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Financial development and economic growth in Togo

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This study investigated the link between financial development and economic growth in Togo for the period 1981-2010. The study employed Johansen's cointegration and Granger causality testing procedure in the context of Vector Error Correction Method (VECM). The result shows a positively and statistically significant effect of financial development on economic growth in Togo and Granger causality test supports supply-leading view that comes from financial development to economic growth. This means that the causal relationship between financial development and economic growth in Togo is unique and is running from financial development to economic growth. The empirical results further confirm a unique cointegration relationship among real GDP per capita, financial development, inflation, primary completion rate, openness, foreign direct investment and real exchange rate. In addition, the variable primary completion rate, foreign direct investment and real exchange rate contribute positively to economic growth in Togo while inflation and openness discourage the economic growth in the Togo. The findings of the study call for the introduction of effective policy measures to deepen financial sector since financial development is an essential precondition for the positive impact of FDI on economic growth.

Key words: Financial development, economic growth, devaluation, Togo.

INTRODUCTION

A significant number of empirical studies have attempted to investigate the link between financial sector development and the economic growth. The neoclassical theory early raised the impact of savings on economic growth through capital accumulation (Solow, 1956; Stiglit and Hirofumi, 1969). The endogenous growth theory reignites the debate between economic growth and

financial sector development. Then a growing body of literature attempts to highlight the direction of the relationship between financial development and economic growth. Some literature argue that, economic growth just follow finance development through the supply of financial service that come from growth of financial institutions and markets (McKinnon-Shaw, 1973;

King and Levine, 1993b; Laima and Oleksandra, 2014). On the contrary, some people argue that the growth of modern financial institutions is a result of the demand of financial services that come from investors and savers (Robinson, 1952; Sunde, 2013). According to Patrick (1966), Nabila and Zakir (2014), the relationship is bidirectional causality between financial deepening and economic growth. While, some other authors argue that there is no link between financial development and economic growth (Lucas, 1988; Mohamed, 2008). However, this argument seems not to be true since when we experience financial crisis, countries economic growth tend to slow down. This was evident in the recent USA financial crisis which was contagious to other countries through globalization and economic integration. Though a large amount of work that investigated the link between financial development and economic growth; there is no consensus on the impact of financial development on economic growth and few papers have examined the relation between financial development and economic growth in Togo. Furthermore, the recent financial crisis has shown that the impact of the financial development on economic growth depends on the level of economic development of a particular country because countries have different level of economic development and cannot use the same macroeconomic policy to fight against the crisis. Hence, it is crucial that each country understands how its financial system relates to its economic growth in view to find the right macroeconomic policy that can assist during the financial crisis. In spite of the prominent role of the financial sector in influencing economic growth, Togo is dominated by banks and still characterized by regional underdeveloped financial markets (BRVM) that constrains resource mobilization and hinder economic growth. Besides, there were privatizations of financial institutions in recent past, which were initially owned by government. It is for these reasons that this study is set out to investigate the impact of financial development on economic growth in Togo.

This paper departs from previous studies by utilising new data since Rousseau, (2007) argued that finance-growth is not as strong in more recent data as it was in the original studies with data for the period from 1960 to 1989. The study further employs modern econometric procedures that address for potential biases induced by simultaneity, omitted relevant variables, non stationary in data and cointegration issue that have been persistently featured in the previous study. Besides, Togo has experienced a severe political crisis from 1990 to 2005 while country`s stability is utmost important for financial development. In addition, this study used one variable as a proxy of financial development; namely domestic credit to private sector as a percentage of GDP. The motivation of using domestic credit to private sector as a proxy for financial development is justified as follow. First, domes-

tic credit to private sector as a percentage of GDP refers to financial resources provided to the private sector and credit measures the extent to which financial market and institutions provided credit to private sector activities. Second, Togo is under fixed exchange rate, while fixed exchange rate means giving up monetary policy. The last justification is due to the neutrality of money in the long run since the long run economic growth is due to technical progress; capital accumulation and skill labor (neoclassical and endogenous growth theory).

