variables. The result of the normalized long run cointegration equation is presented in table 6 below.

Table 6. Result of the long run FDI model

Variable	Coefficient	t-statistics	Inference
LnINF	-0.454214	-2.42726	Significant
LnMS	-1.353683	-4.22933	Significant
LnNRA	6.794277	9.12252	Significant
LnPI	-32.94492	-6.709828	Significant
LnOPEN	49.20223	3.183827	Significant

Results from the long run FDI model reveal that inflation has an inverse relationship with FDI in the case of Sierra Leone. The coefficient was found to be negative and statistically significant at the 1 percent level of significance suggesting that a 1 percent increase in the rate of inflation leads to approximately 0.45 percent decrease in FDI on average in the long run. The degree of responsiveness of FDI with respect to inflation is 0.4542. This finding is in line with theories that inflation has an adverse effect on less developed countries (LDCs) economies. Similar results were found by Pravin Jadhav (2012) for BRICS and in Nigeria by Oba et al (2013).

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Similarly, market size (MZ) has a negative relationship with foreign direct investment. The coefficient was also found to be negative and significant from the value of the t-statistics greater than two. This suggests a 1 percent increase in the market size will deter FDI by approximately 1.35 percent on average in the long run. The degree of responsiveness of FDI with respect to market size is 1.3536. This finding is however in contrary with theories. According to Dunning and Lundan (2008) market size supposed to boost Foreign Direct Investment but this is not so for Sierra Leone as shown in the empirical results.

With regards to natural resource endowment, it has a direct effect on foreign direct investment. The sign of the coefficient is positive and statistically significant suggesting that a 1 percent increase in the availability of natural resource will increase FDI inflows by approximately 6.79 percent on average in the long run. The degree of responsiveness of FDI with respect to natural resource endowment is 6.7942. It is increasingly argued that countries with enough natural resources stand a better chance in attracting foreign investors. As for political instability (the period of war), it has an adverse relationship with FDI. The sign of the coefficient is negative statistically significant for the study as the value of t-statistics is greater than two, the sign of the coefficient suggest that it has a negative relationship with Foreign Direct Investment.

The outcome for political instability is however not surprising because; Sierra Leone had a war for eleven years between 191 and 2001. In the 1990s, there was a significant increase in TNCs' investment in developing countries. While many countries were beginning a process of international economic integration and implementing policies to attract FDI, Sierra Leone was consumed by war. Foreign investors, with the exception of few mining companies, largely bypassed Sierra Leone when considering investment opportunities in Africa.

The result also reveals that openness to trade of the economy which is a measure of (import + export)/GDP is positively related to FDI inflows into Sierra Leone in the long run, and the variable is statistically significant. If the economy is opened by 1 percent, FDI inflows will increase by 49.2 percent. This result is also in conformity with findings by Elizabeth Asiedu who confirmed that trade openness has positive impact on FDI in both Sub-Saharan and non-sub Saharan Africa. In the same vein, S.O. Oladipo has also found a positive impact of trade openness to FDI inflows to Nigeria. Moses et al, Oluwatosin et al, Hosen Sheriff and Maryam all of them have confirmed the same results in their research that trade openness has a significant and positive effect on Foreign Direct Investment inflows.

Short Run Dynamic Model (Error Correction Model)

The existence of long run relationship among the I(1) variables suggests the estimation of the short run dynamic model. The short-run error-correction model (ECM) is an autoregressive

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distributed lag model for the stationarity forms of foreign direct investment (FDI), inflation, market size, natural resource endowment, political instability, and economy openness. It is estimated using OLS. The error correction mechanism is employed to examine the short-run and long-run behavior of FDI in relation to its explanatory variables. This equation incorporates the short run adjustment mechanism into the model. In the previous section, it was evident that there exists a unique long run co-integrating relationship between FDI and, inflation, market size, natural resource endowment, political instability, and economy openness. Nevertheless, in the short run, there may be disequilibria and the error correction model is therefore employed to eliminate deviation from the long run equilibrium.

