Financial Development and Economic Growth in a Post Financial Liberalization Era in Ghana: Does the Measure of Financial Development Matter?

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Abstract
This paper investigated the long-run effect of financial sector development on growth in Ghana. The result showed that the sensitivity of financial sector development to growth depends on the choice of proxy for financial sector development. The result showed that ratio of private credit to GDP, ratio of total domestic credit to GDP, ratio of currency to GDP, ratio of currency to broad money and ratio of broad money stock to GDP are statistically significant and negatively affects growth. The result from the indexes created from principal component analysis confirmed the sensitivity of the effect to the choice of proxy. The findings therefore suggest that one will judge financial sector development as having negative or positive effect on growth depending on the choice of indicator as a proxy for financial sector development. The research therefore recommends that policy makers exercise caution in the choice of proxy for financial development in policy design.

1. Introduction

The financial sector has generally been recognized in the literature to play an important role in the growth of an economy. A well-organized financial sector improves savings and efficiency and therefore contributes to higher economic growth. This view was demonstrated in the work of Mckinnon (1973) where he found that the financial sector can be a catalyst for economic growth. Schumpeter (1911), in particular, submits that an efficient financial system has the ability of initiating technological innovation and economic growth by making available financial services and resources to those people who are most likely to succeed in producing innovative products and processes. In this respect, most of the earlier researches into the finance and economic growth relationship focused on the traditional financial intermediary development, banking, both in developed and developing countries (King & Levine 1993). The researchers used different economic indicators to proxy for financial sector development, including credit to the private sector as a share of GDP, money supply measure M2 as a share of GDP and domestic credit to the private sector (Adusei 2013). Africa, unlike the developed economies has not seen much research into the finance – growth nexus. The sparse literature on the relationship between finance and growth in Africa has produced conflicting conclusions. In his investigation into the finance –growth relationship in Burkina Faso, Ghana, Cape Verde, Cote d'lvoire, Sierra Leone and Liberia, Esso (2010), concluded that there is a positive relationship between financial sector development indicators and growth of the economy. He established a long run relationship between the two variables and further indicated that financial sector development comes before economic growth in Mali and Ghana. Due to the conflicting result on the nexus between financial sector development and growth, the research seeks to employ different measures of financial deepening to estimate the relationship between financial sector development and economic growth.

The rest of the paper has been structured as follows. Section 2 provides review of relevant literature, section 3 looks at Data and Methodology, section 4 introduces the empirical results and discussion and 5 summarizes the research findings, conclusion and recommendation.

2. Literature Review

The empirical and theoretical studies that have looked into the relationship between financial sector development and economic growth did not just start. One fundamental question that has been asked is: will financial sector development influence economic growth positively? Economists have had very different views on this issue for a long time. For instance, Lucas (1988) believes that the relevance of financial matters is very badly over emphasized even in popular and much more professional discussions. Miller (1998) however argues that,

financial market's contribution to economic growth is a proposition almost too obvious for serious discussion. In the midst of such disagreements, the literature on finance and growth continues to expand with new theoretical models and advanced empirical methods. And one such model is the one in the work of Akinlo and Egbetunde (2010). They identified three possible relationships concerning finance and economic growth. They include, the growth driven finance, the finance led growth and the two way causal relationship that is known as feedback hypotheses.

The finance led growth hypothesis suggests that financial sector development plays an important role in economic growth, by suggesting some means. These include efficient allocation of capital, pooling of savings through attractive instruments, reduction of the cost of information gathering and presenting among others. In essence, an efficient financial sector is able to pool the limited credit resources from the surplus units to the deficits. By this process the financial sector promotes efficient allocation of resources Akinlo and Egbetunde (2010); Levine (1997);Ghali, (1999) are among the researchers whose work support this hypothesis. A contrast to the finance-led growth hypothesis is the Growth driven finance hypothesis. This hypothesis is supported by scholars such as Kuznets (1955) and Robinson (1952) .They argued that increase in growth generally leads improvement in financial sector development. The hypothesis argues that the high economic growth increases demand for some categories of financial assets and arrangement and that financial market effectively react to these demands and change. The feedback scenario suggests a two way causal relationship between finance and growth (Akinlo and Egbetunde 2010). Lewis (1955) a 'pioneer' of development economics put forward that, "a two way relationship exists between financial sector development and economic growth". This means that financial market develops as a result of economic growth, which in turn feeds back as a stimulant to real economic growth.

