



## RESEARCH ARTICLE

# THE EFFECT OF FOREIGN DIRECT INVESTMENT ON THE ECONOMIC GROWTH OF SIERRA LEONE

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### ABSTRACT

The objective of this study is to analyze the relationship between Foreign Direct Investment (FDI) and economic growth in Sierra Leone. Data from 1980 to 2014 sourced from the World Bank was used to do the empirical analysis. The estimation techniques were Augmented Dickey Fuller unit root test, Johansen Cointegration, Vector Error Correction Model, Granger Causality Test and Ordinary Least Square (OLS). The results indicated that, the series employed in the study became stationary at first difference; there is a long-run relationship between the variables used in the study. The error correction model, which indicated the speed of equilibrium adjustment, is slow but confirms the existence of long –run equilibrium relationship between the variables used in the study. The Granger causality test results indicated a unidirectional relation between FDI and GDP in Sierra Leone. Thus, FDI granger-cause GDP in Sierra Leone. This is confirmed by the OLS results indicating a positive relationship between GDP and FDI. The results equally indicated that FDI is statistically significant to explain GDP in Sierra Leone. Lagged GDP can help explain present GDP growth in Sierra Leone, thus it is statistically significant. However, real effective exchange rate was not statistically significant to explain GDP growth in Sierra Leone. The estimated model is free from statistical problems such as autocorrelation, functional form misspecification etc as indicated on Table 6. Once FDI contributes to GDP growth in Sierra Leone, it is therefore recommended that, the government of Sierra Leone should ensure macroeconomic stability to sustain foreign investors in it domestic economy as well as attracting new investors.

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## INTRODUCTION

The world has developed into a global village, where interdependence in economic relations encompasses promoting cross-border investments among nations. Although economic collaboration among countries was a vital part of olden and primeval economies, it acquired new significance after about 1500, (Lekachman, 2008). One of such ways in which nations collaborate economically among themselves in this integrated global economy is through Foreign Direct Investment (FDI). Globally, FDI has an astonishing and persistent role to play in making businesses grow. It provides the host nation with new markets and marketing channels, cheaper production facilities, access to new technology, products, skills, financing and a strong drive to overall economic development (Graham and Spaulding 2005). This is hence an effect of FDI on the economic growth of a nation. The conjugal environment of Sierra Leone after a decade of civil war, which officially ended in 2002, has made little progress in attracting FDI for the overall economic growth of the country. FDI inward flow fluctuated considerably between 2000 and 2009.

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Most of the FDIs are concentrated in the mining sector, which accounts for about 90 percent of exports earnings (World Investment Report, 2008). However, the tourism sector, which has the potential of generating USD100 million annually, is yet to attract substantial FDI for improved economic growth (IMF, 2005). CIA in 2009, ranked 73 according to global economic growth index, a fall from fortieth position in 2003. Despite several Government efforts at promoting a ‘Sierra Leone International Investment Forum’, both at home and abroad, FDI in Sierra Leone has still not stimulated substantial economic development (Commonwealth Business Council, 2006). It is, therefore, against this background that the researcher was motivated to undertake this study on FDI and economic growth in Sierra Leone. Sierra Leone has huge potential for attracting FDI as was the case during the pre-conflict era in which inflow exceeded USD100 million in 1986. However, throughout the civil war period, the gains made in FDI and economic growth of Sierra Leone was destroyed as investors left the country. This further stabbed the country into reduced domestic capacity to sustain mass employment and improved standard of living, low industrial as well as revenue generation bases. That is why this study aims at discussing the effect of FDI on the economic growth of Sierra Leone from 1980 to 2014.

## LITERATURE REVIEW

In the past couple of years, studies on related research work have been done on FDI and economic growth. Amongst such studies are the works of Aremu, Charles Harvey et al, Okafor, Nabende, Goldberge and Rania. Goldberge, (2008:33) opines that FDI is an integral part of an open and effective international economic system and a major catalyst for economic development. It exposes the host economy to best practices in technology through intermediation of foreign firms which allow them to disaggregate the total production process of goods and services into separate stages. It also locates each of these stages in an environment where local factor endowments enable efficient production and encourage high output for improved economic development. Conversely, OECD (2004), sustained and stable economic development drive solidifies the socio-economic structure of a state and this is a pre-requisite for determining more FDI inflow into an economy. The Central Bank of Sierra Leone Report (2007) captures a large proportion of foreign firms that provided general characteristics of FDI in Sierra Leone. The analysis gives the total FDI inflows as well as flows by sector and origin. The Report gave a historically trajectory of FDI into Sierra Leone. It pointed out that De Beers was the primary foreign investor from the early 1930s through the mid-1980s. But even with their monopoly in their investment was fairly limited due to the low-capital intensity of the type of mining being conducted. It revealed that the significant decline of FDI in Mid-1980s was attributed to the exit of De Beers from Sierra Leone and by 1991 the eleven years rebel war by the Revolutionary United Front (RUF). However the study pointed out that by 2000 to 2003, investments by telecommunications companies increased. And renewed mining exploration projects raised FDI inflows. UNCTAD (2010), Investment Report revealed that despite the increase of FDI in Sierra Leone, FDI inflows are considerably lower compared to other developing countries. The report focused on current FDI inflows in Sierra Leone without interrogating the reasons for low FDIs and ways to increase FDI inflows like other developing countries.

