

## **Finance-Growth Nexus in Cote D'Ivoire and Nigeria: Does the Proxy of Financial Development Matter?**

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### **ABSTRACT**

This study examines the finance-growth nexus in Cote D'Ivoire and Nigeria using different proxies of measuring financial development to ascertain whether the finance-growth nexus is sensitive to financial development proxies. Findings reveal that a co-integration relationship exists between financial development and economic growth in both countries. While supply-leading hypothesis is supported in Cote D'Ivoire, the feedback hypothesis is supported in Nigeria. Further evidence indicates that the finance-growth nexus is sensitive to the proxies used to measure financial development. The implication of this study is that financial development promotes economic growth. Hence, countries should implement policies and reforms that favour the advancement of those proxies that accelerate growth in order to achieve sustainable economic growth.

*Keywords:* Economic growth, finance-growth nexus, financial development

*JEL Classification:* G23, G21, O40

### **INTRODUCTION**

Many empirical studies have examined the link between financial development and economic growth, but the debate on the causal relation is ongoing. Though

McKinnon (1973) and Shaw (1973) argued that financial development is important for economic growth, there are four hypotheses that are still being tested with varying methodologies and proxies in different countries. First, the supply-leading hypothesis opined that financial development promotes growth through its impact on productivity growth; resource mobilisation and allocation; reduction in information, transaction and enforcement costs; capital accumulation

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and technological innovations (see Beck et al., 2000; Levine, 2005; Wong & Zhou, 2011; Amoro et al., 2014).

Second, Ang and McKibbin (2007), Blanco (2009), and Ratsimalahelo and Barry (2010) found evidence to support the demand-following hypothesis. Accordingly, economic growth promotes financial sector development. As the real GDP per capita of a country increases, the demands for financial products, services, instruments and intermediaries expand, resulting in more investments and financial system development. Third, the feedback or complementarity hypothesis found the existence of bidirectional causal relations between financial development and economic growth. Thus, as the financial system provides financial products and services to the real sector of the economy, investments, productivity and economic growth are stimulated leading to increased demand for financial instruments and institutions (see Apergis et al., 2007; Bangake & Eggoh, 2011; Adusei, 2013; Chortareas et al., 2015).

Finally, evidence in recent times also supported the neutrality hypothesis stating that financial development has no causal relationship with economic growth. Evidences in support of the neutrality hypothesis were documented in Atindehou et al. (2005), Kar et al. (2010), and Grassa and Gazdar (2014). A cursory examination of previous studies on the nexus between financial development and economic growth revealed the absence of consensus among scholars who used

same dataset and case-study. This could be attributed to differences in methodologies and the proxies for measuring financial development. Thus, the impact of finance on growth could be sensitive to the proxies used to measure financial development. Ang (2008) observed that although the positive impact of financial development on growth has become a stylised fact, there are some methodological reservations about some of the empirical findings.

Consequently, as the debate on the finance-growth nexus continues, it becomes necessary to empirically examine the relationship between financial development and economic growth in Cote D'Ivoire and Nigeria using different proxies of financial development. Hence, this study seeks (i) to examine the relationship between financial development and economic growth in Cote D'Ivoire and Nigeria; (ii) to determine whether the proxies of measuring financial development matter in the finance-growth nexus in Cote D'Ivoire and Nigeria.

In this regard, the contributions of this paper to existing literature are immense. It is expected to unveil the relationship between financial development and economic growth in these two countries. Cote D'Ivoire is the largest economy of the eight members of West Africa Economic and Monetary Union known as Union Économique et Monétaire Ouest Africaine (hereafter referred to as UEMOA) that adopts a common currency, a common central bank and a common stock market while Nigeria is the largest economy of the eight non-UEMOA member countries

that uses different currencies, different central banks and different stock markets. Apart from constituting more than 60% of the West African population and real gross domestic product, the two countries have also embarked on financial sector reforms over the past decades that are expected to have significant impacts on their economies.

