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Impact of Foreign Direct Investment on Economic Growth: Empirical Evidence from Ghana

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Abstract

Foreign direct investment (FDI) has been a vital source of economic growth for Ghana, bringing in capital investment, technology and management knowledge needed for economic growth. This paper aims to study the relationship between FDI and economic growth in Ghana for the period 1980-2010 using time series data. The GDP, GDP growth rate, GNI, Manufacturing Value Added, External Debt Stock, Inflation, Trade, Industry Value added and Foreign Direct Investment net inflows as percent of GDP (FDI ratio). We used the simple ordinary least square (OLS) regressions and the empirical analysis is conducted by using annual data on FDI and other variables over the periods 1980 to 2010. We used annual data from IMF, International Financial Statistics tables, published by International Monetary Fund. The goal of this study is to determine the extent to which these variables are related. From this, we can conclude that the independent variables GDP, GDPg, GNI, MVA, GDPc and TRA are all significant to explain FDI since their corresponding p-values of the t-statistic are less than 5 percent and thus have an influence of FDI in Ghana. These findings embrace practical implications for policy makers, government and investors.

Keywords: FDI, GDP, Inflation, Economic Growth, Ghana

Introduction

Foreign direct investment (FDI) has played a leading role in many of the economies of the Africa. There is a widespread belief among policymakers that foreign direct investment (FDI) enhances the productivity of host countries and promotes development. There are several studies done on FDI and economic growth. Their findings vary from different methods used on their research, some of the researchers found that FDI has a positive effect on economic growth. For example is Balasubramanyam et al (1996) analyzes how FDI affects economic growth in developing economies. Using cross-section data and OLS regressions he finds that FDI has a positive effect on economic growth in host countries using an export promoting strategy but not in countries using an import

substitution strategy. Olofsdotter (1998) provides a similar analysis. Using cross sectional data she finds that an increase in the stock of FDI is positively related to growth and that the effect is stronger for host countries with a higher level of institutional capability as measured by the degree of property rights protection and bureaucratic efficiency in the host country. De Mello (1999) only finds weak indications of a positive relationship between FDI and economic growth despite using both time series and panel data fixed effects estimations for a sample of 32 developed and developing countries. On the other hand, Zhang (2001) and Choe (2003) analyses the causality between FDI and economic growth. Zhang uses data for 11 developing countries in East Asia and Latin America. Using cointegration and Granger causality tests, Zhang (2001) finds that in five cases economic growth is enhanced by FDI but that host country conditions such as trade regime and macroeconomic stability are important. According to the findings of Choe (2003), causality between economic growth and FDI runs in either direction but with a tendency towards growth causing FDI; there is little evidence that FDI causes host country growth. Rapid economic growth could result in an increase in FDI inflows. There is further study done by Chowdhury and Mavrotas (2003) which examine the causal relationship between FDI and economic growth by using an innovative econometric methodology to study the direction of causality between the two variables. The study involves time series data covering the period from 1969 to 2000 for three developing countries, namely Chile, Malaysia and Thailand, all of them major recipients of FDI with different history of macroeconomic episodes, policy regimes and growth patterns. Their empirical findings clearly suggest that it is GDP that causes FDI in the case of Chile and not vice versa while for both Malaysia and Thailand, there is a strong evidence of a bi-directional causality between the two variables. The robustness of the above findings is confirmed by the use of a bootstrap test employed to test the validity of the result. In addition, Frimpong and Abayie (2006) examine the causal link between FDI and GDP growth for Ghana for the pre and post structural adjustment program (SAP) periods and the direction of the causality between two variables. Annual time series data covering the period from 1970 to 2005 was used. The study finds no causality between FDI and growth for the total sample period and the pre-SAP period. FDI however caused GDP growth during the post –SAP period. This paper aims to study the relationship between FDI and economic growth in Ghana for the period 1980-2010 using time series data.

