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Accounting for Foreign Direct Investment in Ghanaian Economy

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Abstract
FDI inflows into Ghana have been identified to be lower than other middle income countries; however, various empirical studies – including studies done in Ghana – have identified FDI to have a positive effect on economic growth. This study sought to account for the effect of FDI on economic growth using a two stage least square econometrics analysis. A quarterly time series data spanning 2004 to 2011 for selected variables were used for the econometric analysis. The results found FDI to have a positive effect on economic growth but the effect was found to be insignificant. Financial development and exports growth were identified as having significant negative effects on economic growth. The researchers recommend that Ghana reconsiders its liberal FDI policy to ensure that FDI benefits the country immensely.

Key words: Investment; Arbitrage; Internalization; Productivity

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INTRODUCTION
In recent years there has been a growing quest for improving the economic and social conditions of emerging economies, in the face of the realization that dependent on grants, aids, loans and other form of arms could not improve the lot of the people. Many of these emerging economies natural resources, cheap labor availability, numerous business opportunities and ever-growing market for goods and services. Governments of emerging economies begun to seek antidote to their developmental challenges despite the increasing flow of grants and other supports and one of these alternatives that has proven to be the solution is the Foreign Direct Investment (FDI). Where the doors of the country is opened widely to foreign investors who wants to investment and do business in the country.

FDI has been regarded as having a positive influence on the economic performance of host countries; most of these influences are believed to be in the form of positive externalities which relate to the adoption of foreign technology and know-how, imitation, employee training, introduction of new processes and products by foreign firms, and the establishment of links between local and foreign markets (Alvaro *et al.*, 2006). Empirical studies on the contribution of FDIs to economic development so far have been inconclusive. Although several studies have found that FDI, or FDI in combination with other factors, has a positive effect on economic growth, other studies have found no significant effects, while a few have found that FDI could even have an adverse effect on a country's growth (Asafu-Adjaye, 2005). Indeed, some scholars have identified that for FDI to promote economic growth and development, the host nation must possess absorptive capacities in order to benefit from such investments in the long term (Alfaro *et al.*, 2006). Notwithstanding, there remains substantial literature that continues to support the phenomenon that FDIs have positive significant effects on national economies (Kim, 2011).

Foreign Direct Investment (FDI) in Africa has made an important contribution to the economic development of the continent which has increased only modestly in recent years. The contribution that FDI has made to economic development and integration into world economy has been widely recognised. Nevertheless the image of Africa

among foreign investors still tends to be one of a continent associated mainly with political turmoil, economic instability, diseases and natural disasters (Owusu-Antwi, 2012). As a result of this, African countries have made considerable efforts over the past decade to improve their investment climate by liberalizing their investment regulations and offering incentives to foreign investors.

Like most countries in Africa, Ghana has experienced some periods of political stability, coupled with a remarkable economic management programme spanning from the 1980s and registering an average growth rate of 5% per annum, with amendments to the 1985 investment act code. The country is also well endowed with a number of natural resources such as gold, bauxite and recently oil. Prior to the discovery of oil, FDI inflows into the nation has not been promising (Owusu-Antwi, 2012); largely related to political instability since independence until the late 1980s and early 1990s, the country remained unattractive to foreign investors who irrespective of the availability of investment opportunities were more sceptical due to the perceived risks. Overtime as political tensions eased from 1994 and democracy was restored, the investment climate in Ghana has improved at a steady pace making it an attractive place for investment to foreign investors.

FDI inflows into emerging economies, including Ghana have increased significantly over the last decade with middle income countries benefiting a lot from such inflows. Ghana achieved a middle income status in 2010 and has therefore become more attractive for FDI inflows.

The discovery of oil in commercial quantities in the Ghanaian economy made the economy even more attractive for foreign investments. From experience with other African countries, Ghana is expected to experience an increase in FDI inflows (UNCTAD, 2012). The impact of these flows on economic growth (macroeconomic stability). equity capital, employment creation, and levels of technology and skills within the economy have to be studied. This study is designed to determine the effects of FDI on the economy of Ghana based on the determinants of FDI. We investigate the trend of FDI into Ghanaian economy from 2004 to 2011 and its the impact FDI on economic performance of the country in terms of GDP.

