

The impact of financial sector reforms on foreign direct investment in an emerging economy: empirical evidence from Ghana

Foreign direct
investment

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Abstract

Purpose – This paper aims to empirically investigate the impact that financial sector reforms have on foreign direct investment (FDI) in Ghana.

Design/methodology/approach – Composite financial sector reform index was constructed, which was made up of various forms of reform policies that were implemented from 1987 to 2016. The auto regressive distributed lag bounds test was used to establish cointegration between variables. Having controlled for other covariates that affect FDI such as trade openness, exchange rate, gross domestic product per capita, inflation and by using the fully modified ordinary least squares method, the estimations are robust as it uses a semi-parametric correction to avoid for any possible issues of endogeneity and serial correlation.

Findings – Results from the paper reveal that financial sector reform deepening boost FDI with a 2.167% increase in FDI following from a unit percentage improvement of the financial sector reforms. Considering the various categories of reforms, the results reveal that competitive reforms have the highest impact on FDI followed by privatization reforms with positive and significant elasticity coefficients of 2.174% and 0.726%, respectively. Behavioral reforms revealed a positive effect on FDI, albeit insignificant.

Originality/value – The paper contributes to policy by providing empirical evidence on the effect of financial sector reform on FDI inflows in Ghana. As far as the review of literature is concerned, this



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paper provides the foremost empirical evidence on the subject with sole emphasis on Ghana. Thus, this paper suggests the deepening of the financial sector reforms, improving competition and maintaining macroeconomic stability.

Keywords FDI, Ghana, FMOLS, Financial sector reforms

Paper type Research paper

1. Introduction

Over the past three decades, the financial sector of Ghana, like most emerging economies, has been going through reforms processes to transition from a repressed one to a highly liberalized one. This is because the financial sector is very essential in its contribution to enhancing economic growth and development and as such, reforms in the sector would be considered as a major stride to achieving final liberalization and the status of a strong emerging economy. In respect to the determinants of growth, especially for developing economies over the past two decades, the positive role played by foreign direct investment (FDI) has been evidenced in several studies (see for instance [Ali and Mna, 2019](#); [Owusu-Nantwi and Erickson, 2019](#); [Doku *et al.*, 2017](#); [Iqbal Chaudhry *et al.*, 2013](#)). The current paper thus sought to find out if reforms in financial sector could impact on FDI inflow in Ghana.

In Ghana, the inflows of FDI have substantially increased, with the figure rising from US \$0.17bn (3.33% of GDP) in the year 2000 to US\$3.25bn (6.88% of GDP) in 2017 (UNCTAD, 2017). This is consistent with modernization, endogenous growth and neoclassical growth theories. The modernization theory is based on the fact that economic growth needs capital investment ([Calvo and Sanchez-Robles, 2002](#)). With regard to endogenous growth model, it premises on the reasoning that FDI is accompanied by technology transfer, skills and training which augment technological advancement to attain economic growth in the long term ([Kumar and Pradhan, 2002](#)). Thus, many countries, especially the developing ones now put in policy measures so as to attract FDI inflows so as to rake in the associated benefits induced by FDI ([Kaur *et al.*, 2013](#)).

