

Financial Development, Foreign Direct Investment and Banking Sector Performance: Evidence from African Countries with Stock Exchange Market

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Abstract

The study examined the impact of financial development and foreign direct investment on banking sector performance in African with emphasis on countries with stock exchange markets for the period 1996 to 2016. The study adopted dynamic panel data generalized method of moment estimation model to make robust statistic inference. The study concluded that financial development and foreign direct investment have negative impact on banking sector performance in the samples used. The study recommends governments' effectiveness in the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies to create an enabling environment for the banking sector to thrive.

Keywords: Financial development; foreign direct investment; banking sector performance; dynamic panel data estimation

1. Introduction

The financial sector of every economy is the engine of growth which supports the intermediary financial theory on the assertion that it plays the middleman role for the surplus unit to lend to the deficit unit. The effectiveness and efficiency of the banking system in an economy evidence the robustness and economically fit of the economy to gear towards development. To check the efficiency of the banking sector, its financial performance is taking into consideration (Siddarth, 2018).

Financial development became a central focus when King and Levine (1993) assessed the impact of finance-growth on economic growth; they found that financial development in the financial sector has a strong and positive impact on economic growth. The endogenous growth theory has been widely considered as the theoretical basis of finance-growth nexus studies due to role financial development plays from productivity through to investments. Some studies also validate the findings to King and Levine (1993) that financial development has positive impact on growth and mostly in the developed economies (Levine and Zervos, 1998; Rioja and Valev, 2003; Kiran et al., 2009). There is another section of the argument where some studies posit that there is an equilibrium relationship between financial development and growth (Christopoulos and Tsionas, 2003); meanwhile, Esso (2010) is of the view that financial development has negative impact on growth in developing countries by his assessment of finance-growth nexus in the Ecowas region. Financial development is usually measured as proxy of domestic credit to private sector and since domestic credit are provided by the financial sector in the domestic economy which the banking sector is part of the financial sector; the study intends to assess the domestic impact credit to private sector has on the banking sector performance.

Financial development paves the way for foreign direct investment due to appetite for growth and hunger for credit as well as investment in the private sector. Foreign direct investment becomes imperative to an economy that lacks the prowess to mobilize and accumulate funds domestically to invest in its economic units, mostly in the developing countries (Azman-Saini et al., 2010; Barajas et al., 2009; Chen and Jayaraman, 2016). Many studies have argued that foreign direct investment has the tendency to propagate growth and one way or the other have positive impact on growth (Swan, 1956; Solow, 1956; Romer, 1986; Lucas, 1988; Grossman and Helpman, 1991, Easterly et al., 1994; Pailwar, 2004; Todaro and Smith, 2006; Wan, 2010; Uwaoma and Michael, 2015; Hassan, 2017; Calin-Adrian et al., 2018; Keshmeer, 2018). The study is motivated to investigate the impact of foreign direct and financial development on the banking sector performance since the two

contribute to the access to credit or finance avenues in an economy. The study contributes to the existing literature for policy direction and academic perusal hence it has employed the Arellano-Bond dynamic panel data estimation to infer the outcome robustly.

The study comprises four parts; part 1 introduces the study, part 2 contains the data and methodology used, part 3 displays the results and discusses the outcome and the final part 4 concludes to the study and makes some recommendations.

2. Data and Methodology

2.1 Data

The study utilized panel data from 12 African countries with stock exchange markets for the period of 1996 to 2016. The study considered 9 variables thus domestic credit to the private sector as proxy measure of financial development, foreign direct investment inflows, inflation, gross domestic product per capita, government effectiveness, regulation quality, corruption control and bank’s return of assets and equity as proxy measure of banking sector performance. Further details on the variables can be found in table 1.