Empirical studies on whether financial sector development affects economic growth abounds. Among early researchers to document a positive relationship between economic growth and financial sector development indicators was Goldsmith. According to Goldsmith, the financial superstructure of an economy speeds up economic growth and enhances economic system where the funds will yield the highest social return. Goldsmith (1969) found in a cross-country (34 countries) study that the size of the financial system contributes positively to economic growth, but was unable to show any relationship between financial structure and economic growth. Levine (1993) came up with several problems with Goldsmith's findings; he suggested that, the sample was small (34 countries), the variables that could impact Growth are not accounted for, the operation of the financial organization is not gauged and the focal point of causality is not tested. King and Levine (1993) improved on the work of Goldsmith by increasing the sample size to 77 nations, introducing control factors, examining three growth indicators (real per capital growth, increase in capital accumulation and total productivity growth) and by introducing new financial sector development measures (liquid liabilities over GDP). They found a robust positive relationship between each financial measure and GDP growth per capita using alternative econometric specifications. However, King and Levine did not address the causality issue and focused only on the banking sector (Ayadi et al. 2013).Additionally, Rioja and Valev (2004) posit that the brunt of financial sector development on growth is stronger in affluent countries than for low-income countries. Loayza and Ranciere (2002) emphasize the difference between the short- and long-run impacts of financial sector development on economic growth. They find that the negative short-term association is related to a surge of financial crisis. Ghali (1999), through his study into the finance-growth connection in Tunisia reported that the high cost of information, the uncompetitive nature of the financial sector as well as the ballooning transaction cost in Tunisia makes it difficult to establish the existence of a positive impact of finance on economic growth in developing economies.

The question of trade openness and liberalization influencing economic growth have been answered by many pieces of empirical evidence-most of which have answered that, yes trade openness impacts positively on economic growth. Thus most outward-oriented economies experience high rates of economic growth as compared to inward-oriented economies (Yanikkaya, 2003). Thus, the economy grows due to trade openness. As exports and imports increases, trade openness also increases and the effect is a high growth rate of the economy. Conversely, a study by Yanikkaya (2003) found that trade barriers rather have a positive and significant impact on economic growth. In effect, country-specific trade policies and the different proxies or variables measuring openness could account for these differences. The question then is: what will be the effect on a developing nation like Ghana?

Achieving full employment in an economy is equally important as having a favourable growth in other macroeconomic variable especially in developing economy like Ghana. The high rate of labour force growth and low rates of employments have made the labour market in developing nations to exhibit characteristics different from other nations such as inaccurate unemployment data, high rates of unemployment at the informal sector, absence of unemployment insurances and incomes, among many others (Sodipe and Ogunrinola, 2011). This finding supports the strand of theory suggesting that the positive relationship between GDP and employment is normal and that any observed jobless growth might just be a temporary deviation. With respect to the

relationship between employment or labour demand and economic growth, empirical evidence has showed that there exists a positive association between these two variables. For example, without causality analysis, Sodipe and Ogunrinola, (2011) found positive and statistically significant relationship between employment level and economic growth in Nigeria while they observed a negative relationship between employment growth rate and the GDP growth rate in the economy.

Governments' expenditure whether capital, recurrent or investment can either impacts positively or negatively on the growth of an economy. The most important thing is for governments to spend more on those that impacts productively positively and spend less on those that impact negatively on productivity. For example capital and recurrent expenditure on economic services has negative effect on economic growth, whiles capital expenditure on transfers had positive effect on growth. Similarly, capital and recurrent expenditures on social and community services and recurrent expenditure on transfers have positive effect on economic growth (Nworji et al 2012).Josaphatet al.(2000) investigated the impact of government spending on economic growth in Tanzania and found that increased productive expenditure has a negative effect on growth while consumption expenditure stimulates economic growth. With respect to real interest rate and economic growth, depending on the regime and management style, interest rate can either have negative or positive impact on economic growth. A study by Hansen and Ananth (2013) to investigate the long-run correlation between real interest rates and productivity growth. They found a moderately negative correlation between the two variables, which makes interest rate mildly counter cyclical. A similar study by Udoka and Anyingang (2012) found an inverse relationship between interest rate and economic growth in Nigeria, meaning that high interest rates retards economic growth.

