

STOCK MARKET DEVELOPMENT, LIBERALIZATION AND FINANCIAL DEVELOPMENT IN THE SELECTED SUB-SAHARAN AFRICAN COUNTRIES

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Abstract

The paper examines the long run impact of financial development and the stock market liberalization on stock market development for seven selected sub-Saharan African countries using panel dataset that spans 1990 to 2013. The study employs dynamic heterogeneous panel data analysis by using the technique of Pooled Mean Group (PMG). Results show that on average liberalizing the stock markets in the seven selected SSA countries will have positive long run effect on the economies of these countries. The long run impact of financial development on stock market development is also positive and significant. As such policy design should be tailored towards strategizing financial sector in such a way that would strengthen both the stock market and the banking sector unit of the entire financial market.

Keywords: Financial development, pooled mean group, liberalization, Sub-Saharan African.

JEL Classification: G14, G15, G18

1. Introduction

The financial sector is the nerve-center of any economy owing to the essential functions being performed by this sector. The two units of financial sector which are the banking and the stock market units complement each other in promoting growth (Levine & Zervos, 1998). In spite of the importance of finance to economic development, there has not been much impact of the stock market segment to the real sector in the Sub-Saharan African (henceforth SSA) region (Kagochi, Al-Naseer & Kebede 2013). The financial markets of most of the SSA (aside South Africa) are grossly underdeveloped. This may stem out of the fact that the economies of these countries are small and underdeveloped. It has been pointed out that the nature of the financial system of an economy depends on the size and the level of economic development of that nation. Some

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of the stock markets are small and illiquid as evident by the analysis of Standley (2010). In this analysis, SSA stock markets performance rated low among the developing countries. The analysis uses the two of the indices of measuring stock market which are stock market capitalization and turnover ratio. In 2008, the average indices for market capitalization scaled by Gross Domestic Product (GDP) for SSA region are 41.5 percent; Latin America & Caribbean (LAC) is 91 percent and South Asian is 1249 percent. The average turnover ratio for the same period shows SSA region on the low 10.4 percent as against LAC of 14.1 percent and South Asia of 72.6 percent. The SSA banking sectors performances are also not impressive during the same period. The banking sectors are not well placed to improve the depth of the financial sectors. This is buttressed by such indicators of financial development as credit to the private sector scaled by GDP and deposit money bank asset as a percentage of GDP. The average for credit to the private sector as a percentage of GDP for 2008 for SSA region is 20.9 percent; LAC is 46.0 and South Asia is 40.2 percent. The average value of deposit money bank asset for the same period for SSA is 23.3 percent LAC is 50.6 percent and South Asia is 45.3 (Standley, 2010).

The pictures portray by these statistics indicate that both stock market development and financial development of the SSA are low. This might have predicated the neo-liberalists (McKinnon, 1973; Shaw, 1973) recommendation of the deregulations of the financial sectors. Liberalization of the stock market is part of liberalization efforts. Stock market liberalization is expected to promote both domestic and foreign participation in the stock market thereby boosting the development of the market. Also part of the liberalization effort is the deregulation of both the interest rate and the banking sector reform. Interest rate liberalization is expected to allow the rate to be market determined so that the market is allowed to dictate the costs and direction of funds for efficient resource allocation. Banking sector deregulation allows foreign participation which encourages competition and leads to improved service delivery on the part of the domestic banks. The end result is to make for a deep financial sector thereby promoting vibrant financial development. Notwithstanding the liberalization of the stock market of the region of SSA, the development of the sector as evaluated from such indices as market capitalization as percentage of GDP, turnover ratio, market concentration do not justify the liberalization efforts. Two issues are being addressed in this paper: first is that one and half decades after liberalizing the stock markets, the long term impacts of the liberalized stock markets on the development of the stock market are yet to be felt in the SSA countries; the second issue is the effect of financial development on stock market development. Financial development from this perspective is measured as domestic credit to the private sector as a percentage of GDP. The paper is structured as follows. We begin with discussion on the concept of stock market development and financial development in Section two. Section three discusses the trends in stock market growth in the SSA countries. Section four is on the review of literature. Section five is on theoretical framework, data and methodology. Results and interpretations are presented in Section six while Section seven concludes.

