Banks, Stock Market and Economic Growth in Developing Countries: A Re-Assessment Using Panel Cointegration

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Abstract

This study employs the panel co-integration and Fully Modified Ordinary Least Squares (FMOLS) techniques to empirically investigate the impact of financial development on economic growth in 20 developing countries. Based on data covering the period from 1989 to 2010, the results show that the contribution of intermediated funds to the growth process is relatively more significant than that of the stock market. Banks and stock markets are found to be substitute rather than compliment in financing economic activities in these countries, suggesting the availability of alternative financing for the economy. Generally, financial development is found to be important contributors to the growth process. However, overall financial depth represented by the ratio of broad money to GDP is found to be more significant than both banks and stock market in financing real GDP, suggesting that self-finance still dominates as mode of financing in developing countries.

Keywords: banking development, stock market development, economic growth, developing countries, panel co-integration

1. INTRODUCTION

The financial sector plays a significant role in ensuring efficient allocation of capital by channeling funds to projects with the highest marginal product of capital. Financial markets and intermediaries pool and mobilize savings as well as gather, process and evaluate information on prospective investment projects, thereby reducing the consequences of moral hazards and market inefficiencies. Financial sector also shares and enables the diversification of risks, monitors managers and exerts corporate control as well as eases borrowing constraints (Pagano, 1993; Chou and Chin, 2001). These functions of financial sector enhance the accumulation of physical capital as well as the productivity of investments, thus promoting economic growth.

In view of the important role of the financial sector on the real economic activities, empirical and theoretical literature on the finance-growth relationship has been abundant (see

for instance, Bencivenga and Smith, 1991; King and Levine, 1993; Rajan and Zingales, 1998). Despite this, some issues remained unresolved in the finance-growth literature, particularly in the context of the developing countries. Specific issues include the relative importance of intermediated financing through the bank sector against that of direct financing through the stock market and their contribution to economic growth at different level of economic development, the relevance of stage of development vis-à-vis the optimal mix of financial structure, and whether banks and stock market are substitute, compliment or they co-evolve. In this respect, there are conflicting arguments with some favoring the banks against market, while others advocated for the complimentary role of both banks and markets in the growth process.

By easing information frictions, banks play important role in improving resource allocation (Boyd and Prescott, 1986). Investment financed by banks is more sustainable compared to those financed by the stock market which are too sensitive to market prices, hence may not be sustainable in the long run. Similarly, financial and economic policies can be carried out easier under a bank-based system, which provides governments with more means to fine-tune the economy and enhance economic growth (Odhiambo, 2010). However, banks are blamed of exercising monopoly, being inefficient and conservative. The monopoly enjoyed by banks tends to result to inefficiency, which the competitive nature of stock markets mitigates. Stock market also encourages innovative activities that enhance economic growth as against the traditional approach usually taken by banks (Allen and Gale, 2000).

Following the increasing importance of the stock markets in the largely bank-dominated developing economies, the focus of research in the area of finance-growth nexus is shifting towards the mutual role of banks and stocks markets to growth. Boyd and Smith (1998) suggest that both banks (debt market) and stock markets (equity market) are complimentary rather than substitutes in financing capital investments. Both sources of financing are necessary in stimulating economic growth, with the level of development would determine the optimal mix of the two, with access to equity markets may not be needed in the early stages of economic development These issues are still very relevant especially to developing countries, where banks play significantly more role in the financial sector than the equity or bond markets (Kronberger, 2002). In view of this, the stock markets in the developing countries tend to have low activity, thus the bulk of formal private saving and borrowing takes place in the banking sector (Baliamoune-Lutz, 2010).

Recently, however, equity markets in the developing economies are recording a remarkable growth relative to those in developed countries. Bailey (2010) reported that since the late 1990s, the equity market capitalization in these countries has increased substantially and account for over one-fifth of global equity market capitalization, which is three times its share in mid-2000s. With this development, the relative importance of bank and stock market development in promoting economic growth in developing countries is of vital theoretical and policy concern. Similarly, there is an urgent need to evaluate, whether the substantial increase in equity market development in developing countries is complimenting, competing or mutually co-evolving with the banking sector. On the back of these issues, this study aims to empirically investigate the relative significance of banking sector and equity market development in promoting economic growth among a group of twenty developing countries, selected based on geographical location and data availability (see Appendix I for the list of the countries).