3.0 Model Specification, Data and Methodology
3.1 Model Specification and Data
Following the review of literature on financial sector development and growth, the study adopted the endogenous growth model $(Y_t = AK_t)$ to capture the effect of financial sector development on economic growth. Where growth in real output depends on total factor productivity, real aggregate capital stock which is a function of (human and physical capital), savings rate and the efficiency of financial intermediation. Following Jalil and Feridun (2011), the study adopted the following specification:

$$Y_t = \beta_0 + \beta_1 W_t + \beta_2 FD_t + \beta_3 DPR_t + \varepsilon_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(1)$$

where Y_t is real total output of the economy (proxy by GDP); $\beta_0, \beta_1, \beta_2, \beta_3$ are parameters; W_t is a vector of control variables of growth including, L (labour force, proxy by population); K −denoting the stock of capital (proxy by real total government fixed capital formation to GDP ratio); GE − representing real total government expenditure (proxy by general government final consumption expenditure to GDP ratio); NX − (the ratio of the sum of exports minus imports to GDP); and $INFL$ − denoting CPI inflation. The variable FD_t − represents a vector of proxies for financial sector development consisting of private-sector credit/GDP(CPS/Y); private-sector credit/total domestic credit(CPS/DC); broad money/GDP$(M2^+/Y)$; narrow money/broad money$(M1/M2^+)$; narrow/broad money to GDP ratio$(M1M2^+/Y)$; and narrow/broad money$(M1/M2)$. An attempt has been made to include two additional measures of money to the ratio of narrow money/broad money as posited in Adu and Marbuah (2013). Currency /broad money$(Cu/M2^+)$; currency/GDP(Cu/Y); total domestic credit/GDP (DC/Y) and total bank deposit liabilities/GDP(DEP/Y). DPR-denotes real deposit interest rate (proxy by the 3-month time deposit rate and calculated as the difference between the nominal deposit rate and the annualized rate of inflation); and ε_t is an error term. All variables are in natural logarithm except DPR.

It is *a priori* expected that real output on one hand and financial depth and the real interest rate on the other hand will have a positive relationship. As posited by Shaw (1973), the level of output is influenced by investment through financial intermediation. In furtherance, Khan (2008) was of the view that a positive real interest rate deepens financial intermediation through increased volume and value of savings which includes real output. The relationship between the control variables and economic growth is a matter of empirical issue.

Data spans from post financial reform (Structural Adjustment Program) for Ghana covering the period 1988 to 2012 when Ghana's financial sector was liberalized. Data were obtained from the bank of Ghana statistical Bulletin, World Development Indicators (2013) and International Financial Statistics (2013).

3.2 Methodology
The next step under the time series framework of the study is to choose an appropriate estimator to study the relationship among the variables. The paper utilizes the Fully Modified Least Squares (FMOLS) estimator postulated by Phillips and Hansen (1990). The paper opts for the FMOLS over other methods of estimations like the ARDL (Pesaran et al 2001), the Johansen Maximum Likelihood test (by Johansen and Juselius, 1990) because it does not require establishing co-integration before estimation, performs better on small samples and it is applicable to both $I(0)$ and $I(1)$ variables.

4.0 Empirical Result

4.1 Principal Component Analysis

In order to test the robustness of the results and include only the relevant variables in the estimation, Principal component analysis (PCA) was employed to reduce the data set. The purpose of PCA is to find unit-length linear combinations of the variables with the greatest variance. All principal components combined contain the same information as the original variables, but the important information is partitioned over the components in a particular way: (that is to say, the components are orthogonal, and earlier components contain more information than later components).

