

FOREIGN DIRECT INVESTMENT, FINANCIAL SECTOR DEVELOPMENT & ECONOMIC GROWTH: EMPIRICAL EVIDENCE ON LINKS FROM GHANA

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Abstract

This study re-estimated the links between foreign direct investment (FDI) and economic growth by including the development of the domestic financial sector in Ghana. The simple dynamic ordinary least squares regression was used to analyze how financial sector development in Ghana contributes in attracting FDI to promote economic growth. It was found out that improvement in financial sector in Ghana leads to more inflows of foreign direct investment. The FDI with the interaction term and financial sector development has a significant positive impact on current real gross domestic product. This implied that FDI works through the domestic financial sector to affect the economic performance of the Ghanaian economy positively. Thus, the financial sector development is a key for FDI inflows to impact positively on the economic performance of the Ghanaian economy. The Granger causality test also showed that there is unidirectional causality from real gross domestic product to FDI, financial sector development to FDI. It is recommended that prudent financial policies being implemented should be continued since financial sector development leads to increase in FDI inflows which in turn impact positively on economic performance.

Keywords: FDI, Financial Sector Development, Economic Growth, Ghana

INTRODUCTION

Over the years, economic prosperity issues have often been linked to massive inflows of foreign direct investment (FDI) into a nation, and the impact of FDI on economic growth has been argued considerably in the development and economic growth literature. Studies to investigate the fundamental theories of FDI, various macro economic variables that influence FDI, the impact of economic integration on the movements of FDI, and the advantages and disadvantages of FDI have been conducted by many researchers (Yusop 1992; Jackson and Markowski 1995; Cheng and Yum 2000; Lim and Maison 2000). Most of them agree that there exists a positive causal relationship between FDI and economic performance, either in the short run, or in the long run, or both.

Zhang (2001) has studied the causal relationship between FDI and economic performance in both East Asian and Latin American countries. Zhang's findings suggest that there is considerable cross-country variation and differences between East Asia and Latin America in the causal patterns of FDI-growth links. He further concluded that a key advantage created by FDI to recipient countries is technology transfer and spillover efficiency. This advantage, however, does not automatically occur, but rather depends on recipient countries' absorptive capabilities, such as a liberal trade policy, human capital development, and an export-oriented FDI policy. Investigations of the causal relationship between economic growth and FDI inflows have, therefore, a significant role in economic development. If there is unidirectional causality from economic growth to FDI, this implies that national income growth can be treated as a catalyst in attracting inflows of FDI. Conversely, if the unidirectional causality runs from FDI to economic performance, this would strongly suggest that FDI not only stimulates the economic growth rate, but also leads to fixed capital formation and employment augmentation (Borensztein, De Gregorio, and Lee 1998; Lim and Maison 2000; Zhang 2001). If a bi-directional causality exists between these variables, then both FDI and economic growth would have a reinforcing causal relationship.

In relation to the Ghanaian economy, the issue of foreign direct investment is not different. Myriads of opinions exist on the importance of FDI for economic growth. The standard view, however, appears to provide support for the existence of a close association between investment and growth. As noted by Asafu-Adjaye (2005), the distrust of foreign direct investment in the 1960's and early 1970's waned very fast and developing country governments have now come to embrace it recently. He noted that the growing interest in FDI is not only a result of globalization but also a consequence of the steady decline in official development [finance](#). He also studied on the impact of FDI in Ghana. He indicated that FDI has a significant impact on Ghana's economic growth. Therefore, understanding the exact nature of the FDI-Growth relationship is crucial for developing an appropriate policy response. Examining

causality between FDI and growth for the Ghanaian economy, Frimpong and Oteng-Abayie (2006) employed a bivariate framework for their study. Their study provided different results for different sample periods. It was revealed that there is no causality between FDI and growth for the total sample period and the pre-SAP period. However, unidirectional relationship runs from FDI to GDP growth during the post-SAP period. Sackey et al. (2012) investigated the effect of FDI on economic growth in Ghana and tested for the presence of the long run linear relationship between FDI inflows and economic growth for Ghana. The study employed Vector Auto Regressive (VAR) and Johansen Co-integration test. Their findings revealed a long run relationship between the variables. They further concluded that there existed a positive relationship between the variables. In a recent study, Insah (2013) studied ~~into~~ Foreign Direct Investment and Economic Growth in Ghana using Dynamic Ordinary Least Squares. He found out that, the elasticity of economic growth with respect to FDI had a positive sign. However, the effect of a three year lag of FDI on economic growth had a negative effect. Therefore, policy makers should not concentrate on current macroeconomic inflows but rather consider effects of past FDI inflows on current levels of economic growth.