2. LITERATURE REVIEW

The relationship between the financial sector and real economic sector was initially highlighted in the seminal work of Bagehot (1873) who contends that money market development in England enable the flow of capital from less productive to the high

productive regions as well as from the less profitable to the most profitable trades in search of the highest return on the capital. Subsequently, Schumpeter (1911, 1934) depicted financial intermediaries (banks, in particular) as occupying the center-stage in economic development. While both views emphasized on a particular segment of the financial system, Gurley and Shaw (1955) depicted an all-encompassing approach by relating the financial system and its role to growth as evolving depending on stages of economic development. According to them, initially investments are self-finance, which give way to debt-finance and then equity-finance. However, it was the financial repression theory developed by McKinnon (1973) and Shaw (1973) that provided the theoretical foundation for the role of financial development in economic growth. The advent of the endogenous growth models provided further insight and basis to empirically investigate the finance-growth nexus.

Theoretically, Greenwood and Jovanovic (1990) developed an endogenous growth model to show that financial intermediation promotes growth as it allows a higher rate of return to be earned on capital, which in turn provides the means to implement costly financial structures. In the same vein, Bencivenga and Smith (1991) show that by reducing uncertain future liquidity needs of economic agents, financial development shifts the composition of savings in the direction of capital, thereby promoting growth. Equally, financial development can promote growth by increasing the amount of saving directed to investment and by increasing the marginal productivity of investment (Pagano, 1993).

Empirically, King and Levine (1993) investigate the finance-growth relationship in a cross country study involving 80 countries; they found financial development to be strongly associated with real per capita GDP growth, the rate of physical capital accumulation, and improvements in the efficiency with which economies employ physical capital. Reinforcing the previous findings, Levine and Zervos (1998) found that both stock market liquidity and banking development positively predict growth, capital accumulation, and productivity even after controlling for economic and political factors. However, their results also revealed that stock markets provide different services from banks.

The above studies were however implicit on the development characteristics of countries, which may affect the level of development of their financial systems and hence the finance-growth relationship. Taking this into consideration, Rioja and Valev (2003) investigate the effects of financial development on the sources of growth in countries belonging to different income group. The results showed that finance has a strong positive influence on productivity growth primarily in more developed economies, whereas in less developed economies, the effect occurs primarily through capital accumulation. This has revealed that financial intermediaries in developing countries lack the capacity to effectively select and monitor most profitable investments; rather some social and political parameters are used in providing funding.

This might lead to moral hazard and financial instability, which may stifle the contribution of finance to growth or even making financial development to adversely affect growth. Supporting the first scenario, Baliamoune-Lutz (2010) found that in 18 sub-Saharan Africa (SSA) countries, there was no strong evidence that finance leads economic development. For the second scenario, Dufrenot, Mignon, and Peguin-Feisolle, (2010) found that, while financial intermediation is a positive determinant of growth in developed countries, it acts negatively on the economic growth of developing countries.

The above findings might however be influenced by the methodology employed, as contrary results were found by Kiran, Yavuz and Güriş, (2009) who investigate the long-run relationship between the financial development and economic growth in a panel of 10 emerging countries for the period 1968 to 2007. Employing the panel co-integration technique and the fully modified OLS developed by Pedroni, the study finds that financial development has a significant positive influence on economic growth. Similarly, in Africa,

Ahmed (2010) employed the same set of techniques and finds a long-run equilibrium relationship between financial development and economic growth, that financial development is found to cause economic growth. On whether stock markets and banks are compliments or substitute, Dey (n.d.) found that bank credit and stock market liquidity are inversely related, meaning that they substitute each other in providing external financing to firms.

These conflicting findings pointed out that there are still unresolved issues in the finance-growth literature, especially with regards to developing countries. More so, the afore reviewed studies were silent on the relative importance of bank and stock market development to growth and whether the increasing role of stock market in developing countries is at the expense of banks or it is just complimenting it. This study is an attempt to fill this literature gap.