1. LITERATURE REVIEW

1.1 Definitions of Concepts

The concept of FDI has gained increasing dominance in economics and finance literature. As it is generally accepted that FDI's plays positive roles in the development of a nation, many countries have undertaken policies that encourage the inflow of FDIs (Omoniyi & Omobitan, 2011). In fact, Alfaro *et al.* (2006) recognizes that net FDI moves from negative to positive as we climb the development ladder, hence less developed and developing countries often receive than they give FDIs, whereas countries at the latter end of the development ladder give FDIs than they receive.

To understand the concept of FDI, it is important to know what it entails. By definition, FDI refers to an increase in the book value of the total investment held in one country by investors from another country and managed/controlled by the investor (Graham, 1995). Todaro & Smith (2003) also note that most FDIs take the form of subsidiaries of Multinational Corporations (MNCs) and that the parent corporation is the investor. Omoniyi & Omobitan (2011) also consider FDIs to represent "expansion of the international activities of MNCs" (p. 124).

Asafu-Adjaye (2005) also provides insights into understanding the definition of FDI. He asserts that a foreign investor is a person/group/company that engages in some form of productive activity in a country and funds such activity from funds acquired from foreign sources. Under his definition, he excludes foreigners who engage in trade or other speculative activities and those who engage in provision of temporal services.

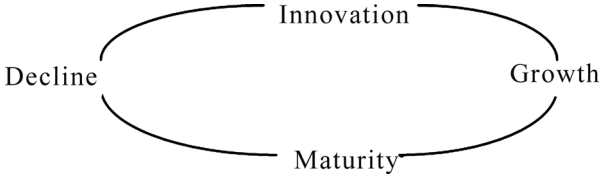
Denisia (2010) also considers the definition of FDI from a macroeconomic view point, and indicates that FDI is "a particular form of capital flows across borders, from countries of origin to host countries, which are found in the balance of payments. The variable of interest is capital flows and stocks; revenues obtained from investments" (Denisia, 2010, p. 54).

1.2 Theoretical Review of FDI Literature

Various theories have been derived over the years to explain the concept of FDI; although, all such theories have contributed to the field, there is no single universally accepted theory in this field of study (Denisia, 2010). Some of the underlying theories include Vernon's Production Cycle Theory, Theory of Exchange Rates on Imperfect Capital Markets, Neoclassical Theory, The Internalization Theory, Dunning's Eclectic Theory, Keynesian Theory of Economics, Marginal Efficiency on Investments (MEI) and Accelerator Theories (Denisia, 2010; Kim, 2011).

1.2.1 Vernon's Production Theory

Vernon (1966) developed the production theory to explain the type of foreign direct investments that US companies were making in Western Europe after World War II specifically in the manufacturing sector. In his theory, he identified four stages of production which he believed was a continuous cycle: innovation, growth, maturity, and decline.



Source: Denisia (2010)

Figure 1
Vernon's Production Theory

According to this theory, US Transnational companies (TNCs) create innovative products in excess and export the surplus to foreign markets due to their advantage in technology; this situation was made possible after the World War II. Over time, firms in the international markets begin to imitate and thus it becomes necessary for the TNCs to set up operational facilities in the host country to maintain market share. The theory explained the nature of foreign investment by US companies in Western Europe over the period 1950 – 1970 (Denisia, 2010).

1.2.2 Neoclassical Theory

The Neoclassical economists argue that capital seeks the highest return; they argue that where rates of returns on investment differ across countries, the result is opportunity for arbitrage profit; hence capital holders seek to invest in countries where returns are higher (Kim, 2011). According to Cockcroft and Riddell (1991). future investment flows are directly related to the incentive package which also has an effect on the expected rate of return on the investment, the security of the investment, scope and speed of disinvesting, tax regimes and overall macroeconomic policies. However, other macroeconomic issues also inhibited investment; for example price legislations in countries affected investment from foreign companies hence there was the need to improve the investment climate in countries for foreigners (Kim, 2011). Based on this theory, the major supply-side factor that influences FDI in developing countries is the expectation amongst the investors of a higher return or higher profits; hence developed countries will continuously invest in poorer countries that basically have higher risk levels and in turn require higher rates of return (Ekpo, 1996).

1.2.3 Theory of Exchange Rates on Imperfect Capital Markets

Another school of thought explained FDI using the concept of international trade and the foreign exchange risk exposure that it generates; based mainly on the assertions of Itagaki (1981) and Cushman (1985). this theory indicates that where there is an appreciation of a country's currency against the host nation's currency, it results in a reduction in foreign direct investment and vice versa (Denisia, 2010); however, this theory does not account for simultaneous flows in FDIs between countries with different currencies (Denisia, p. 56).