The results of the short run dynamic model are reported in table 7. The coefficient of the error correction term indicates the speed of adjustment in eliminating deviation from the long run equilibrium. The coefficient has the expected negative sign (-0.571950) and it is statistically significant at the 1% level. The significance of the coefficient further confirms the existence of the long run relationship between FDI and the I(1) variables under consideration. The magnitude of the coefficient implies that nearly 57% of the disequilibria in the previous year's shock adjust back to long run equilibrium in the current year.

Table 7. Short Run Dynamics (ECM). Dependent Variable: D(LnFDI)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.274383	1.026627	0.267266	0.7912
D(INF)	-0.287460	0.132120	-2.175746	0.0440
D(MS)	-0.015349	0.101396	-0.151378	0.8808
D(NRA)	0.922086	0.263624	3.497733	0.0016
D(PI)	-0.122867	0.035373	-3.473438	0.0029
D(OPEN)	0.342558	0.152706	2.243255	0.0385
ECM(-1)	-0.571950	0.171160	-3.341611	0.0024

R-squared	0.690109	Mean dependent var	0.379647
Adjusted R-squared	0.639571	S.D. dependent var	9.152587
S.E. of regression	6.054998	Akaike info criterion	6.616502
Sum squared resid	1026.564	Schwarz criterion	6.927571
Log likelihood	-108.7888	Hannan-Quinn criter	6.723883
F-statistic	8.280876	Durbin-Watson stat	2.050448
Prob(F-statistic)	0.000033		

Inflation and Foreign Direct Investment

The regression results further indicates that inflation is significant in explaining FDI inflows in Sierra Leone, and the variable has the correct sign. For instance, a 1 percentage increases in the rate of inflation causes FDI to decrease by approximately 0.28 percent. This finding is in line

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with findings by previous researchers, Sesay Brima, Alabi and Reuben Adeolu have conducted similar studies found that inflation has a significant and negative relationship with FDI. It is also argued that both domestic and foreign investors may not be willing to invest in an economy with high inflation rate.

Market Size and Foreign Direct Investment

The short run result also reveals that market size and FDI are negatively related in Sierra Leone, it has an indirect relationship with FDI. The sign of the coefficient is negative even though insignificant for the study as the probability value is greater than five percent, but the sign of the coefficient suggest that it has a negative relationship with Foreign Direct Investment.

Natural Resource Endowment and Foreign Direct Investment

The result shows that natural resource endowment which is a share of minerals, natural gas, forest and oil in total export is positive and statistically significant for the study in the short run. This finding is not surprising given the country's rich natural resource endowment. A one percentage increase in the availability of natural resources can induce FDI inflows by approximately 0.92 percent. This finding is also in line with theories and previous studies that most of the TNCs operations in Africa is natural resource seeking.

Political Instability and Foreign Direct Investment

Political instability was included in the model as a dummy variable to capture the period of war in view to see how the 11 year civil war in Sierra Leone impacted FDI inflows. From the result above in table 7, the coefficient that represents political instability was found to be negative and statistically significant. This implies that the long civil war in Sierra Leone had an adverse effect on FDI inflows. This result is also not surprising as politically instable environment will scare away investors.

Openness and Foreign Direct Investment

The result also reveals that openness to trade of the economy which is a measure of (import + export)/GDP is positively related to FDI inflows into Sierra Leone in the short run, and the variable is statistically significant. If the economy is opened by 1 percent, FDI inflows will increase by approximately 0.34 percent. This result is also in conformity with findings by Elizabeth Asiedu who confirmed that trade openness has positive impact on FDI in both Sub-Saharan and non-sub Saharan Africa. In the same vein, S.O. Oladipo has also found a positive impact of trade openness to FDI inflows to Nigeria. Moses et al, Oluwatosin et al, Hosen Sheriff

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and Maryam all of them have confirmed the same results in their research that trade openness has a significant and positive effect on Foreign Direct Investment inflows.