Nevertheless, these previous studies in Ghana ignored the role played by domestic financial sector development in examining the long run relationship and short run causality, between FDI and economic growth. Indeed the speed of technological innovation and patterns of economic growth of a country are highly dependent on the evolution of the domestic financial sector, which acts as a mechanism to channel financial resources between surplus and deficit units, as well as transferring technology embodied in FDI inflows. Financial systems that are more effective at pooling the savings of individuals can profoundly affect economic development. Besides the direct effect of better savings on capital accumulation, better savings mobilization can improve resource allocation and boost technological innovation (Levine 1997). Based on this, Ghana has implemented financial sector reform programme since the late 1980's. The banking system had suffered swallowing together with widespread bank distress as a consequence of the pre-reform policies of financial repression, government control of banks and the prolonged economic crisis. The financial sector reforms included the liberalization of allocative controls on banks, restructuring of insolvent banks and reforms to prudential regulation and supervision to help improve financial sector development in Ghana.

Based on FDI-led growth in Ghana, very few studies have included the financial sector development variable in examining the causality between FDI and economic growth. The introduction of the financial sector indicator is expected to improve and reinforce the link between FDI and economic performance as well as reflect the level of absorptive capability of a recipient country in enjoying the benefits embodied in FDI inflows. Therefore, this study contributes significantly to the Ghanaian economy by analyzing the link that may exist among

foreign direct investment, economic growth and financial sector development using dynamic ordinary least squares (DOLS) technique, since DOLS becomes better than OLS by coping with small sample and energetic sources of bias as well as providing superior approximation to normal distribution.

The problem at hand now is research to date has established that the conditions required to attract inward FDI includes political and macroeconomic stability, good taxation and investment policies and improved infrastructure. Although, these conditions are necessary to attract FDI, they may not be sufficient as the market for FDI becomes increasingly competitive. Barro (1990) contributed that, financial liberalization and stabilization must be undertaken by host countries before any increases in FDI become feasible. Alfaro et al. (2004) found that FDI promotes economic growth in economies with sufficiently developed financial markets. New developments have also indicated the volatility of FDI has called for important macroeconomic and financial adjustments. Choong et al (2004) studied ~~into~~ foreign direct investment, economic growth and financial sector development (a comparative analysis) and found out that, in all the countries under study, both FDI and economic growth are not co-integrated by themselves directly but rather through their dynamic interaction with the development of the domestic financial sector. Furthermore, their results proved that the presence of FDI inflows creates a positive technological diffusion in the long run only if the evolution of the domestic financial system has achieved a certain minimum level. Therefore, this study seeks to examine the significance of the development of the financial sector in affecting the link between FDI and economic growth in Ghana.

The main objective of the study is to re-estimate the links between FDI and economic growth by including the development of the domestic financial sector in Ghana. Specifically, to determine whether financial sector development transforms effectively the benefits embodied in FDI inflows in promoting economic growth in Ghana. Also, to determine whether the financial development indicator and the interactive term promoting economic growth is necessary to be included in the model.

The following hypotheses were tested.

H_0 : There is a negative relationship between financial development and FDI in Ghana.

H_1 : There is a positive relationship between financial development and FDI in Ghana.

H_0 : There is a negative relationship between FDI and economic growth in Ghana.

H_1 : There is positive relationship between FDI and economic growth in Ghana.

H_0 : There is no significant relationship between the interaction of financial development and FDI on economic growth in Ghana.

H_1 : There is significant relationship between the interaction of financial development and FDI on economic growth in Ghana.

This study is crucial because the importance of financial markets for the development of a country's economy cannot be overemphasized. For this reason, many countries have embarked on a number of financial sector development programmes since the mid of the 1980's in order to revamp their economies. Based on this the Ghanaian government has in the last 3 decades been committed to developing and enhancing the financial markets as a vehicle for mobilizing savings for investment. Therefore, this study contributes to the existing literature by being the first to analyze the link between FDI and economic growth by including the development of the domestic financial sector in Ghana using DOLS technique, the study will contribute to existing literature. Furthermore, the study will help and give policy makers a clear understanding of the financial sector in Ghana and how it contributes to attracting FDI to promote further economic growth and development.