1.2.4 Internalization Theory

The focus of this theory was to explain the growth of transnational companies and what motivated them to engage in FDIs (Denisia, 2010). The original theory is based on work by Buckley & Casson (1976) and Hennart (1982). According to the proponents of the theory, MNCs organize their internal activities to gain comparative advantages which are exploited to gain control of market. The theory of internalization assumes that foreign companies enjoy oligopolistic power in host countries (Cockcroft & Riddell, 1991) and that because of market imperfections, firms choose an investment location based on the potential comparative advantage they may enjoy (Kim, 2011). It is also argued that MNCs may engage in FDI in order to create a barrier for entry by controlling inputs. Based on this theory, MNCs engage in FDIs through wholly-owned subsidiaries which enables them to control risk whilst retaining control and market share; thus, an internal market is created that enables the firm to reduce its costs through integration, transfer pricing, economies of scale and scope (Kim, 2011).

1.2.5 The Eclectic Theory

Professor Dunning developed the eclectic theory to consist of three different theories to account for FDI: Ownership Advantages, Location and Internalization (OLI model). He argues that the internalization theory accounts for a part of FDI. Based on his work, Ownership advantages refer to intangible assets which belong exclusively to a company and may be transferred within MNCs at low costs in order to increase incomes or reduce costs (Denisia, 2010). Denning argues that to enter a foreign market successfully, MNCs must possess some characteristics that will ensure that the benefits that accrue to the company will exceed the operating costs associated with presence in the host country; and that since the firm has monopoly (ownership) over these specific benefits it possesses, the firm can use that advantage abroad to gain higher marginal profits to lower marginal costs than competitors (Dunning, 1973, 1980, 1988).

Location as part of the eclectic theory determines the host nation where the MNC will choose to establish a subsidiary. Once there are ownership advantages, the MNC will benefit from using the advantages rather than selling or renting rights to foreign companies (Denisia, 2010). Location decisions are based on the associated qualitative and quantitative benefits for a particular location (for example, transportation costs, telecommunications, market size, etc). political advantages based on governmental policies of host nations and how it affects FDI operations and social advantages which include culture issues, distance from home country.

The Internalization characteristic offers the framework that MNCs use to decide on the form of FDI to engage in. As cross-border marker internalization benefits increases, the firm will increasingly prefer to engage in production in host country rather that offering opportunities for franchise or offer rights under license (Denisia, 2010). The OLI model is firm-specific and further depends on the economic, political and social atmosphere of host country.

1.2.6 Keynesian Theory of Economics

This theory indicates that FDI into host countries was targeted at developing countries in order to transform the underdeveloped and unproductive societies into growing economies (Riddell, 1992). This theory focuses on international aid that is meant to accelerate growth in developing economies and ensure sustainability of growth

but not mainly to raise the standards of living (Kim, 2011). The economic motive of FDI was also in the self-interest of the developed nations to invest in developing nations to raise their own welfare. If the rate of interest is higher than the productivity of capital in developed countries and lower in developing countries, both parties gain (Kim, 2011). Where under-utilized resources in developed countries, which is not tapped into because of balance of payments constraints, international aid will benefit both developing and developed countries whereby such resources are diverted to developing countries.

1.2.7 Marginal Efficiency of Investment (MEI) and Accelerator Theories

MEI is used to measure business demand for investments (Kim, 2011). According to this theory, FDI occurs where MEI (also known as the Internal Rate of Return [IRR]) on additional investments is more than the cost of funds used for such investment. MEI/IRR refers to the rate of return internal to the project and it is rate at which the Net Present Value for a project (in this case FDI) is zero. This theory is also referred to as the investment theory and is based on work by Keynes. A further evolution of this theory is the accelerated theory which regards investment (FDI) as a linear proportion of changes in input. Based on this theory, where there is a wider gap between existing capital stock and desired capital stock, the firm's rate of investment is high (Kim, 2011).