Table 1: Principal Component Analysis

Principal Component	Eigen value	Proportion	Cumulative
1	4.643	0.580	0.580
2	2.008	0.251	0.832
3	0.851	0.106	0.938
4	0.256	0.032	0.970
5	0.187	0.023	0.993
6	0.054	0.007	1.000
7	0.0001	0.000	1.000
8	5.146	0.000	1.000

Table 2: PCA Scoring Coefficients

Variable	1	2	3	4	5	6	7	8
$\ln(M2+/Y)$	0.4332	0.1665	0.1853	-0.2558	-0.2742	0.4882	0.6061	-0.0633
$\ln(CPS/Y)$	0.4527	-0.0148	-0.0884	0.293	0.3226	-0.0431	-0.0684	-0.7686
$\ln(DC/Y)$	0.3694	0.3304	-0.0754	0.6893	-0.3109	-0.2131	0.0279	0.3616
$\ln(CPS/DC)$	0.4099	-0.2494	-0.0772	-0.0368	0.6903	0.1138	0.0586	0.5192
$\ln(DEP/Y)$	0.1996	-0.3501	0.8095	-0.0244	-0.0921	-0.4161	-0.0100	0.0075
$\ln(Cu/Y)$	0.2452	0.5628	0.2644	-0.2976	0.0522	0.1811	-0.6524	0.0595
$\ln(Cu/M2+)$	-0.2175	0.5983	0.1365	-0.1032	0.4161	-0.4397	0.4447	-0.0349
$\ln(M1/M2+)$	-0.3945	0.0588	0.4500	0.5220	0.2514	0.5497	0.0182	-0.0132

The result from the PCA test in table 1 shows that the eight proxies of financial sector development explains 100% variance in the original data. More specifically, the first six variables (M2+/Y, CPS/Y, CPS/DC, DEP/Y and Cu/Y) explains 100% variance in the original data. All the eight indicators were exclusively used to examine the effect of each proxy of financial depth due to high correlation among them. Also, each proxy of financial sector development is insufficient to explain financial depth. The first component could explain 58% variation in financial depth. Due to the insufficiency of each financial sector development indicator to explain variation in financial depth and to test for the robustness of our result, eight proxies of financial sector development were created using minimum soring coefficient of 0.2. Thus, following Adu and Marbuah (2013), we were able to create proxies for financial sector development that explains 100% variance in financial sector development whilst eliminating multicollinearity among the indicators of financial sector development as all the sub-indexes created had zero correlation among themselves. The sub-indexes each explains 100% variation in financial depth and includes FDIndex1 (M2+/Y, CPS/Y, DC/Y, CPS/DC, Cu/M2+, Cu/Y and M1/M2+), FDIndex2 (DC/Y, CPS/DC, DEP/Y, Cu/M2+ and Cu/Y), FDIndex3 (DEP/Y, Cu/Y and M1/M2+), FDIndex4 (M2+/Y, CPS/Y, DC/Y, Cu/Y and M1/M2+), FDIndex5 (M2+/Y, CPS/Y, DC/Y, CPS/DC, Cu/M2+ and M1/M2+), FDIndex6 (M2+/Y, DC/Y, DEP/Y, Cu/M2+, and M1/M2+), FDIndex7 (M2+/Y, Cu/M2+ and Cu/Y) and FDIndex8 (CPS/Y, DC/Y and CPS/DC).

4.2 Test for Stationarity (ADF and PP Unit Root Test).

After the reduction and selection of relevant data set with the PCA, a unit root test is carried out on the selected variables to test for stationarity, for final estimation by FMOLS. ADF unit root test was employed to test for stationarity. Philips Perron unit root test was also employed to augment the ADF unit root test due to its ability to remove serial correlation and heteroskedastic error term.

The result shows that the variables considered including the eight sub-indexes of financial sector development is a mixture of stationary *I(0)* and stationary *I(1)*. From table 3 below, real GDP, ratio of broad money to real GDP, ratio of private credit to GDP, ratio of total domestic credit to real GDP, ratio of private credit to total domestic credit, ratio of narrow money to broad money, ratio of government expenditure, FDIndex1, FDIndex2 and FDIndex4 were all stationary at the level at conventional levels of significance whereas labour, capital, ratio of total deposit to real GDP, ratio of net export to real GDP, inflation rate, deposit rate, FDIndex3, FDIndex5, FDIndex6, FDIndex7 and FDIndex8 were first differenced stationary at conventional levels of significance. The

result depicts a mixture of *I(0)* stationary and *I(1)* stationary. By economic implication, a shock to any non-stationary variable will lead to a permanent effect. Statistically, using non-stationary variables is likely to result in a spurious regression if OLS is used and therefore warrants the use of Fully Modified Ordinary Least Squares (FMOLS) which is applicable irrespective of whether the variable is *I(0)* or *I(1).*