FDI inflow in Ghana

Foreign direct investment (FDI) in developing economies has grown rapidly following financial and political transformation. To increase their share of FDI inflows, most countries have eased restrictions on foreign direct investment, strengthened macro stability, privatized state-owned enterprises, instituted domestic financial reforms, capital account liberalization and granted tax incentives and subsidies. Ghana for instance through the Free Zones Act, 1995 and the Ghana Investment Promotion Act 1994 has granted certain tax incentives and investor protection policies to attract foreign investors and also make the environment conducive for their operations. This initiative and policy taken in Ghana have increased the number of foreign direct investment and helped in economic growth.

Attracting FDI is a preoccupation of Ghana's opening up policies and economic reforms. Various Governments in Ghana have developed various legislations to improve investment conditions and the business environment in order to attract FDI, putting Ghana in the top ten reformers globally for the second year in a row, according to the World Bank's Doing Business team. Ghana's shares of FDI quadrupled from 2005 to \$636M in 2006 and represent 19.4% of gross fixed capital formation

according to 2008 World Investment Report (WIR). In 2008, Ghana experienced increased global attention as a result of hosting the 2008's Africa Cup, the UNCTAD XII (United Nations Conference on Trade and Development) and WAIPA (World Association of Investments promotion Agencies) meetings. This attention comes at a time when the country has had strong GDP growth and significant increases in FDI inflows (World Bank, 2008). Foreign direct investment (FDI) provides a major source of capital which brings with it up-to-date technology. It would be difficult to generate this capital through domestic savings, and even if it were not, it would still be difficult to import the necessary technology from abroad, since the transfer of technology to firms with no previous experience of using it is difficult, risky, and expensive.

Over a long period of time FDI creates many externalities in the form of benefits available to the whole economy which most companies cannot appropriate as part of their own income. These include transfers of general knowledge and of specific technologies in production and distribution, as well as industrial upgrading, work experience for the labor force and the introduction of modern management and accounting methods. The establishment of finance related and trading networks, and the upgrading of telecommunications services may also occur. FDI in services affects the host country's competitiveness by raising the productivity of capital and enabling the host country to attract new capital on favorable terms (Lipsey et al, 2010). It also creates services that can be used as strategic inputs in the traditional export sector to expand the volume of trade and to upgrade production through product and process innovation (Lipsey et al, 2007). Beyond the initial macroeconomic stimulus from the actual investment, FDI will influence growth by raising total factor productivity and, more generally, the efficiency of resource used in the recipient company or economy. This works through three channels: the linkages between FDI and foreign trade flows, the spillovers and other externalities in relation to the country's business sector, and the direct impact on structural factors in the host economy. As countries develop and approach industrialized nation status, inward FDI contributes to their further integration into the global economy by engendering and boosting foreign trade flows. Apparently, several factors are at play. They include the development and strengthening of international networks of related enterprises and an increasing importance of foreign subsidiaries in MNEs' strategies for distribution, sales and marketing (Andre-Pascal, 2002).

Foreign Direct Investment & Its Components

In this research, FDI refers to the monetary resources foreigners invest in companies or their subsidiaries listed on the Ghana Stock Exchange. The research focus is only on foreign investors who live outside Ghana and invest their monies into the various companies listed on the Exchange. According to the literature, FDIs require a business relationship between a parent company and its foreign subsidiary. Foreign direct business relationships give rise to multinational corporations (MNC). For an investment to be regarded as an FDI, the parent firm needs to have at least 10% of the ordinary shares of its foreign affiliates. The investing firm may also qualify for an FDI if it owns voting power in a business enterprise operating in a foreign country. This assertion by the Economy, Investment and Financial Report of the Economy Watch website is true but FDI can also be the monetary resources, expertise, machinery foreigners invest in companies outside their domestic countries. Parent firms setting up subsidiaries outside their domestic countries do not need to own at least 10% of the ordinary shares of the subsidiary to provide FDI support, but can owe any percentage of the ordinary shares to provide the support. Foreign direct investment (FDI) plays an

extraordinary and growing role in global business. It can provide a firm with new markets and marketing channels, cheaper production facilities, access to new technology, products, skills and financing.