1.3 Review of Global Empirical Studies

Despite the theoretical benefits associated with FDI, empirical evidence remains inconclusive. Macroeconomic studies on the impact of FDI on economic growth have yielded uncertain results. Empirical evidence suggests that the impact of FDI on economic growth is not automatic (Kim, 2011). Borensztein *et al.* (1998) and Xu (2000) found that FDI comes with technology which subsequently leads to higher growth only where the host country has reached a minimum level of human capital development (measured by the human capital index, see Sharma & Gani, 2004). Lipsey (2002) finds positive effects but indicates that there is no consistent relationship between FDI stock and economic growth. Carkovic & Levine (2002) found that the macro empirical literature provides weak support for the positive effects of FDI on economic growth. Ikara (2003) found that FDI contributes to production by raising total factor productivity and efficiency of resource use, which leads to economic growth. He found that the effect of FDI on economic growth is through direct technology transfer, technological spillover, human capital formulation, international trade integration, and competitive business environment. Hermes & Lensink (2003). Alfaro *et al.* (2004). and Durham (2004) all found evidence that indicates that countries with well-developed financial markets benefit significantly from the impact of FDI on growth rates. Alfaro *et al.* (2006) also found that a country's capacity to take advantage of FDI externalities might be limited by local conditions, such as the development of the local financial markets or the educational level of the country, referred to as absorptive capacities.

Studies at micro levels also indicate ambiguous results of FDI on firm productivity. Alfaro *et al.* (2006) split such studies into three generation papers. First generation papers focus on country case studies and industry level cross sectional studies. These studies found a positive correlation between the productivity of a multinational enterprise (MNE) and average value added per worker of the domestic firms within the same sector (p. 1).

The second generation studies make use of firm-level panel data. The outcomes of most of these studies find no effect of foreign presence or negative productivity spillover effects from the MNEs to the developing country firms (Aitken and Harrison, 1999). The positive spillover effects are found only for developed countries; for instance Hermes and Lensink (2003) found positive spillovers from foreign to local firms in a panel data set of UK firms; also, Gorg and Strobl (2002) find that foreign presence reduces exit and encourages entry for domestic firms in the high-tech sector in Ireland.

Third generation studies argue that since multinationals would like to prevent information leakage to potential local competitors, but would benefit from knowledge spillovers to their local suppliers, FDI spillovers ought to be between different industries (Alfaro *et al.*, 2006). Thus the focus is on vertical (inter-industry) externalities instead of horizontal (intra-industry) externalities (p. 2). This means the externalities from FDI will manifest themselves through contacts between domestic suppliers of intermediate inputs and their multinational clients in downstream sectors (backward linkage); or between foreign suppliers of intermediate inputs and their domestic clients in upstream sectors (forward linkage) (Alfaro *et al.*, 2006). Javorcik (2004) and Alfaro and Rodriguez-Clare (2004) found results consistent with FDI spillovers between different industries; they found evidence to support backward linkages between the downstream suppliers and the MNE in Lithuania and in Venezuela, Chile, and Brazil respectively (see Kugler, 2006).

Empirical evidence exists to support the assertion that FDI promotes competitiveness of local firms. Blomstrom *et al.* (1994) found such positive evidence in his study in Mexico and Indonesia; Smarzynska (2002) also found that local suppliers in Lithuania enjoyed positive spillover from supplying foreign customers.

In a study that focused on developing economies, De Mello (1997) found out that FDI impact on economic growth varies tremendously between developed and developing economies. His conclusion was that, the effect of FDI on growth was dependent on the scope of efficiency spillovers to domestic firms.

1.4 Review of Empirical Studies in Ghana

Ghana has become increasingly attractive for FDI. With a host of reform programmes including the Economic Reform Programme (ERP) in 1983, the adoption of Mining Code in 1986, Investment Code in 1994 and the Free Zone Act in 1995, the country has improved its business environment for both domestic and foreign investors (UNCTAD, 2003). Ghana's openness to trade has increased considerably since 1980 due to its flexibility to international trade. Total trade (exports plus imports) increased from 20% of Gross Domestic Product (GDP) in 1980 to 103% of GDP in 2006 (World Bank, 2008a).

Despite losing momentum with the reforms in the late 1990s, the World Bank (2008b) recognizes Ghana for having implemented significant economic and institutional reforms in recent years. Hence, Ghana belongs to the group of top reformers and continues to increase the efficiency of its public services (UNCTAD, 2003). The country's political environment has improved since its introduction of multi-party democracy in 1992, thus, helping to ensure political stability which has been identified as a key prerequisite for attracting FDI (UNCTAD, 2003). Foreign Direct Investment in Ghana has fluctuated over the years.