Theoretical link between the liberalization of stock market and financial development is such that stock market liberalization attracts more investors to the domestic economy. Increased investors participation encourages investment in riskier projects since investors now shift from low risk to riskier and more profitable projects.

Thus the ability of a financial system to provide the avenue for risk diversification among other financial intermediating functions translates to financial development (Levine, 2005). Stock market contributes immensely to the growth of the real sector through its influence on the manufacturing sector of the advanced economies. Corroborating this point, Mankiw (2010) portends that if there is a lull in the stock market of any economy, then it is a sign that economic crisis is looming around the corner. The channels of transmission between liberalization of stock market and development of the market implies that liberalization leads to increase in foreign participation in domestic exchange and to a large extent increase the market size in terms of high rate of capitalization. Liberalization also improves the liquidity of the market with respect to value traded. Liquidity refers to the speed with which investors can convert assets to cash. Moreover, market concentration is discouraged through diffuse ownership of shares that results from liberalizing the stock market. High level of liquidity which implies greater volume of shares traded leads to diverse ownership of shares and hence reduces market concentration. The improvement in these indices of evaluating stock market development is the consequence of stock market liberalization.

2. Concept of Stock market development and Financial Development

Stock market development is a broad concept that consists of the stock market indices that measures the size, liquidity, market concentration, volatility, institutions and the impacts of stock market on the real sector of the economy (El-Wassal, 2013). Market size is measured by market capitalization which is number of listed securities scaled by GDP. While large market may be an attribute of a developed stock market it should be active in the context of trading in the market. Large but inactive market in terms of low volume of trading indicates poor level of liquidity. Large size should be complemented with market liquidity for the exchange to be categorized as a developed stock market. There are two measures of liquidity: stock value traded as a ratio of GDP and stock value traded scaled by market capitalization which is turnover ratio. Stock value traded shows the extent of trading regarding the whole economy while turnover indicates trading in relation to the stock market. Liquidity of stock is the avenue by which investors can easily and cheaply dispose of their shares whenever they wish (Arestis, Demetriades & Luintel, 2001). Stock market concentration is the degree to which the large firms are in control of shares that is the percentage of market capitalization own by the largest ten firms. Volatility is the changes in stock return, studies use the twelve month rolling standard deviation estimates of market returns. Volatility of stock may be desirable because it reveals changing values of firms among economic fundamentals for a better resource allocation. Excessive stock price changes is however not healthy for a better developed stock market. This is due to the fact that investors demand higher risk premium when stock prices are highly volatile thereby increasing the cost of capital and thus reducing investment level (Demirguc-Kunt & Levine, 1996; El-Wassal, 2013). Small stock market with high volume of trading exhibits low market capitalization but high liquidity ratio. Another feature of stock market development is that the transaction cost must be low, high costs of transactions discourage investors from investing in the stock market. Institutional factors are the supervisory and regulatory framework that strengthened the effectiveness of stock markets. Institutional factors include the

regulatory framework, the supervision of the regulatory framework and the enforcement of such supervision. They are part of the facilities that established investors' confidence in the stock markets (Pagano, 1993; Prasad, Rogoff, Wei & Kose, 2003; Singh, 1997).

Concept of Financial Development

Financial development is the situation where financial markets reduce the enforcements, information and transaction costs in its bid to allocate capital (Levine, 2005). The extent to which the financial markets are efficiently implementing the finance function is referred to as financial development. Financial development exists where the financial markets are able to reduce transaction, information and enforcement costs. It can also be explained in form of the ease with which firms can access external funds. It is measured in the speed with which investors are adequately rewarded for their investments. All these depend on the structures, institutions, transaction costs and competition that are governing the financial system (Rajan & Zingales, 2001). Financial system that exists to build up investors' confidence on the safety of their funds translates to a financially developed economy. The financial intermediaries mediate between the users of funds and the sources of these funds. The access to investment funds provided by the financial intermediaries paves way for technological innovation on the part of the entrepreneur (Schumpeter, 1912). This makes it easy for the entrepreneur to carry out his entrepreneurial ability without hindrance based on the availability of finance provided by the intermediaries. Furthermore, there is empirical evidence that lend support to the fact that financial development is able to predict the future level of economic growth (Levine & Zervos, 1998).

