THE Effect Of Foreign Direct Investment on Economic Growth in Ghana

ISAAC NKETSIAH

Directorate of Research, Innovation and Consultancy

University of Cape Coast

Email: isaac.nketsiah@ucc.edu.gh

Abstract

This study examines the relationship between Foreign Direct Investment and Economic Growth as well as some selected macroeconomic variables as such as inflation, gross fixed capital formation, trade openness and government spending in Ghana for the period 1983 to 2012 by means of time series analysis. This study employs Least Squares to examine the possible effects among the investigated series. The results suggest that, the impact of foreign direct investment on economic growth in Ghana is significantly positive. These findings will be useful for making appropriate policies by policy makers, investors and the government.

Key words: FDI, Time series analysis, Macroeconomic variables, Economic Growth, Ghana

1.0. Introduction

Developing economies like Ghana promotes economic growth by means of attracting foreign direct investment (FDI) (Eduardo et al. 1998). FDI can be defined as the ‘‘cross-border investments which are made by an investor with the view of establishing a lasting financial interest in an industry or enterprise and trying to exert a degree of influence on the operations of the enterprise and where the foreign investor holds an interest of at least 10% in equity capital’’ according to IMF, 1998. According to a study by Robert E. Lipsey in 1999, he concluded that internationalized production comes as a result of foreign direct investment. According to Lipsey, this is the investment that involves some degree of control of the acquired or created firm which is in any other country apart from the investors' country. FDI and portfolio investment are different because of the involvement in the control of the investment.

FDI is seen as one of the main indicators of economic growth and it is believed to bring about certain benefits to national economies. According to a study by Carkovic and Levine, 2002 , FDI inflows makes investible funds available to developing economies and is also makes technology transfer possible. This has a long lasting effect on the economy. Moreover, a large and growing body of literature has showed that FDI plays major role in economic development of a country. For instance, according to the United Nation Conference on Trade and Development (UNCTAD), 2002 investment policy review of Ghana, FDI flows to Sub-Saharan Africa since 1994 have averaged over USD 4.3 billion, more than double the average for 1986-1991 period of USD 1.7 billion a year. In 1997, Nigeria primarily due to its oil reserves topped the list of the largest FDI recipients in the African continent with estimated inflows of USD 1.5 billion (UNCTAD 2000). According to (GIPC, Jan. 2007), foreign equity accounted for about 75% of overall equity finance in Ghana. Ghana's share of FDI quadrupled from 2005 to $636m in 2006. This according to 2008 World Investment Report (WIR, 2008), represent 19.4% of gross fixed capital formation

Various researchers share differing opinions on the contributions of FDI to economic growth. Their different views are based on theoretical and analytical findings. For example, in 2003, a study by Townsend, to examine the relationship between foreign direct investment and economic growth came to a conclusion that the relationship between FDI and economic growth is not so clear. Other researchers see FDI as a very important tool for economic growth especially in the less developed countries (LDCs) however the story is different in the case of some scholars. According to a study by Lall in 2002 on FDI and development: research issues in the emerging context, Lall asserted that FDIs contribution to economic growth depends on several factors and it is subject to variation in time from one host country to another. It is worth noting that, the findings of these researchers vary because of different methodologies employed. For example Balasubramanyam et al (1996) analyzed how FDI affects economic growth in developing economies by using cross-section data and Ordinary Least Square regression. He found out that FDI affects economic growth positively especially in host countries that utilize an export promoting strategy. However, the story is different from countries using an import substitution strategy. Hence, Balasubramanyam found out that FDI has a positive effect on economic growth.

Some hold the opinion that the contribution of FDI to economic development is not as obvious as most people claim. Nevertheless, there are still some researchers who think that FDI has no positive contribution to the economic growth of the host country. According to a study by Frimpong and Abayie (2006) which examined 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 using time series data covering the period from 1970 to 2005. It was established from their findings that, there was no causality between FDI and growth.

From the foregoing discussion, it can be seen that there has been no consensus opinion on FDI and economic growth.Therefore, the purpose of this paper is to examine the effect of

Foreign Direct Investment on Economic Growth in Ghana for the period 1983-2012 using time series data. This study expands the scope since it uses current data available at www.wdi.org.

2.0. Data Sources and Variable Definitions

The study employed mainly secondary sources of data for its analysis over the period 1983 - 2012. The data were drawn from the World Bank's World Development Indicators 2012, UNCTAD 2012, World Bank's Africa Development Indicators 2012, the choice of these variables is as a result of their interrelationship and interdependence.