Moreover, a panel or cross country study on the subject may not highlight the specificities of each country that may influence the relationship since it estimates only average effects for a sample of countries covered. Therefore, this study is set out to explore the relationship between financial development and economic growth in Togo while taking into account the endogeneity issue and the currency devaluation.

The rest of the paper is organized as follows. Section 2 reviews the existing literature. Section 3 presents the methodology that enables us to investigate the impact of financial development on economic growth in Togo. Section 4 describes data set, presents the estimation technique and interpretation of the results**.** Section 5 concludes the study and provides some policies recommendations.

LITERATURE REVIEW

Dimitris et al. (2003) investigated the relationship between financial development and economic growth. They used data of 10 developing countries over the period 1970 to 2000. They have used the ratio of total bank deposits liabilities to nominal GDP as measure of financial development. Their findings showed that long run causality runs from financial development to economic growth. They further argued that there is no short run causality between financial development and output.

Christopoulos and Tsionas (2004) used data of 10 developing countries to determine the relationship between financial development and economic growth. The authors used panel data analysis and the ratio of total bank deposits liabilities to nominal GDP as a proxy of financial development. They found evidence of long-run causality running from financial depth to economic growth.

Valenzuela (2009) examined the Impact of Financial Development on Economic Growth for Chile. The author argued that financial development has a significant effect on GDP and the most important channel is through total factor productivity.

Sanusi and Salleh (2007) determined the relationship between financial development and economic growth in

Malaysia, using data from 1960 to 2002. Ratio of broad money to GDP, credit provided by the banking system and deposit money banks to GDP were used as proxy of financial development. The autoregressive distributed lag model was used in their analysis. The result showed that the ratio of broad money to GDP and credit provided by the banking system exert positive and statistically influence on economic growth in the long-run.

Laima and Oleksandra (2014) analysed the relationship between financial development and economic growth in Lithuania. The authors concluded that the relationship between financial development and economic growth in Lithuania is consistent with the supply leading hypothesis meaning that there is the significant impact of Lithuanian financial development on country's economic growth.

Fatima (2004) examined the link between financial development and economic growth in Morocco over the period 1970 to 2000. The author used three financial indicators as measure of financial development, namely ratio of liquid liabilities (M3) to GDP, ratio of domestic credit provided by banking sector to GDP and domestic credit to private sector to GDP. The result from Granger-causality showed a short-run relationship between financial deepening and economic growth.

Khan and Shenhadji (2003) studied the relationship between financial development and economic growth by using data of 159 countries. The authors have used cross–section data framework and the study covered period 1960 to 1999. They further used two-stage least square (2SLS) to solve endogeneity problem in the underlying relationship. The result indicated a positive and statistically significant impact of financial development on economic growth.

Esso (2009) examined the causal relationship between financial development and economic growth in ECOWAS countries, using data from 1960 to 2005. The author adopted the autoregressive distributed lag analysis and the test for non causality proposed by Toda and Yamamoto (1995) were used. The ratio of M2 to GDP was used as measure of financial development and the author found long-term relationship between financial depth and economic growth in some countries namely, Cote d`Ivoire, Guinea, Niger and Togo. But a negative long-run relationship was found in Sierra Leone and Cape Verde.

Nabila and Zakir (2014) studied Financial Development, Trade Openness and Economic Growth in Developing Countries. The result showed that there are strong evidences of the long-run relationship between financial development and economic growth in developing countries. In addition, the study revealed a bi-directional causation between financial development and FDI. Furthermore, trade openness has impact on financial development in all the countries, which calls for the introduction of effective policy measures to promote trade between countries.

Christophe et al. (2008) investigated the finance-growth relationship. They used a sample of 63 industrial and developing countries over the period 1960 to 1995 and 1960 to 2000. They have used three indicators as measure for financial development namely, private credit by deposit money banks to GDP; liquid liabilities of the financial system to GDP and the credit by money banks and other financial institutions to the private sector. Their findings support the one way causality from economic growth to financial development.