LITERATURE REVIEW

The neoclassical growth theory of Solow (1956) assumed the rate of technological progress to be determined by a scientific process that is separate from, and independent of, economic forces. Neoclassical theory thus implies that economists can take the long-run growth rate as given exogenously from outside the economic system. On the other hand, the endogenous growth theory challenges this neoclassical view by proposing channels through which the rate of technological progress, and hence the long-run rate of economic growth, can be influenced by economic factors. It starts from the observation that technological progress takes place through innovations, in the form of new products, processes and markets, many of which are the result of economic activities. For example, because firms learn from experience how to produce more efficiently, a higher pace of economic activity can raise the pace of process innovation by giving firms more production experience. The study therefore will follow the following possible links and related hypothesis:

FDI-led Growth

The hypothesis of FDI-led economic growth is actually based on the endogenous growth model, which states that foreign investment associated with other factors such as capital, human capital, exports, and technology transfer have had significant effects in driving economic growth (Borensztein, De Gregorio, and Lee 1998; Lim and Maisom 2000). These growth-driving

determinants might be initiated and nurtured, so as to promote economic growth through FDI. To this extent, FDI may have a positive growth impact that is similar to domestic investment, along with alleviating partly balance-of-payment deficits in the current account (Zhang 2001, p. 177). Recent studies have recommended that, via technology transfer and spillover efficiency, the inflow of FDI might be able to stimulate a country's economic performance. The spillover efficiency occurs when domestic firms are able to absorb the tangible and intangible assets of multinational corporations (MNCs) embodied in FDI. Besides, as FDI creates backward and forward linkages, and MNCs contribute technical help to domestic firms, it is expected that the level of technology and productivity (for both labour and capital) of domestic producers will increase (Blomstrom, Kokko, and Zejan 1992).

Growth-led FDI

Quite different from the hypothesis of FDI-led economic growth, the GDP-driven FDI hypothesis is strongly based on the MNC theory. According to the Eclectic Paradigm, Dunning (1977, 1993, and 1995) argues that MNCs with certain ownership advantages will invest in another country with locational advantages, and both advantages can be captured effectively by "internalizing" production, through FDI. The hypothesis of growth-led FDI, therefore, focuses on locational factors, such as market size (proxied by GDP or GNP), as the most significant factor in attracting FDI. As the market size (GDP) of the host country increases with a high rate of economic growth, *ceteris paribus*, FDI will increase, resulting from the expected higher level of profitability. High rates of economic growth will cause levels of aggregate demand for investments (both domestic and foreign) to rise (Corden 1999 and Zhang 2001). In addition, better economic performance suggests better infrastructural facilities and greater opportunities for making profits. As a result, the greater the size of the market the greater the inflows of FDI into the recipients' countries, all things being same.

Feedback

There is a possibility that feedback causality exists between FDI and economic growth. As large market size leads to rapid economic growth, which in turn will increase the flow of FDI, and subsequently increase the profitability levels. This will foster economic performance resulting from the high level of aggregate demand. Therefore, it is not surprising to conclude that there exists positive feedback between FDI and economic growth, due to the interdependence between these two variables.

Financial Sector –led Growth

The endogenous growth theory that positively links financial sector development and economic growth emerged in the 1990s (Eschenbach, 2004). This theory, which follows the Schumpeter's argument, emphasizes the role of the financial sector in promoting innovations and the speed of technological progress, thus contributing to long-term economic growth (King and Levine, 1993). The endogenous growth literature argues that the financial sector fosters capital accumulation and productivity growth by facilitating trading, hedging, diversifying, and pooling of risks, mobilizing savings, allocating resources, monitoring managers and exerting corporate control and facilitating exchange of goods and services.

Endogenous growth model literature argues that there is a two-way causal relationship between financial sector development and long-run economic growth. The financial sector influences long-run economic growth through two main channels: the volume of investment and the efficiency of investment. There are also feedback effects from economic growth to the development of the financial sector (De Gregorio and Guidotti, 1995:435). Considering financial sector development, although existing theories have not yet formally identified a direct link between financial development, economic growth, and foreign direct investment, Hermes and Lensink (1999) and Bailliu (2000) attempted to study the significance of both foreign capital inflows and financial development as a channel for promoting growth. Different from previous studies, both studies investigated the relationship between international capital inflows and economic growth through financial sector evolution, rather than simply focusing on the promotion of the domestic investment rate and spillover efficiency. They concluded that inflows have both positive spillover efficiency and a significant impact on economic growth, if the domestic financial sector has achieved a certain minimum level of development. Hence, this study follows the endogenous growth model.

METHODOLOGY

This section developed an econometric framework for the analysis of the relationship between foreign direct investment (FDI) and economic growth by including the development of the domestic financial sector for Ghana during the period 1980 to 2012. This period was significant because it covered the period when the government employed interventionist policies and when it liberalized the market by forming a comprehensive Financial Sector Adjustment Program (FINSAP). This study assumed that the development of Ghana's financial sector, *ceteris paribus*, was essential in attracting foreign direct investment to promote economic growth. Many researchers in Ghana have focused on exploring the channels through which FDI stimulates economic growth such as "The Effect of FDI on economic growth in Ghana" (Sackey et al,

2012). Consequently, this study is particularly interested in analyzing how financial sector development in Ghana contributes in attracting FDI to promote economic growth in Ghana.