Net Foreign Direct Investment (FDI) Inflow

FDI is defined as ‘‘cross-border investments which are made by an investor with a view to establishing a lasting financial interest in an industry or enterprise and trying to exert a degree of influence on the operation of the enterprise and where the foreign investor holds an interest of at least 10% in equity capital’’ according to IMF, 1998. The net FDI use in this study is the difference between inward and outward FDI in million US dollars. Similarly, foreign direct investment should generally be expected to exert a positive effect on real output, as it is considered as cross-border investments. It is therefore expected that an increase in the netinflow of FDI will lead to an increase in aggregate output and hence its rate of growth. Thus the coefficient of FDI is expected to be positive ($\beta 3 > 0$). The annual Net FDI data were extracted from the World Bank (2012) Development Indicators.

Gross Fixed Capital Formation

Gross fixed capital formation (GFCF) includes land improvements, plant, machinery, and equipment purchases; and the construction of roads, railways, schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. Todaro and Smith (2003) defined it as ‘‘increasing a country's stock of real capital’’. Theoretically, capital (K) measured by gross domestic capital formation as a percentage of GDP is expected to exert

a positive impact on the rate of growth of GDP. Consequently, the study expects the coefficient of capital to be positive($\beta 2 > 0$). Thus, the higher the rate of investment of capital, the higher the rate of real GDP growth, ceteris paribus. The annual data were extracted from World Bank (2012) Development Indicators.

Inflation (Consumer Prices)

Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a fixed baskets of goods and services that may be fixed or change at specified intervals, such as annually. Inflation is expected to proxy the general macroeconomic instability, therefore is expected to be negatively related to growth ($\beta 6 < 0$).

GDP (Constant)

GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not including in the value of production. It is calculated without making deductions from depreciation of fabricated assets or for depletion and degradation of natural resources. According to Mankiw, 2003 GDP gives us indication about the country's total income and the total expenditure on its output of goods and services. The annual data were extracted from World Bank (2012) Development Indicators.

Trade Openness (% of GDP)

Openness is defined as percentage trade of GDP (WDI, 2012). Trade is the sum of exports and imports a goods and services measured as a share of gross domestic product. Trade liberalization (openness to trade) is often hypothesized to raise growth through several channels, such as access to advanced technology from abroad, possibilities of catch-up, greater access to a variety of inputs for production, and access to broader markets that raise the efficiency of domestic production through increased specialization. Hence, theoretically,

the effect of openness of the economy on GDP growth is positive (β4 > 0). The annual data were extracted from World Bank (2012) Development Indicators.

Government Consumption Spending

General government final consumption expenditure is made up of all government current expenditures for the acquisition of goods and services (including compensation of employees). It also consist of expenditures on national defence and security, but excludes government military expenditures that are apart of government capital formation. It is expected that government expenditure will boost the economy, hence, positive effect on real output. Thus, the coefficient of government expenditure is expected to be positive (β5> 0). The annual data were extracted from World Bank (2012) Development Indicators.

3.0. Methodology

In estimating the effect of FDI on growth in many developing countries including Ghana, the basic aggregate production function (APF) which has been extensively used in econometrics studies will be adopted. The APF model has been used by Feder (1983) and Fosu (1990). It is worth noting that, the factors of production technology determines the level of output in an economy. That is:

$$Y_t = A_t L_t^{\beta 1} K_t^{\beta 2} e_t \quad \text{.....(1)}$$

Where Y denotes the aggregate production of the economy (real GDP) at time *t* and ***K***, ***L***, *A* denotes the amount of capital (gross domestic fixed capital formation), labour stock and total factor productivity (TFP) respectively. On the assumption that technology is fixed, any increase in the amount of labour or capital will increase the output in the economy. In this case**,** ***A*** captures the TFP of growth in output not accounted for by increase in labour and capital. Since this study seeks to investigate the effects of FDI on economic growth through changes in TFP, TFP therefore is a function of FDI and other factors. Thus it is assumed that;

$$A = f(FDI, TRADE, GOV, INF)$$

$$= FDI^{\beta 3} TRADE^{\beta 4} GOV^{\beta 5} INF^{\beta 6} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Where, FDI: Net Foreign Direct Investment Inflow;

TRADE: Trade liberalization (Trade as percentage of GDP)

GOV: Government Expenditure

INF: Inflation (which is expected to proxy general macroeconomic instability)