Until recently, the financial sectors in Cote D'Ivoire and Nigeria were characterised by poor institutional environment, insufficient financial products, low financial liberalisation and openness as well as paltry monetary policy instruments. However, the two countries had recently embarked on several policy reforms with a view to restructure the financial sector. Such reforms had eliminated credit ceiling, liberalised interest rate, privatised banks and strengthened the regulatory and supervisory frameworks. Consequently, larger financial institutions emerged through consolidation or recapitalisation as well as merger or acquisition that provided varieties of financial services to individuals, firms and governments. Despite the improvement in the financial systems in Cote D'Ivoire and Nigeria, the relationship between financial development and economic growth remains unclear. Jalloh (2014) posited that empirical studies on the link between financial sector and economic growth in West Africa countries could still produce mixed results despite the reforms and development in the sector in recent times that was aimed at increasing the prospects for economic growth.

This study is expected to reveal whether the finance-growth nexus is sensitive to the proxies of measuring financial development. These are some of the gaps this study attempts to fill. Interestingly, this study found evidence to support the finance-growth nexus in both countries. Also, the finance growth-nexus is sensitive to the proxies of measuring the development of the financial system in Cote D'Ivoire and Nigeria. One of the main policy implications of this study is that countries should implement policies and reforms that favour the advancement of those proxies of measuring the development of the financial system that have positive and significant impacts on growth in order to achieve long-term economic growth.

This paper contains four sections. Section one is literature review, section two presents the methodology, section three discusses empirical results and discussion, and the last section concludes the study with some policy recommendations.

## LITERATURE REVIEW

Theoretical and empirical evidences suggest that financial development has a positive influence on economic growth. Modern growth theory developed by Romer (1986), Lucas (1988) and Grossman and Helpman (1991) posited that the financial system has an impact on sustained growth by catalysing human and physical capital accumulation as well as by increasing the rate of technological progress. This is because financial systems perform basic functions of pooling and mobilising

savings, monitoring investments and exerting corporate governance. The financial sector also facilitates trading, diversification and management of risks, as well as facilitates the exchange of goods and services. Thus, the financial sector provides financial services, intermediaries and instruments necessary for the growth of factor inputs, technology and investment that are fundamental for economic growth.

Consequently, the causal relation between financial development and economic growth has attracted the attention of scholars worldwide. In Sub-Saharan Africa, the nexus between financial development and economic growth has received considerable attention from some researchers. Using the ratio of broad money supply relative to GDP as a proxy for measuring financial development, Ndebbio (2004) examined the causal relationship between financial development and economic growth in 34 Sub-Saharan African countries. He concluded that financial development had positive impact on economic growth in Sub-Saharan African countries. However, the study did not show the causal link between financial development and economic growth in the 34 countries.

Based on data from 13 Sub-Saharan African countries Ghirmay (2004) examined the causal relationship between financial development and economic growth in these countries. His findings supported bidirectional causal relations in six countries (Ethiopia, Kenya, Malawi, Tanzania, Rwanda and South Africa),

demand-following hypothesis in five countries (Cameroon, Mauritius, Nigeria, Togo and Zambia) and finance-leading hypothesis in Benin and Ghana only. Ghirmay's study used credit to private sector relative to GDP as a proxy to measure the development of the financial system.

Employing the Hsiao-Granger method, Gries et al. (2009) examined the link between financial deepening, trade openness and economic development in 16 countries Sub-Saharan African countries. Findings from the study supported finance-led hypothesis in three countries (Rwanda, Sierra Leone, and South Africa), demand-following hypothesis in three countries (Cameroon, Ghana and Madagascar) and bi-directional causal relations in Nigeria and Senegal. The study found no evidence of any causal relation between financial development and economic growth in eight countries (Burundi, Cote D'Ivoire, Ethiopia, Gabon, Kenya, Mauritius, Gambia and Togo), thereby, supporting the neutrality hypothesis. To proxy financial development, the study constructed a composite indicator to measure broad financial deepening using private credit by depositing money banks to GDP, liquid liabilities relative to GDP and commercial bank plus central bank assets.