3. ESTIMATING MODEL AND ESTIMATION TECHNIQUES
Based on the extant literature and the insight from the endogenous growth model, the following model is specified to investigate the relationship between financial development and economic growth in developing countries.

(1) $$\ln GDP_{it} = \beta_{0i} + \beta_{1i} \ln FD_{it} + \beta_{2i} \ln GFCF_{it} + \beta_{3i} \ln CV_{it} + \varepsilon_{it}$$

Where GDP is the real GDP, FD is a vector of financial development indicators, GFCF is gross fixed capital formation, CV is a vector of control variables; all are in natural log, the disturbance term ε_{it} is assumed to be white noise and follows a one-way error component model. Eight different specifications of the above model were estimated; the first four measure the independent effects of broad money, bank credit, stock market capitalization and stock market turnover on economic growth. The fifth and sixth specifications measure the contemporaneous effect of banking sector and stock market development on economic growth. The last two specifications, involve the interactive terms of banking and stock market development; it is used to investigate whether, they are substituting or complimenting each other.

The financial development indicators used are ratio of broad money to GDP (BMG) and the ratio of private credit by the banking sector to GDP (CRD). The BMG is used to measure the overall financial depth of the economy or the level of monetization in the economy; however, in developing countries, where a large component of the broad money stock is currency held outside the banking sector, broad money is less indicative of the degree of financial intermediation by banking institutions (Esso, 2010). But the McKinnon (1973) hypothesis posits that in developing countries, a broadly defined demand for money complements the demand for physical capital. This position is derived from an outside money model in which economic units are constrained to self-finance and there are considerable indivisibilities in investment. Therefore, cash balance holdings are positively related to the propensity to invest, this inform the choice of this indicator in this study. Specifically, banking sector development is measured by the ratio of private credit by deposit money bank to GDP; it is included to reflect the actual financial intermediation activity of commercial banks.

Two indicators of stock market development are employed, namely market capitalization (MCP) and stock traded (STR) both as ratios of GDP, they represent the size and liquidity of the stock market, respectively. The first equals the value of the shares of listed companies on domestic exchanges; it reflects the ability to mobilize capital and diversify risk, while the second indicator measures the activity of the stock market trading volume relative to the size of the economy, thus, it reflects the liquidity that stock market provide to economic agents (Mohtadi and Agarwal, 2004).

Gross fixed capital formation is used as a proxy for capital accumulation, which is one of the major channels through which finance may influence growth. Furthermore, some

variables are included in the model to control for the possible effects of other growth determining factors; this in order to avoid misspecification bias. These variables are general government expenditure (TGE) and trade openness (OPN). Government expenditure may lead to budget deficit, which if financed by borrowing from the financial system has the potential of crowding-out private investment and hence negatively affects growth; also government spending if effectively carried out, may contribute positively to growth. On the other hand trade openness may contribute positively to economic growth by providing domestic entrepreneurs access to foreign markets. Data utilized in this research is on annual basis and in 2005 constant United States Dollars (USD); it covered the period 1989 to 2010 for each country, hence constituting a balanced panel. The data is obtained from the *World Development Indicators* and *Global Financial Development Database* of the World Bank.

Estimation Techniques

To estimate the long run relationship between financial development and economic growth in the panel of the 20 countries over the period 1989 to 2010 (long panel); the appropriate technique is the panel co-integration test. Generally, panel co-integration involves three stages; firstly, panel unit root tests are conducted to ascertain the integrating order of the variables, secondly, panel co-integration test is conducted to establish the existence of a long run relationship among the variables and finally, the estimation of long run coefficients.