The economic theory shows that the impacts of variables can be manifested in the latter periods or extended to many periods. In this situation, dynamic models are employed to explain the relationship between or among the variables. Dynamic models are usually seen in three forms according to the variables affected by the delays. It may be that the delays involve only affect exogenous variable, endogenous variable or simultaneously both exogenous and endogenous variables. A simple dynamic model with delay in the exogenous variable is given as:

$$Y_t = \alpha + \sum_{i=0}^m \alpha_i X_{t-i} + u_t ; \dots\dots\dots (1)$$

where X_{t-1} is the first lag or delay of X_t .

If the variables are highly correlated then there will be the problem of multicollinearity, therefore, dynamic model is employed to solve this problem.

A simple dynamic model with delay in the endogenous variable is given as:

$$Y_t = \beta + \sum_{i=1}^n \beta_i Y_{t-i} + u_t ; \dots\dots\dots (2)$$

where Y_{t-1} is the first lag or delay of Y_t .

A simple dynamic model with delays in the endogenous and exogenous variables

simultaneously is given as,

$$Y_t = \beta + \sum_{i=1}^n \beta_i Y_{t-i} + \sum_{i=0}^m \alpha_i X_{t-i} + u_t ; \dots\dots\dots (3)$$

In this case, the problem of the presence of random variable as delay of endogenous variable and exogenous variable are added to the existence of residual autocorrelation. Hence, the OLS estimate is biased and inconsistent, therefore, there is the need to use instrumental variable (that is, variable not previously included as explanatory variable that is uncorrelated with the model error term and very correlated with the explanatory variable of the model which it replaced as an instrument). This method of instrumental variable allows us to obtain estimates that have consistent parameters. Given the model with distributed delays, the set delay

structure $\{\delta\} = \{\delta_0, \delta_1, \delta_2, \dots, \delta_s\}$, assuming that $\{\delta\}$ is finite, then, the Fisher's Arithmetic delay

can be used. Fisher arithmetic delay,

$$\delta_i = \begin{cases} (s+1-i)\delta & 0 \leq i \leq s \\ 0 & i > s \end{cases} \dots\dots\dots (4)$$

Using the Fisher arithmetic delay the model (1) becomes

$$Y_t = \mu + \sum_{i=0}^s \delta_i X_{t-i} + u_t = \mu + \delta \sum_{i=0}^s (s+1-i) X_{t-i} + u_t = \mu + \delta Z_t + u_t \dots\dots\dots (5)$$

where Z_t is the instrumental variable to be constructed and $\{\delta\} = \{\delta(s+1), \delta(s), \delta(s-1), \delta(s-2), \delta(s-3), \dots, \delta\}$. The model with the instrumental variable can now be estimated using the OLS.

In case of multiple regression model $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon \dots\dots\dots (6)$

If $E(\varepsilon) = 0, C(X_1, \varepsilon) = 0, C(X_2, \varepsilon) = 0, C(X_3, \varepsilon) = 0$, then the model (6) is estimated using OLS.

But if $C(X_i, \varepsilon) \neq 0$, then the model (6) is estimated with instrumental variable Z_i for X_i . For instance, if $C(X_1, \varepsilon) = 0, C(X_2, \varepsilon) \neq 0$ and $C(X_3, \varepsilon) = 0$, then the model becomes

$$Y = \Pi_0 + \Pi_1 X_1 + \Pi_2 Z + \Pi_3 X_3 + \mu \dots\dots\dots (7)$$

where Z is a valid instrument and require $\Pi_2 \neq 0$.

The error term from the estimate may or may not correlate with the explanatory variable(s). Therefore, the DW statistic for the dynamic model with delay will be examined to find out if the error term was correlated with the explanatory variables, that is, if the problem of autocorrelation or serial correlation exists. If this problem existed, then the correlogram of the residual will be examined to determine the autoregressive (AR) term(s) or moving average (MA) term(s) or both to be included in the model to correct the problem of serial correlation.

The variables used for the estimation were in natural logarithm which consists of GDP: Gross Domestic Product, FDI: foreign direct investment, DC: financial sector development indicator and DCFDI: interaction term between FDI and financial sector development indicator. In terms of the number of delays to choose, the Schwartz Akaike information criteria is used taking the number of delays for which the model has the lowest values of the criteria of information. The model proposed for this study was based on the assumption that foreign direct investment (FDI) inflows will impact on economic growth through financial sector development. As a result, following Kings and Levine (1992a, 1993b) and Insah (2013) the study measured financial sector development as domestic credit to private sector (DC).