Table 3: Unit Root Test

Variable	ADF Unit Root Test		PP Unit Root Test	
	Level	1st Differenced	Level	1st Differenced
Ln(Y)	3.834	-2.682*	3.668	-2.714*
Ln(M2+/Y)	-1.267	-4.703***	-1.222	-4.729***
Ln(CPS/Y)	-1.719	-6.641***	-1.929	-6.626***
Ln(DC/Y)	-1.638	-4.749***	-1.606	-4.780***
Ln(CPS/DC)	-2.250	-7.401***	-2.249	-7.825***
Ln(M1/M2+)	-1.690	-5.315***	-1.656	-5.399***
Ln(Cu/Y)	-1.951	-5.014***	-2.001	-5.048***
Ln(L)	-6.006***		-3.908***	
Ln(K)	-3.002**		-3.056**	
Ln(NX)	-3.473**		-3.508**	
Ln(GE/Y)	-2.520	-4.678***	-2.570	-4.679***
Ln(DEP/Y)	-3.462**		-3.513**	
ln(INFL)	-2.803*		-2.803*	
DPR	-3.350**		-3.323**	
FDIndex1	-1.545	-6.243***	-1.621	-6.451***
FDIndex2	-2.023	-4.550***	-2.196	-4.631***
FDIndex3	-3.074**		-3.115**	
FDIndex4	-2.390	-5.259***	-2.416	-5.280***
FDIndex5	-4.149***		-4.156***	
FDIndex6	-5.675***		-5.320***	
FDIndex7	-5.530***		-5.927***	
FDIndex8	-5.261***		-6.065***	

*, ** and *** represents significance levels at 10%, 5% and 1% respectively.

4.3 Estimated Relationship between Economic Growth and Financial Sector Development

From table 4 and 5 below, the results of the estimated long run effect of financial depth on economic growth are shown. The result in table 4 uses the individual variables as a proxy for financial depth whereas table 5 shows the combined effects of indicators of financial sector development on economic growth. In all the estimated models, the $\overline{R^2}$ is high enough to say that the model is well specified as the regressors explains about 99% variations in economic growth.

In table 4, all the proxy measures of financial sector development have negative relationship with economic growth except total deposit to GDP ratio and ratio of narrow money to broad money supply. Financial deepening have a negative and statistically significant impact on economic growth in models (1a)-(3a) and (7a)-(8a). More specifically, an increase in the ratio of broad money to real GDP will cause economic growth to decrease by 0.08% whereas an increase in private credit to real GDP and the ratio of domestic credit to real GDP will respectively cause approximately 0.06% and 0.05% decrease in economic growth. This negative repercussion of financial deepening on economic growth could as a result of the characteristics of the financial sector such as high cost of information, lack of adequate competition and high rate of transaction cost of which Ghali (1999) made similar assertion akin to developing countries.

In models (7a) and (8a), an increase in ratio of currency to GDP and ratio of currency to broad money will statistically as well as economically cause economic growth to decrease by approximately 0.07% and 0.15% respectively. In models (5a)-(6a), though financial deepening has a positive relationship with economic growth, a change in financial deepening has no significant effect on economic growth.
Among the control variables, labour force proved to be a robust determinant of long-run economic growth. The coefficient of labour force is positive and highly statistically significant in all the eight estimated specifications. Interestingly and as also concluded by Adu and Marbuah (2013), the coefficient of the labour force is greater than one, violating the neoclassical postulations of growth model. By implication, there is no diminishing returns to labour.

In other control variables, capital and net export were also identified as a robust determinant of economic

growth. In all the estimated specifications, capital has a negative and statistically significant effect on economic growth. An increase in capital will have approximately 0.12% to 0.19% decrease in economic growth. Net export to GDP ratio which is economically and statistically significant based on economic growth. The net export has a negative relationship with economic growth in all models. In model (2a)-(6a) for instance, a unit increase in net export is expected to cause economic growth to decrease by approximately 0.2%. This result goes to buttress established regularities about Ghana's import-driven economy.

Government expenditure and real deposit interest rate were however found as not robust and non-significant determinant of economic growth as the signs alternate depending on the model specification. Is also worth noting that inflation rate was non-significant determinant of economic growth.