Table 1 Variable Description and source

Variable	Decription	Source
lninf	Consumer price index (2010=100, average)	IMF - Global financial development
lndcp	Domestic credit to the private sector (% of GDP)	IMF - Global financial development
lnfdi	Foreign direct investment, net inflows (% of GDP)	World development indicators
lngdppc	GDP per capita (constant 2005 US\$)	IMF - Global financial development
lnroa	Bank return on assets (% , after tax)	IMF - Global financial development
lnroe	Bank return on equity (% , after tax)	IMF - Global financial development
goveff	Government effectiveness	Worldwide Governance Indicators
regqty	Regulation quality	Worldwide Governance Indicators
corco	Corruption control	Worldwide Governance Indicators

All the variables were transformed into a natural logarithm. The econometric models for the study are as follows (Arellano and Bond, 1991):

$$\lnroe/\lnroa_{it} = \sum_{j=1}^p a_j \lnroe/\lnroa_{i,t-j} + \beta_1 \ln dcp_{it} + \beta_2 \ln inf_{it} + \beta_3 \ln gdppc_{it} + \beta_4 \ln goveff_{it} + \beta_5 \ln regqty_{it} + \beta_6 \ln corco_{it} + v_i + \varepsilon_{it} \quad i = 1, \dots, N \quad t = 1, \dots, T_i$$

$$\lnroe/\lnroe_{it} = \sum_{j=1}^p a_j \lnroe/\lnroa_{i,t-j} + \beta_1 \ln fdi_{it} + \beta_2 \ln inf_{it} + \beta_3 \ln gdppc_{it} + \beta_4 \ln goveff_{it} + \beta_5 \ln regqty_{it} + \beta_6 \ln corco_{it} + v_i + \varepsilon_{it} \quad i = 1, \dots, N \quad t = 1, \dots, T_i$$

$$\lnroe/\lnroa_{it} = \sum_{j=1}^p a_j \lnroe/\lnroa_{i,t-j} + \beta_1 \ln dcp_{it} + \beta_2 \ln fdi_{it} + \beta_3 \ln inf_{it} + \beta_4 \ln gdppc_{it} + \beta_5 \ln goveff_{it} + \beta_6 \ln regqty_{it} + \beta_7 \ln corco_{it} + v_i + \varepsilon_{it} \quad i = 1, \dots, N \quad t = 1, \dots, T_i$$

In the models (1 - 3), i represent the 12 cross sectional countries in Africa, t represents the period of time from 1996 to 2016, v represents the panel level effect, and ε_{it} represents the independent and identically distributed (i.i.d.) over the whole data sample with variance σ_{ε}^2 . j represents the time lag that will be determined by Arellano-Bond test for the serial correlation.

2.2 Methodology

The study employs panel data methodologies such as panel unit root tests, panel correlation matrix; dynamic panel data estimation method, thus generalized method of moment two-step method and homogeneous causality test for robustness and statistical inference. The summary statistics of the variables are firstly established to ascertain the standard deviation, mean, median values, Kurtosis test, Skewness test and Jarque-Bera test to ensure the distribution pattern of the variables. Subsequently, unit root tests are performed to confirm whether the variables are stationary or have unit-roots. Hence, the following tests are considered; Levin, Lin and Chu (2002); Im-Peasaran (2003); Maddala and Wu (1999) for check for homogeneity and heterogeneity to either accept or reject the null hypothesis which states that there is unit root in the variables. In order to check for multicollinearity in the variables, the correlation matrix approach is adopted to check for multicollinearity. After all these tests are performed, and all the null hypotheses are rejected then the study runs the Arellano and Bond (1991) dynamic panel data generalized method of moment two-step method on models 1 to 3 to estimate the coefficients at which the independent variables affect the dependent variables. The study used two-step GMM method for its estimations due to the effect of less propensity of an influence by heteroskedasticity than the one-step method. Furthermore, Sargan test is performed to examine the validity of instruments used in the process. Again, AR (1) and AR (2) tests are also performed to check for autocorrelation of the residuals; the value of AR (2) depicts that the hypothesis of zero second-order serial correlation existing among the variables cannot be rejected (Lingyun and Xiaolu, 2018).

Afterward, a homogeneous causality test is performed to ascertain the direction of causality among the variables. This test was proposed by Dumitrescu and Hurlin (2012).

3. Results and discussion

3.1 Summary statistics

Table 2 presents the summary statistics of the variables and from the table, it can be witnessed that the mean and the median values are closely related. The standard deviation has homogeneous nature and the Jarque-Bera test affirms that the data is not in normal distribution. Kurtosis test shows that the distribution is leptokurtic thus too tall and the Skewness test confirms that the variables are positively and negatively skewed, but the positive is more than the negative which means that mass of the distribution is concentrated on the right thus the mean values are higher than the median values.