Development of the financial sector is one major absorption capacity, which must be established to enhance the inflows of FDI ([Asong, 2014](#) and [Adams, 2009](#)). [Omri and Kahouli \(2014\)](#) revealed that Middle East and North African countries, as a result of ill-developed financial markets, did not benefit enough from FDI. On their part, [Almfraji and Almsafir \(2014\)](#) and [Seenivasan \(2014\)](#) provide evidence to the effect that development of the financial sector presents one sure conduit through which countries can reap the FDI-induced benefits. [Anyanwu \(2012\)](#) found that in addition to natural resource endowment, rule of law and trade openness and financial sector development influence FDI inflows. Using cross-country data, [Alfaro *et al.* \(2004\)](#) found evidence to suggest that even though FDI plays an important role in contributing to economic growth, the level of development of local financial markets is crucial for these positive effects to be realized and that countries with well-developed financial markets gain significantly from FDI. [Hermes and Lensink \(2003\)](#) and [Durham \(2004\)](#) reached the same conclusion after using different samples and measurement choices, which provide evidence that sound local financial markets are an important precondition for benefits of FDI to materialize. Furthermore, [Alfaro *et al.* \(2009\)](#) examined whether factor accumulation or total factor productivity (TFP) are the channels. In the financial-markets through which FDI promotes growth. Findings from macro-level cross-country analysis revealed the positive interaction effect between FDI and financial institutions to affect not the accumulation of physical or human capital, but rather growth in aggregate TFP. Similarly, [Alfaro and Charlton \(2009\)](#) provided industry-level evidence using data for OECD countries which showed that controlling for levels of financial development, the relationship

between FDI and growth is stronger for industries more reliant on external finance. On their part, [Prasad *et al.* \(2007\)](#) revealed that an influx of foreign capital spurs the growth of finance-dependent industries only in countries with highly developed financial markets and hinders their growth in countries with less developed financial markets. [Desbordes and Wei \(2014\)](#) who sought to empirically assess financial development and its causal impact on greenfield FDI found that the net effect of host country's financial development on the magnitude of greenfield FDI is positive, and that the effect primarily operates by increasing the average size (rather than the number) of greenfield projects. In the African sub-region, [Agbloyor *et al.* \(2014\)](#) studied the causality which existed between FDI and financial sector development. By using instrumental variable panel regression model, they reported that FDI and development of the financial sector positively influence each other. Similarly, [Sghaier and Abida \(2013\)](#) found evidence to the effect that the degree to which economic growth was enhanced via FDI improves with financial sector development. Also on their part, [Ofori-Abebrese and Kamasa \(2013\)](#) established that private investment improves when there is deepening of financial sector reforms in Ghana.

Since independence, banks are the dominant force in the financial system in Ghana. Between the years 1976 and 1983, the economy of Ghana experienced severe crises, balance of payment deficit and deteriorating economic growth ([Aryeetey and Kanbur, 2008](#)). Thus, in collaboration with the International Monetary Fund (IMF), there was an introduction of Economic Recovery Program in 1983 and Financial Sector Adjustment Program in 1986. In 2003, these reforms were followed up with the Financial Sector Strategic Plan (FINSSP). Other reform policies to follow included the Bank of Ghana Act 2002, Banking Amendment Act 2007, Foreign Exchange Act 2007, Credit Reporting Act 2008 and Lender and Borrowers Act 2008, among others.

Following the inception of the financial sector reforms, studies have been undertaken to assess its effects on various outcomes such as economic growth ([Owusu and Odhiambo, 2015](#)), banking systems ([Owusu-Antwi, 2009](#)), banks performance ([Antwi-Asare and Addison, 2000](#)) and private sector investment ([Ofori-Abebrese and Kamasa, 2013](#)). However, there is a lacuna in the literature with regard to the impact of financial sector reform on the FDI inflows. Moreover, most of the studies conducted on financial reforms fail to account for the gradual changes in the reforms by simply using proxies such as broad money supply, credit to private sector and real interest rate, among others. This paper thus seeks to fill this gap in three ways. First, it will measure the effect of financial sector reforms on FDI inflows by constructing an index to capture the gradual changes in the sector's reforms. Second, by decomposing the index into types, this paper will go a step further to investigate which types of the financial reforms matters most in enhancing FDI inflows in Ghana. Third, the paper will assess the Granger causality between financial sector reforms and FDI inflows in Ghana. Given the importance of FDI to growth process, findings from this paper would inform policy decisions with regard to measures to help deepen the sector so as to rake in the benefits associated with FDI inflows.

The remainder of the paper has been organized along the following sequence. Section 2 highlights the procedure for constructing the financial sector reform index. Data type and empirical strategy are explained in Section 3. Analysis and discussion of results laid out in Section 4. The paper concludes with policy implications in Section 5.