## MATERIALS AND METHDOS

The aim of this work is to find out the relationship between economic growth and FDI in Sierra Leone. Ordinary Least Squares (OLS), Johansen co -integration test, Augmented Dickey Fuller test and vector error correction models (VECM) are the estimation techniques of this study.

### Model Specification

The model of this study starts with the production function follows:

$$GDP_t = f(FDI_t, REER_t, GDP_{t-1}) \dots \dots \dots (1)$$

The econometric model of this production function is as:

$$GDP_t = \alpha_0 + \alpha_1 FDI_t + \alpha_2 REER_t + \alpha_3 GDP_{t-1} + \varepsilon_t \dots \dots \dots (2)$$

For the avoidance of certain statistical problems such autocorrelation, functional form misspecification etc, the natural logarithm (L) form of the model is:

$$LGDP = \alpha_0 + \alpha_1 LFDI_t + \alpha_2 LREER_t + \alpha_3 LGDP_{t-1} + \varepsilon_t \dots \dots \dots (3)$$

Where:

**GDP** measured in US\$ million represents the size of the economy of Sierra Leone

**FDI** measured in US\$ million represents foreign direct investment into the economy of Sierra Leone

**REER** is real effective exchange rate between the Leone and major foreign currencies usually the US dollar

**GDP<sub>t-1</sub>** :is the lagged period of GDP meaning the previous value of the GDP of Sierra Leone can help explain the present value of GDP in Sierra Leone. It is also used to correct autocorrelation. It is measured in US\$ million.

**ε<sub>t</sub>** :is the error term which represents other unobserved independent variables that can help explain economic growth in Sierra Leone.

**α<sub>0</sub>** : is the intercept and **α<sub>1</sub> to α<sub>3</sub>** are the estimated coefficients.

### Data Source

Time series data used for the study is taking mainly from the World Development Indicators of World Bank. It covers the period from 1980-2014. This period is carefully chosen because; it is made up of periods before, during and after the civil war of Sierra Leone, which will enable the researcher to do thorough empirical analysis of FDI impact on economic growth.

## RESULTS AND DISCUSSING

**Unit Root Test|:** The analysis starts with unit root test via the Augmented Dickey Fuller test technique. The essence of this is to find out whether the series have unit root or not. This will help the research to avoid estimating a spurious model. From Table 1, the unit root test results indicated that, the series employed in the study became stationary at first difference. Thus, the order of integration is I (1).

**Co-integration test results:** The second chief interest of this study is to ascertain the relationship between stock exchange in Sierra Leone and monetary policy instruments in the long- run. This is done via the Johansen co-integration test technique as presented on Table 2. From the results presented on table 2, the trace statistics indicated 2 Cointegration equations at the 5% significance level. This means that there exist a long-run relationship between economic growth, foreign direct investment and the other series employed in the study. From the results presented on Table 3, the Max-Eigen statistics indicated 2 Co integration equations at the 5% significance level. This means that there exist a long-run relationship between economic growth, foreign direct investment and the other series employed in the study.

**Vector Error Correction Model (VECM):** Once there exists a long-run relationship between the variables employed in the study, the test indicated 2 co-integration equations, so there is the need to do the short run analysis by means of the vector error correction model. With the vector error correction model, the guideline is that, the constant term, which serves as the error correction term must be negative and statistically significant. Therefore, from Table 4, C(1) which serves as the error correction term, its coefficient is negative (-0.21) and it is statistically significant at 5% level. The coefficient -0.21(21%) is the annual speed of equilibrium adjustment, which is slow.

**Table 1. Augmented Dickey-Fuller Test (ADF) Results**

VARIABLES	Statistics Of ADF Test			Critical Value (5%)		Order of Integration
	Level	Lags	1 <sup>st</sup> Difference	Level	1 <sup>st</sup> Difference	
GDP	0.013325 (0.9947)	1	-6.366956 (0.0000)***	-3.552973	-3.557759	I(1)
FDI	-2.296591 (0.4176)	1	-3.729367 (0.0467)***	-3.644963	-3.690814	I(1)
REER	-2.962046 (0.1576)	1	-3.991680 (0.0193)***	-3.552973	-3.557759	I(1)

Source: author's computation with Eviews (2018)

\*\*\* indicates that series are stationary at first difference, values in () are the probability values at 5% significance level.