In a study of the impact of FDI in the Ghanaian economy, Asafu-Adjaye (2005) found that FDI has a significant positive impact on economic growth in Ghana but that the role of FDI in Ghana's economic development can be further increased if favorable policies and development of certain sectors (for example financial sector development) took place. On their part, Aryeetey *et al.* (2008) asserted that although FDI had positive benefits for the Ghanaian economy, the relative level of FDI flow in Ghana in comparison to other competing economies was low. They concluded that for Ghana to benefit immensely from FDI there was the need to put in place certain structures to attract higher levels of FDI.

1.5 Hypothesis Formulation

Based on literature, a positive correlation between GDP and financial development, exports growth and FDI are expected; whilst a negative relationship is expected between GDP and Inflation. Also, a positive correlation is expected between FDI and GDP, External debt, and trade openness; whereas a negative correlation is expected between FDI and Exchange rate. We therefore put forward the following hypotheses:

$\mathbf{H_1}$: There exists a positive relationship between GDP and Financial Development, Export Growth and FDI.

$\mathbf{H_2}$: GDP and Inflation are negatively correlated.

2. RESEARCH METHODOLOGY

2.1 Research Design

A quantitative approach was used for the study. Thus, mathematical models were estimated to determine the effect of FDI on economic growth (proxies by GDP). Secondary data was the gathered for the variables used for the estimations. Time series data was used for the study, the period for the study was from 2004 to 2011; however to ensure that enough data points were obtained for the regression analysis, quarterly statistics on the variables used for the period 2004 to 2011 were used. Data was gathered from three main sources; FDI statistics was gathered from Ghana Investment Promotion Council (GIPC). whereas the other variables were obtained from Bank of Ghana and Ghana Statistical Service sources.

2.2 Model Specification

The study adopts the model based on the conditional convergence theory which is commonly used for studies in developing economies. The model is based on Solow's Production function framework used extensively by scholars to analyze the determinants of growth in developing economies (Omoniyi & Omobitan, 2011). In attempting to model economic growth in Ghana, Mends-Brew *et al.* (2012) found that Solow's production function is ideal for explaining and predicting economic growth.

Solow's production model originally identified two variables: capital (K) and Labor (L) as factors that influence a nation's economic growth. In order to account for other factors that contribute to economic growth aside labor and capital, Solow came up with a third component as total factor productivity (A) such that Solow's basic growth model was

$$\mathbf{Y_t = f(K, L, A)} \quad \mathbf{(1)}$$

From the model above, Solow identified total factor productivity (A) as the key determinant of growth in the long term. In estimating growth, the basic neoclassical growth equation used as identified in Omoniyi & Omobitan (2011) is

$$\mathbf{Q^g = A^g + b_1K^g + b_2L^g} \quad \mathbf{(2)}$$

Where: Q^g = growth rates of aggregate output

A^g = growth rate of total factor productivity

K^g = growth rate of physical capital

L^g = growth rate of labor

b_1 and b_2 = elasticities of output with respect to capital and labor respectively.

The general form for Solow's production function used by empirical studies for input-output relationship studies in developing countries is written as (Omoniyi & Omobitan, 2011):

$$\mathbf{Q^g = \alpha_0 + \alpha_1\frac{1}{Qt\text{-}1} + \alpha_2L^g + \alpha_3Z^g} \quad (3)$$

Where:

Q^g = Growth rate of real aggregate output

I = Domestic investment

Q_{t-1} = Lagged GDP

Z^g = Growth rate of other variables influencing total factor productivity

α_0 = constant assumed to be growth of productivity

α_1, α_2, α_3 = parameters

Solow asserts that the factors influencing total factor productivity are not fixed and therefore different variables can be employed depending on the study (Mends-Brew *et al.*, 2012). Thus, various variables that have been identified overtime to influence total factor productivity include growth of exports, inflation and agricultural growth rates (Omoniyi & Omobitan, 2011). In this regard also, Asafu-Adjaye (2005) use FDI, financial development (FD). trade openness (Open). and interactions between FDI and FD and Open respectively in modeling the impact of FDI on the Ghanaian economy. Furthermore, Mansouri (2005). in a study of the Moroccan economy used FDI, Trade Openness (TR). and the interactions between FDI and TR to account for total factor productivity (Z^g) in the equation above. Omoniyi & Omobitan (2011) made use of external debts, FDI, and exchange rate; whilst introducing a political dummy estimating the impact of FDI on economic growth in Nigeria.