The overall regression results fail to reject the hypothesis of the study except for market size which proves to be insignificant in explaining FDI inflows in Sierra Leone in both the long and the short run. The adjusted R- squared is 0.639571, implying that 63% of the variation in the FDI inflows is explained by the explanatory variables, which is an indication of a very good fit. In comparison to the R square, the adjusted R square is better and more precise good fit measure because it allows degree of freedom to sum of squares therefore even after addition of new independent variable(s) the residual variance does not change. The Durbin Watson statistic indicates the absence of autocorrelation among the variables which means the model has an economic meaning.

The overall equation is highly statistically significant as shown by the probability value of the F-statistic (0.000033).

Diagnostics and stability test results

Diagnostics and stability tests were also conducted to ascertain the robustness of the model used and the stability of the parameters respectively. Diagnostic test suggests that the model passes the test of serial correlation, functional form misspecification, non-normality of the errors and heteroscedasticity associated with the model. The regressions below include diagnostic statistics for testing against various alternative hypotheses: residual autocorrelation (dw and AR), skewness and excess kurtosis (Normality), autoregressive conditional heteroscedasticity (ARCH), RESET (RESET), heteroscedasticity (Hetero),The results of the diagnostic test are reported in Table 8.

Table 8: Diagnostic Test

Test Type	Statistic	Probability
Normality Test (Jarque-Bera Statistics**)**	Jarque-Bera Statistics =5.778418	Probability = 0.055620
Serial Correlation (Breush-Godfrey Serial Correlation LM Test)	F-statistics =0.411334	Prob. Chi-Square = 0.5847
ARCH Test (Autoregressive Heteroskedasticity Test)	F-statistics = 0.064113	Prob. Chi-Square = 0.7943
Heteroskedasticity Test (Breush-Pagan-Godfrey)	F-statistics = 0.552226	Prob. Chi-Square = 0.7167
Model Specification Test (Ramsey RESET Test)	F-statistics = 1.504128	Probability = 0.2306

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The diagnostic test suggests good fit of the model. The model does not suffer from the problems of non-normality of the errors, serially correlated errors, ARCH effect, heteroskedasticity and functional form misspecification from the probability values greater than 5%.With regards stability test, the plot of the CUSUM test shows that the estimated model is stable over the study period as it lie within the 5 percent critical bound (figure 2). However, the CUSUMSQ test as shown in figure 3 indicates that the model is not completely stable within the 5 percent critical bounds although the deviation seems to be temporary as the plot returns completely back to lie within the critical bounds.

Figure 2: Plot of Cumulative Sum (CUSUM)