**Table 2. Johansen –Cointegration Test Results, Trace Statistics**

Hypothesized No. of CE(s)	Eigen value	Trace Statistics	0.05 Critical value	Prob.**
None *	0.668802	40.20881	29.79707	0.0022
At most 1	0.518898	17.00298	15.49471	0.0294
At most 2	0.075025	1.637768	3.841466	0.2006

Source: Author's Computation with Eviews (2018)

Trace test indicates 2 Cointegration equation(s) at the 0.05 level. \* denotes rejection of the null hypothesis at the 0.05 level. \*\*MacKinnon-Haug-Mechilis (1999) p-values.

**Table 3. Johansen –Cointegration Test Results, Max-Eigen Statistics**

Hypothesized No. of CE(s)	Eigen value	Trace Statistics	0.05 Critical value	Prob.**
None *	0.668802	23.20583	21.13162	0.0252
At most 1	0.518898	15.36521	14.26460	0.0334
At most 2	0.075025	1.637768	3.841466	0.2006

Source: Author's Computation with Eviews (2018)

Max-Eigen Statistics indicates 2 Cointegration equation(s) at the 0.05 level. \* denotes rejection of the null hypothesis at the 0.05 level. \*\*MacKinnon-Haug-Mechilis (1999) p-values

This therefore confirms the long run equilibrium relationship between the series employed in the study.

**Granger Causality Test Results:** The next interest of this study is to ascertain whether economic growth granger cause foreign direct investment in Sierra Leone and the vice versa. The results are shown on Table 5. From the granger-causality test carried out, one null hypothesis is rejected because its probability value is less than 5% since according to the Thumbs rule, if the p-values of the F-Statistic are less than 5%, then there is a causal relationship among the variables. Therefore, from these results, the conclusion is that, there is a causal relationship between foreign direct investment and economic growth in Sierra Leone. Thus, FDI granger-cause GDP. The results from the table above indicate a unidirectional causality. However, when we fail to reject the null hypothesis, GDP does not granger-cause FDI because its p-value is more than 5% as indicated on Table 5.

**Ordinary Least Square (OLS) Estimated Results:** The ultimate goal of this study is to find out the effect foreign direct investment has on growth economic in Sierra Leone. It is to find out whether the effect is contractionary or expansionary. From table 6, the regression results show that, a 1% increase in FDI leads to economic growth in Sierra Leone by about 0.22% holding other factors constant. Clearly looking at the point estimate of FDI, it is a bit large which indicated that the effect FDI has on economic growth is also great. Moreover, FDI is statistically significant at 5% level to explain economic growth in Sierra Leone. Another macro indicator that can help explain economic growth in Sierra Leone is the real effective exchange rate (REER), which determines the volume of trade between the domestic economy and the international market. From the results, even though REER is not statistically significant at 5% level to explain growth in

Sierra Leone, there exists a positive relationship between them. Furthermore, the results indicated that previous values of economic growth (lagged GDP) can help explain present economic growth in Sierra Leone and it is statistically significant at 5% level. In addition, lagged GDP is used to correct the problem of autocorrelation. The independent variables employed in the study jointly explained the dependent variable by about 72% in variation. The estimated model is also free from all statistical problems such as autocorrelation, functional form misspecification, residuals not normally distributed and heteroskedasticity. These diagnostic test results are presented on Table 6.

**Table 4. Vector Error Correction Model results**

Dependable Variable: D(GDP)				
	Coefficients	St.Error	t-Statistic	Prob
C(1)	-0.205278	0.066166	-3.102468	0.0065
C(2)	21.07596	7.075376	2.978776	0.0084
C(3)	-0.531225	0.188434	-2.819160	0.0118
C(4)	-8.781433	7.596424	-1.155996	0.2637
C(5)	15638338	83117265	0.188148	0.8530
C(6)	3.27E+09	1.17E+09	2.798434	0.0123
<b>R<sup>2</sup></b>	0.550075			
<b>R<sup>2</sup></b>	0.417744			
Durbin-Watson	2.179927			
F-Statistic(Prob)	4.156817(0.011925)			
No. Observation	26			

**Table 5. Granger-Causality Test Results**

Null Hypothesis	Observations	F-Statistic	Probability value
GDP does not Granger Cause FDI		3.06796	0.0944
FDI does not Granger Cause GDP	24	7.18906	0.0140***
Number of Lags	1		

Source: Author's computation with Eviews (2018)

Table 6. OLS results

Dependable Variable: LGDP				
	Coefficients	St.Error	t-Statistic	Prob
C	3.325009	3.780857	0.879433	0.3879
LFDI	0.221443	0.104821	2.112579	0.0452
LREER	0.176322	0.569169	0.309789	0.7594
L(GDP(-1))	0.648041	0.186516	3.474452	0.0020
<b>R<sup>2</sup></b>	0.724348			
<b><math>\bar{R}^2</math></b>	0.689892			
Durbin-Watson	1.947675			
F-Statistic(Prob)	21.02213(0.000001)			
No. Observation	28			