In accounting for effect of FDI on economic growth in Ghana, this study adopts the models used by Omoniyi & Omobitan (2011) and makes adjustment to the model by introducing financial development and trade openness in place of domestic investment and political dummy respectively. The decision to replace the two variables was made based on the finding that domestic investment was not an essential contributor to economic growth in the long term whereas political dummy was deemed unnecessary as Ghana has only experienced a democratic rule during the period under study. Financial development is regarded as a measure of the strength of the banking system which influences domestic capital formation and investment (Asafu-Adjaye, 2005) hence its selection, whereas trade openness have been identified in literature as one of the main factors influencing FDI flows (Yih Yun *et al.*, 2000; Asiedu, 2002; Asafu-Adjaye, 2005; Mansouri, 2005). As a result, the equation estimated is:

$$GDP^g_t = \alpha_0 + \alpha_1 FD + \alpha_2 EXP^g + \alpha_3 FDI^g + \alpha_4 INF + \varepsilon_{1t} \quad (4)$$

Empirical studies have however identified endogeneity between GDP and FDI (Asafu-Adjaye, 2005; Omoniyi & Omobitan, 2011); as such FDI is believed to affect GDP just as GDP affects FDI. As a result, a simultaneous equation is developed such that the counterpart to equation (3) is provided as:

$$FDI^g_t = \beta_0 + \beta_1 GDP^g + \beta_2 EXD^g + \beta_3 EXR + \beta_4 Open + \varepsilon_{2t} \quad (5)$$

Where: GDP^g = Growth rate of GDP
INV^g = Domestic Investment growth rate as a proxy for domestic capital (K)
EXP^g = Growth rate of exports
FDI^g = Growth rate of FDI
INF = Inflation rate
EXR = Exchange rate
EXD^g = External Debt growth rate
Open = Trade openness (Measured as a ratio of imports + exports to GDP)
FD = Financial Development (measured as a ratio of narrow money, M2, to GDP)

The selection of Open as explanatory variables for FDI was based on the empirical study by Asafu-Adjaye (2005) in which he concludes that trade openness granger-cause FDI. Thus, the model will also confirm whether or not trade openness affects FDI in Ghana. The other variables selected are identified from the study of Omoniyi & Omobitan (2011). The political variable was ignored as within the period the study covers, Ghana has only been under democratic rule.

2.3 Estimation Technique

A two-stage least squares (2SLS) estimation method was adopted where foreign direct investment was endogenized. Asafu-Adjaye (2005) identifies the inappropriateness of using the OLS regression in modeling the effects of FDI on GDP due to the problem of simultaneity; as a result, he adopts the vector autoregression model in assessing the impact of FDI on economic growth in Ghana. Other studies have also attempted to eliminate the problem of simultaneity by adopting the 2SLS as used by Mansouri (2005) and Omoniyi & Omobitan (2011). Thus, in undertaking this study, the 2SLS was preferred.

2.4 Data Analysis

Eviews econometric software and Statistical Package for Social Scientists (SPSS) software were used to analyze data. Model estimation and residual diagnostics were done using Eviews. Eviews econometrics software has been used in various recent studies to handle econometrics modeling and estimation hence the selection of the software.

3. RESULTS AND DISCUSIONS

3.1 FDI and GDP Relationship

The study sought to determine any relationship between FDI and economic growth, as proxied by GDP. Thus, a scatter plot of quarterly FDI against quarterly GDP from 2004 to 2011 was done using Eviews as in the figure below:

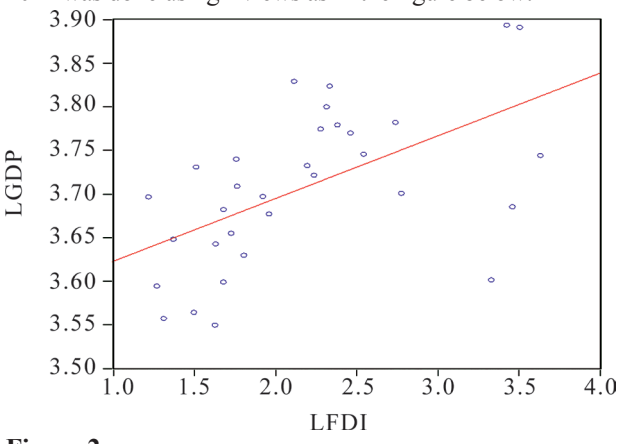


Figure 2
Relationship Between FDI and GDP in Ghana, 2004 – 2011

3.2 Stationarity Test

In running a time series analysis, it is essential that variables are found to be stationary; use of non-stationary data variables in estimating a model can lead to biased estimates. To check for stationarity, the researcher used both the Augmented Dickey Fuller (ADF) test with intercept only and Phillips-Perron (PP) test of stationarity, as was done by Djokoto (2012). The outcome is presented in table 1 below:

Table 1
Test for Stationarity

Variable	ADF		PP	
	I(0)	I(1)	I(0)	I(1)
Lopen	-2.00	-15.73	-11.76	-11.43
Linv	-5.74		-7.05	
Linf	-4.76		-4.86	
Lgdp	-12.43		-7.32	
Lfdi	-7.10		-9.13	
Lfd	-12.23		-7.92	
Lexr	-2.44	-5.55	-2.51	-5.55
Lexp	-5.71		-12.35	
Lexd	-3.46**		-5.09	

** denotes significance at 5%; all other estimates are significant at 1%

Thus, from Table 1, all the variables with the exception of trade openness (lopen) and exchange rate (lexr) were found to be stationary at levels. Trade openness and exchange rate were found to be stationary at first difference. As a result, a first difference of the two variables was generated and used for the estimation.

3.3 Estimation Results

Using the 2SLS method of estimation, the researcher generated the residuals of the endogenous variables using their reduced form equations before using the residuals to estimate the simultaneous equations. The results of the two estimates are presented in the tables below:

Table 2
Factors Affecting GDP

Dependent Variable: LGDP
Method: Least Squares
Date: 09/01/12 Time: 11:13
Sample (adjusted): 9/01/2004 12/01/2011
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.031915*	0.005773	5.528298	0.0000
LFDIRR	0.010015	0.008725	1.147809	0.2619
LEXP	-0.213758**	0.090154	-2.371023	0.0258
LFD	-0.792486*	0.090538	-8.753034	0.0000
LINF	0.048052	0.103974	0.462151	0.6480
R-squared	0.867246	Mean dependent var		0.011475
Adjusted R-squared	0.846006	S.D. dependent var		0.074869
S.E. of regression	0.029380	Akaike info criterion		-4.065990
Sum squared resid	0.021580	Schwarz criterion		-3.832457
Log likelihood	65.98985	Hannan-Quinn criter.		-3.991281
F-statistic	40.82971	Durbin-Watson stat		2.337841
Prob(F-statistic)	0.000000			

* denotes significance at 1%; ** denotes significance at 5%
Source: Researcher's computations using Eviews

From the results in the table above, two variables (FDI and Inflation) are found to have a positive effect on economic growth (GDP); whereas, export growth (lexp) and financial development (lfd) are found to have a negative effect on economic growth. As a pre-whitening process, growth rate of the variables were used for the estimates as was done by Omoniyi & Omobitan (2011). Since the variables are expressed in logarithms, their coefficients represent their elasticities in relation to GDP (Asafu-Adjaye, 2005). Thus, a 1% change in financial development (LFDD) will induce a 0.79% inverse change in GDP; furthermore, a 1% change in FDI will result in a similar change in GDP by 0.010%.

However, FDI and inflation are all found to be statistically insignificant; this corroborates the findings of Omoniyi & Omobitan (2011) who also found that in the case of Nigeria, FDI was insignificant in explaining economic growth. This is contrary to Asafu-Adjaye (2005) and Aryeetey *et al.* (2008) who found a significantly positive effect of FDI on economic growth in Ghana. In

the case of inflation and the effect on economic growth, contrary to findings of a statistically significant negative relationship between inflation and growth in Nigeria (Omoniyi & Omobitan, 2011). the study found an insignificant relationship in the case of Ghana.

Financial development is found to be statistically significant at 1% significance level. Contrary to the finding by Asafu-Adjaye (2005) of the positive effect of financial development on GDP, this study found a significant negative effect on GDP. Differences in results may be attributed to the use of quarterly data as opposed to annual data used by Asafu-Adjaye (2005). Also, this finding is contrary to Deidda & Fattouh (2002) and Guryay *et al.* (2007) who found insignificant relationship between financial development and GDP, the later in the case of Northern Ireland. Xu (2000) indicates that empirical assessments of impact of financial development on GDP have produced mixed results. Asafu-Adjaye (2005) indicate that financial development may influence investments which may in turn influence growth; notwithstanding, this finding suggests that financial development over the last five years have had a negative effect on growth as proposed by Van Wijnbergen (1983) and Buffie (1984).