2. Construction of financial sector reforms index

Since the inception of financial sector reforms, several measures have been proposed to help measure the changes which reflect the reforms (see for instance, [Laeven, 2000](#); [Arestis *et al.*, 2002](#); [Abiad and Mody, 2005](#); [Bandiera *et al.*, 2000](#)). The financial reform index constructed for

this paper followed that of [Abiad et al. \(2010\)](#) [1]. Owing to the fact that financial reform is multidimensional, they developed a database which took into account of the modifications in financial sector policy implementation. Seven dimensions of policy changes were used in the development of index, which includes financial account restrictions, security markets, state ownership, banking regulations, interest rate controls, credit controls and barriers to entry.

For each dimension, a scaler score is assigned to range between zero and three. When a score is zero, it represented full repression in a particular dimension. A score of one represented partial repression in a particular dimension. Scores of two and three represented partial liberalization and full liberalization in a particular dimension respectively. This results in a matrix of seven variables, with each representing a particular reform dimension of which a summation is obtained and used as a reform index for a particular year. It must be noted that changes in policies brings about changes in the scores for a particular year. For example, when there is a complete removal of restrictions on the securities markets, this policy reform will correspond to jump of the score with respect to the dimension in question. Likewise, restrictions and impositions in a particular policy dimension will result in a reduction in the score for a particular year.

This approach of constructing reform index contrasts with most existing measures ([Bandiera et al., 2000](#) and [Laeven, 2000](#)), where binary dummy variables are coded to denote financial liberalization. Thus, the index constructed presents a more reliable measure of the reform changes. [Figure A1](#) shows the reform index constructed for the study period. It is seen clearly the reforms have been deepening with time having increased from an index score of 4 in 1987 to a score of 11 by the year 2002. Although it saw a drop to 10 in 2012, it has been on the increase and the index score stood at 17 by the year 2017.

Also, to assess the impacts of the various types of financial sector reforms on private sector investment, the reforms index developed was grouped into three main types following [Ankinand et al. \(2010\)](#) in the form of *behavioral reforms* (credit and interest rate liberalization), *competitive reforms* (banking sector entry, financial account transactions and security market reforms) and *privatization reforms*. [Ankinand et al. \(2010\)](#) argue that controls on credit and interest rate to a large extent are almost equal or comparable. This is because if financial institutions are allowed to give credit facilities and yet are not granted the freedom to set rates of interest on credit they give out, it will imply that the credit allocation is going to be affected by the structure of the prevailing interest rate. It can be argued that interest rate and credit controls of all forms may be seen as a restriction on the behaviour and actions of financial institutions. Therefore, reforms to abolish interest rate as well as credit controls are combined into what is to be called “*Behavioral Reforms*” (BR).

Also, equity market restrictions and international capital transactions would mean that banks are restricted with respect to the use of funds, the number of available sources of funding, foreign entry and competition from non-bank financial institutions. The effect of these restrictions on entry and banks transactions has comparable consequences with respect to the competitive position of institutions in the financial system. Thus, reforms for banking sector entry, financial account transactions and securities market are combined into “*Competitive Reforms*” (CR). Finally, government ownership is argued to be a restriction of a different form. Thus, reforms in respect to government ownership is categorized as “*Privatization Reforms*” (PR).

[Figure A2](#) depicts the reform index based on behavioral, competitive and privatization reforms. Worthy of note is the privatization reform index, which was coded zero up until 1996. This means that privatization reforms were fully repressed for much longer years even after the inception of the sector reforms in 1987. It is also noted that all the reforms categories have been improving over time.