Akinlo and Egbetunde (2010) used broad money supply relative of GDP as proxy to measure financial development in investigating the finance-growth nexus with time series data from 10 countries in Sub-Saharan Africa. The findings from the

study revealed that bi-directional causality was dominant in five countries (Chad, Kenya, Sierra Leone, South Africa and Swaziland), finance-leading hypothesis in four countries (Congo Republic, Central African Republic, Nigeria and Gabon) while only Zambia showed demand-following responses.

Menyah et al. (2014) used data from 21 African countries for the period of 1965–2008 to investigate the causal relationship between financial development and economic growth. To proxy financial development, they constructed financial development index using four measures of financial development, namely broad money supply, liquid liabilities, total domestic credit provided by the banking sector and domestic credit to the private sector (all as ratios of GDP). The study confirmed a unidirectional causal link between financial development and economic growth in three countries (Benin, Sierra Leone and South Africa), while a unidirectional causal link was found between economic growth and financial development in Nigeria, and a bi-directional causality was noted in Zambia. However, the study found no evidence of any causal relation between financial development and economic growth in 15 countries, thereby supporting the neutrality hypothesis in Burkina Faso, Cameroon, Burundi, Central African Republic, Congo, Chad, Cote D'Ivoire, Gambia, Gabon, Kenya, Madagascar, Malawi, Senegal, Niger, Sudan and Togo.

Other studies that found conflicting and inconclusive results on the finance-

growth nexus in African countries include Agbetsiafa (2004), Ratsimalahelo and Barry (2010), Ezzo (2010), Adusei (2013) and Madichie et al. (2014). The proxies used to measure financial development in these different studies included total credit provided by banking institutions, domestic credit to private sector, liquid liabilities (all as ratios of GDP) and bank liquid reserves as a ratio of bank assets.

The above reviews showed that studies which examined the finance-growth nexus in Cote D'Ivoire were scanty with Gries et al. (2009) and Menyah et al. (2014) being the two main studies that concluded the absence of causal relation between financial development and economic growth. However, with the reforms in the financial system in Cote D'Ivoire in the past decades coupled with the high growth in real GDP per capita, it is expected that one of these two variables should Granger cause the other. This study attempts to investigate the finance-growth nexus in Cote D'Ivoire and Nigeria using different proxies of measuring financial development.

## METHODOLOGY

This study employs Autoregressive Distributed Lagged (ARDL)-Bounds test procedure to investigate the co-integration relationship between financial development and economic growth in Cote D'Ivoire and Nigeria. The ARDL procedure was developed by Pesaran and Shin (1999) and further expanded by Pesaran, Shin and Smith (2001). It has several merits over

other co-integration procedures because it can be used in the case where some of the regressors are endogenous, with small sample size, and when the variables are integrated in order one [I (1)] or level [I (0)] because it does not impose any restrictive assumptions that all the variables should be integrated in the same order (see Odhiambo, 2009). The study period was 1980-2014 and data were sourced from the World Development Indicators of the World Bank.

Among the wide range of monetary aggregates to measure financial development as suggested in the literature, the present study uses three common proxies such as domestic credit to private sector, broad money supply and total bank credit (all as ratios of GDP) to examine the finance-growth nexus. Thus, credit to private sector is commonly used as a proxy of financial development because it deals with savings mobilisation that makes credit available to economic agents and facilitates transactions thereby reducing transaction costs. Nevertheless, broad money supply and total bank credit are also used to proxy financial development because the former measures financial depth and consists of the totality of currency outside the banks as well as demand, time and saving deposits. Also, total bank credit consists of all credit provided to the various sectors of the economy on a gross basis by the banking institutions such as deposit money banks, savings and mortgage loans institutions. The study uses the growth rate of GDP to proxy economic growth and includes two conditioning variables, namely government

consumption expenditure as a ratio of GDP and inflation rate, to capture the effects of government policy and macroeconomic stability respectively (see Beck et al., 2000; Beck & Levine, 2004). All the variables except inflation are in natural logarithm.