Zang and Kim (2007) examined whether financial development precede economic growth. The authors used data of seventy four countries over the period 1961-1995. They used three financial indicators as measure of financial development, namely ratio of liquid liabilities to GDP, ratio of deposit money bank domestic assets to deposit money banks domestic assets plus central bank domestic assets and credit issued to private enterprises as a share of GDP. Their findings confirm that economic growth precedes subsequent financial development.

Luintel and Khan (1999) examined finance-growth link for a sample of 10 less developed countries. The author used multivariate vector autoregression analysis to address the relationship between financial depth and economic growth. Their findings showed two ways causality between financial depth and economic growth.

Abu-Bader and Abu-Qarn (2006) investigated the causal relationship between financial development and economic growth in five (5) Middle Eastern and North Africa (MENA) countries for different period ranging from 1960 to 2004.Their findings gave a weak support for the supply-leading view. But the Granger causality tests indicated evidence of either bidirectional or one way running from economic growth to financial development.

Fang and Jiang (2014) studied the Promoting Effect of Financial Development on Economic Growth in China. Empirical results showed that the banking and insurance sectors provide significant promoting effects on economic growth; the promoting effect of the securities sector is uncertain.

Zang et al. (2010) have studied the finance-growth nexus for South Korea by employing error correction model and a nonlinear smooth transition error correction technique. The authors have used a quarterly data from 1970 to 2004. The cointegration test shows that the financial development has a positive impact on the long-run economic growth and a causal relationship is bidirectional in the long run. While their empirical results do not reveal any positive influence in the short run.

Houssem and Hassene (2011) addressed the Causality between Financial Development and Economic Growth. The authors have used Fully modified OLS approach, GMM analysis and data of 10 countries over 1990-2006, six countries from OECD and four others from MENA. A

long-run relationship between financial development and economic growth was confirmed for the 10 countries investigated by a panel data cointegration analysis. The GMM system approach showed a strong positive link between financial development and GDP per capita. The bi-direction causality between financial development and economic growth was found for OECD countries when error correction model approach was used, while a unidirectional causality was found for MENA countries that run from economic growth to financial development.

Adamopoulos (2013) analysed financial development and economic growth and has used a vector error correction model, based on Johansen cointegration analysis and stationary tests. Finally, Granger causality method was applied in order to define the direction of causality between the examined variables. The empirical results indicated that there is a bilateral causal relation-ship between economic growth and industrial production, while there is a unidirectional causality between economic growth and credit market development. Also, stock market development causes economic growth and industrial production.

Rousseau and Wachtel (2007) showed that the finance-growth relationship is not strong in more recent data as it was in the original studies with data for the period over 1960-1989. They argued by saying; firstly, excessive financial development or too rapid growth of credit may lead to both inflation and weakened banking systems which in turn inhibit growth through financial crisis (case of USA subprime from summer 2007). Secondly, excessive financial development may result from widespread financial liberalization from 1980 and 1990 in countries that lacked the legal or regulatory infrastructure to exploit the benefit successfully.

Mohamed (2008) in his study of finance-growth nexus in Sudan from 1970 to 2004, has used the autoregressive distributed lag framework. He used two measures of financial development, namely the ratio of M3 to GDP and the ratio of credit to the private sector to GDP. The study showed a weak relationship between financial development and economic growth.

Ernesto and Marcelo (2013) analysed Financial Development and Economic Growth for a sample of 111 countries covering the period 1961 to 2009. The authors used time series techniques that deal with the problem of cross-sectional dependence and relax the constraint that the slope parameters of the independent variables should be the same for all countries. They demonstrated that financial development does not have a significant influence upon economic growth.

Keho (2010) examined the Effect of Financial Development on Economic Growth for seven out of eight countries of UEMOA. The author found no evidence of nonlinear relationship between finance and growth. The author used threshold models, cross-terms regression

and argued that financial development has no significant impact on economic growth regardless of the level of inflation.