Definition of Variables in the Model

Financial Sector Development

Although, much has been written about foreign direct investment (FDI) and economic growth, no previous study has been seen in Ghana on how financial sector development affects the link between FDI and economic growth using DOLS technique. Financial development is generally defined as the improvement in quantity, quality and efficiency of financial intermediary services. In relation to the measurement of financial sector development, there has not been any unique measure of the extent of financial development. Consequently, the measures used tend to differ from one study to another. Gupta (1984), for example used financial intermediation ratio (FIR) as the ratio to GNP of the following Assets: currency outside banks and money with banks, quasi-money with banks, post office savings deposit, bonds of other Financial Institutions, Capital accounts of other financial institutions and charge in life insurance assets. Kings and Levine (1992a, 1993b) on the other hand, used the ratio of (m_1 and m_2) of GDP, quasi liquid liabilities and domestic credit to the private sector as measure of financial depth. Therefore, this study will follow Kings and Levine (1992a, 1993b) by measuring financial [sector](#) development as domestic credit to private sector.

Foreign Direct Investment

There are several sources for data on FDI. An important source is the World Development Indicators (WDI) publication, which reports the Balance of Payments statistics on FDI. Net FDI inflows, reported in the WDI, measure the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. Gross FDI figures reflect the sum of the absolute value of inflows and outflows accounted in the balance of payments financial accounts. Therefore this model will focus on the inflows to the economy; therefore, this paper used the net inflow measure.

Economic Growth

The growth of real income depends on the changes in the consumption, investment spending, and government spending and net export. The real GDP also depends on the real exchange rate, inflation, the growth of output in mining and agriculture and the changes in the foreign aid. In theory, the growth of real GDP should be related to real income and consequently to the growth of factors of production (labour and capital) and variables which capture changes in factors of production (technology, information and organisation). Movement in the exchange rate reflects comparative advantage and, indirectly productivity. Although Kings and Levine

(1992a, 1993b,c), in a series of their studies used a number of indicators to measure economic growth such as real per capita GDP, Physical capital accumulation and ratio of domestic investment to GDP, but this study measures economic growth by using real gross domestic product.

ANALYSIS AND FINDINGS

The correlation coefficient between the variables under consideration is shown in table 1 below. From the table, the variables are highly correlated, the correlation coefficient between real gross domestic product and foreign direct investment is 0.9054, between real gross domestic product and financial sector development is 0.9727 and between financial sector development and foreign direct investment is 0.8548. Therefore, there might be the problem of multicollinearity. As a result, the study used dynamic model with delay in endogenous or exogenous variables or both, as the case may be in a particular instance, to examine the research problems.

Table 1: The correlation coefficient between the variables

	LNRGDP	LNFDI	LNDC
LNRGDP	1.000000	0.905353	0.972703
LNFDI	0.905353	1.000000	0.854819
LNDC	0.972703	0.854819	1.000000

Estimation of the Effect of DC on FDI

Table 2 below shows the simple dynamic OLS of foreign direct investment and financial sector development with delay in the foreign direct investment inflow. The expectation of the error term and covariances of the exogenous variables with the error term are zero, that is $E(\varepsilon) = 0, C(FDI_{t-1}, \varepsilon) = 0, C(DC_t, \varepsilon) = 0$, then, the variables financial sector development(DC) the delay in FDI are valid (do not need an instrumental variables for the estimation) to explain the behavior of the current FDI. From Table 2, the delay in FDI and financial sector development explained about 90 percent of the total variations in the current foreign direct investment inflow. The DW statistics of 1.7 shows that there is no evidence of autocorrelation, since this value lies between 1.5 and 2.5. The result showed that, at 5 percent level of significance, there is a significant positive relationship between financial sector development and foreign direct investment inflow. This relationship is inelastic. A percentage point increase in financial sector development causes the current foreign direct investment inflows to increase by 0.4986 percentage point all other things being same. Therefore, improvement in financial sector development will improve foreign direct investment inflows into Ghana. This confirms the

alternative hypothesis that there is a positive relationship between financial sector development and foreign direct investment inflow into Ghana. Also, the delay in FDI at 5 percent level of significance causes current FDI to improve. From Table 2, if previous FDI increase by a percentage point, current foreign direct investment inflows will increase by 0.7530 percentage point. Hence, an improvement in financial sector development leads to increase in the inflow of foreign direct investment and the delay in FDI also improve current foreign direct investment inflows.