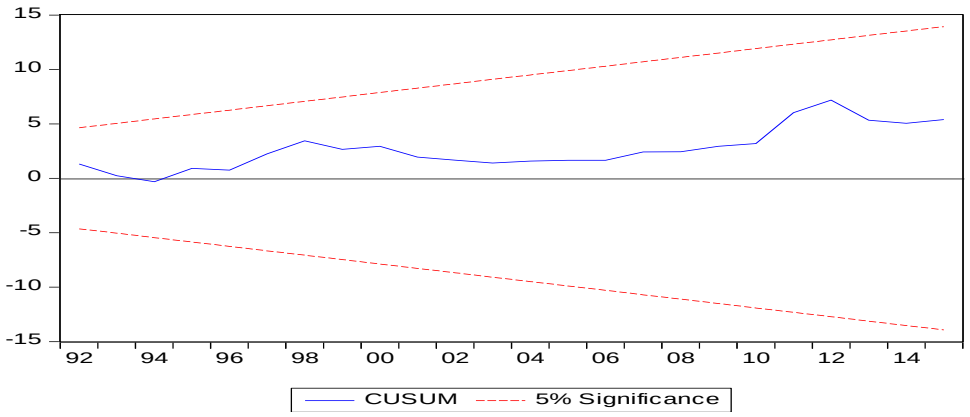
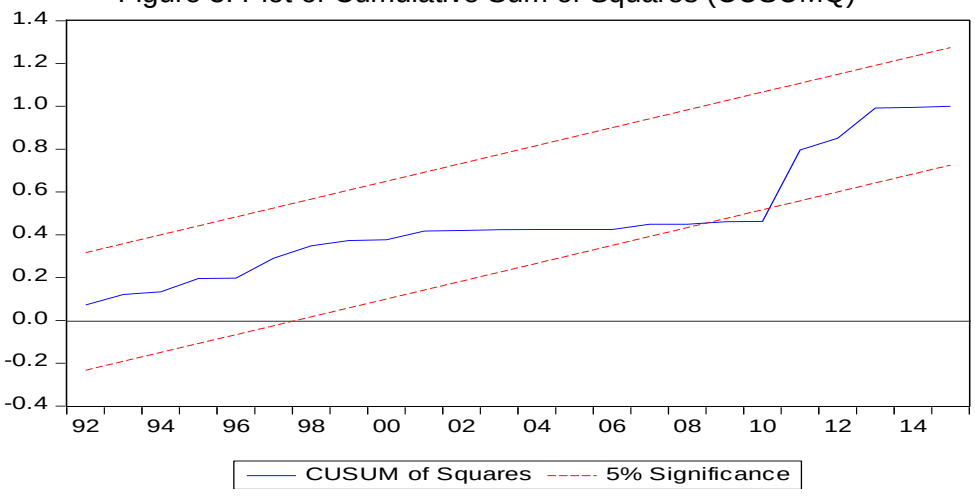


Figure 3: Plot of Cumulative Sum of Squares (CUSUMQ)



CONCLUSION

The initial fluctuation of foreign direct investment flows to Sierra Leone, the significance of foreign direct investment in a developing economy, and the recent drop in FDI inflows to Sierra Leone motivated this study. The broader objective of this research was to assess the factors

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influencing foreign direct investment in Sierra Leone between the periods 1980 and 2015. In doing so, time series data were collected from the World Development Indicators (WDI) World Bank database and the international financial statistics. The ordinary least squares (OLS) regression technique was employed to estimate the relationship between foreign direct investment and its influential variables.

Prior to estimating the model, the time series properties of the variables were first examined. Using both the Augmented Dickey-Fuller (ADF) test and the Phillip-Perron (PP) test statistics, all the variables were found to be non-stationary in levels. The non-stationary variables were stationary at first difference.

Employing the Johansen's approach, the I(1) variables were tested for the existence of long run relationship. The trace test result suggests the presence of two co-integrating relationship between foreign direct investment and the I(1) explanatory variables and the maximum eigen test result suggests one co-integrating relationship. The long run result however shows that natural resources endowment and the economy openness to trade exert positive and statistically significant relationship with foreign direct investment whereas inflation, market size and political instability(war dummy), exert negative relationship with foreign direct investment.

The existence of a co-integrating relationship necessitated the estimation of the short run dynamic model. The results of the error correction model indicate that the error correction term has the expected negative sign and is statistically significant, which further confirmed the existence of a long run relationship. The long-run foreign direct investment model shows a statistically significant relationship between foreign direct investment and its influential factors.

The data findings analyzed from the short run also show that foreign direct investment is greatly influenced by natural resources endowment followed by economy openness, inflation and political instability respectively. Taking all other independent variables at zero, a unit increase in natural resources endowment, increases foreign direct investment by 0.92 units while a unit increase in economy openness will result in a 0.34 units increase in foreign direct investment. Lastly, a unit increase in macroeconomic instability (inflation) will result in 0.28 units drop in foreign direct investment inflows, and a unit increase in political instability will lead to a 0.12 unit fall in FDI inflows to Sierra Leone.