Data and Methodology

This section describes the econometrics methods that we use to access the relationship between FDI and economic growth. We used the simple ordinary least square (OLS) regressions and the empirical analysis is conducted by using annual data on FDI and other variables over the periods 1980 to 2010. We use annual data from IMF International Financial Statistics tables, published by International Monetary Fund to find out the relationship between FDI, GDP, GNI, MVA, EDS, INF, GDPc, TRA and IVA in the case of Ghana.

Model Specification and Estimation

OLS framework

$$FDI_i = \alpha + \beta_1 GDP_i + \beta_2 GDPg_i + \beta_3 GNI_i + \beta_4 MVA_i + \beta_5 EDS_i + \beta_6 INF_i + \beta_7 GDPc_i + \beta_8 TRA_i + \beta_9 IVA_i + \varepsilon_i \quad (1)$$

Where:

Dependent variable is = FDI

Explanatory variables are:

GDP= Gross Domestic Product

GDPg= Gross Domestic Product growth rate

GNI= Gross National Income

GNI= Gross National Income

MVA= Manufacturing, Value Added

INF= Inflation, Consumer Prices

GDPc= Gross Domestic Product per capita

IVA= Industry, Value Added

β = Coefficients of the Independent variables.

TRA= Trade

i = Time period

Hypotheses

Hypothesis 1: $\frac{\partial FDI}{\partial GDPg} > 0$ $\frac{\partial FDI}{\partial GDP} > 0$ This study expects that FDI inflows should have a positive

effect on Gross Domestic Product and Gross Domestic Product growth rate. If there is an increase in FDI inflow, there will lead and enhance the economic growth in Ghana. In contrast, if the FDI is negative correlation to economic growth, it will not help in GDP growth in a country.

Hypothesis 2: $\frac{\partial FDI}{\partial TRA} > 0$ Trade leads to specialization and expanding potential markets which

allows domestic firms to take advantage of economies of scale, more competitive. This study expects Trade to have a positive effect on FDI as the openness to international market affects the probability of foreign investors.

Hypothesis 3: $\frac{\partial \text{FDI}}{\partial \text{EDS}} < 0$ It is assumed that there is a negative interaction between FDI and External debt.

Hypothesis 4: $\frac{\partial \text{FDI}}{\partial \text{INF}} < 0$ High inflation is an indication of economic instability and it destroys the value of money. Value destruction implies a negative impact on economic growth and it can infer that the impact on FDI is negative.

Diagnostic Testing

On the other hand, we also apply the diagnostic testing to test the series whether the series are free from autocorrelation (Breusch-Godfrey Serial Correlation LM Test), heteroscedasticity (Breusch-Pagan-Godfrey Test) and normality problem (Jarque-Bera Statistics).

Hypothesis 5:

H0: There is no serial correlation in the residuals.

H1: There is serial correlation in the residuals.

Hypothesis 6:

H0: Residuals are homoscedastic

H1: Residuals are heteroscedastic

Hypothesis 7:

H0: Residuals are normally distributed

H1: Residuals are not normally distributed

For Hypothesis 5, 6 and 7 if the computed p-value is greater than 0.05 significant levels, then we do not reject the null hypothesis and conclude that there is no serial correlation in the residuals, residuals are homoscedastic and residuals are normally distributed.

Conversely, if the computed p-value is less than 0.05 significant levels, then we reject the null hypothesis and conclude that there are existing autocorrelation heteroscedasticity and normality problem.

Empirical Results and Discussions

The focus of this study is to determine whether the Foreign Direct investments received directly affect the growth of the Ghanaian economy. The main objective of this research is to ascertain whether there is a positive or negative impact of FDI on the growth of the Ghanaian.