Panel Unit Root Tests

The Levin and Lin (1993) and Levin, Lin and Chu (2002) panel unit root test, LLC henceforth, assumed all the cross section units to be stationary or not, thus restricting heterogeneity among the cross sectional units. To overcome this shortcoming of the LLC, Im, Pesaran and Shin (2003), IPS hereafter, developed a less restrictive panel unit root test, which allows for heterogeneity between cross-sectional units and residual serial correlation in a dynamic panel framework. The IPS is based on the mean of individual unit root statistics Nonetheless, Breitung (2000) finds that the inclusion of individual specific trend, leads to a dramatic loss of power by both the LLC and IPS tests and that they are also sensitive to the specification of deterministic trends. In order to address this problem, Breitung formulated a panel unit root test statistic that does not employ a bias adjustment and its power is greatly higher than that of LLC and IPS tests.

Maddala and Wu (1999), MW henceforth proposed the Fisher-ADF based panel unit root test, which is based on combining the ρ-values of the test-statistic for a unit root in all cross-sectional units. The advantage of MW test over IPS is that its value do not depend on different lag lengths in the individual ADF regressions (Kiran, Yavuz and Güriş, 2009; Bangake and Eggoh, 2010). They also do not require a balanced panel (Baltagi, 2005).

Panel Co-integration Test

The most widely used residual-based panel co-integration test in the literature was developed by Pedroni (1999, 2000 and 2004). The test takes into account the heterogeneity of the cross-section units, by using idiosyncratic parameters, which are allowed to vary across the cross-section units; this is an advantage over such other tests as the Kao (1999) test. Accordingly, Pedroni proposed seven different test statistics, which can be categorized into two. The first set comprising of four test statistics are based on pooling of the residuals along the within-dimension, while the remaining three statistics are based on between-dimension, which permits for heterogeneous autocorrelation coefficients across countries (Pedroni, 2004). The test considers the following regression equation:

(2)
$$y_{it} = \alpha_i + \delta_i t + \beta_{1i} x_{1i,t} + \beta_{2i} x_{2i,t} + ... + \beta_{Mi} x_{Mi,t} + e_{i,t} \qquad t = 1...T, i = 1...N$$

Where T is the number of observations over time; N represents number of cross section units (countries); M is the number of the regression variables; y and x are assumed to be integrated of order one and α_i varies across individual countries in the panel. The residual, which is to be tested for stationarity is given by:

(3) $\qquad e_{it} = \rho e_{it-1} + u_{it}$, or by the following augmented equation:

(4) $\qquad e_{it} = \rho_i e_{it-1} + \sum_{j=1}^{pi} \psi_{ij} \Delta e_{it-j} + v_{it}$

Where ρ_i is an autoregressive coefficient of the residuals across countries, the null hypothesis of no co-integration is given by H_0: $\rho_i = 1$ and the alternative hypotheses, which are based on the two categories, are as follows:

1. H_a: $(\rho_i = \rho) < 1 \quad i$, for the within-dimension test or panel statistics test, which assume that all countries are either uniformly co-integrated or not co-integrated.

2. The heterogeneous alternative hypothesis holds that substantial portion of the countries are co-integrated, it is given by H_a: $\rho_i < 1 \quad i$, for the between-dimension or group statistics test, in which countries are, allow to differ in whether they are co-integrated or not.

Estimation of Long-Run Relationships and Inference

After establishing the existence of long-run relationship among the variables in the study, the next task is to estimate the coefficients of the long-run economic relationships as well as to test if these coefficients satisfy theoretical assumptions. However, the popular Ordinary Least Squares (OLS) estimator has been shown to have many limitations, particularly when applied to panel data. For instance, Baltagi (2005) shows that, the OLS estimator is inconsistent when used in panel data, Moreover, the OLS estimator is asymptotically biased and its asymptotic distribution is dependent upon nuisance parameters related with the dynamics of the data generating process. Another source of problem in using OLS in co-integrated panel is the standard assumption of endogeneity of the regressors (Kiran, Yavuz and Güriş, 2009; Pedroni, 2000), which has violated the OLS assumption of no autocorrelation.

To overcome these limitations, Pedroni (2000; 2001) suggested the Fully Modified OLS (FMOLS), which is based on the correction of the dependent variable using the long-run covariance matrices in order to remove the nuisance parameters and then applies the standard OLS estimation technique to the corrected variables. This method has many advantages, among them are; it accounts for the serial correlation and endogeneity in the regressors that are usually present when long-run relationship exists. In addition, it tackles the problems of non-stationarity in regressors and simultaneity bias as well as generates consistent estimates of the β parameters in small samples (Christopoulos and Tsionas, 2003; Kiran, Yavuz and Güriş, 2009).