Table 2 Summary statistics

	LNROA	LNROE	LNFDI	LNGDPPC	GOVEFF	CORCO	REG_QTY	LNDPC
Mean	0.571	2.770	0.649	7.373	-0.206	-0.288	-0.154	3.076
Median	0.711	2.758	0.932	7.366	-0.173	-0.294	-0.174	2.987
Maximum	2.164	4.990	2.253	9.192	1.049	1.217	1.127	4.666
Minimum	-4.908	-2.509	-5.056	5.725	-1.215	-1.431	-1.352	1.129
Std. Dev.	0.809	0.961	1.142	0.888	0.504	0.574	0.445	0.818
Skewness	-1.581	-1.333	-1.702	0.151	0.279	0.412	0.339	0.051
Kurtosis	10.454	7.501	7.369	2.038	2.562	2.708	3.641	2.057
Jarque-Bera	688.453	287.429	322.130	10.683	5.288	8.014	9.143	9.444
Probability	0.000	0.000	0.000	0.005	0.071	0.018	0.010	0.009

3.2 Panel unit root tests

This section exhibits the unit root tests performed and table 3 reports the results. According to the results, at level form lnroe, lnroa, lnfdi and regqty showed stationary with all the four tests performed. At the same level

form, goveff and corco showed stationary with IPS, ADF-Fisher and PP-Fisher tests, Indcp showed stationary with LLC and PP-Fisher and lngdppc showed stationary with LLC test, but lninf had a unit root. Subsequently, first difference tests were performed and all the variables showed or became stationary. Therefore, the study can conclude that at first difference all the variables are stationary hence there is no unit root hence the null hypothesis is rejected.

Table 3 Panel unit root tests

Variables	Level				First Difference			
	LLC	IPS	ADF-Fisher	PP- Fisher	LLC	IPS	ADF-Fisher	PP- Fisher
lnroa	-2.432**	-3.360***	60.675***	77.722***	-18.362***	-16.857***	241.637***	589.386***
lnroe	-4.777***	-5.476***	86.771***	81.100***	-15.029***	-15.783***	209.874***	573.135***
lninf	-0.490	4.885	11.680	29.618	-4.336***	-3.340***	59.407***	69.037***
lngdppc	-1.661**	2.787	19.498	8.095	-8.270***	-7.193***	94.672***	134.347***
Indcp	-3.403***	-0.962	28.594	40.515**	-10.221***	-9.717***	134.648***	146.151***
lnfdi	-4.057***	-4.027***	58.025***	56.197***	-12.811***	-13.210***	175.747***	317.482***
goveff	-0.203	-1.473*	37.019**	104.784***	-45.700***	-39.965***	1609.89***	1849.44***
regqty	-2.374***	-3.527***	65.308***	82.799***	-33.314***	-28.818***	739.146***	1020.14***
corco	0.750	-1.643**	37.382**	139.294***	-52.817***	-47.979***	1754.53***	1695.80***

Note: *** indicates 1% significance level, ** indicates 5% significance level, * indicates 10% significance level. Countries: Ghana, Nigeria, Botswana, Kenya, Egypt, Mauritius, Morocco, Rwanda, Tanzania, Tunisia, Uganda, Zambia

3.3 Correlation matrix

The study considered a correlation matrix to ascertain whether the independent variables are highly correlated with the dependent variables. Table 4 reports the result of the correlation matrix and from the results it can be evidenced that there is no multicollinearity in the variables. Moreover, the independent variables are not highly correlated to the dependent variables. The rule of thumb posits that the coefficient of two independent variables should not be more ± 0.70 to be cleared free of multicollinearity. From the result, the highest coefficient of the independent variables is -0.386 which is lower than assumed coefficient.

Table 4 Correlation matrix

	LNROA	LNROE	LNDCP	LNFDI	LNINF	LNGDPPC	GOVEFF	REGQTY	CORCO
LNROA	1								
LNROE	0.826	1							
LNDCP	-0.386	-0.173	1						
LNFDI	-0.029	-0.088	-0.129	1					
LNINF	-0.074	-0.020	0.382	0.182	1				
LNGDPPC	-0.275	-0.144	0.742	0.096	0.258	1			
GOVEFF	-0.032	0.059	0.504	0.059	0.034	0.581	1		
REGQTY	0.054	0.056	0.383	0.100	0.049	0.518	0.884	1	
CORCO	0.064	0.141	0.284	0.074	0.028	0.498	0.836	0.758	1