**Diagnostic Test**

Serial correlation LM test, CHSQ(2) = 0.071929(0.9647)

Functional Form Ramsey RESET test, F-Statistic(1 23) = 0.538380(0.4705)

Normality J-B value = 2.995868(0.223592)

Breusch-Paan-Godfrey Heteroskedasticity Test,

CHSQ(3) = 6.151988(0.1044)

Source: Author's computation with Eviews (2018)

**CONCLUSION AND POLICY IMPLICATION**

The objective of this study is to analyse the relationship between FDI and economic growth in Sierra Leone. Data from 1980 to 2014 sourced from World Bank was used to do the empirical analysis. The estimation techniques were Augmented Dickey Fuller unit root test, Johansen co integration, Vector Error Correction model, granger causality test and Ordinary Least Square (OLS). The results indicated that, the series employed in the study became stationary at first difference; there is a long-run relationship between the variables used in the study. The error correction model, which indicates the speed of equilibrium adjustment, is slow but confirms the existence of long –run equilibrium relationship between the variables used in the study. The Granger causality test results indicated a unidirectional relation between FDI and GDP in Sierra Leone. Thus, FDI granger-cause GDP in Sierra Leone. This is confirmed by the OLS results indicating a positive relationship between GDP and FDI. The results equally indicated that FDI is statistically significant to explain GDP in Sierra Leone. Lagged GDP can help explain present GDP growth in Sierra Leone, thus it is statistically significant. However, real effective exchange rate was not statistically significant to explain GDP growth in Sierra Leone. The estimated model is free from statistical problems such as autocorrelation, functional form misspecification etc as indicated on Table 6. Once FDI contributes to GDP growth in Sierra Leone, it is therefore recommended that, the government of Sierra Leone should ensure macroeconomic stability to sustain foreign investors in the domestic economy as well as attracting new investors. Also through its Central Bank, stabilize the current exchange rate regime with a Leone redenomination policy.

**REFERENCES**

- Acs, Z. J., Desai, S. and Hessels, J. 2008. Entrepreneurship, economic development and institutions. *Small Business Economics*, 31 (3), 219–234.
- Adam Smith Institute, 2006. Business Economic Cycle, Journal of - The Free-Market Think Tank, Vol 2, 2006, London SW1P 3BL, UK.
- Anokhin, S., Grichnik, D. and Hisrich, R. D. 2008. The journey from novice to serial entrepreneurship in China and Germany: Are the drivers the same? *Managing Global Transitions*, 6 (2), 117–142.
- Aremu, J.A. 2005. Attracting and Negotiating Foreign Direct Investment with Transnational Corporation in Nigeria, (Lagos: Market Link Communication).
- Economic and Financial Review, Annual Bulletin of the Bank of Sierra Leone, December 2009.
- Elbadawi, Ibrahim and Francis M. Mwega, 2007. “Regional integration and FDI in Sub-Saharan Africa” Nairobi: African Economic Research Consortium.
- Exploration Discovery Development, 2008. African Mineral Interim Report for 2009, Freetown. Fisheries of Sierra Leone, A Publication of the Ministry of Fisheries and Marine Resource.
- Foreign Investment in South Africa: The Policy Debate, (Sweden, African Publication Trust, 1975).
- Government of Sierra Leone, 2009. Ministry of Trade & Industry, NEWS RELEASE, “Bizness dey cam begin swit na Salone”.
- Graham, J.P. and Spaulding, R.B. 2005. Understanding Foreign Direct Investment, *Citi Bank International Business Journal*, Vol 9, New York, PGF.
- Hackett, L. 1992. Industrialization: The First Phase, Journal of World History Center, Vol 4, Posvar Hall Pittsburgh, PA 15260.
- Hermes, Niels and Robert L. 2007. Foreign Direct Investment, Financial Development and Economic Growth: The Perspective of Africa. Stockholm: Azcriff.
- Ibi Ajayi, S. 2006. Foreign Direct Investment in Sub-Saharan Africa: Origins, Targets, Impact and Potential. Nairobi: African Economic Consortium.
- Invest in Sierra Leone, 2009. Stability, Opportunity and Growth, A Guide of the Sierra Leone Investment and Export Promotion Agency (SLIEPA).
- Ministry of Fishery and Marine Resource, 2008. Executive Summary: Fishery Sector in Sierra Leone, Freetown, Development and Statistical Report.
- Sierra Leone: Selected Issues and Statistical Appendix, IMF Country Report No. 09/12 January 2009, (Unpublished).

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