In table 5, the results of our estimation of the long-run effects of financial sector development (using the financial sector development indexes as proxies) on economic growth in Ghana. The specifications in Table 4 are the same as the specifications described in Table 5. However, the difference is that in table five, the financial sector development indexes are combined effects of the proxies used in table 4. . In models (1b)–(6b), all the proxy measures for financial sector development have positive relationship with economic growth. However, financial sector development has statistically significant effect on economic growth in only models 1b and 2b. Specifically, a combined increase in (M2+/Y, CPS/Y, DC/Y, CPS/DC, Cu/M2+, Cu/Y and M1/M2+) and (DC/Y, CPS/DC, DEP/Y, Cu/M2+and Cu/Y), will have a negative repercussion on growth by respectively decreasing GDP by approximately 0.02% and 0.01%.   Though models 7b and 8b have a positive relationship with economic growth, the proxies of financial sector development are insignificant determinants of economic growth.

With respect to the control variables, labour, capital and net export maintained their status as a significant and robust determinant of economic growth as same as seen in the estimated specifications in table 4. Government expenditure, inflation and real deposit interest were insignificant in explaining changing trends in economic growth in Ghana.

Table 4: Estimated Relationship between Financial sector development and Economic Growth.

Variable	(1a)	(2a)	(3a)	(4a)	(5a)	(6a)	(7a)	(8a)
Constant	3.500	3.348	3.702	3.648	3.927	3.520	3.599	4.005
	(4.490)***	(11.893)***	(10.274)***	(11.186)***	(11.777)***	(8.884)***	(11.777)***	(12.402)***
Ln(L)	2.126	2.206	2.098	2.131	2.067	2.183	2.047	1.913
	(6.200)***	(7.462)***	(10.655)***	(10.658)***	(8.793)***	(5.794)***	(9.640)***	(9.809)***
Ln(K)	-0.147	-0.151	-0.151	-0.176	-0.182	-0.186	-0.124	-0.121
	(-3.888)***	(-4.130)***	(-4.118)***	(-4.381)***	(-4.720)***	(-4.385)***	(-3.844)***	(-4.266)***
Ln(NX/Y)	-0.147	-0.206	-0.200	-0.223	-0.209	-0.200	-0.089	-0.077
	(-2.260)**	(-3.547)***	(-3.544)***	(-3.473)***	(-3.400)***	(-3.211)***	(-1.544)	(-1.526)
Ln(GE/Y)	0.020	-0.051	-0.0417	-0.011	-0.014	0.011	0.016	0.006
	0.218	-1.109	-0.945	-0.226	-0.300	0.213	0.434	0.191
Ln(INFL)	0.015	0.021	0.025	0.020	0.030	0.043	0.011	0.013
	0.744	1.091	1.329	0.925	1.253	1.390	0.685	0.921
DPR	-0.00019	5.290	0.00025	-0.0004	-1.040	0.0006	-9.170	-1.930
	-0.278	0.076	0.3656	-0.474	-0.013	0.512	-0.162	-0.038
Ln(M2+/Y)	-0.077							
	(-1.776)*							
Ln(CPS/Y)		-0.058						
		(-2.386)**						
Ln(DC/Y)			-0.0512					
			(-1.977)*					
Ln(CPS/DC)				-0.035				
				-0.777				
Ln(DEP/Y)					0.018			
					0.748			
Ln(M1/M2+)						0.112		
						0.943		
Ln(Cu/Y)							-0.070	
							(-3.406)***	
Ln(Cu/M2+)								-0.149
								(-4.460)***
$\overline{R^2}$	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99

Table 5: Estimated Relationship between Financial Sector Development and Economic Growth.