Table 2: Simple dynamic OLS model with delay in the exogenous variable

Dependent Variable: LNFDI				
Method: Least Squares				
Included observations: 30 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.355698	1.111947	-2.118534	0.0435
LNFDI(-1)	0.752993	0.112506	6.692899	0.0000
LNDC	0.498589	0.197535	2.524054	0.0178
R-squared	0.903583	Mean dependent var	7.816309	
Adjusted R-squared	0.896441	S.D. dependent var	0.896268	
S.E. of regression	0.288424	Akaike info criterion	0.445867	
Sum squared resid	2.246081	Schwarz criterion	0.585986	
Log likelihood	-3.688000	Hannan-Quinn criter.	0.490692	
F-statistic	126.5174	Durbin-Watson stat	1.721041	
Prob(F-statistic)	0.000000			

Estimation of the Effect of FDI on RGDP

The estimate of FDI-led growth model is shown in Table 3. Table 3 shows the simple dynamic OLS of real gross domestic product and foreign direct investment with delay in real gross domestic product. The expectation of the error term and covariances of the exogenous variables with the error term are zero, that is $E(\varepsilon) = 0, C(RGDP_{t-1}, \varepsilon) = 0, C(FDI_t, \varepsilon) = 0$, then the foreign direct investment inflow and the delay in RGDP are valid (do not need an instrumental variables for the estimation) to explain the behavior of the current RGDP. From Table 3, the delay in RGDP and FDI explained about 99 percent of the total variations in the current RGDP and the

DW statistics of 1.74 shows that there is no evidence of autocorrelation since this value falls within 1.5 and 2.5.

From table 3, at 5 percent level of significance, the delay in real gross domestic product has a significant positive impact on current real gross domestic product. As the previous year's real gross domestic product increase by a percentage point current real gross domestic product increase by 1.0789 percentage point. Unfortunately, foreign direct investment inflow did not have a significant positive impact on real gross domestic product. A percentage point increase in the foreign direct investment leads to 0.0096 percentage point decrease in real gross domestic product. Therefore, foreign direct investment does not improve economic performance significantly directly. This finding is inconsistent with the finding of Sackey et al. (2012).

Table 3: Simple dynamic OLS model with delay in endogenous variables

Dependent Variable: LNRGDP				
Method: Least Squares				
Date: 06/01/14 Time: 11:24				
Sample (adjusted): 1981 2011				
Included observations: 31 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.681465	0.300010	-2.271473	0.0310
LNRGDP(-1)	1.078961	0.035490	30.40157	0.0000
LNFDI	-0.009602	0.007024	-1.367144	0.1825
R-squared	0.994697	Mean dependent var	9.863593	
Adjusted R-squared	0.994319	S.D. dependent var	0.182382	
S.E. of regression	0.013747	Akaike info criterion	-5.644232	
Sum squared resid	0.005291	Schwarz criterion	-5.505459	
Log likelihood	90.48560	Hannan-Quinn criter.	-5.598996	
F-statistic	2626.223	Durbin-Watson stat	1.740152	
Prob(F-statistic)	0.000000			

Estimation of the Effect of FDI, DC and interaction on GDP

Since the objective of the study is to empirically examine the significance of the development of the financial sector in affecting the link between FDI and economic growth, the study included two additional variables, namely: financial sector indicator measured as Domestic Credit to

private sector (DC) and the interaction term between FDI and financial sector development (DCFDI). The interaction between FDI and financial sector development will therefore test the significance of financial sector development in enhancing the positive externalities associated with FDI inflows. To ensure that the interaction term (DCFDI) does not proxy for FDI or the levels of development of financial markets, both of these variables will be included in the regression model.

Table 4 below shows the simple dynamic OLS of real gross domestic product, delay in real gross domestic product, foreign direct investment, financial sector development and interaction term. The expectation of the error term and covariances of the exogenous variables with the error term are zero, that is $E(\varepsilon) = 0, C(RGDP_{t-1}, \varepsilon) = 0, C(FDI_t, \varepsilon) = 0, C(DC_t, \varepsilon) = 0, C(INT_t, \varepsilon) = 0$, then the delay in RGDP, FDI, DC and interaction term (DCFDI) are valid (do not need an instrumental variables for the estimation) to explain the behavior of the current RGDP. From Table 4, the delay in RGDP, FDI, DC and interaction term (DCFDI) explained about 99.6 percent of the total variations in the current RGDP. The DW statistics of 1.9 shows that there is no evidence of autocorrelation since this value falls within 1.5 and 2.5. From table 4, at 5 percent level of significance, the delay in real gross domestic product has a significant positive impact on current real gross domestic product. As the previous year's real gross domestic product increases by a percentage point, current real gross domestic product increases by 1.014 percentage point, all other things being equal. The foreign direct investment has a significant positive impact on current real gross domestic product. As foreign direct investment increases by a percentage point, current real gross domestic product increases by 0.075 percentage point. This finding is consistent with the findings of Sackey et al. (2012) and Insah (2013). However, financial sector development has negative impact on current real gross domestic product but not significant. This indicates that as financial sector development increases by a percentage point current real gross domestic product decreases by 0.0568 percentage point. This further means that improvement in financial sector development on its own does not caused expansion in real income; the financial sector just serves as intermediary for foreign direct investment to cause expansion in real income. The finding is contrary to the finding of Alfaro et al. (2004). Finally, the interaction term between foreign direct investment and financial sector development indicator has a significant positive impact on current real gross domestic product. As a result, improvement in interaction term leads to improvement in current real gross domestic product. This confirms the alternative hypothesis that there is significant relationship between the interaction of financial development and FDI on economic growth in Ghana. This results further indicates that FDI inflows will creates additional employment, technological transfers and

spillover efficiencies in the long term only when the financial sector is very well developed at a certain minimum level. This finding is consistent with the finding of Choong et al. (2004).