**Model Specification**

The Autoregressive Distributed Lagged (ARDL) model employed in this study is specified as follows:

$$\Delta Y_t = \alpha_0 + T + \sum_{i=1}^m \alpha_1 \Delta Y_{t-i} + \sum_{j=0}^n \alpha_2 \Delta FDI_{t-j} + \sum_{k=0}^o \alpha_3 \Delta GOV_{t-k} + \sum_{l=0}^p \alpha_4 \Delta INF_{t-l} + \alpha_5 Y_{t-1} + \alpha_6 FDI_{t-1} + \alpha_7 GOV_{t-1} + \alpha_8 INF_{t-1} + \mu_t \tag{1}$$

$$\Delta FDI_t = \beta_0 + T + \sum_{i=1}^m \beta_1 \Delta Y_{t-i} + \sum_{j=0}^n \beta_2 \Delta FDI_{t-j} + \sum_{k=0}^o \beta_3 \Delta GOV_{t-k} + \sum_{l=0}^p \beta_4 \Delta INF_{t-l} + \beta_5 Y_{t-1} + \beta_6 FDI_{t-1} + \beta_7 GOV_{t-1} + \beta_8 INF_{t-1} + \mu_t \tag{2}$$

Where: Y= economic growth (proxy by growth rate of real GDP); FDI = financial development alternatively proxy by FDI1, FDI2 and FDI3 for domestic credit to private sector, broad money supply and total bank credit, respectively; T = time trend;  $\mu_t$  = disturbance term.

Equation 1 is made up of two segments of results with the first segment ( $\alpha_1, \alpha_2, \alpha_3, \alpha_4$ ) examining the short-run relationship while the second segment ( $\alpha_5, \alpha_6, \alpha_7, \alpha_8$ ) explores the long-run association between financial development and economic growth. Similarly, ( $\beta_1, \beta_2, \beta_3, \beta_4$ ) explores the short-run relationship while ( $\beta_5, \beta_6, \beta_7, \beta_8$ ) investigates the long-run relationship between financial development and economic growth in Equation 2. The

number of lags selection based on Akaike information criterion (AIC) are expressed by  $m, n, o, p$ . In testing for co-integration relationship using the ARDL procedure, the null hypotheses of no co-integration among the variables in the models are stated against the alternative hypotheses as follows:

$$\begin{aligned}
 H_0 &: \alpha_5 = \alpha_6 = \alpha_7 = \alpha_8 = 0; \\
 H_1 &: \alpha_5 = \alpha_6 = \alpha_7 = \alpha_8 \neq 0 \text{ for Equation 1.} \\
 H_0 &: \beta_5 = \beta_6 = \beta_7 = \beta_8 = 0; \\
 H_1 &: \beta_5 = \beta_6 = \beta_7 = \beta_8 \neq 0 \text{ for Equation 2.}
 \end{aligned}$$

The decision to either accept or reject the null hypothesis of no co-integration between the variables is based on a comparison of the calculated F-statistic with the tabulated F-statistic critical values. After establishing co-integration relationship between the two variables, the next step is to investigate the long-run and short-run causal relations between them using the error correction model (ECM) procedure. This approach is chosen ahead of other Granger causality techniques because it outperforms them in both small and large samples (see Guilkey & Salemi, 1982; Geweke et al., 1983; Odhiambo, 2009). The error correction model equation is as follows:

$$\Delta Y_t = \phi_0 + \sum_{i=1}^m \phi_i \Delta Y_{t-i} + \sum_{j=0}^n \phi_2 \Delta FD_{t-j} + \sum_{k=0}^o \phi_3 \Delta GOV_{t-j} + \sum_{l=0}^p \phi_4 \Delta INF_{t-j} + \varpi ECT_{t-1} + \mu_t \tag{3}$$

$$\Delta FD_t = \delta_0 + \sum_{i=1}^m \delta_1 \Delta FD_{t-i} + \sum_{j=0}^n \delta_2 \Delta Y_{t-j} + \sum_{k=0}^o \delta_3 \Delta GOV_{t-j} + \sum_{l=0}^p \delta_4 \Delta INF_{t-j} + \lambda ECT_{t-1} + \mu_t \tag{4}$$

where  $ECT_{t-1}$  = lagged error correction term,  $m, n, o, p$  are the lag lengths that are chosen optimally using a step-down approach up to a maximum of 2 lags.