3.4 Assessing the impact of financial development and foreign direct investment on banking sector performance

The study used two dependent variables as a measure of banking sector performance thus return of equity and return of assets which are mostly used to measure financial performance. Table 5 depicts the results of the analysis; using return of equity (lnroe) as dependent variable, financial development showed negative and

statistically significant relationship with banking sector performance (lnroe), lnfdi also showed negative and significant relationship with banking sector performance (lnroe). From the result, it is evidenced that domestic credit to private sector and foreign direct investment do not positively impact banking sector performance in the sample of the study. In comparison, using return on assets (lnroa) as dependent variable, financial development showed negative and significant relationship with banking sector performance (lnroa) while foreign direct investment showed insignificant in model 2 which did not consider the existence of domestic credit to private sector (financial development) but in model 3 which combined the two variables in one model showed that foreign direct investment has negative and statistically significant relationship with banking sector performance (lnroa). Moreover, gross domestic product per capita which was considered to assess the economic growth impact on banking sector performance showed that in model 1&2 by using lnroe as dependent variable lngdppc (economic growth) has negative and statistical significant relationship with banking sector performance but model 3 showed positive and statistically significant relationship taking into consideration both lndcp (financial development) and lnfdi (foreign direct investment). On the other hand, the result of using lnroa (return on assets) as dependent variable showed the same result as lnroe. However, regulation quality (regqty) which is referred to as the quality of policies and implementation of the policies to enable the private sector to thrive and corruption control (corco) showed positive and significant relationship with banking sector performance (lnroe and lnroa) but insignificant in model 3 with lnroe as dependent variable. Meanwhile, government effectiveness (goveff) as in the quality of policies formulated and their implementations showed negative and significance in model 1&2 with lnroe as dependent variable and model 2&3 with lnroa as dependent variable.

Table 5 Results of dynamic panel data estimations (GMM - Two step method)

Dependent Variable: LNROE				Dependent Variable: LNROA			
	Model 1	Model 2	Model 3		Model 1	Model 2	Model 3
lnroe	-0.234	-0.221	-0.291	lnroa	-0.269	-0.208	-0.283
L1	(-16.03)***	(-8.56)***	(12.20)***	L1	(-9.85)***	(13.56)***	(-12.67)***
lninf	0.817	0.588	0.597	lninf	0.336	0.238	0.321
	(8.27)***	(3.63)***	(3.95)***		(3.04)**	(1.85)*	(1.40)
lngdppc	-0.039	-0.178	0.085	lngdppc	-0.030	-0.250	0.096
	(-1.26)	(-6.18)***	(2.90)***		(-0.83)	(-10.66)***	(2.09)**
goveff	-0.409	-0.768	-0.387	goveff	-0.170	-0.962	-0.340
	(-2.84)**	(-5.49)***	(-0.80)		(-0.94)	(-4.13)***	(-1.68)*
regqty	0.228	0.400	0.334	regqty	0.503	0.897	0.593
	(2.63)**	(4.54)***	(0.99)		(4.31)***	(5.96)***	(3.12)**
corco	0.374	0.580	0.312	corco	-0.002	0.363	0.469
	(6.13)***	(9.90)***	(2.03)**		(-0.02)	(4.52)***	(0.60)
lndcp	-0.246		-0.444	lndcp	-0.444		-0.582
	(-5.51)***		(-10.91)***		(-15.03)***		(-10.54)***
lnfdi		-0.109	-0.240	lnfdi		-0.036	-0.155
		(-2.16)**	(-8.69)***			(-1.19)	(-3.57)***
constant	0.970	2.241	1.921	constant	0.848	1.585	0.538
	(1.68)*	(3.02)**	(2.66)**		(1.39)	(2.59)**	(0.59)
sargan test	20.414	20.101	-19.805	sargan test	15.118	19.243	18.803
probability	1.000	1.000	1.000	probability	1.000	1.000	1.000
AR (1)	-2.787**	-2.991**	-2.767**	AR (1)	-2.846**	-3.054**	-2.999**
AR (2)	0.818	1.458	1.461	AR (2)	0.268	0.582	1.081