4. EMPIRICAL RESULTS AND ANALYSIS
Results of Panel Unit Root Tests
The results of the panel unit root tests at the levels of the variables are presented in Table 1. Deterministic trend and individual effects (intercept) are included in the tests, going by the plot of the variables, which shows the presence of linear trend and intercept. Generally, the null hypothesis of unit root could not be rejected at 5%; implying that the variables are not stationary at levels. However, there is an exception in the cases of LCRD, LGFCF and LMCP, which were respectively reported to be stationary by the MW, LLC and IPS tests. But given the weaknesses of these tests as highlighted earlier and that in all the three cases, the other three tests reported the variables to be non-stationary, the variables are considered to be non-stationary at levels.

Table 1. Results of Panel Unit Root Test at Levels

Assumption	Common unit root process		Individual unit root process	
Tests	LLC	Breitung	IPS	MW
LBMG	-0.314	0.482	0.703	35.530
LCRD	1.227	1.257	-0.251	66.935***
LGDP	-0.164	1.893	0.438	45.876
LGFCF	-3.482***	-0.837	2.974	29.688
LMCP	-0.244	-1.283	-1.665**	51.354
LOPN	0.170	0.045	-1.042	51.423
LSTR	-0.013	-0.643	-0.914	50.003
LTGE	0.815	-1.311	4.836	15.297

Note: ***, ** and * denotes statistical significance at 1%, 5% and 10% respectively. selection of lag length is based on Schwarz information criteria

Upon taking the first difference of the variables, the null hypothesis of unit root was unanimously rejected by all the tests at 1%, thus, the variables turned out to have no unit root as reported in Table 2. This means that, all the variables are stationary at first difference and hence, integrated of order one. Consequently, the basis to investigate the existence of long run relationship through panel co-integration test is provided.

Table 2. Results of Panel Unit Root Test at First Difference

Assumption	Common unit root process		Individual unit root process	
Tests	LLC	Breitung	IPS	MW
LBMG	-11.838***	-8.663***	-12.817***	202.433***
LCRD	-7.465***	-5.086***	-10.615***	172.129***
LGDP	-10.170***	-5.333***	-8.466***	137.850***
LGFCF	-10.162***	-7.345***	-8.458***	136.748***
LMCP	-11.480***	-8.368***	-10.257***	164.668***
LOPN	-13.209***	-3.264***	-10.127***	161.404***
LSTR	-10.513***	-4.723***	-11.344***	187.615***
LTGE	-11.228***	-5.300***	-12.611***	202.262***

Notes: ***, ** and * denote statistical significance at 1%, 5% and 10%, respectively.
Selection of lag length is based on Schwarz information criteria.

Results of Panel Co-integration Test
The results of the Pedroni panel co-integration tests for the various specifications stated earlier are contained in tables three and four. Like in the case of the unit root tests, deterministic trend and individual effects are also included in the co-integration tests; this because including time specific effects makes the Pedroni panel co-integration tests more powerful (Carlsson, Lyhagen and Österholm, 2007).

Table 3. Results of Pedroni Panel Co-integration Tests for Banking and Stock Market Independent Models

	Private Credit		Broad Money		Market Capitalisation		Stock Turnover	
	Statistic	ρ-Value	Statistic	ρ-Value	Statistic	ρ-Value	Statistic	ρ-Value
Panel Statistics				Within-Dimension				
Panel v-Statistic	26.589***	0.000	27.700***	0.000	21.153***	0.000	23.938***	0.000
Panel rho-Statistic	1.997	0.977	1.764	0.961	2.500	0.994	1.602	0.946
Panel PP-Statistic	-3.137***	0.001	-3.733***	0.000	-1.786**	0.037	-3.313***	0.001
Panel ADF-Statistic	-3.006***	0.001	-3.623***	0.000	-2.105**	0.018	-4.256***	0.000
Group Statistics				Between-Dimension				
Group rho-Statistic	3.987	1.000	4.190	1.000	4.443	1.000	3.994	1.000
Group PP-Statistic	-4.340***	0.000	-1.933**	0.027	-1.789**	0.037	-1.720**	0.043
Group ADF-Statistic	-3.588***	0.000	-2.268**	0.012	-2.938***	0.002	-3.774***	0.000

Note: ***, ** and * denote statistical significance at 1%, 5% and 10%, respectively.