The functional method of analyzing financial development is stressed by Levine (1997). The paper explains the different functions of finance by which a financially developed market can be evaluated. While these functions remain the same among countries, the qualities of the services coupled with the institutions that govern the services are different among nations. This explains the reason why some countries have better developed financial development and are able to grow faster than others. The existence of financial intermediaries stems out of the need for acquisition of information, reduction in transaction costs to facilitate the investment process. Another function is that the intermediaries acquire information on the availability of high risk and high return projects that facilitates better allocation of resources. Risk reduction is also specified as a function of financial system. One of the common types of risk is liquidity risk. Liquidity risk measures the ease with which assets are exchanged for cash at reasonable prices. Through stock market liquidity avenue is provided for investors that wants to exchange his investment into liquid cash thereby making investment in the stock market more viable. The liquidity risk that is being taken care of by finance is the mechanism through which a developed stock market is linked to strong financial development and vice versa. A highly liquid stock exchange is an indication of a well-developed financial system. In the same manner financial development as measured in domestic credit to the private sector provides the means by which investors can borrow in order to invest in the stock markets.

In sum the ability of financial markets to perform such functions as diffusion and management of risk; means of transaction of goods and services; mobilization of savings; provision of information about investment opportunities and monitoring these

investments in an economy is an indication that financial sector is developed (Levine, 2005). For the purpose of the present study, financial development is measured in domestic credit to the private sector scaled by GDP. This follows the approach of Baltagi, Demetriades and Law (2009) that use this measure in examining the influence of financial liberalization and trade on financial development in some industrial and developing countries.

3. Trends in Stock Markets growth in SSA region

The development of stock markets in the SSA region is dated back to the 90s when the stock exchanges of these economies were established. During this period, with the exception of South Africa, the stock markets of the SSA region did not make much economic impacts on their economies in comparison to the other regions of the world (Kagochi, *et al.*, 2013; Yartey & Adjasi, 2007; Yartey, 2008). Statistics reveal that some of the indicators of market development for SSA countries are poor even among the other countries on the same level of development. Indicators of market capitalization scaled by GDP and number of listed companies between 2005 and 2012 show a decrease in market capitalization for all the regions of the world. However, the intensity of the fall in SSA region was much more pronounced than the other regions of the world. The picture is brought to the limelight in Table 1.

Table 1

Changes in Market Capitalization as a % of GDP and Number of Listed Companies

Region	2005	2012
<i>Panel A Changes in Market Capitalization as a % of GDP</i>		
Europe & Central Asia	28.2	26.3
Middle East & North Africa	27.2	25.6
South Asia	58.2	59.3
Sub-Saharan Africa	124.7	65.3
<i>Panel B Number of listed companies</i>		
Europe & Central Asia	3931	5311
Middle East & North Africa	6180	2455
South Asia	6050	6496
Sub-Saharan Africa	911	923

Source: *World Development Indicators, 2015*

The same low trend is applicable to turnover ratio and market concentration. Market concentration is high in most SSA countries. Evidence of thick concentration is found in such places like Ghana and Abidjan. From 1995 to 2000 the Ashanti goldfields controlled 90% of the entire market capitalization of Ghana. Also only five companies are in control of 75% of market transactions in Abidjan (Allen, Otchere & Senbet, 2011).

In spite of the foregoing analysis SSA stock markets have performed outstandingly well in the years 2000s. Stock markets in the region grow by 300 per cent during early

2000s (Kagochi *et al.*, 2013). Furthermore in an exploratory analysis of African stock markets Allen *et al.* (2011) analyzed the opportunities for African stock market in the face of world challenges. The authors computed risk-adjusted returns to evaluate the investment opportunities for African exchanges considering the fact that Africa is a high risk environment. The computation was done using the Sharpe ratio that measures mean return using volatility. Average risk-adjusted return computed for the period was 25 per cent for African stock markets indicating high investment opportunities for the region.