Table 4: Simple Dynamic OLS Model with Delay in Endogenous Variables

Dependent Variable: LNRGDP				
Method: Least Squares				
Date: 06/01/14 Time: 11:30				
Sample (adjusted): 1981 2011				
Included observations: 31 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.831537	0.601113	-1.383328	0.1783
LNRGDP(-1)	1.013873	0.084521	11.99547	0.0000
LNFDI	0.075042	0.036254	2.069875	0.0485
LNDC	-0.056827	0.034280	-1.657747	0.1094
INDCFDI	0.556487	0.235234	2.365674	0.0257
R-squared	0.995642	Mean dependent var	9.863593	
Adjusted R-squared	0.994972	S.D. dependent var	0.182382	
S.E. of regression	0.012932	Akaike info criterion	-5.711482	
Sum squared resid	0.004348	Schwarz criterion	-5.480193	
Log likelihood	93.52796	Hannan-Quinn criter.	-5.636087	
F-statistic	1485.160	Durbin-Watson stat	1.918863	
Prob(F-statistic)	0.000000			

Granger (1996) causality test has been performed in order to examine the linear causation between the variables concerned. Then result is shown in table 5 below. Granger causality is useful in determining the direction of the relationships among the selected variables. From table 5, the result shows that there is unilateral directional causality between real gross domestic product and foreign direct investment, real gross domestic product and interaction term, financial sector development and foreign direct investment, and financial sector development and interaction term. However, foreign direct investment does not cause expansion in real gross domestic product, financial sector development does not cause real gross domestic product neither does real gross domestic product cause financial sector development, interaction term does not cause real gross domestic product. Also, foreign direct investment

does not cause financial sector development and interaction term does not cause financial sector development. Finally, there is bidirectional causality between interaction term and foreign direct investment.

Table 5: Pairwise Granger Causality Test for Variables under Consideration

Pairwise Granger Causality Tests			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
LNFDI does not Granger Cause LNRGDP	29	0.09753	0.9074
LNRGDP does not Granger Cause LNFDI		7.10852	0.0038
LNDC does not Granger Cause LNRGDP	30	0.14054	0.8696
LNRGDP does not Granger Cause LNDC		1.90509	0.1698
INT1 does not Granger Cause LNRGDP	29	0.10279	0.9027
LNRGDP does not Granger Cause INT1		4.68134	0.0192
LNDC does not Granger Cause LNFDI	29	4.46111	0.0225
LNFDI does not Granger Cause LNDC		1.83880	0.1807
INT1 does not Granger Cause LNFDI	29	4.96914	0.0156
LNFDI does not Granger Cause INT1		5.34708	0.0120
INT1 does not Granger Cause LNDC	29	2.13932	0.1396
LNDC does not Granger Cause INT1		4.95700	0.0158

DISCUSSION

The result of a significant positive relationship between financial sector development and foreign direct investment inflow shows that if a country develops its financial sector the inflow in foreign direct investment will increase. But the foreign direct investment inflow and financial sector development by themselves do not cause growth in Ghana. However, the interaction between foreign direct investment and financial sector development cause a significant and positive improvement in the real gross domestic product. From the Granger causality test, the result shows that unidirectional causality run from real gross domestic product to foreign direct investment. This means that improvement in foreign direct investment in Ghana strongly depends on the improvement in Ghana's real gross domestic product. An increase in real GDP

will attract more FDI into Ghana, all other things being same. The results again show unidirectional causality from real gross domestic product to interaction term. This implies that the interaction term depends on real gross domestic product, and that any policies directed to increase real gross domestic product will at the end, also increase the interaction term, and the reverse is also true, all other things being the same.

Also the results indicate unidirectional causality from financial sector development to foreign direct investment. This means that foreign direct investment depends strongly on financial sector development and thus a decrease/an increase in financial sector development will likely restrain/improve the inflow of foreign direct investment into Ghana which might further lead to other economic problems or successes such as unemployment/employment, low income/high income and so on, *ceteris paribus*. Furthermore, unidirectional causality runs from financial sector development to the interaction term. This implies that the interaction term depends strongly on the growth, development and stabilization of the financial sector. An improvement in the financial sector development will also cause an improvement in the interaction term, all other things being held constant. Unfortunately, the causality tests identified that foreign direct investment does not cause expansion in real gross domestic product. This means that improvement in real gross domestic product will not depend on the inflow of foreign direct investment. Any policies directed to improve the inflow of foreign direct investment into Ghana, will not affect the growth of real GDP, *ceteris paribus*. This finding is consistent with the finding of Frimpong and Oteng-Abayie (2006).