Variable	(1b)	(2b)	(3b)	(4b)	(5b)	(6b)	(7b)	(8b)
Constant	3.308	3.928	3.893	3.859	3.921	3.855	3.882	3.777
	(8.420)***	(8.014)***	(9.472)***	(8.626)***	(7.072)***	(7.655)***	(11.557)***	(10.202)***
Ln(L)	2.241	2.015	2.057	2.063	2.051	2.050	2.056	2.092
	(4.490)***	(5.18)***	(11.600)***	(7.922)***	(10.211)***	(7.201)***	(7.743)***	(6.123)***
Ln(K)	-0.146	-0.135	-0.172	-0.171	-0.168	-0.170	-0.170	-0.201
	(-4.018)***	(-4.151)***	(-4.072)***	(-4.348)***	(-4.612)***	(-4.316)***	(-4.359)***	(-4.573)***
Ln(NX/Y)	-0.165	-0.117	-0.207	-0.210	-0.202	-0.234	-0.201	-0.217
	(-2.808)**	(-2.085)**	(-3.180)***	(-2.685)**	(-3.374)***	(-3.731)***	(-3.203)***	(-3.606)***
Ln(GE/Y)	-0.015	-0.006	-0.009	-0.009	-0.014	-0.009	-0.007	0.018
	-0.367	-0.165	-0.165	-0.127	-0.309	-0.196	-0.148	0.362
Ln(INFL)	0.020	0.022	0.018	0.022	0.015	0.033	0.020	0.029
	1.061	1.297	0.691	1.050	0.762	1.383	0.936	1.362
DPR	0.0002	0.0002	-0.0004	-0.0002	-0.0005	0.0005	-0.0003	-9.490
	0.226	0.348	-0.441	-0.307	-0.744	0.462	-0.432	-0.130
FDIndex1	-0.017							
	(-2.381)**							
FDIndex2		-0.012						
		(-3.152)***						
FDIndex3			-0.001					
			-0.189					
FDIndex4				-0.0004				
				-0.0242				
FDIndex5					-0.020			
					(-1.758)*			
FDIndex6						0.046		
						0.942		
FDIndex7							0.187	
							0.508	
FDIndex8								-0.965
								-1.274
$\overline{R^2}$	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99

5.0 Conclusions and Policy Implications

The paper aimed at investigating the long-run effects of financial sector development on economic growth in Ghana. The analysis was based on eight alternative proxy indicators for financial sector development. Since all eight indicators cannot enter a single equation due to high correlation among them and small nature of our sample, the estimation was done eight times with each indicator of financial sector development used at a time. Because the principal component analysis showed that all proxies of financial sector development is not sufficient enough to explain financial sector development, we used PCA to create eight proxies of financial sector development which is able to explain 100% variations in financial sector development. The results indicate that the growth effect of financial sector development is sensitive to the choice of proxy used. For instance using either the private sector credit to GDP ratio or the private sector credit as a ratio to total credit, we found negative and statistically significant effect of financial sector development on growth. We also found a negative and statistically significant effect of financial sector development on growth using either ratio of currency to GDP or ratio of currency to broad money supply. The same can also be said when one uses broad money supply to GDP ratio to proxy for financial sector development as the coefficient on this variable was found to be negative and statistically significant. The indexes created from principal component analysis confirmed the sensitivity of the effect to the choice of proxy. This finding helps in understanding the conflicting results in the literature as many studies rely on single indicators hence unable to identify which financial sector variables have positive growth enhancing effects and which does not.

Following from the findings of this study, it is recommended that government redirect its expenditure programs into areas that will be growth enhancing. Further, since the ratio of broad money to GDP, ratio of currency to broad money and ratio of currency to GDP have contraction effect on economic growth, it is recommended that the monetary authorities put in measures to reduce the excess money that flows into the hands of the public.

Thirdly, since the ratio of net export to GDP has a negative effect on total output, it is therefore recommended that government cuts down on its import bill by encouraging the consumption of made-in-Ghana goods. This can be done creating the enabling environment for manufacturers in the economy so that it enhances capacity which will result in increase in total output.

Finally, since it is apparent that the sensitivity of financial sector development to economic growth depends on the choice of a proxy, it is recommended that caution is taken in the choice of financial sector development

indicator as a proxy for policy making.