3. Empirical strategy and data

3.1 Model specification

The endogenous growth model provides an appropriate framework for explaining the association between financial sector reform and FDI. Following prior studies, the paper adopt a varied model of Bailliu (2000) to estimate the effect of financial sector reforms on FDI in Ghana in the model, as shown in equation (1).

$$\begin{aligned} LNFDI_t = & \beta_0 + \beta_1 LNINDEX_t + \beta_2 LNTO_t + \beta_3 LNINFL_t + \beta_4 LNGDPC_t \\ & + \beta_6 LNEXC_t + \varepsilon_t \end{aligned} \quad (1)$$

where, LNFDI is log of FDI, LNINDEX is log of Financial Sector Reform Index. The paper controlled for other factors including log of trade openness (LNT0), log of inflation rate (LNINFL), log of gross domestic product (GDP) per capita (LNGDPC) and log of exchange rate (LNEXC) while ε_t is the error term. The paper takes natural log of the variables to express values of all the variables be at the same unit or level.

Also, to assess the various types of reforms and its effect on FDI, equation (2) is estimated as:

$$\begin{aligned} LNFDI_t = & \gamma_0 + \gamma_1 LNCR_t + \gamma_2 LNBR_t + \gamma_3 PR_t + \gamma_4 LNTO_t + \gamma_5 LNINFL_t \\ & + \gamma_6 LNGDPC_t + \gamma_7 LNEXC_t + \varepsilon_t \end{aligned} \quad (2)$$

where LNCR is the log of competitive reform, LNBR is log of behavioral reform and PR is privatization reform. All other variables are as defined in equation (1). It must however be noted that each of the reform category is estimated in a separate model so as to avoid issues of multicollinearity.

3.2 Estimation strategy

Although applying ordinary least squares (OLS) estimator on equations (1) and (2) are consistent, they do not have asymptotic t -distributions owing to the fact that the independent variables series may be endogenous and arbitrarily correlated with the co-integration errors (Enders, 1995; Wooldridge, 2003). In avoiding the problem, the current paper uses the fully modified OLS (FMOLS) cointegrating estimator ahead of other popular approaches to cointegration procedures to estimate long run equilibrium inferred by equations (1) and (2).

The FMOLS is an optimal single equation method, which uses a semi-parametric correction to eliminate serial correlation and endogeneity (Phillips and Loretan, 1991). Phillips (1995) demonstrates to the fact that FMOLS technique is reliable in the case of cointegrated $I(1)$ and $I(0)$ regressors. Furthermore, even when there is no cointegration, the finite sample outcome for FMOLS for many simulation studies has been found to be reliable. Also, FMOLS uses the Kernel estimators of the nuisance parameters that affect the asymptotic distribution of the OLS estimator. Therefore, FMOLS estimator uses both the serial correction and endogeneity corrections and is given as:

$$\beta^+ = \left(Y_2' Y_2 \right)^{-1} \left(Y_2' y_1^+ - T \hat{\delta}^+ \right) \quad (3)$$

$$y_{1t}^+ = y_{1t} - \hat{\sigma}_{21}' \sum_{22}^{-1} \Delta y_{2t} \quad (4)$$

$$\hat{\delta}^+ = \hat{\Delta} \begin{bmatrix} 1 \\ -\sum_{22}^{-1} \hat{\sigma}_{21} \end{bmatrix} \tag{5}$$

where $\hat{\Delta}$ is a consistent estimate of $\Delta = \sum_{k=0}^{\infty} E(u_{20}u_{1k})$ and $\hat{\Sigma}$ is consistent for Σ .

3.3 Data and descriptive statistics

The paper uses annual times series data for the period 1987-2017 for its analysis. The sources of data are the World Bank’s World Development Indicators (WDI 2018) and IMF Working Papers. Financial sector reforms index (INDEX) was constructed following [Abiad et al. \(2010\)](#) Formal definitions of variables are given in [Table A1](#) of the [Appendix](#).