Hence, we test the null hypotheses of no long-run or short-run causality against the alternative hypotheses of the presence of causality. The short-run null hypotheses in Equations 3 and 4 are stated against the alternative hypotheses as:

$$\begin{aligned}
 H_0 &: \phi_1 = \phi_2 = \phi_3 = \phi_4 = 0; \\
 H_1 &: \phi_1 = \phi_2 = \phi_3 = \phi_4 \neq 0 \\
 H_0 &: \delta_1 = \delta_2 = \delta_3 = \delta_4 = 0; \\
 H_1 &: \delta_1 = \delta_2 = \delta_3 = \delta_4 \neq 0
 \end{aligned}$$

Hence, the short-run causality is examined by the statistical significance of the F-statistic of the coefficients of the independent variables, whereas the long-run causal relations are explored by the significance of the coefficient of the  $ECT_{t-1}$  at 5% levels. The null hypothesis is rejected based on the joint statistical significance of the regressors as well as the significance of the coefficient of  $ECT_{t-1}$  which should also be negative.

## EMPIRICAL RESULTS AND DISCUSSION

The summary of descriptive statistics of the proxies used to measure financial development and the real GDP growth rate for Cote D'Ivoire and Nigeria as presented in Table 1 shows wide variations. For instance, the mean value of FD1 (credit to private sector relative to GDP) in Cote D'Ivoire is 24.3% compared with 15.0% in Nigeria for the period of 1980-2014. Also, FD2 (broad money supply relative to GDP) shows an average of 27.7% in Cote D'Ivoire while Nigeria shows 24.4%.

Furthermore, the mean values of FD3 (total bank credit as a ratio of GDP) for Cote D'Ivoire and Nigeria are 31.5% and 25.7% respectively. This shows that Cote D'Ivoire performed better in financial development indicators during the period studied compared with Nigeria. Also,

Cote D'Ivoire exhibits greater average government consumption expenditure as a ratio of GDP (GOV) than Nigeria. However, the average growth rate of GDP (Y) and inflation rate (INF) were greater in Nigeria compared with Cote D'Ivoire during the period studied.

Table 1  
Summary of Descriptive Statistics

Cote D'Ivoire						
	Y	FD1	FD2	FD3	GOV	INF
Mean	1.817	24.268	27.702	31.462	18.680	4.808
Maximum	10.700	42.300	38.400	51.300	162.00	26.100
Minimum	-11.000	12.200	17.800	16.900	10.500	-0.800
Std. Dev.	4.072	10.753	4.651	11.393	25.019	5.119
Skewness	-0.331	0.488	0.400	0.277	5.601	2.446
Kurtosis	4.678	1.493	3.029	1.434	32.604	10.003
Nigeria						
	Y	FD1	FD2	FD3	GOV	INF
Mean	3.708	15.020	24.441	25.702	9.673	19.718
Maximum	33.700	38.390	43.270	48.670	17.900	72.730
Minimum	-13.100	8.7100	13.230	4.910	4.800	5.410
Std. Dev.	7.670	6.189	6.646	12.027	3.605	17.877
Skewness	1.156	2.433	0.730	0.499	0.513	1.627
Kurtosis	8.540	9.063	3.319	2.275	2.058	4.382

Notes: Y= growth rates of real GDP; FD1- domestic credit to private sector as a ratio of GDP; FD2= broad money supply as a ratio of GDP; FD3= total bank credit provided to all sectors as a ratio of GDP; GOV= government consumption expenditure as a ratio of GDP; INF= inflation rates.