To ascertain the goodness of fit of the model, diagnostic test statistics were conducted involving normality, serial correlation, heteroscedasticity, ARCH effect and functional form misspecification tests. The results suggest a good fit of the model. Similarly, to determine the stability of the model over the study period, the CUSUM and CUSUMQ test were employed.

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These tests suggest that the estimated conditional model of foreign direct investment inflows in Sierra Leone is remarkably stable and otherwise well specified over the period 1980 -2015 as it lies within the critical bounds. The results therefore failed to reject the hypothesis of the study and conclude that the selected explanatory variables are significant in influencing foreign direct investment in Sierra Leone.

Policy Suggestions

The above findings have important policy implications for both policy and financial analysts. It can be seen from both the short and long run results that inflation is a significant factor in influencing FDI inflows to Sierra Leone. The relationship between inflation and foreign direct investment inflows to Sierra Leone shows a sign of weak macroeconomic performance. This result is actually not surprising as the country's inflation rate has continues to remain in a double digit and investors both foreign and domestic may not be willing to invest in an environment with high inflation rate. This calls for policy framework that focuses on inflation. The monetary authorities should ascertain that inflation is kept to a single digit so as to avoid scaring away foreign investors.

Market size of the economy has proven otherwise for Sierra Leone. According to theories and findings from previous studies, market size supposedly to have a positive relationship with foreign direct investment. It is believed that the larger the size of the market, the more attracted it becomes to investors. This is however not surprising as the size of the Sierra Leone market is very small as opposed to other countries in the continent. An important policy implication emerging form this is that there is need for continuous increase and growth of the country's Gross Domestic Product (GDP). Foreign investors will be motivated and attracted when they have no doubt that the host country creates the needed market for their products. This can be achieved if government creates an enabling environment (or incentives) for production activities.

The screening of investment applications and granting differential enticement to different foreign firms is of paramount importance to Sierra Leone in order to attract sustainable foreign investors. China for instance permits repatriation of profits only out of net foreign exchange earnings (Adams, 2009). Sierra Leone should contract an independent consultant to assess foreign investor business applications based on the country's specific nation objectives before issuing them license of operation. Policy makers in Sierra Leone should adopt china's strategy towards foreign direct investors especially towards natural resource-seeking foreign investors. The consultant should be independent of government influence while carrying their mandate so that to minimize the effect of corruption in duties. The consultant should also be insured by a

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reputable insurance company in the country and will be obliged to pay a heavy consequence if found violating the contract. The research also recommends that policy makers in Sierra Leone should focus on promotional resources to attract some types of foreign direct investment which are willing to convert the primary resource to finished product and regulate others. Policies should be aimed at putting in place an ideal model based on the national goal of the country to screen foreign direct investment applications so as to ascertain their productive level.

The paper strongly recommends that policies aimed at ensuring proper and coordinated manpower planning and training should be put in place to ensure good quality of labor force in Sierra Leone. There should also be a policy that insures that any project that is providing infrastructural facilities should be independent inspected before and after completion by all stakeholders especially the user.

Central bank or the banking authorities should apply a stricter regulation to banking sector especially commercial banks regarding their daily transaction. This will ensure an efficient and reliable financial system that is less prone to ambiguity and increase the likelihood of absorptive capacity to Sierra Leone to take advantage of the technological spillovers of foreign direct investment.

Finally, this paper recommends policies such as high tariff on exportation of raw materials and high tariff on importation of goods that are produced with the raw materials found within Sierra Leone. This will discourage exportation of primary goods and in the long run boast the manufacturing industry.

This paper has only examined the relationship between foreign direct investment and inflation, market size, natural resource endowment, political instability and economy openness in Sierra Leone. Any future research on this issue should consider the possibility of exploring causality between foreign direct investment and economic growth.

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