In terms of descriptive statistics, the log of FDI has a mean of 19.36, standard deviation of 2.11 and is normally distributed. Log of financial sector reform index (FINDEX) has a mean of 2.33, standard deviation of 0.420 and is normally distributed. Log of GDP has a mean of 23.80, standard deviation of 0.49 and is normally distributed with Jarque–Bera statistic of 2.14 (*p*-value of 0.34). Also, log of trade openness, log of exchange rate and log of inflation are with mean of 3.72, −0.93 and 2.92, respectively, and a corresponding standard deviation of 0.54, 1.70 and 0.52, respectively. It must be noted that trade openness, exchange rate and inflation are all normally distributed. [Table A2](#) displays the variable statistics.

4. Results and discussions

4.1 Preliminary results

The paper first conducts test on the unit roots among the variables under study. This is to help ascertain the order to which the variables are integrated. Results from the augmented [Dickey and Fuller \(1979\)](#) (ADF) test are reported in [Table 1](#).

The unit root test was conducted first at the level values of the variables and the results show that all the variables are not stationary. This means that all the variables have unit root at their level values. However, the results for the first difference indicate that the variables do not have unit root, which means FDI, financial sector reform index, inflation, GDP per capita, exchange rate and trade openness are stationary at first difference.

After the stationarity test, the bounds test for cointegration was used so as to establish the cointegration which exist between FDI and the independent variables. The results as displayed in [Table 2](#) depict the presence of cointegration between the FDI and independent variables. This is because the *F*-Statistic of 4.591 is above the upper bounds critical value of

Variable	Level	First difference	
	ADF Stat	ADF Stat	I(d)
LNFDI	−3.240	−4.755***	I (1)
LNINDEX	−3.445	−4.309**	I (1)
LNINFL	−1.239	−5.318***	I (1)
LNGDPC	−2.040	−3.645**	I (1)
LNEXC	−1.339	−4.100**	I (1)
LNT0	−2.670	−3.955**	I (1)

Table 1.
ADF unit root
tests results

Notes: Null hypothesis: the series has a unit root. ***, ** denote rejection of null hypothesis at 1%, 5% and significance levels, respectively. The lag length is chosen based on the automatic Akaike Information Criterion

5% (3.79) and 10% (3.35) levels and for that matter implied that there exist a long run relationship as far as FDI and the independent variables are concerned.

4.2 Main results

Having established the presence of unit roots and cointegration among variables under study, the coefficients of the variables affecting FDI are estimated. Table 3 displays the results.

The findings reveal that financial sector reforms have a positive and significant effect on FDI. That is, 1% increase in financial sector reforms (LNINDEX) results in 2.167% increase in FDI. These results confirm the theoretical framework by Bailliu (2000) who expanded the AK model to demonstrate that when there is improved financial sector reforms, financial markets in the domestic economy become efficient with respect to the discharge of financial intermediation roles. This ensures that most foreign capitals which flow into the host economy are channeled to investment purposes. The finding are also in line with Ofori-Abebrese and Kamasa (2013) who find a positive effect of financial sector reforms on private sector investment in Ghana. Moreover, the result is also consistent with the findings made by Fowowe (2011) that financial sector reforms influences investment in the sub-Saharan African region.

Trade openness is a political location advantage of FDI that arises from favorable government policies (Denisia, 2010). From the findings, trade openness (LNT0) is has positive and significant impact on FDI. The implication is that a unit percentage increase in trade openness (LNT0) increases FDI inflows by 1.883%. The finding is consistent with that of Ghosh (2007) who also established that trade openness affect FDI positively. The finding is also consistent with Cuadros *et al.* (2004) who show that countries who are more open to trade benefits more in areas of FDI technology and its associated spill-overs.