Export growth rate was also found to be statistically significant at 5% significance level. This result is contrary to Omoniyi & Omobitan (2011) who found export growth to be insignificant in accounting for economic growth in Nigeria. A negative effect of export growth on GDP was found which is contrary to the export led growth hypothesis which indicates that exports increase total factor productivity because of their impact on economies of scale and other externalities such as technology transfer, improving skills of workers, improving managerial skills, and increasing productive capacity of the economy (Abou-Stait, 2005).

With an adjusted R^2 of over 84%, the independent variables thus accounts for about 84% of variations in the dependent variable (GDP). Also, the F-statistic of 40.83 is highly significant at the 1% significance level, which means that the independent variables have a jointly significant relationship with GDP; thus, indicating that the model used was useful in determining whether a relationship exists between FDI and GDP in Ghana.

On the other hand, the researchers sought to identify factors that lead to FDI in Ghana; variables identified were exchange rate, external debt rate, trade openness, and economic growth as proxied by GDP. The use of GDP was due to the endogeneity between FDI and GDP that have been found in the literature. The results of the estimation are presented in the table below:

3.4 Hypothesis Test Result

Table 2 displays the statistics tests and corrections of factors that affect economic growth (proxied by GDP). The first hypothesis states that there is a positive relationship between GDP and Financial Development, Export Growth and FDI. The test result indicates a correlation of 0.010 and a p-value of 0.261 indicating an insignificant positive correlation between GDP and FDI. The correlation and test of significance between GDP and FD were -0.214 and 0.00 at 5% significance showing a significant negative relationship between GDP and FD. A correlation figure of -0.792 and P-value of 0.026 at 10% significance. We therefore have enough evidence to support the hypothesis that GDP and FDI are positively related, but the relation is a insignificant. However there is no enough evidence to support the claim that GDP positively correlate with FD and Export growth. The second hypothesis states that GDP increases when inflation decreases is rejected as the test result shows a correlation coefficient of 0.048 and a P value of 0.65 at 5% significance.

CONCLUSION AND POLICY IMPLICATIONS

Using a 2SLS, and a quarterly time series data of selected macroeconomic variables, a model based on Solow's production function was estimated. The results found significant negative effects of financial development and exports growth rate on growth rate of GDP. These findings were contrary to Asafu-Adjaye (2005) and Omoniyi & Omobitan (2011) who found significant positive relationships.

However, FDI and inflation were both found to be statistically insignificant; this corroborates the findings of Omoniyi & Omobitan (2011) who also found that in the case of Nigeria, FDI was insignificant in explaining economic growth. However, these findings were contrary to Asafu-Adjaye (2005) and Aryeetey *et al.* (2008) who found a significantly positive effect of FDI on economic growth in Ghana, although the findings confirm the positive effect. The insignificant effect of FDI on GDP may be as a result of the use of quarterly data as opposed to the traditional annual approach adopted by various studies. Quarterly statistics are more vulnerable to fluctuations than annual data and this was observed by the researcher in the FDI data obtained from GIPC. Thus, FDI may still have a significant effect on GDP, albeit the effect is minimal as confirmed by Asafu-Adjaye (2005) and Aryeetey *et al.* (2008). The reason for the minimal effect has been related to low levels of FDI inflows and the low levels of human capital development as determined by Ghana's Human Development Index (HDI) of 0.541 in 2011.

The identification of a positive relationship between FDI and GDP indicates that FDI can be a catalyst for growth in the Ghanaian economy. Presently, FDI inflows have generally increased over the past two years since Ghana discovered oil in commercial quantities. Notwithstanding, FDI inflows do not seem to have a massive impact on human development in Ghana as evidenced by Ghana's ranking on the HDI. This situation may be largely due

to the fact that most of the foreign investment inflows channeled at sectors of the economy that do not contribute much knowledge and technological know-how which is believed to influence human development. According to GIPC (2011). most of FDI inflows have been to the agriculture sector, manufacturing sector (generally extractive) and general trading and construction sector. Although the establishment of Free Zone Board, provision of tax holidays and the import duty exemptions for foreign investors amongst other policies has been beneficial in driving up FDI inflows, the level of inflows is still one of the lowest amongst middle-income countries.

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