Table 2  
Unit Root Test Results

Variables	Augmented Dickey Fuller (ADF)		Philip-Perron (PP)	
	[I (0)]	[I (1)]	[I (0)]	[I (1)]
Cote D'Ivoire				
Y	-4.511***	-8.455***	-4.526***	-9.465***
FD1	-1.421	-4.642***	-1.421	-4.264***
FD2	-1.536	-8.451***	-1.376	-8.525***
FD3	-0.927	-4.587***	-1.074	-4.614***
GOV	-16.157***	-20.014***	-12.208***	-44.512
INF	-4.332***	-5.939***	-4.301***	-10.897***
Nigeria				
Y	-4.351***	-9.387***	-4.357***	-22.572***
FD1	-2.592	-5.111***	-2.429	-8.725***
FD2	-3.252**	-4.877***	-2.141	-7.178***
FD3	-2.455	-8.468***	-2.454	-8.468***
GOV	-4.774***	-6.472***	-2.574*	-6.466***
INF	-3.195**	-5.972***	-3.101**	-12.851***

Notes: \*\*\*, \*\* and \* indicate statistically significant at 1%, 5% and 10% respectively or a rejection of the null hypothesis of a unit root. Y= growth rates of real GDP; FD1- domestic credit to private sector as a ratio of GDP; FD2= broad money supply as a ratio of GDP; FD3= total bank credit provided to all sectors as a ratio of GDP; GOV= government consumption expenditure as a ratio of GDP; INF= inflation rates.



To ascertain the order of integration of the variables, the study conducted unit root tests using both the Augmented Dickey Fuller (ADF) and Philip-Perron (PP) tests. The results as shown in Table 2 indicate that all the financial variables (FD1, FD2, FD3) are integrated at order one [I (1)] while the growth rate of real GDP (Y), government consumption expenditure as a ratio of GDP (GOV) and inflation rate (INF) are integrated at order zero [I (0)] at 5% significant level in Cote D'Ivoire. Similar results are obtained for Nigeria, with the exception of FD2 that seems stationary at 5% significant level with the ADF. Since the variables are a mixture of [I (0)] and [I (1)] in both countries, the ARDL-bounds test can be appropriately applied.

The results of the ADRL-bounds test presented in Table 3 reveal the presence of co-integration relationship between the two

variables in both countries. When financial development is proxied by FD1, FD2 and FD3 in the different economic growth equations, their respective calculated F-statistic are greater than the respective upper bound values at 5% significant level. Therefore, we reject the null hypotheses of no co-integration and conclude that long-run co-integration relationship exists between the two variables. Conversely, when financial development is used as the dependent variable in the different equations, co-integration relationship is only found in Nigeria as the respective computed F-statistic were greater than the respective upper bound critical values at 5% significant level. Hence, in all the financial development equations for Nigeria, we reject the null hypotheses of no co-integration while the reverse is found for Cote D'Ivoire.

Table 3  
*Cointegration Test Results*

Dependent Variable	Function	Cote D'Ivoire F-test Statistic	Nigeria F-test Statistic
Y	Y = f(FD1)	6.012**	8.782***
FD1	FD1 = f(Y)	2.068	7.141***
Y	Y = f(FD2)	4.749*	7.804***
FD2	FD2 = f(Y)	0.270	9.335***
Y	Y = f(FD3)	4.687*	7.733***
FD3	FD3 = f(Y)	1.599	5.700**
Bound Test Critical Values		Lower Bounds I(0)	Upper Bounds I(1)
1%		5.17	6.36
5%		4.01	5.07
10%		3.47	4.45

*Notes:* \*\*\*, \*\* and \* indicate statistically significant at 1%, 5% and 10% levels respectively or a rejection of the null hypothesis of no cointegration.

Y= growth rates of real GDP; FD1- domestic credit to private sector as a ratio of GDP; FD2= broad money supply as a ratio of GDP; FD3= total bank credit provided to all sectors as a ratio of GDP; GOV= government consumption expenditure as a ratio of GDP; INF= inflation rates.

For robustness check of the co-integration results, the study conducted structural breaks test using the test proposed by Bai and Perron (2003) to ascertain the presence of structural breaks in the series. After controlling for structural breaks, the co-integration results reveal that financial development and economic growth are still co-integrated in all the economic growth equations in both countries. This denotes that even in the presence of structural breaks in the series, financial development and economic growth remain co-integrated in the two countries.