Table 2.
ARDL bounds test
for cointegration
results

<i>F</i> -statistic	Critical value bounds of <i>F</i> -statistic			
	Lower bound	Upper bounds	Lower bound	Upper bounds
4.591	2.62	3.79	2.26	3.35

Note: F_{FDI} (LNFDI|LNINDEX, LNT0, LNINFL, LNGDP, LNEXC)

Table 3.
FMOLS estimation
results

Variable	Dependent variable: LNFDI			
	Coefficient	Std. error	<i>t</i> -statistic	Prob.
LNINDEX	2.167	1.883	2.446	0.022**
LNT0	1.883	0.562	3.353	0.003***
LNINFL	0.372	0.178	2.092	0.047**
LNGDPC	1.143	0.659	1.734	0.096*
LNEXC	−0.180	0.174	−1.036	0.311
R^2	0.901			
Adjusted R^2	0.881			

Notes: Quadratic-Spectral kernel and Newey – West automatic bandwidth were used to estimate the long-run covariance matrix. All variables included are natural logarithm; ***, **, * denote rejection of null hypothesis at 1%, 5% and 10% significance levels, respectively

Although extreme high inflation has the potential of impacting negatively on economic growth, inflation intrinsically is not detrimental to economic growth since there is a threshold beyond which inflation negatively affects economic growth (Khan and Senhadji, 2001). This paper finds a positive and statistically significant (5% significant level) association between inflation and FDI (FDI) inflows. This means that a 1% increase in inflation increases FDI inflows by 0.372%. This is an interesting finding which indicates that inflation facilitates FDI inflows which transits into economic growth in Ghana.

The market size hypothesis argues that the size of economic growth attracts FDI inflows. Walsh and Yu (2010) supports the market size hypothesis arguing that market size positively influences FDI inflows because of increased higher demand potential and lower costs arising from economies of scale. This paper finds significant positive association between FDI and GDP per capita. This means that FDI inflows is driven to an extent by the market size in Ghana with a 1% rise in GDP per capita resulting in 1.14% rise in FDI. In addition, the paper finds a negative effect of exchange rate on FDI albeit insignificant. This empirical finding is not consistent with the currency areas hypothesis which posits that a weak currency attracts FDI inflows.

Now to identify which aspect of the financial sector reforms impacts the most on FDI, the reform index constructed was separated into three main types: competitive reforms (security market reforms, financial account transactions and banking sector entry reforms), behavioral reforms (interest and credit rate reforms) and privatization. This is to help evaluate the impacts of the various forms of financial sector reforms on FDI inflows and also to know which reforms matters most in attracting FDI. Results from the FMOLS estimations are reported in Table 4.

The results as presented in Table 4 shows that all the various sub-division of financial sector reforms have a positive and significant effect with FDI inflows. With the exception of behavioral reforms which is insignificant, competitive and privatization reforms are statistically significant at 5% and 10%, respectively. In terms of magnitude, competitive reforms pose the most impact on FDI with an elasticity coefficient of 2.194% compared to privatization reforms which had elasticity coefficient of 0.726%. The results imply that financial sector reforms relating to security market, financial account transactions, banking sector entry and privatization are more effective in attracting FDI inflows to Ghana. However, the positive yet insignificant coefficient of the behavioral reform index imply that credit and interest rate reforms which makes up the behavioral reforms (LNBI) is not well deepened enough to cause a significant impact on FDI inflows.

Variable	Dependent variable: LNFDI		
	Competitive reforms (1)	Behavioral reforms (2)	Privatization reforms (3)
LNCI	2.194** (0.881)		
LNBI		0.539 (1.004)	
LNPI			0.726* (0.412)
LNT0	2.911*** (0.687)	3.001*** (0.876)	3.026*** (0.919862)
LNINFL	0.684*** (0.222)	0.223 (0.304)	0.417 (0.330)
LNIGDP	0.825 (0.827)	0.271 (1.149)	1.976 (1.480)
LNEXC	-0.367* (0.189)	0.081 (0.234)	0.121 (0.234)
R ²	0.920	0.905	0.911
Adjusted R ²	0.903	0.885	0.892

Table 4.
FMOLS Results of
the various types of
reforms on FDI

Notes: Bartlett kernel and Newey – West bandwidth were used to estimate the long-run covariance matrix; All variables included are natural logarithm. The figures in parentheses are standard errors; ***, **, * denote rejection of null hypothesis at 1%, 5% and 10% significance levels, respectively

4.3 Granger causality test

Finally, the paper sought to identify the causality between FDI and financial sector reforms. Table 5 displays results for the pairwise Granger causality tests.