Table 1. Method of Least Squares

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-9.46E+08	5.37E+08	-1.760808	0.0928
GDP	0.429241	0.126281	3.399091	0.0027
GDPG	28243585	13327515	2.119194	0.0462
GNI	-0.364937	0.088541	-4.121682	0.0005
MVA	-2.561130	0.482747	-5.305325	0.0000
EDS	0.054380	0.060814	0.894200	0.3813
INF	-1209288.	1540538.	-0.784977	0.4412
GDPC	3637805.	2183973.	1.665682	0.0106
TRA	1890756.	3963092.	0.477091	0.0382
IVA	0.143076	0.239345	0.597780	0.5564
R-squared	0.963094	Mean dependent var		3.43E+08
Adjusted R-squared	0.947278	S.D. dependent var		7.00E+08
S.E. of regression	1.61E+08	Akaike info criterion		40.88493
Sum squared resid	5.43E+17	Schwarz criterion		41.34750
Log likelihood	-623.7164	Hannan-Quinn criter.		41.03571
F-statistic	60.89103	Durbin-Watson stat		2.053094
Prob(F-statistic)	0.000000			

R-square has a limit value of 1, and it happens when the regression line fits the observations exactly. The overall fit of the estimated regression equation to the actual data will be "better" if R-square is closer to the value of 1. For time series data R-square of .5 might be considered as a reasonable good fit for cross sectional data Baye (2005). In this research paper, total 96.31% variation in the dependent variable as shown in table 1 is explained by the explanatory variables. However, the rest of the variation is due to factors other than the independent variables or residuals. The validity of the model is represented in the value F-statistics. F-statistic is a measure of total explained variation divided by total unexplained variation. The higher the F-statistic, the better the overall fit of the regression line through the actual data. Since the p-value is less than 5 percent, we can conclude that all the independent variables (here $GDP_i, GDPg_i, GNI_i, MVA_i, EDS_i, INF_i, GDPC_i, TRA_i, IVA_i$) can jointly explain or influence FDI_i .

From the multiple regression models drawn from table 1 the coefficients of the independent variables are written in the form:

$$FDI_i = \alpha + 0.429241 GDP_i + 28243585 GDPg_i - 0.364937 GNI_i - 2.561130 MVA_i + 0.054380 EDS_i - 1209288. INF_i + 3637805. GDPC_i + 1890756. TRA_i + 0.143076 IVA_i + \epsilon_i$$

(2)

The correlation between FDI and GDP, FDI and GDPg is positive because as FDI is increasing the GDP and GDPg is also increasing. This positive relationship affirms our hypothesis 1. Trade, TRA is positively correlated to FDI as illustrated in the nature of TRA's coefficient therefore failing to reject our hypothesis 2. Increment in trade activities will increase due to foreign direct investment. Hypothesis 3 also confirms our expectation that EDS is negatively correlated to FDI. A large external debt can negatively influence potential investors when determining both the location of their foreign investments and the type of investment. For example, if investors expect that a government with a large external debt will engage in distortion and unpredictable fiscal policies in order to service their external debt, they will lower expectations of the returns on their investments. This in turn will limit the country's foreign direct investment (FDI) inflows, encourage non-productive short term investments and discourage existing firms from making new investments and/or engaging in research and innovations. Inflation was noted to have a negative relationship with FDI because of the nature of inflation's coefficient from this study. Increase in inflation will decrease the purchasing power of people, also decrease the demand of goods and services it will also decrease the supply of goods and services and the resulting investment will also decrease.

The independent variable significance can be drawn from the p-value of the t-test of the various independent variables. For each independent variable to be significant to this study, then its p-value of the t-statistic must be less than 0.05 or 5 percent. From this, we can conclude that the independent variables GDP, GDPg, GNI, MVA, GDPc and TRA are all significant to explain FDI since their corresponding p-values of the t-statistic are less than 5 percent and thus have an influence of FDI in Ghana.