4. Review of Literature

There are different researches on the impact of stock markets on growth the literature on the effects of liberalizing the stock markets on the development of stock markets itself is however sparse. Kagochi *et al.* (2013) examined the influence that stock market (financial development) has over economic growth for group of seven SSA countries using a panel data analysis that spans from 1991 to 2007. Market capitalization was the only variable that was significant among the other indices of measuring stock market. Adjasi and Biekpe (2006) analyzed the relationship between market development and growth in fourteen African countries in panel data estimation. The authors find a positive relationship between stock market and growth. Demirguc-Kunt and Levine (1996) in deriving a wider conceptual interpretation of stock market development collated data on different indicators of market for 44 developing countries from 1986 to 1993 and compare the results among countries. The conclusion from the paper is that there are great cross-country differences for individual indicator for each country.

El-Wassal (2005) in its investigation of 40 emerging countries for the period 1980 to 2000 examines the relationship between the development of the market as proxy by market capitalization and other explanatory variables of growth, stock market liquidity, financial liberalization and country risk. The result shows that all the explanatory variables are significant except the country risk. Levine and Zervos (1998a) in analyzing data for 47 countries found that the two indices of financial development (both market liquidity and banking sector development) are positively correlated with existing and future rates of growth. Bekaert & Harvey (2000) examined the effects of liberalizing the stock markets on the cost of capital in some emerging economies. The results indicate that liberalization has positive effect on the cost of capital. Henry (2000) investigates the effects of stock market liberalization on investment level for 11 developing countries. Findings show evidence of increased investment level in nine out of 11 developing countries investigated one year after liberalization. Arestis, Demetriades & Luintel (2001) using time series approach investigates the relationship between economic growth and stock market development. The paper uses quarterly data from 1973-1997 with the major variables of interest being output, banking system, and stock market system for five industrial countries. Findings indicate that bank-based system of financial development contributes more to long-term growth than the stock-market based system.

Solarin and Dahalan (2014) employing GMM approach for a panel of selected African countries for the period 1990-2009 examined the relationship between financial development and growth. Findings show that the stock market liquidity has a positive significant relationship with growth unlike the banking indices. Ahmed (2010) examines the relationship between financial development, financial liberalization and growth using

panel data and time series for the period 1976-2005 for 15 SSA countries. Findings indicate the existence of long-run relationship between financial development and growth. From the analysis there is however a weak evidence to back-up the notion that financial liberalization have direct influence on growth. Looking at the foregoing analysis of the review studies, it can be seen that study that investigates the long run effect of stock market liberalization on stock market development in the SSA region is sparse.

5 Theoretical Framework, Data and Methodology

Based on the previous discussion on the concept of stock market development, the study adopts the existing stock market model of Calderon-Rossell (1990) modified by Yartey (2008) to form the analytical model for the present research. The stock market development model is thus derived using Calderon-Rossell (1990) modified by Yartey (2008):

$$S_{it} = \alpha_i + \theta S_{it-1} + \delta M_{it} + \beta L_{it} + \varepsilon_{it} \quad (1)$$

In the existing equation (1) of Yartey (2008), S_{it} is the market capitalization α_i is the country specific fixed effect M_{it} are the macroeconomic variables of GDP per capita, credit to the private sector, gross domestic investment as a percentage of GDP, stock market value traded as percentage of GDP and macroeconomic stability proxy by inflation and real interest rate. The L_{it} represent the indices of institutional quality like political risk, corruption, law and order while the error term is ε_{it} .