In light of the literature reviewed above, it is evident that the existing literature present mixed results in that, some report positive, negative while others report no relationship between financial development and economic growth. This implies therefore there is still need to further investigate the relationship between financial development and economic growth specifically for country level like Togo in order to provide policy maker a better guide to formulate policy (ies).

METHODOLOGY

In this section we present the method that enabled us to examine the relationship between financial development and economic growth in Togo for the period 1981 to 2010. The study employed two different models based on Johansen cointegration test. The first model examines the long run equilibrium relationship among the variables and the second investigate the short run equilibrium.

Theoretical assumptions

In order to achieve the objective of the study, Financial Development, Primary completion rate, Devaluation and Foreign direct investment are expected to have positive effect on economic growth in Togo while Inflation and Openness are expected to have a negative effect on economic growth in Togo.

Model specification

The empirical model for the long run equilibrium:

$$\text{Ly}_t = \beta_0 + \beta_1 \text{Fd}_t + \beta_2 \text{Inf}_t + \beta_3 \text{Pm}_t + \beta_4 \text{Op}_t + \beta_5 \text{LFDI}_t + \beta_6 \text{Rexch}_t + e_t$$

Ly_t = natural logarithm of real GDP per capita,

Fd_t = measure of financial development proxy by variable credit facilities available to domestic sector,

Inf_t = inflation, consumer prices (as an annual percentage),

Op_t = openness measured as exports plus imports as a percentage of GDP,

Pm_t = primary completion rate used as measure of human capital development,

LFDI_t = natural logarithm of foreign direct investment,

Rexch_t = real exchange rate between USA dollars and franc CFA, variable introduced
to capture the effect of the franc-CFA devaluation,

e_t = error term.

Model for the short run equilibrium

The short run model is specified as follows:

$$\Delta\, Ly_{\,t} = \delta_0 + \delta_1\, \Delta\, Fd_{\,t} + \delta_2\, \Delta\, Inf_{\,t} + \delta_3\, \Delta\, Pm_{\,t} +$$

$$\delta_4\, \Delta\, Op_{\,t} + \delta_5\, \Delta\, LFDI_{\,t} + \delta_6\, \Delta\, Rexch_{\,t} +$$

$$\gamma\, resid_{\,t-1} + \upsilon_t$$

Where:

$$resid_{\,t} = Ly_{\,t} - \hat{Ly}_t$$

$$\hat{Ly}_t = \hat{B}_0 + \hat{B}_1\, Fd_{\,t} + \hat{B}_2\, Inf_{\,t} + \hat{B}_3\, Op_{\,t} + \hat{B}_4\, Pm_{\,t} +$$

$$\hat{B}_5\, LFDI_{\,t} + \hat{B}_6\, Rexch_{\,t}$$

$resid_{\,t}$ is the residual from the long run estimation.

DATA, ESTIMATION TECHNIQUE AND INTERPRETATION OF THE RESULTS

Data

The data for this study (Financial development and Economic growth in Togo) have been collected from the World Development Indicators 2011 (World Bank), except of exchange rate between USA dollars and franc-CFA which has been collected from UNCTAD data base.

Estimation technique

Since we are using time series data for estimating the impact of financial development on economic growth in Togo, the estimation technique is very crucial. The major concern with the time series is that if non-stationary of data series persists then it may lead to spurious relationship. In order to avoid spurious regression, we have checked for unit roots (Appendix: Table 3) for the variables using Augmented dickey fuller (ADF) and we found that variable inflation, primary completion rate and real exchange rate are stationary but log real GDP per capita, financial development, openness and foreign direct investment are not stationary but are integrated of order one; so risk of cointegration which might lead to spurious regression. Then we addressed for cointegration issue by using Johansen (1988) procedure and the result revealed unique cointegration relationship among variables (Appendix: Table 4). Moreover, we confirmed the cointegration issue through the unit root test of the residual from the long run regression (Appendix: Table 5). This justifies the use of the vector correction model in our study. Furthermore we used Granger causality test to address the direction of causality between financial

Table 1. Long-run relationship.