The results in Table 3, revealed that three of the five within dimension and two of the three between dimension Pedroni panel co-integration tests, have rejected the null hypothesis of no co-integration. Therefore, we can deduce that a long run equilibrium relationship exists between economic growth on one hand and monetary, banking and stock market development represented by broad money, private credit, market capitalization and market turnover as well as other control variables on the other hand.

Table 4. Results of Pedroni Panel Co-integration Tests for Cuncurrent Banking and Stock Market Models

	CRD*MCP		CRD*STR		CRD & MCP		CRD & STR	
	Statistic	ρ-Value	Statistic	ρ-Value	Statistic	ρ-Value	Statistic	ρ-Value
Panel Statistics				Within-Dimension				
Panel v-Statistic	21.153***	0.000	23.938	0.000	24.375***	0.000	27.301***	0.000
Panel rho-Statistic	2.500	0.994	1.602	0.946	2.845	0.998	2.569	0.995
Panel PP-Statistic	-1.786**	0.037	-3.31***	0.001	-3.188***	0.001	-3.157***	0.001
Panel ADF-Statistic	-2.105**	0.018	-4.26***	0.000	-3.529***	0.000	-3.785***	0.000
Group Statistics				Between-Dimension				
Group rho-Statistic	4.443	1.000	3.994	1.000	4.878	1.000	4.672	1.000
Group PP-Statistic	-1.789**	0.037	-1.720**	0.043	-4.775***	0.000	-3.667***	0.000
Group ADF-Statistic	-2.938***	0.002	3.774***	0.000	-4.687***	0.000	-4.738***	0.000

Notes: CRD*MCP and CRD*STR are models involving the interactive terms (product of) private credit and market capitalisation and stock turnover ratio respectively, while CRD&MCP and CRD&STR are models simultanously involving private credit and each of market capitalisation and stock turnover respectively.
***, ** and * denote statistical significance at 1%, 5% and 10%, respectively.

Similarly, Table 4 shows that majority of the seven Pedroni panel co-integration tests reject the null hypothesis of no co-integration 1% or 5% level of significance. This means the long run relationship between economic growth and the various measures of financial

development in developing countries is robust irrespective of whether banks and/or stock market are considered independently or jointly. However, the results from both tables have shown that Panel rho and Group rho-tests consitently accept the null of no co-integration. But this is not worrisome, since a Monte Carlo simulation by Pedroni (2004) shows that the two tests tend to underestimate the rejection of the null when N and T are small. Therefore, we conclude that long run relationship exists between the variables and thus proceed to estimate the long run coefficients.

Results of the Fully Modified OLS Estimator

The long run coefficients of the co-integrating vector are estimated using the FMOLS estimator for the various specifications; the results are presented in Table 5. In all cases the dependent variable is real GDP. In the first model (involving bank private credit) presented in panel one of Table 5, it is clear that private credit is significantly contributing to economic growth, with every 1% increase in private credit resulting into 0.36% increase in real GDP. The other variables in the model are equally important for growth, as a percentage increase in gross fixed capital formation and trade openness are causing real GDP to increase by 0.21% and 0.52% respectively. The only exception is government expenditure, which turnout to have negative influence on growth, though in negligible amount compared to other variables in the model.

The positive effect of financial development on growth is even higher when the ratio of broad money to GDP is used as a proxy for financial development. The results in panel one of Table 5, show that a 1% increase in broad money will lead to 0.56% increase in real GDP, which is 0.20% larger than the effect of private credit. The same goes for gross fixed capital formation, which contribute 0.25% to GDP for every percentage increase. These phenomena have implied that to a large extent, investment in developing countries is self-financed. However, the effect of trade openness is suppressed and government expenditure is no longer having any impact on GDP.