The F-Statistics and probability values were determined under the null hypothesis of no causality. The null hypothesis that FDI (LNFDI) does not Granger cause financial sector reform (LNINDEX) is not rejected at significance levels. However, the null hypothesis that financial sector reforms (FINDEX) does not Granger cause FDI (LNFDI) is rejected at 1% significance level. This indicates that financial sector reforms are important determinant in estimating the level of FDI inflows in Ghana. This confirms the financial liberalization theory by McKinnon (1973) and Shaw (1973), as well as the result from the long-run, estimate that financial sector reforms (FINDEX) promote FDI inflows. Consequently, it can be stated that there exists a one-way causal relationship, which runs from financial sector reforms to FDI in Ghana.

5. Conclusion and policy implications

This paper measured the effect that financial sector reforms have on FDI in Ghana. A multi-dimensional financial sector reform index was constructed using the various forms of financial sector reform policies implemented during the paper period of 1987-2016. The autoregressive distributed lag bounds test was used to establish the cointegration between variables. By employing FMOLS method of estimation, the paper reveals a 2.67% increase in FDI following a unit percentage increase in financial sector reforms. In addition, the paper examined the impact of various types of financial sector reforms on FDI in Ghana. The findings revealed that competitive reforms have the highest impact on FDI followed by privatization reforms with positive and significant coefficients of 2.174 and 0.726, respectively. Behavioral reforms although showed a positive effect on FDI, it was not statistically significant. With respect to control variables, the paper found that trade openness, GDP per capita and inflation has a positive effect on FDI in Ghana. Finally, the paper revealed the existence of a one-way causal relationship, which runs from financial sector reforms to FDI in Ghana.

The findings from the paper has the following implications: The Central Bank (Bank of Ghana) must strengthen its supervisory work in the adherence to the reform policies by financial institutions so as to deepen the sector reforms to ensure greater efficiency and competition. This in the end will improve FDI inflows. In particular, reforms in the areas of credit and interest rate must be improved so as to have a positive and significant impact of the behavioral reforms on FDI, while sustaining and consolidating reforms in the areas of privatization and competition. Furthermore, the corporate governance practices in the financial sector should be keenly monitored and checked to ensure compliance. Finally, given that covariates such as GDP per capita, trade openness and inflation affect FDI, the government must ensure economic growth and stability while augmenting with policies that enhances trade openness so as to attract FDI.

Null hypothesis:	Obs	F-statistic	Prob.
LNFDI does not Granger Cause LNINDEX	30	1.577	0.220
LNINDEX does not Granger Cause LNFDI	30	6.348	0.018***

Note: *** denotes rejection of the null hypothesis at 1%

Table 5.
Pairwise Granger
causality tests

The paper is however limited in terms of its scope in dealing with the transmission mechanisms through which financial sector reforms affect FDI. This presents as a recommendation for further research opportunity. Another future area that could be explored could be the complementarity effect of the financial sector reforms and FDI on economic growth in Ghana.