Variables	Ly_t
Fd_t	0.0216***
	(0.00705)
Inf_t	-0.0163***
	(0.00316)
Pm_t	0.000535
	(0.00141)
Op_t	-0.00451***
	(0.000884)
LFDI $_t$	0.0172*
	(0.00963)
Rexch $_t$	4.14e-06
	(4.34e-06)
Constant	5.436***
	(0.264)
Observations	30
R-squared	0.735

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. Note: Natural logarithm of real GDP per capita (Ly_t) is the dependent variable.

development and economic growth and the result confirms unique causality between financial development and economic growth in Togo which runs from financial development to economic growth (Appendix: Table 6). Besides, Ramsey Reset test for better specification of the model has showed a p-value of 86.97% higher than 10%. This means a better specification of the model and no omitted variable bias.

EMPIRICAL RESULT AND INTERPRETATION

Estimation of the long-run relationship

The estimation of the long-run relationship is presented in Table 1. The variable financial development (credit to domestic sector as percentage of GDP) is positively and statistically significant at one percentage (1%) level. This means financial system improvement is crucial for sustainable economic growth in Togo. This positive effect of financial development on economic growth is theoretically and empirically supported in the literature by McKinnon (1973) and Laima and Oleksandra (2014).

The variables primary completion rate and real exchange rate have the positive sign as expected but not significant, while foreign direct investment is positive and statistically significant at 10% level. The positive effect of primary completion rate has been supported by some

empirical study which argued that a higher literacy rate improves the efficiency of an economy as it provides a more productive labour force (Wilson and Briscoe, 2004; Berthelemy et al., 1996). A possible explanation of the insignificance of primary completion rate is due to the proxy variable which does not capture fully human capital development. Possibly if we had a data for high school or university could serve as a good proxy for human capital development.

The variable real exchange rate, although insignificant contribute positively to economic growth in Togo. This means this country did not reap the full benefit of devaluation due to the uncompetitive products because of underdeveloped infrastructure. The positive effect of devaluation on economic growth has been support by Huseyin et al. (2008) and Hala and Sahar (2008).

The foreign direct investment is statistically significant at 10% level which means the flow of FDI is adequate to stimulate economic growth in Togo as the FDI is the way the technology was transferred to less developing countries and the aspect of employment generation.

The variable inflation and openness have negative sign as expected and are statistically significant at 1% level. This means inflation and openness are the main factors that deter economic growth in Togo. The negative impact of inflation on economic growth in Togo is when prices increase persistently, the cost of production will be expensive to the investors, hence can force them to reduce their investment plan. This implies they reduce production and employment and thus will have a negative effect on economic growth. This negative effect has been supported by Bruno and Easterly (1996), Gylfason (1999) and Rousseau et al. (2000).

A greater degree of openness may benefit for Togo if its opening economy will enhance competitions, thus improve the quality and stabilize price of goods and services and promotes the domestic export but this is not the case in the country under study. This country is exporter of raw materials, agriculture and intermediate goods and is importer of final goods due to under-developed industrial sector. This kind of trade will negatively affect the economic growth of the country, because it profit only for foreign companies which are supplier of final goods to grow in size by increasing their production.

Estimation of the short-run relationship

The results for the short run model presented in Table 2 shows that financial development, primary completion rate and foreign direct investment maintain the same sign, positive as in the long run while inflation and openness maintain the same sign, negative, just like in the long run results.

Table 2. Short-run relationship.