Empirical Specification of the model

By: substituting (2) into (1) we obtain;

$$Y = L^{\beta 1} K^{\beta 2} FDI^{\beta 3} TRADE^{\beta 4} GOV^{\beta 5} INF^{\beta 6} e^{\varepsilon_t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3)$$

Here Y refers to economic growth (dependent variable). From (3), the specific operational model for real GDP growth for Ghana in an estimable economic form is

$$InY = \beta_0 + \beta_1 InL_t + \beta_2 InK_t + \beta_3 InFDI_t + \beta_4 InTRADE_t + \beta_5 InGOV_t + \beta_6 InINF_t + e_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4)$$

Where all the variables are as previously defined except $\mathbf{e_t}$, which represents the error term, t, is time and In denotes natural logarithm. Equation (4) shows the long-run equilibrium relationship which is also seen as a log transformation.

4.0. Empirical Results and Discussion

Table 1: Descriptive Statistics-Individual Samples

Table 1 presents a summary of descriptive statistics of the variables. Sample mean, standard deviation, skewness and kurtosis, and the Jacque-Bera statistic and p-value have been reported. The LFDI has a larger standard deviation among all the variables, which supports the general intuition that FDI is highly volatile. The coefficient of skewness is low and negatively skewed with the exception of LRGDP and LINFLA. From the p-values, the null hypothesis of LRGDP, LFDI and LINFLA are normally distributed at 5% level of significance cannot be rejected. The Standard deviation, compared to the mean is low which indicates small coefficient of variation.

	LRGDP	**LTRADE**	**LFDI**	**LGFCF**	**LGOV**	**LINFLA**
Mean	22.77813	4.089540	0.059096	2.862483	2.395119	3.043434
Median	22.74838	4.214733	0.510155	3.034849	2.413212	3.080147
Maximum	23.63421	4.753590	2.253395	3.397858	2.811810	4.812184
Minimum	22.06242	2.442347	-3.093830	1.324419	1.768150	2.165619
Std. Dev.	0.432561	0.541685	1.665798	0.477692	0.205079	0.628771
Skewness	0.246578	-1.253071	-0.475570	-1.446259	-0.726588	0.676658
Kurtosis	2.127617	4.424920	1.992181	4.875405	4.821023	3.260986
Jarque-Bera	1.255318	10.38893	2.400456	14.85476	6.784803	2.374475
Probability	0.533840	0.005547**	0.301125	0.000595**	0.033628**	0.305063
Sum	683.3439	122.6862	1.772876	85.87448	71.85357	91.30302
Sum Sq. Dev.	5.426168	8.509263	80.47164	6.617511	1.219665	11.46525
Observations	30	30	30	30	30	30

Unit Root Test

To ensure that the variables are stationary and that shocks are only temporary and will dissipate and revert to their long run mean, we test for stationarity or unit roots. The Augmented Dickey-Fuller (ADF) (Dickey and Fuller, 1979) and Phillips and Perron (PP) (1988) tests are used to determine whether there are unit roots or not. The results indicate that all the data were stationary at levels at 5% significant level. Hence, it is possible for Least Square estimation to be employed. Ordinary Least Squares (OLS) is one of the simplest methods of linear regression. Its goal is to closely "fit" a function with the data. It does so by minimizing the sum of squared errors from the data.

The main criteria for a good estimator obtained from a small sample under OLS are unbiasedness; least-variance; efficiency; least mean-square-error (MSE) and sufficiency. The OLS have the least variance within the class of linear unbiased estimators. It may well be that the other non-linear or biased estimators from other methods have a smaller variance. However, the comparism of the OLS estimates is restricted traditionally to the class of linear unbiased estimators, which are popular because they are easy to analyse and understand (Wonnacott and Wonnacott, Econometrics, p.21). The unit root results is as follows:

Table 2: ADF and PP Unit Root Test on Variables

	ADF Test		PP Test		
	Levels	1st Difference	Levels	1st Difference	Conclusion
RGDPY	0.0000	0.0000	0.0000	0.0000	I(0)
TRADE	0.0001	0.0000	0.0001	0.0000	I(0)
GOV	0.0000	0.0001	0.0000	0.0000	I(0)
FDI	0.0002	0.0000	0.0003	0.0000	I(0)
INFL	0.0004	0.0000	0.0000	0.0000	I(0)
GFCF	0.0000	0.0000	0.0000	0.0000	I(0)