Table 2. Breusch-Godfrey Serial Correlation LM Test

F-statistic	0.027397	Prob. F(2,19)	0.9730
Obs*R-squared	0.089143	Prob. Chi-Square(2)	0.9564

In hypothesis 5, since the p-value (0.9564) of Obs*R-squared is more than 5 percent ($p > 0.05$), we fail to reject null hypothesis meaning that residuals are not serially correlated which is desirable for a regression model.

Table 3. Breusch-Pagan-Godfrey Heteroscedasticity Test

F-statistic	6.666641	Prob. F(9,21)	0.0002
Obs*R-squared	22.96294	Prob. Chi-Square(9)	0.0603
Scaled explained SS	12.58611	Prob. Chi-Square(9)	0.1822

In hypothesis 6, the p-value of Obs*R-squared (0.0603) shows that we cannot reject null hypothesis. So residuals do have constant variance which is desirable in regression meaning that residuals are homoscedastic.

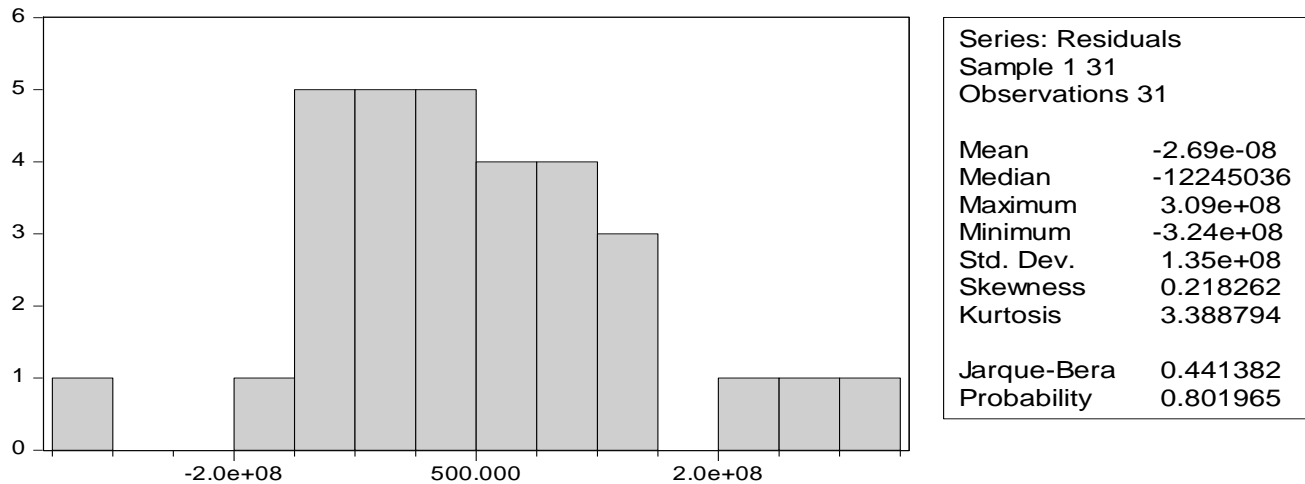


Figure 1. Residual Normality Test

Jarque Berra statistics is 0.441382 and the corresponding p value is 0.801965. Since p value is more than 5 percent we accept null meaning that population residual is normally distributed which fulfills the assumption of a good regression line in Hypothesis 7.

Conclusions

As a conclusion, foreign direct investment has continued to play a significant role in the Ghanaian economy. Through the empirical result, the analysis shows that there is a positive relationship between the FDI and economic growth, which the relationship is found to be significant. The robustness of the result has been tested using GDP, GDP growth rate, GNI, MVA, EDS, INF, TRA, IVA as dependent variables. These findings have important policy implication where the government has to be concerned with the importance of the FDI contribution to economic growth. Economic development of a country can be achieved by encouraging more foreign direct investment, which it can help to create more employment in the country. In addition, advance technology in production will train more skilled labor; therefore it will enhance the productivity and fulfill the satisfaction and demand from the consumers. But, there is a negative effect on domestic producers, because they lose their market power, since the foreign investor become monopolistic in the market. This indirectly will make the domestic producer facing the difficulties to survive in the market in the long term as foreign companies can achieve economy of scale with advance technology.