Stock market development is determined by economic growth, market liquidity, banking sector development, institutional quality (El-Wassal, 2005; Yartey, 2008). In Yartey (2008) model, stock market development as proxy by market capitalization is the dependent variable while the other variables of economic growth, turnover ratio which is a proxy for market liquidity, banking sector development, macroeconomic stability and institutional quality are all the independent variables. For the present analysis however while adopting the existing model, it would be modified with stock market liberalization and financial development as a main explanatory variables to take care of the objective. Thus the analytical model for the present study is specified:

$$Mktcap_{it} = \alpha_i + \omega_1 Stoklib_{it} + \omega_2 DCPS_{it} + \omega_3 USTB_{it} + \omega_4 RGDP_{it} + \varepsilon_{it} \quad (2)$$

Here i represents the countries to be investigated on $i=1, 2, \dots, N$, t is the time period which is $t=1, 2, \dots, T$. $Mktcap_{it}$ measures stock market development, which is the dependent variable in the model. The variable is represented by market capitalization scaled by GDP. $Stoklib$ is the stock market liberalization index. $DCPS$ is the total credit to the private sector as a percentage of GDP. $RGDP$ is the real Gross domestic product at (2005) constant prices. $USTB$ is the foreign interest rate proxy by six months' US Treasury bill rates.

Data

Considering the fact that liberalization started in the 1990s in the SSA region, the effect of liberalization will be observed from 1990 to 2013. The data is obtained from the World development indicators 2015. The index of stock liberalization is computed using the chronology of Kaminsky and Schmukler (2008) (henceforth K-S). The different

dates of liberalization of stock markets by the individual countries are obtainable from the International Monetary Fund's Annual Report on Exchange Arrangements and Exchange Restrictions IMF (AREAR). Following the chronology of K-S, values are assigned based on the policy of the country whether liberalizing or restricting. Value of "1" means the country is restricting foreign participation in the stock markets, "2" indicates that there is partial liberalization and "3" means that there is full liberalization.. The essence of computing this index is to show the intensity of liberalization of stock market.

Methodology

The paper employs dynamic heterogeneous panel analysis by using the Pooled Mean Group (PMG) of Pesaran, Shin & Smith (1999). The Mean Group assumes unrestricted coefficients among panel members. It estimates individual regression for each unit and computes the averages of the country specific that would represent the entire group. In this case different intercepts, slopes and short run variances among the panel are assumed. The traditional fixed effects, which is the dynamic fixed effect allows that the slopes, error correction and the long run coefficients to be same among the group while freeing only the intercepts to be different among countries. PMG technique takes a middle position between the two by allowing the intercepts, error correction and slopes to be different while restricting the long run coefficients to be same among the individual panel member. In situation where the slopes, short run variances and long run coefficients are different among group, then MG estimator would be efficient. However where the long run coefficients are similar within countries, in that case PMG estimator would be appropriate. The applicability of common long run assumption is relevant to the present study's analysis of seven selected SSA economies where they all are developing countries being on the same level of economic development. Also it is almost implausible to assume common value for speed of adjustment among the countries. Individual countries within the region cannot attain equilibrium of their explanatory variables with the dependent variables after the shock at the same time. In essence it is not realistic for different countries to get back to equilibrium at the same time after the shock.

Recent empirical researches show that the PMG have been employed by different authors. Blackburne and Frank (2007) use this technique to estimate consumption through income and inflation in 24 OECD countries from 1960 – 1993. Bassanini and Scarpetta (2001) investigated the effect of human capital development on growth in a panel of 21 OECD countries over a period of 1971-1998 using the MG and PMG techniques. The unrestricted specification for the ARDL system of equations for $t = 1, 2, \dots, T$, time period and $i = 1, 2, \dots, N$ countries for the dependent variable Y is:

$$Y_{it} = \sum_{j=1}^p \beta_{ij} Y_{i,t-j} + \sum_{j=1}^q \theta'_{ij} X_{i,t-j} + \alpha_i + \varepsilon_{it} \quad (3)$$

where $X_{i,t-j}$ is the $(k \times 1)$ vector of explanatory variable for group i and α_i is the fixed effect $Y_{i,t-j}$ is the lagged dependent variable β_{ij} represents the scalar coefficient of the lagged value of the dependent variable, also θ'_{ij} shows the vector coefficient of the lagged value of the explanatory variable. The model can be re-parameterized as a Vector Error

Correction Method (VECM) system:

$$\Delta y_{it} = \theta_i (Y_{it-1} - \omega'_i X_{it-1}) + \sum_{j=1}^{p-1} \beta'_{ij} \Delta Y_{it-j} + \sum_{j=1}^{q-1} \theta'_{ij} \Delta X_{it-j} + \alpha_i + \varepsilon_{it} \quad (4)$$

ω_i measures the long run coefficient while θ_i takes care of the error correction mechanism. The technique of PMG main interest is on both the short run adjustment mechanism and the long run coefficient. The restriction of similar long run coefficient among the group is of relevance to the present study considering the fact that the seven selected SSA countries have common characteristics as developing countries on the same level of economic development.