Variables	$\Delta \mathbf{Ly}_t$
$\Delta \mathrm{Fd}_t$	0.0271***
	(0.00942)
$\Delta \mathrm{Inf}_t$	-0.0102***
	(0.00302)
$\Delta \mathrm{Pm}_t$	0.000171
	(0.000647)
$\Delta \mathrm{Op}_t$	-0.00329***
	(0.000913)
$\Delta \mathrm{LFDI}_t$	0.00432
	(0.00420)
$\Delta \mathrm{Rexch}_t$	-2.11e-06
	(2.88e-06)
lagresid	-0.508**
	(0.182)
Constant	0.00246
	(0.0228)
Observations	29
R-squared	0.790

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. Note: First difference of natural logarithm of real GDP per capita ($\Delta \mathrm{Ly}_t$) is the dependent variable.

The error correction term has the expected sign, negative and statistically significant at 5% level. This implies that 50.8% of the deviation from the long run equilibrium is corrected each period (annually).

CONCLUSION AND RECOMMENDATIONS

The study examined the relationship between financial development and economic growth in Togo for the period 1981-2010. Togo time series investigation shows unique cointegration relationship among real GDP per capita, financial development, inflation, primary completion rate, openness, foreign direct investment and real exchange rate. In addition, the results confirm a positive impact of financial development on economic growth and the Granger-causality test give support to unidirectional causality that runs from financial development to economic growth.

Furthermore, the variable primary completion rate, foreign direct investment and devaluation of franc-CFA proxy by real exchange rate between USA dollars and franc-CFA, contributed positively to economic growth in Togo while inflation and openness discourage economic growth in Togo. The positive impact of education on

economic growth has been support by some author among them; we have Berthelemy et al. (1996) who argued that human capital development is pre-condition for economic growth. The negative impact of inflation and openness on economic growth has been found by Lucas (1998); Rivera-Batiz and Xie (1993); Rousseau et al. (2000) and Gylfason (1999).

From policy perspective, government of Togo should adopt the following appropriate policy: It is therefore imperative that policies which seek to increase financial depth be vigorously pursued in order to stimulate economic growth. The government needs to introduce an effective reform in education sector to enhance human resources. Finally, the government needs to control for the opening of the country economy and pursue tight monetary policy so as to lower the inflation.

In summary, these findings highlight the relationship between financial development and economic growth in Togo and the main limitation of the study is it does not include a variable which may account for country risk level due to data problems.

Conflict of Interests

The author has not declared any conflicts of interest.

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Table 3. Augmented Dickey-Fuller test.

Variables	ADF Test	Integration order	1% CV	5% CV	10% CV
Ly	-4.323	I(1)	-3.736	-2.994	-2.628
Fd	-3.808	I(1)	-3.736	-2.994	-2.628
Inf	-3.513	I(0)	-3.73	-2.992	-2.626
Pm	-3.371	I(0)	-3.73	-2.992	-2.626
Op	-3.83	I(1)	-3.736	-2.994	-2.628
FDI	-4.133	I(1)	-3.75	-3	-2.63
Rexch	-4.746	I(0)	-3.73	-2.992	-2.626

Table 4. The results of Johansen cointegration test.

Trend: constant					Number of obs = 29
Sample:	**1982-2010**				**lags=1**
Max rank	**Parms**	**LL**	**Eigenvalue**	**Trace statistic**	**5% CV**
0	7	-798.49994	.	130.6383	124.24
1	20	-778.35102	0.75082	90.3405*	94.15
2	31	-762.39597	0.66724	58.4304	68.52
3	40	-751.36143	0.53280	36.3613	47.21
4	47	-743.08274	0.43501	19.8039	29.68
5	52	-737.12599	0.33689	7.8904	15.41
6	55	-734.09165	0.18882	1.8217	3.76
7	56	-733.18079	0.06089		

Table 5. Unit root test for the residual from the long run estimation.

Variable	ADF Test	Phillips Perron	Integration order	1%CV	5%CV	10%CV
Residual	-3.39	-3.582	I(0)	2.654	-1.95	-1.602

Table 6. Granger causality wald tests.

Equation	Excluded	chi2	df	Prob > chi2
Ly	fd	5.5428	1	0.019
Ly	All	5.5428	1	0.019
fd	Ly	1.0707	1	0.301
fd	All	1.0707	1	0.301