Therefore, government should impose the relevant policies like joint venture in order to give opportunities to the domestic producers to become part and enjoy the profit together with foreign direct investors. This will benefit the local partner as they are exposed to higher technology. Besides, government plays an important role in maintaining political stability. Because if a new government come in with highly different policies, foreign direct investors need to adjust their strategies in accordance with those new policies.

References

- Asiedu, E. (2002). "On the Determinants of Foreign Direct Investment to Developing Countries: Is Africa Different?" *World Development*, 30 (1), pp.107-19.
- Asiedu, E. (2003). "Policy Reform and Foreign Direct Investment to Africa: Absolute Progress but Relative Decline", Lawrence, KS: Department of Economics, University of Kansas. Mimeo.
- Balasubramanyam, V. N., Salisu, M., and Dapsoford, D. (1996). "Foreign Direct Investment and Growth in EP and IS Countries, *Economic Journal*, 106, pp. 92-105.
- Bengoa M., & Sanchez-Robles, B. (2002). *Foreign Direct Investment, Economic Freedom, and Economic Growth: New Evidence from Latin America*. Universidad de Cartabria, Economics Working Paper No. 4/03.
- Carkovic, M., and Levine, R. (2002). Does foreign direct investment accelerate economic growth? University of Minnesota Department of Finance working Paper, August 28, 2005.
- Choe, J. I. (2003). Do foreign direct investment and gross domestic investment promote economic growth?, *Review of Development Economics*, 7(1), 44-57.
- Chowdhury, A., and Mavrotas, G. (2005). "FDI and Growth: A Causal Relationship", UNUWIDER Research Paper No. 2005/25, UNU-WIDER.
- De Mello, L. (1999). "Foreign Direct Investment Led Growth: Evidence from Time-Series and Panel Data", *Oxford Economic Papers*, 51, 133-151.
- Frimpong, J. M., Oteng-Abayie, E. F. (2008). 'Bivariate Causality Analysis between FDI Inflows and Economic Growth in Ghana', *International Research Journal of Finance and Economics*, Issue 15.
- Ibrahim, A. (2005): "Sectoral Analysis of Foreign Direct Investment in Ghana", BOG Research Paper, Research Department, Bank of Ghana.
- Kandiero, T., and Chitiga, M. (2003). "Trade Openness and Foreign Direct Investment in Africa", Paper prepared for the Economic Society of Southern Africa 2003 Annual Conference, October 2003, Cape Town, South Africa.
- Karikari, J. A. (1992). "Causality between Direct Foreign Investment and Economic Output in Ghana" *Journal of Economic Development*, 17, pp. 1-12.
- Kholdy, S. (1995). "Causality between foreign investment and spillover efficiency", *Applied Economics*, 27, 74-749.
- Shan, J., Tian, G. G., and Sun, F. (1997). "The FDI-led growth hypothesis: further econometric evidence from China", Economic Division Working Papers 97/2, NSDS, Australia.
- Tsikata, G. K., Asante, Y., and Gyasi, E. M. (2000). "Determinants of Foreign Direct Investment in Ghana". Overseas Development Institute.
- UNCTAD. (2002). *World Investment Report 2002*. Geneva: UNCTAD.
- UNCTAD. (2005). "Economic Development In Africa: Rethinking The Role Of Foreign Direct Investment", UNCTAD/GDS/AFRICA/2005/1, United Nations, Geneva. U.S. Library of Congress (1990): Country Studies-Ghana. Retrieved on October 10, 2012, from <http://countrystudies/us/ghana>.
- Zhang, K. H. (2001). Does Foreign Direct Investment Promote Economic Growth? Evidence from East Asia and Latin America. *Contemporary Economic Policy*, 19(2), 175-185.