The long run stock market development model is thus:
 $Mktcap_{it} = \omega_{0i} + \omega_{1i} Stoklib_{it} + \omega_{2i} DCPS_{it} + \omega_{3i} USTB_{it} + \omega_{4i} RGDP_{it} + \varepsilon_{it}$ (5)

The method of PMG allows common long run coefficient among the group and this is justified for the present study on the basis that the countries in this analysis have the same categorization of the same level of economic development since they are all developing countries according to World Bank.

If the variables in (5) are $I(1)$ and are cointegrated then the error term for all i s are stationary that is $I(0)$. The ARDL panel model of (2) is thus:

$$Mktcap_{it} = \alpha_i + \delta_{10i} Stoklib_{it} + \delta_{11i} Stoklib_{it-1} + \delta_{20i} DCPS_{it} + \delta_{21i} DCPS_{it-1} + \delta_{30i} USTB_{it} + \delta_{31i} USTB_{it-1} + \delta_{40i} RGDP_{it} + \delta_{41i} RGDP_{it-1} + \varphi_i Mktcap_{it-1} + \varepsilon_{it} \quad (6)$$

Reparameterizing Equation (6) into error correction specification gives:

$$\Delta Mktcap_{it} = \theta_i (Mktcap_{it-1} - \omega_{0i} - \omega_{1i} Stoklib_{it} - \omega_{2i} DCPS_{it} - \omega_{3i} USTB_{it} - \omega_{4i} RGDP_{it}) - \delta_{11i} \Delta Stoklib_{it} - \delta_{21i} \Delta DCPS_{it} - \delta_{31i} \Delta USTB_{it} - \delta_{41i} \Delta RGDP_{it} + \varepsilon_{it} \quad (7)$$

where:

$$\omega_{0i} = \frac{\alpha_i}{1-\varphi_i}, \quad \omega_{1i} = \frac{\delta_{10i} + \delta_{11i}}{1-\varphi_i}, \quad \omega_{2i} = \frac{\delta_{20i} + \delta_{21i}}{1-\varphi_i}, \quad \omega_{3i} = \frac{\delta_{30i} + \delta_{31i}}{1-\varphi_i},$$

$$\omega_{4i} = \frac{\delta_{40i} + \delta_{41i}}{1-\varphi_i}, \quad \theta_i = -(1 - \varphi_i).$$

In order to establish that there is long run relationship between the dependent variable of stock market development and the explanatory variables, and then the speed of adjustment must not be zero that is $\theta_i \neq 0$. In essence the error correction method must be negative and significant in order to validate the result of PMG.

6. Empirical Results and Interpretation

The results in Table 2 show the estimates results using the three technique techniques of PMG and DFE. The approach in this study is to estimate using the three techniques. The results as presented in Table 2 would indicate whether heterogeneity of all the coefficients is appropriate in which case MG estimator would be efficient or homogeneity should be allowed in the case of DFE. The third choice is the middle position where homogeneity of only the long run coefficient is assumed while the intercepts, slopes and error correction are allowed to be different which shows that PMG estimator is efficient. The theoretical expectation is that for foreign interest rate the result is expected to be significant and negative. This would be conforming to the theoretical expectation on determinants of foreign capital flows that low interest rate among other factors is responsible for foreigners investing in the stock markets of developing countries. Results of stock market liberalization, domestic credit to the private sector, real GDP are all expected to be significant and positive. And finally the adjustment mechanism is expected to be significant and negative.