Both indicators of stock market development, that is market capitalization and stock turnover are also significantly influencing real GDP, but to a lesser degree than private credit and broad money. From the results in panel two of Table 5, a 1% increase in market capitalization leads to 0.13% increase in real GDP. On the other hand, stock turnover, brings about only 0.06% increase in real GDP, this is indicative of low activities in the stock market of developing countries. Other variables in the stock market models exhibit about the same pattern as in the broad money and private credit models. Trade openness is still making tremendous positive contribution to GDP (0.40% and 0.57%, respectively) and government expenditure exert negative influence only the stock turnover model. The effect of gross fixed capital formation is very insignificant in the market capitalization model, but slightly significant in the stock turnover model.

Table 5. Long Run Estimates Using FMOLS

Banking and Monetary Sectors							
Variables	**Coefficient**	**t-stat**	**ρ-Value**	**Variables**	**Coefficient**	**t-stat**	**ρ-Value**
LCRD	0.361***	8.241	0.000	LBMG	0.564***	7.587	0.000
LGFCF	0.211***	2.775	0.006	LGFCF	0.252***	3.185	0.002
LTGE	-0.116*	-1.836	0.067	LTGE	-0.066	-0.991	0.322
LOPN	0.515***	8.976	0.000	LOPN	0.392***	6.133	0.000
Stock Markets							
LMCP	0.131***	5.542	0.000	LSTR	0.057***	2.891	0.004

LGFCF	0.000***	2.983	0.003	LGFCF	0.169*	1.848	0.065
LTGE	-0.017	-0.242	0.809	LTGE	-0.172**	-2.385	0.018
LOPN	0.402***	6.036	0.000	LOPN	0.570***	8.658	0.000
Banks and Stock Market Cuncurrent							
LCRD	0.291***	6.600	0.000	LCRD	0.364***	8.327	0.000
LMCP	0.093***	4.178	0.000	LSTR	0.018	1.074	0.284
LGFCF	0.153**	2.057	0.040	LGFCF	0.176**	2.258	0.025
LTGE	-0.017	-0.276	0.783	LTGE	-0.125**	-2.032	0.043
LOPN	0.385***	6.319	0.000	LOPN	0.499***	8.865	0.000
Banks and Stock Market Interaction							
LCRD*LMCP	-0.083***	-8.538	0.000	LCRD*LSTR	-0.065***	-7.049	0.000
LGFCF	0.164**	2.205	0.028	LGFCF	0.060	0.720	0.472
LTGE	0.036	0.566	0.571	LTGE	-0.099	-1.498	0.135
LOPN	0.389***	6.656	0.000	LOPN	0.523***	8.806	0.000

*Notes***:** The coefficient of LGFCF in the LMCP model is 0.000000000010 and cannot be contained in the column, this is why 0.000 is written.

    ***, ** and * denote statistical significance at 1%, 5% and 10%, respectively.

In the above models, roles of banks and stock market to economic growth are treated independently. However, in reality the two run concurrently in financing real economic activities. In most cases firms do not restrict their sources of external finance to either banks or stock market alone, they rather explore both sources. Based on this assumption, models were estimated that combine bank credit on one hand and market capitalization and turnover on the other hand. The results in panel three of Table 5, revealed that banks still dominate the financing of real economic activities; a 1% increase in bank private credit accounts for 0.29% increase in real GDP as against mere 0.09% by market capitalization. The effect of banks become even more domineering, when stock market development is represented by market turnover ratio, which turn out to have no significant influence on real GDP.

Having been able to ascertain the relative significance of bank and stock market to real GDP, the next task is to find out whether bank and stock market are compliments or substitutes. This is very relevant, because stock markets in many developing countries came into existence much later than banks, which means they either take away some part of the market share of banks or compliment them in providing finance to the private sector. The results in panel four of Table 5, shows that the interactive term of both bank private credit and market capitalization as well as stock turnover, are negative and statistically significant. This means that bank and stock market in developing countries are substitutes, rather than compliments.