Table 3: The Ordinary Least Squares results are displayed below:

Dependent Variable: LRGDP

Method: Least Squares

Date: 06/02/14 Time: 21:29

Sample: 1983 2012

Included observations: 30

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LTRADE	0.306970	0.182966	1.677743	0.1064
LGOV	-0.041217	0.266331	-0.154759	0.8783
LGFCF	-0.333076	0.269800	-1.234533	0.2290
LFDI	0.206947	0.038866	5.324622	0.0000
LINFLA	-0.162932	0.064752	-2.516247	0.0190
C	23.05855	0.671568	34.33542	0.0000

R-squared	0.854854	Mean dependent var	22.77813
Adjusted R-squared	0.824615	S.D. dependent var	0.432561
S.E. of regression	0.181152	Akaike info criterion	-0.402100
Sum squared resid	0.787589	Schwarz criterion	-0.121860
Log likelihood	12.03150	Hannan-Quinn criter.	-0.312449
F-statistic	28.27005	Durbin-Watson stat	0.972439
Prob(F-statistic)	0.000000		

From the table, we can form the long term equation for growth rate (GDPY) in relation to the other economic indicators as below:

$GDPY_t$=23.0586 + 0.3070$TRADE_t$ - 0.0412GOV_t – 0.3331$GFCFI_t$ + 0.2069FDI_t- 0.1629$INFLA_t$…….. (5)

The results show that the constant term literally indicate the coefficient (23.0586) at which trade, government expenditures, gross domestic fixed capital formation, FDI and inflation were zero. The 23.0586 coefficient indicates that holding the explanatory variables constant, growth will increase by 23.0586.

It is worth noting that, inflation which is used to capture macro economic instability is appropriately signed. That is, the coefficient is significantly negative. This implies that, if the general price level increases by 1%, growth will fall by 0.1629.

Theoretically, capital, that is Gross Fixed Capital Formation (GFCF) is expected to contribute positively to growth of GDP. However, from the results, since the capital coefficient in the long-run growth equation is negative and insignificant at 5% significant level, it implies that, in the long-run, increases in capital has no potential of stimulating growth in Ghana. Hence, GFCF with coefficient of -0.3331 indicating that a unit increase in capital input results in 33.33% decrease in real GDP, all other factors held constant.

With reference to openness to trade (TRADE) with coefficient of 0.3069 which is not significant at 5% significant level. This means that, in the long run, trade openness of Ghana is expected to stimulate growth by 30.69%. This is in line with results obtained by Oteng-Abeyie Frimpong (2006) that, trade openness effect on growth implies that trade liberalization of the economy and export promotion since 1984 has been positive but not significant. In this light, channels such as access to advance technology from abroad, greater access to inputs for production and access to broader market that raise efficiency of domestic production must be encouraged to ensure openness to trade and thus, stimulate growth.

The result also shows that, government spending with negative coefficient of -0.0412 is insignificant at 5% significant level. This implies that, all other things been equal, increase in government spending is expected to cause a decrease in economic growth by only 4.12%

The results suggest that, the impact of foreign direct investment (FDI) on growth is positive; This is substantiated by the positive coefficient (0.2069) obtained. The coefficient of FDI after the regression was 0.2069 and it was statistically significant at 5% significant level. This positive coefficient is comparable to that of the results obtained by Balasubramanyam et al (1996) who did a study on 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.

5.0. Conclusion

The study examined the effect of foreign direct investment on economic growth in Ghana proxy by inflation which is used to capture macro economic instability. The study used 30-year time series data from 1983-2012. The Augmented Dickey-Fuller (ADF) and Philips-Peron tests - econometric technique were used to examine the unit roots of the variables. The conclusion drawn from the study is that foreign direct investment (FDI) has positive significant effect on economic growth in Ghana between the period studied.

The results have policy implications. There is the need to properly monitor FDI-utilizing projects. This is because, it is necessary to avoid the misutilization and mismanagement of

the foreign capital resources. Again, projects that help SMEs in the consumer goods sector have a relatively high potential for reducing poverty, as this sector benefits individuals in the urban and rural areas. Thus, it will be in the right direction to allocate more FDI projects to such sectors.

Consequently, FDI may be very helpful in boosting economic growth under the presence of appropriate monetary, fiscal and the trade policies. We should walk the talk, so to speak to ensure that policies to boost FDI are strictly implemented.