Note

1. For detailed methodology, see [Abiad et al. \(2010\)](#).

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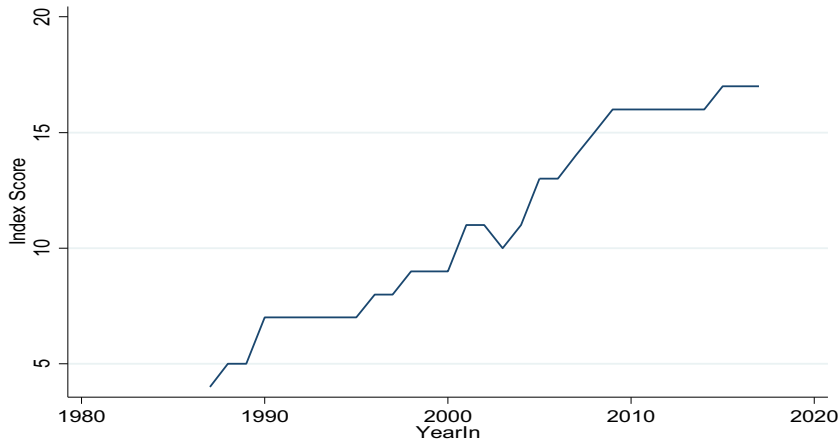
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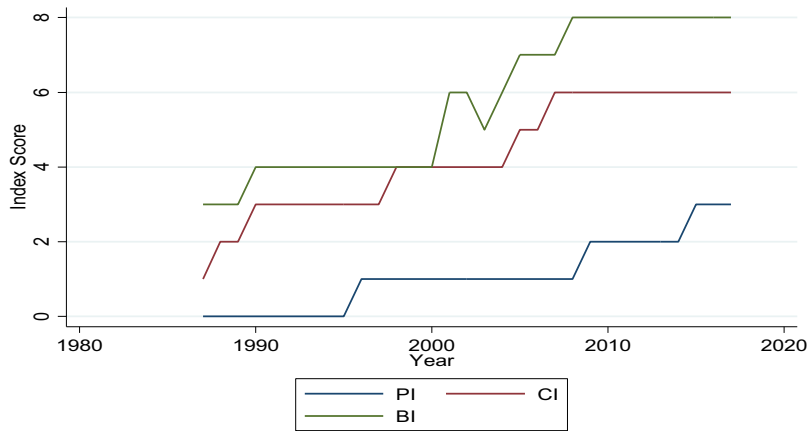
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Source: Financial sector reform index constructed by the authors

Figure A1.
Composite reform
index scores



Source: Financial sector reform index constructed by the authors

Figure A2.
Reform index for
sub-categories

Table A1.
Definition of
variables

Variable	Definition
LNFDI	Foreign direct investment refers to direct investment equity flows in the reporting economy. It is the sum of equity capital, reinvestment of earnings, and other capital. This study used the net FDI inflow as a ratio of GDP
LNINDEX	Financial sector reform index is an index constructed following Abiad <i>et al.</i> (2010) along seven different dimensions: credit controls and reserve requirements, interest rate controls, entry barriers, state ownership, policies on securities markets, banking regulations and restrictions on the financial account
LNGDP	The study used GDP per capita to measure economic growth. GDP per capita is measured by dividing the Gross Domestic Product (GDP) by the total population in the county
LNT0	This study used the total value of exports and imports as a ratio of GDP to measure trade openness
LNINF	Inflation rate is measured by the consumer price index annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified interval
LNEXE	Exchange rate is the rate at which a country's currency is exchanged for another. It is the value of a country's currency in relation to another currency. The value of the local currency (Ghana Cedi) against the United States Dollar (US) is used as a proxy of the exchange rate in this study

Table A2.
Descriptive statistics
of variables

Statistic	LNFDI	LNINDEX	LNGDP	LNINF	LNT0	LNEXC
Mean	19.35856	2.327085	23.80094	2.917867	3.720161	−0.934963
Maximum	21.97183	2.833213	24.68025	4.085330	4.579154	1.470321
Minimum	15.36307	1.386294	23.07503	1.963799	2.918100	−4.175659
SD	2.106246	0.419950	0.488072	0.522015	0.543297	1.701520
Skewness	−0.183346	−0.415434	0.321358	0.339194	0.178436	−0.454119
Kurtosis	1.929444	2.125369	1.885155	2.367133	1.590527	1.957158
Jarque – Bera	1.654049	1.879790	2.138953	1.111779	2.730548	2.470206
Probability	0.437349	0.390669	0.343188	0.573562	0.255311	0.290805
Observations	31	31	31	31	31	31

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