After establishing the co-integration relationship between the two variables, the study explores the long-run effects of the variables. The results presented in Table 4 reveal that financial development (proxy by FD1 and FD3) has positive and significant

impact on economic growth in both countries, thereby supporting the finance-led growth hypothesis. However, financial development is found to be insignificantly related to economic growth at 5% level when proxied by FD2. Thus, one percentage increase in FD1 (FD3) increases economic growth by 0.10% (0.08%) in Cote D'Ivoire and 0.02% (0.03%) in Nigeria. This implies that FD1 (credit to private sector) and FD3 (total bank credit) can accelerate growth in both countries, while the reverse is the case for FD2 (broad money supply). This reveals that the finance-growth nexus is sensitive to the proxies of measuring financial development in both countries. Fundamentally, the above results are also robust to the presence of structural breaks in the series.

Table 4  
Long-Run Coefficients Results

Variables	Cote D'Ivoire			Nigeria		
	Y=f(FD1)	Y=f(FD2)	Y=f(FD3)	Y=f(FD1)	Y=f(FD2)	Y=f(FD3)
C	0.109 (0.066)	0.534 (0.278)	0.263 (0.153)	4.668*** (4.997)	4.739*** (3.343)	4.73*** (6.504)
FD	0.10*** (3.368)	0.123 (1.852)	0.081*** (3.194)	0.022** (2.746)	-0.007 (-0.196)	0.026* (1.697)
GOV	0.023 (0.368)	-0.024 (-0.321)	-0.020 (-0.323)	-0.075** (-2.746)	-0.064** (-2.621)	-0.050** (-2.333)
INF	0.862** (2.637)	0.797** (2.106)	0.872** (2.647)	0.012 (0.818)	0.006 (0.429)	0.005 (0.484)
T	0.01*** (4.103)	0.002** (2.079)	0.005*** (4.005)	0.002*** (3.094)	0.002*** (3.018)	0.002*** (2.618)
$\bar{R}^2$	0.763	0.697	0.686	0.682	0.659	0.658

Notes: \*\*\*, \*\* and \* indicate statistically significant at 1%, 5% and 10% levels, respectively. Figures in parenthesis are T-statistics. The dependent variable is growth rates of real GDP; FD1= domestic credit to private sector as a ratio of GDP; FD2= broad money supply as a ratio of GDP; FD3= total bank credit provided to all sectors as a ratio of GDP; GOV= government consumption expenditure as a ratio of GDP; INF= inflation rates; T=time trend.

This study confirms the findings of Onwioduokit (2007) who showed that credit to private sector (FD1) has positive impact on output growth. Adeoye (2007) and Alayande (2007) reported a negative relationship between broad money supply (FD1) and economic growth in Nigeria. These results refute the findings of Gries et al. (2009) and Menyah et al. (2014) who found no evidence of any link between financial development and economic growth in Cote D'Ivoire.

The set of conditioning variables included in the model indicate that government consumption expenditure has no positive impact on economic growth in both countries. This could be due to inefficiency associated with government consumption expenditure in both countries. Rousseau and Yilmazkuday (2009) and Ogujiuba and Ehigiamusoe (2014) posited that government consumption expenditure could have insignificant or negative effects on economic growth because of the crowding-out of potentially more productive private sector investments that are associated with large government consumption expenditures, poor budget implementation and inefficiency in many developing countries. Furthermore, inflation rate has no impact on economic growth in Nigeria, but has significant impact on economic growth in Cote D'Ivoire because of lower inflation rate in the latter. In theory, low inflation rate is vital to stimulate economic growth while high and volatile inflation rate are deleterious to economic growth (see Boyd et al., 2001; Rousseau & Wachtel, 2002).

Finally, the study examines causal relations between financial development and economic growth using the error correction model (see Table 5). The results reveal a long-run unidirectional causality between financial development and economic growth in Cote D'Ivoire. In the case of Nigeria, a bidirectional long-run Granger causality is noted between the two variables. The long-run Granger causality is supported by the significance of the coefficient of the  $ECT_{t-1}$  while the short-run Granger causality is supported by the statistical significance of the F-statistic at 5% level (see Granger et al., 2000). The lagged error correction terms are negative and statistically significant at 5% level for the three models in both countries. The existence of a negative and significant  $ECT_{t-1}$  indicates that the whole system is being adjusted towards a long-run equilibrium at the speed of their coefficients. This is because the coefficient of the  $ECT_{t-1}$  reveals the adjustment speed from short-run to long-run equilibrium over time. The findings are consistent with Gries et al. (2009) and Menyah et al. (2014) who found a bidirectional causal relation between financial development and economic growth in Nigeria.