References

- Adam, A.M. and G. Tweneboah, (2008). Foreign direct investment and stock market development: Ghana evidence. Munich Personal RePEc Archive, No. 11261.
- Alfaro L. (2003) ‘‘Foreign direct investment and growth, does the sector matter?’’
- Alfaro L. et al. (2003) ‘‘FDI and economic growth: the role of local Financial market’’ *Journal of international economics volume 64*
- 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.
- Carkovic M. Levine R. (2002) ‘‘Does foreign direct investment accelerate economic growth?’’
- Dickey, D. and W. Fuller, (1979). Distribution of the estimators for autoregressive time series with a unit root. *Journal of the American Statistical Association*, 74(366): 427-431.
- Eduardo.F (1998) “How Does Foreign Direct Investment Affect Growth?” *Journal of International Economics*, *Vol. 45, pp. 115-35.*
- GIPC (2007), GIPC Quaterly Report, January 2007, Accra;Ghana Investment Promotion Centre. University of Minnesota Department of finance ‘working paper’ Online www.ssrn.com
- Lall S. (2002) FDI and development: research issues in the emerging context. Edited by Bora B. (2002) *Foreign Direct Investment Research Issues*. Routledge London, New York
- Lipsey R.E. (2001). ‘‘Foreign Direct investment and the operations of multinational firms: concepts, history and data’’ (Online) December. *NBER working paper* No 8665 www.nber.org/papers/w8665 Online www.people.hhb.edu
- Townsend I. (2003). ‘‘Does Foreign direct Investment accelerate economic growth in less developed countries?’’(online).www.stolaf.edu/people/tjf/townsend_thesis

- UNCTAD (2008), World Investment Report 2008, United Nation Conference on Trade and Development
- World Bank (2012) *World Development Indicators 2012.* Washington: The World Bank

APPENDIX A: VARIABLES IN THEIR FIRST DIFFERENCES

Years	DLRGDP	DLTRADE	DLGOV	DLGFCF	DLFDI	INFLA
1983	NA	NA	NA	NA	NA	123
1984	0.082939	0.49151	0.21423	0.59983	-0.2662	39.7
1985	0.049662	0.252496	0.25833	0.330196	1.008966	10.3
1986	0.050685	0.416424	0.166235	-0.02443	-0.5044	24.6
1987	0.046835	0.221507	-0.04609	0.111791	0.209953	39.8
1988	0.054755	-0.08186	-0.0877	0.074108	0.038467	31
1989	0.049608	-0.02641	0.013299	0.164303	1.088287	25.2
1990	0.032746	0.038191	-0.05537	0.087011	-0.12797	37.3
1991	0.051471	-0.0047	0.018095	0.092782	0.186678	18
1992	0.038061	0.079137	0.244021	-0.21841	0.146518	10.1
1993	0.047361	0.209133	0.174023	0.628084	1.787041	25
1994	0.032467	0.08936	-0.04983	-0.05174	0.714877	24.9
1995	0.040301	-0.07709	-0.12419	-0.06868	-0.95425	59.5
1996	0.044997	0.229396	-0.0083	-0.03865	0.049365	46.6
1997	0.041107	0.167906	0.03279	0.159065	-0.3772	27.9
1998	0.045933	-0.05785	-0.18555	-0.06063	0.63388	14.6
1999	0.043059	0.013555	0.047402	-0.08864	0.344491	12.4
2000	0.036332	0.350536	-0.05716	0.119408	0.053016	25.2
2001	0.039221	-0.05311	-0.0482	0.159701	-0.68389	32.9
2002	0.044017	-0.12063	0.015314	-0.36568	-0.56473	14.8
2003	0.050693	-0.00205	0.152847	0.19728	0.628997	26.7
2004	0.054488	0.024367	0.059089	0.215252	-0.1333	12.6
2005	0.057325	-0.01516	0.226417	0.051469	-0.14915	15.1
2006	0.062035	-0.39887	-0.30305	-0.32332	0.835869	10.9
2007	0.062597	-0.00762	0.022748	-0.07333	0.583312	10.7

2008	0.080939	0.060804	-0.02807	0.064507	0.532416	16.5
2009	0.039137	0.029629	0.042671	-0.08409	-0.04183	19.25071
2010	0.077026	0.051587	-0.1242	0.223549	-0.14978	10.70757
2011	0.139823	0.218836	0.473857	0.0378	0.035004	8.72
2012	0.07617	0.084379	-0.20395	0.125002	-0.00616	9.16