6. DISCUSSION OF FINDINGS

From the empirical results presented and analyzed in the previous section, broad money appeared to be the most influential contributor to real GDP, above other financial development indicators. This implied that self-finance still dominates the economies of many developing countries, thereby conforming to the McKinnon (1973) hypothesis. According to this hypothesis, economic units are constrained to self-finance in developing countries, which are characterized by small-sized private firms. Under this condition, money plays an

important in increasing the amount of physical investment, therefore, cash balances holdings are positively related to propensity to invest.

Moreover, banks appeared to greatly play more roles in influencing real GDP than stock market. This shows that banks still dominate the financial system of developing countries; the obvious reason for this might be that the real sectors in developing countries are dominated by small and medium scale enterprises, which cannot access the stock market. This result confirmed Kronberger (2002) and Baliamoune-Lutz (2010) assertions that the financial systems of developing countries are dominated by banks, hence bulk of borrowing taking place in the banking sector.

Market capitalization is also found to be more significant in influencing real GDP than market turnover. This is indicative of the fact that there are low activities in the stock markets of many developing countries. Most of the stock markets in developing countries were established recently, therefore, the stock market capitalization largely represents initial public offerings by private firms and in some cases by privatized public enterprises. Thus, market capitalization tends to have more effect on real GDP than stock turnover.

The individual contribution of banks to real GDP is not significantly improved when stock market was introduced and vice versa. In the case of stock market, the introduction of banks even reduces its contribution to real GDP. This is indicative to the fact that the two are not compliments. In fact, the results clearly suggest that banks and stock market are substitute rather than compliment. This confirmed the findings of Dey (n.d.) and contradicts the findings of Boyd and Smith (1998). Overall, the findings of this study revealed that financial development in the form of monetary, banks and stock market development are positively influencing real GDP in developing countries. These results confirmed the findings of Levine and Zervos (1998) and Kiran, Yavuz and Güriş, (2009).

7. CONCLUSION

The aim of this study is to examine the relative importance of stock market and banking sector development on economic growth as well as to determine whether the banking sector and stock market are complimenting or substituting each other in financing real economic activities in twenty developing economies. The panel co-integration and the FMOLS approaches were employed. The study concluded that the overall depth of the financial sector represented by broad money is the most significant contributor to growth; meaning that self-finance still largely constitutes the mode of financing real economic activities, which are majorly in the form of small and medium enterprises. On the relative importance of banks and stock market, the study found that the banking sector is to a large extent relatively more significant in financing real GDP than the stock market. This has confirmed the claim that the financial systems of developing countries are dominated by banks, with the stock market gradually catching up.

The stock markets of developing countries are also found to have low activities, as market capitalization plays significantly more role than stock turnover. However, this might not be unconnected with fact that many the stock markets in developing countries were recently established. Therefore, these markets are characterized by initial public offerings by private firms and privatized public enterprises. Bank and stock markets are found to be substitutes, rather than compliments; meaning that they are competing for both savers funds and investment opportunities to finance; this will lead to efficiency in the activities of both, it also suggest that the introduction of stock markets in developing countries is gradually diversifying their financial system and lessening the traditional dominance of the banking system. Overall monetary, banking and stock market developments in developing countries are contributing to the growth process and the financial systems of developing countries fit the characterization of financial system by Gurley and Shaw (1955), in which self-financing

still dominates, but is giving way to debt and equity financing. The policy implication of these findings is this; financial reforms should be implemented across the board that is in all the sectors of the financial system as against selective policy. This will ensure that the real economy gets the best from the financial system.

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Table 6. List of Countries

Sub Saharan Africa	North Africa and the Middle East	Asia	South and North America
Cote d'Ivoire	Egypt	Bangladesh	Chile
Ghana	Jordan	Malaysia	Colombia
Kenya	Mauritius	Pakistan	Peru
Nigeria	Morocco	Philippines	Trinidad and Tobago
	Tunisia	Sri Lanka	Venezuela
		Thailand	