However, the absence of short-run causality between financial development and economic growth in Cote D'Ivoire and Nigeria is not surprising following the usual assumption that economic growth interacts more with macroeconomic variables in the long-run than in the short-run (see Morley, 2006). Conversely, when financial

development is used as a dependent variable in the different equations, there is little or no evidence of short-run causal relation running from economic growth to financial development since

all the computed F-statistic are not statistically significant at 5% level (except FD1 in Cote D'Ivoire and FD3 in both countries that are statistically significant at 10%).

Table 5  
Granger Causality Test Results

Dependent Variables	Causal Flow	Cote D'Ivoire			Nigeria		
		F-Statistic	ECT T-Statistic	$\bar{R}^2$	F-Statistic	ECT T-Statistic	$\bar{R}^2$
Y	Y ← FD1	0.544 (0.588)	-0.210** [-2.431]	0.48	0.342 (0.713)	-0.044** [-2.065]	0.52
FD1	FD1 ← Y	2.989* (0.070)	-	0.31	0.424 (0.659)	-0.492* [-2.043]	0.37
Y	Y ← FD2	0.140 (0.699)	-0.557** [-2.039]	0.53	0.032 (0.968)	-0.019** [-2.430]	0.49
FD2	FD2 ← Y	0.387 (0.683)	-	0.22	0.649 (0.532)	-0.393* [-1.883]	0.36
Y	Y ← FD3	0.112 (0.984)	-0.236** [-2.799]	0.46	0.437 (0.651)	-0.024** [-2.038]	0.53
FD3	FD3 ← Y	2.711* (0.087)	-	0.36	2.509* (0.100)	-0.380* [-1.836]	0.37

Note: \*\*\*, \*\* and \* indicate statistically significance at 1%, 5% and 10% levels respectively. P-values of F-statistics are in parenthesis while the values in squared brackets are the t-statistic of the coefficients of error correction term (ECT). Y= growth rates of real GDP; FD1= domestic credit to private sector as a ratio of GDP; FD2= broad money supply as a ratio of GDP; FD3 = total bank credit provided to all sectors as a ratio of GDP; GOV = government consumption expenditure as a ratio of GDP; INF= inflation rates.

## CONCLUSION

This study seeks to provide answers to two basic questions: a) what is the relationship between financial development and economic growth in Cote D'Ivoire and Nigeria? b) does the proxy used to measure financial development matter in the finance-growth nexus? Using ARDL-bounds testing approach and data from Cote D'Ivoire and Nigeria for the period of 1980-2014, empirical results support the

existence of a co-integration relationship between financial development and economic growth in both countries. The long-run results reveal that financial development has a significant impact on economic growth, and the results are sensitive to the proxies used to measure financial development. Fundamentally, our key empirical evidence implies that financial development does contribute to economic growth in both countries. Hence,

credits (credit to private sector and total credit provided by the banking institutions to all sectors) accelerate economic growth. Since the proxies used to measure financial development matter, countries should embark on policies and reforms that favour the strengthening of those proxies that are growth-enhancing.

The findings from the Granger causality specifications reveal a long-run unidirectional causal relation between financial development and economic growth in Cote D'Ivoire and bidirectional Granger causality between financial development and economic growth in Nigeria. Thus, empirical evidence from this study supports the supply-leading hypothesis in Cote D'Ivoire and the feedback hypothesis in Nigeria. This is confirmed by the lagged error correction terms that are negative and statistically significant indicating the speed at which the entire system is adjusted towards a long-run equilibrium over time. Therefore, in order to promote economic growth, financial development is necessary in both countries, although economic growth also accelerates development of the financial sector in Nigeria. The implication of this is that efforts to advance the promotion of financial development and economic growth would be beneficial to the countries and spur long-run growth.

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