Again, the study identified that financial sector development does not cause real gross domestic product neither does real gross domestic product cause financial sector development. This indicates that real GDP does not depend on financial sector development. On the other hand, financial sector development does not depend on real GDP. Thus, any policies directed towards the expansion of real GDP will not affect financial sector development and also any policies directed towards financial sector development will equally not affect real GDP. In addition, the interaction term does not cause real gross domestic product. This implies that real GDP does not depend on interaction term. Finally, the study identified that foreign direct investment does not cause financial sector development and also the interaction term does not cause financial sector development.

POLICY IMPLICATIONS

1. The study found that unidirectional causality run from financial sector development to foreign direct investment. This implies that FDI depends on the domestic financial sector development. As a result, the governments through the monetary policy authorities should draw up very good monetary policies that will attract new financial institutions,

grow existing financial institutions and then develop the financial sector of the Ghanaian economy. This will attract more FDI into Ghana and further lead to job creation, improvement in income and technological transfers.

2. The study identified FDI to negatively impact on real GDP. This could mean that in Ghana most of the FDI's are found mostly in the minerals sector of the Ghanaian economy, more especially in the gold subsector which does not positively impact on the Ghanaian economy. The reason could be due to the fact that all the proceeds gained by these foreign investors are repatriated back into their respective countries, leaving very little for Ghana.

- ~~As a result, the~~ current agreement between foreign investors of the mineral sector and government of Ghana concerning the extraction of minerals in Ghana should be reviewed such that more of the proceeds gained from production by these foreign investors ~~are maintained~~ in Ghana, invested in Ghana for further expansion of their business operations. This will improve employment levels and then finally result in an increase in income levels of the people of Ghana.
- In addition, the government of Ghana should ensure that there is good governance, rule of law, stabilization of the macroeconomic environment, good taxation and investment policies and massive infrastructure development to keep existing foreign investors and if possible attract potential foreign investors into Ghana for further job creation, additional government revenue generation and technological transfers and spillover efficiencies.
- Also, the government should identify new productive sectors such as the agriculture sector where potential and existing foreign investors can channel some of their resources for the betterment of the growth, development and sustainability of the Ghanaian economy.

3. The study also identified financial sector development to affect the Ghanaian economy negatively. It is suggested that, in addition to good governance, rule of law and macroeconomic stabilization, there should be financial liberalization and stabilization in Ghana before any increase in FDI become viable. In addition to that the government of Ghana through the information ministry should educate Ghanaians to trust, believe and do business with the financial institutions for growth, development and sustainability of the financial sector of the Ghanaian. The will enhance better savings mobilization, better savings on capital accumulation, improve resource allocation and then boost technological innovation and for that matter economic growth.

CONCLUSION

This study re-estimated the links between FDI and economic growth by including the development of the domestic financial sector in Ghana. The simple dynamic ordinary least squares regression was used to analyze how financial sector development in Ghana contributes in attracting FDI to promote economic growth; [therefore, the result in this study is limited to Ghana. Also, the data used for the study is limited to 1981 to 2012.](#) From the result, there is a significant positive relationship between financial sector development and foreign direct investment inflow. So, the financial sector development is a key for foreign direct investment inflows to impact positively on the economic performance in Ghana. However, foreign direct investment inflow on its own does not have a significant impact on real gross domestic product. But the foreign direct investment with interaction with other variables has a significant positive impact on real gross domestic product. The financial sector development on its own has insignificant impact on real gross domestic product. This means that improvement in financial sector on its own does not caused expansion in real income. It just serves as intermediary for foreign direct investment inflow to cause expansion in real income. The interaction term between foreign direct investment and financial sector development indicator has a significant positive impact on current real gross domestic product. In addition, Granger causality test shows that there is unilateral directional causality between real gross domestic product and foreign direct investment, real gross domestic product and interaction term, financial sector development and foreign direct investment, and financial sector development and interaction term. Finally, there is bidirectional causality between interaction term and foreign direct investment.

[It is recommended that prudent financial policies being implemented should be continued since financial sector development leads to increase in foreign direct investment inflows which in turn impact positively on economic performance.](#) For future research it is recommended that the effects of Foreign Direct Investment on Agricultural Sector, Industrial Sector, Services Sector and Economic Growth in Ghana should be analyzed.

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