References

- Adu, G., Marbuah, G., and Mensah, T. J. (2013) 'financial sector development and economic growth in Ghana: Does the measure of financial sector development matter?' *Review of Development finance* 3.pp (192-203).
- Adusei, Michael (2013) 'Financial sector development and Economic Growth; Evidence from Ghana'. *The International Journal of Business and Finance Research*. Vol. 17, No. 5.
- Ayaadi, R., Arbak, E, Ben-Naucer, S., and De Groen, W. P. (2013) Financial sector development And Economic Growth across the Meditarranean, MEDPRO Technical Report, No 30.
- Akinlo,A. E., and Egbetunde, T., (2010) financial sector development and economic growth: the experience of 10 sub-saharan African countries revisited. *The review of finance and banking,* vol 2, iss 1, pp 017-028
- Esso, L. J. (2010) 'Re-examining the finance Growth Nexus: Structural Break, Threshold cointegration and causality Evidence from the ECOWAS'. *Journal of Economic Development*, 35(3), 57-79.
- Jalil, A., Feridun, M., (2011). Impact of financial development on economicgrowth: empirical evidence from Pakistan. Journal of the Asia Pacific Economy16 (1), 71–80.
- Ghali, K. H. (1999), Financial sector development and Economic Growth: The Tunisian Experience, *Review of Development Economies* 3(3), 310-322.
- Goldsmith, R. W, (1969). '*Financial Structure and Development*'. New Haven," CT: Yale University Press
- Hansen, Bruce E., and AnanthSeshadri (2013). "Uncovering the Relationship between Real Interest Rates and Economic Growth." Ann Arbor MI: University of Michigan Retirement Research Center (MRRC) Working Paper, WP 2013-303.
- Johansen and Juselius (1990) "Maximum Likelihood estimation and Inference on Cointegration with Applications the Demand for Money" Oxford Bulletin of Economics and Statistics, 52(2): 169-210.
- Josaphat, P. K., and Oliver, M. (2000). "Government Spending and Economic Growth inTanzania," 1965-1996: *CREDIT Research Paper* (Nottingham, United Kingdom: University of Nottingham).
- Khan, M.A., (2008). Financial development and economic growth in Pakistan: evidence based on Autoregressive Distributed Lag (ARDL) approach. SouthAsia Economic Journal 9 (2), 375–391.
- King, R. G. and P. Levine (1993) 'Finance and Growth: Schumpeter might be right'. *Quarterly Journal of Economics* 108: 717-38
- Kuznets, S. (1955) 'Economic growth and income inequality'. *American Economic Review,* 45, 1-28.
- Levine, R. (1997) 'Financial sector development and Economic Growth: Views and Agenda'. *Journal of Economic Literature* 35(2): 688-726.
- Lewis, W. Arthur (1955). The Theory of Economic Growth, Homewood, Illinois, Richard D. Irwin.

- Loayza, N. and R. Ranciere (2002) 'Financial Fragility, Financial sector development, and Growth'. World Bank, Washington, D.C., mimeo
- Lucas, R. E. (1988) 'On the mechanics of economic development'. *Journal of Monetary Economics, 22 (1),* 3-42.
- McKinnon, R. I. (1973) *Money and Capital in Economic Development*. Washington D.C. The Brookings Institution.
- Miller, Merton H. (1998). Financial markets and economic growth. *Journal of Applied Corporate Finance* 11 (3), 8–15.
- Nworji et al (2012). Effects of public expenditure on economic growth in Nigeria. International Journal of Management Sciences and Business Research, 1 (7)
- Pesaran, H.M., Shin, Y. and Smith, R.P. (2001) "Bounds Testing Approaches to the Analysis of Level Relationships" Journal of Applied Econometrics, 16 (3) 289-326
- Rioja, F. and N. Valev (2004) 'Does One Size Fit All?: A Reexamination of the Finance and Growth Relationship'. *Journal of Development Economics*, Vol. 74, No. 2, pp. 429-447.
- Robinson, J. (1952). *The generalization of the general theory, the rate of interest and other essays.* London:MacMillan
- Schumpeter, J. A. (1912). "Theorie der WirtscaftlichenEntwicklung," Leipzig: Dunker &Hamblot [The Theory of Economic Development: An Inquiry into Profits, Capital, Interest, and the Business Cycle, translated by Redvers Opie. Cambridge, MA: Harvard University Press]
- Shaw, E., (1973), *Financial Deepening in Economic Development*, Oxford University Press.
- Sodipe, O. A. And Ogunrinola, O. I. (2011), Employment and Economic Growth Nexus In Nigeria**.** *International Journal of Business and Social Science, 2 (11). 232-239.*

- Udoka and Anyingang (2012), The effect of interest rate fluctuation on economic growth in Nigeria, 1970 – 2010. International Journal of Business and Social Sciences, 3(2). 295 - 322
- Yanikkaya H. (2003), Trade openness and economic growth: a cross-country empirical investigation. *Journal of Development Economics,* 72, 57– 89.

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