Note: *** indicates 1% significance level, ** indicates 5% significance level, * indicates 10% significance level. Z statistics are in parenthesis. Countries: Ghana, Nigeria, Botswana, Kenya, Egypt, Mauritius, Morocco, Rwanda, Tanzania, Tunisia, Uganda, Zambia

3.5 Granger causality test

The study adopted the granger causality test to establish the causal relationship among the variables. The granger causality shows the direction or linkage of causality; either bidirectional or unidirectional linkage or causality. It is evidenced that there is bidirectional linkage or causal relationship between inflation (lninf) and financial development (lndcp); this means that a change in one variable affects the other variable concurrently. However, there is an evidence of unidirectional linkage or causality from lnroe→lnroa, lndcp→lnroe,

goveff→lnlncp, lnfdi→lninf, lnfdi→goveff, goveff→lninf, regqty→lninf, corco→lninf, lngdppc→regqty, goveff→regqty, corco→goveff and corco→regqty. The unidirectional granger causality or linkage affirms that the first variable causes the latter. The evidence from table 6 is enough for the study to reject the null hypothesis which states that none of the variables granger causes the other.

Table 6 Granger causality test

Null Hypothesis:	Obs	F-Statistic	Prob.	sig.
LNROE does not Granger Cause LNROA	228	3.978	0.020	**
LNROA does not Granger Cause LNROE		1.037	0.356	
LNDCP does not Granger Cause LNROA	228	8.142	0.000	***
GOVEFF does not Granger Cause LNROA	228	3.590	0.029	**
CORCO does not Granger Cause LNROA	228	2.420	0.091	*
LNROA does not Granger Cause CORCO		1.133	0.324	
LNDCP does not Granger Cause LNROE	228	7.279	0.001	***
LNINF does not Granger Cause LNDCP	228	9.400	0.000	***
LNDCP does not Granger Cause LNINF		2.655	0.073	*
LNGDPPC does not Granger Cause LNDCP	228	2.261	0.107	
LNDCP does not Granger Cause LNGDPPC		0.652	0.522	
GOVEFF does not Granger Cause LNDCP	228	2.868	0.059	**
LNFDI does not Granger Cause LNINF		2.394	0.094	*
LNFDI does not Granger Cause GOVEFF		2.343	0.098	*
GOVEFF does not Granger Cause LNINF	228	3.872	0.022	**
LNINF does not Granger Cause GOVEFF		0.698	0.499	
REGQTY does not Granger Cause LNINF	228	2.522	0.083	*
LNINF does not Granger Cause REGQTY		0.043	0.958	
CORCO does not Granger Cause LNINF	228	2.388	0.094	*
LNGDPPC does not Granger Cause REGQTY		4.091	0.018	**
GOVEFF does not Granger Cause REGQTY		3.970	0.020	**
CORCO does not Granger Cause GOVEFF	228	2.354	0.097	*
GOVEFF does not Granger Cause CORCO		0.857	0.426	
CORCO does not Granger Cause REGQTY	228	5.188	0.006	**

Note: *** indicates 1% significance level, ** indicates 5% significance level, * indicates 10% significance level. Countries: Ghana, Nigeria, Botswana, Kenya, Egypt, Mauritius, Morocco, Rwanda, Tanzania, Tunisia, Uganda, Zambia

4. Conclusion and recommendation

The study examined the impact of financial development and foreign direct investment on banking sector performance in a panel of 12 African countries with stock exchange markets for the period 1996 to 2016. The study used panel data methodologies such panel unit root tests, panel correlation matrix, Arellano-Bond dynamic panel data generalized method of moment two-step method and granger causality test to assess and analyze the data to make statistical inference.

The study inferred that financial development (domestic credit to the private sector) and foreign direct investment (FDI) both have negative and significant impact on banking sector performance. Consequently, an increase in inflation seems to profit the banking sector. The study found that increase has positive impact on banking sector performance. Moreover, government’s effectiveness which balls down to quality of public

services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies have negative impact on banking sector performance but the quality of regulations implementation for private sector development has positive impact on banking sector performance as well as corruption control. Furthermore, economic growth has positive impact on banking sector performance; the banking sector contributes immensely to the growth of an economy. Therefore, an increase in the banking sector's performance automatically increases economic growth.

The study recommends that quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies should be adhered to strictly in order to create an enabling environment to the banking sector to thrive.

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