Table 2
Estimated MG, PMG and DFE Results of the Stock Market Development Model

Dep. Var. IMktcap	DFE	MG	PMG
Variables	Coeff.	Coeff.	Coeff.
lStoklib	-18.98 (-1.05)	-7.27 (-1.20)	6.56** (2.55)
ldcps	-55.13* (-1.75)	-60.41* (-1.91)	2.58*** (2.63)
lustb	-4.09 (-0.57)	2.94 (0.42)	3.62*** (3.73)
lrgdp	56.01 (1.13)	95.47* (1.75)	3.47* (1.70)
Cons.	-5.51 (-0.93)	-21.43** (-2.35)	-13.98* (-1.89)
Short-run (ec)	-0.01*** (-3.27)	-0.03*** (-3.74)	-0.04*** (-5.46)

Values in parentheses are t-statistics, *** and ** are one and five percent significant levels respectively * is significant at ten percent

Interpretation of Results

The three estimates results as presented in Table 2 indicate that PMG estimator is more efficient since all the explanatory variables of interest are highly significant. PMG estimator reveals that on average liberalizing the stock market of the seven selected SSA economies will increase the development of the stock markets of these countries in the long run. Increasing the index of stock market liberalization by one percent would lead to 656 percent increase in the level of stock market development in the long run for the selected SSA nations. The result is in conformity with apriori expectation. It is also in tandem with Henry (2000) who investigated the effects of stock market liberalization on investment in sample of 12 emerging economies. Furthermore the level of financial

development as measured in domestic credit to the private is also positive with one per cent level of significant. It indicates that increasing the level of domestic credit to the private sector by one per cent would increase the development of the stock markets of the selected seven by 258 percent in the long run. Moreover results of economic growth as measured in real GDP is also positive and significant. One per cent increase in real GDP would enhance the development of the stock markets by 347 percent in the long run. Foreign interest rate as measured in United States' treasury bill (USTB) is significant but with the wrong sign. The result states that increasing the rate of interest rate of the industrial countries will increase the stock market of the seven selected SSA nations in the long run. The result falls short of theoretical expectation on foreign capital inflow which posits negative relationship between capital inflow and foreign interest rates.

Results on the adjustment mechanism are significant and appropriately signed for all the three techniques. The PMG estimator indicates that 4 percent of the distortion from long run equilibrium would be restored within one year. For MG estimator it is 3 percent and DFE indicates 1 percent. The advantage of the PMG estimator is that different adjustment mechanism is allowed for individual countries in the group. The estimates result of individual countries results using PMG estimator with different error correction method is presented in Table 3.

Table 3
Individual Countries Estimates Results

Dep.Var	BTSW	CIV	GHA	KEN	MART	NIG	SAF
lmktcap							
Variables	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff
lStokil	-0.27* (-1.92)	0.13 (0.92)	0.09 (0.19)	-0.11 (-0.50)	0.06 (0.32)	0.19 (0.76)	0.05 (0.22)
lDCPS	0.25 (0.76)	0.41 (1.14)	-0.77 (-0.92)	-1.62** (-1.99)	0.33 (0.42)	0.44* (1.83)	-0.38 (-0.52)
lustb	-0.24** (-2.55)	0.21** (2.32)	0.27 (0.98)	0.13 (0.83)	0.01 (0.14)	0.23* (1.83)	-0.03 (-0.19)
lrgdp	1.80* (1.68)	1.29 (1.11)	-10.1 (-1.49)	-2.85 (-0.73)	-1.88 (-0.58)	-0.38 (-0.32)	5.55 (1.55)
Cons	-13.9 (-1.89)	-0.76 (-0.46)	-3.05 (-0.69)	-0.75 (-0.21)	-3.96 (-1.53)	-11.9 (-1.77)	-1.24 (-1.26)
Short-run (ec)	- 0.04*** (-5.46)	-0.00 (-0.54)	-0.01 (-0.91)	-0.00 (-0.28)	-0.01*** (-2.90)	-0.03** (-2.80)	-0.00*** (-2.95)

Values in parentheses are t-statistics, *** and ** are one and five percent significant levels respectively * is significant at ten percent

NOTE: BTSW=Botswana; CIV=Cote d'Ivoire; GHA=Ghana; KEN=Kenya; MART=Mauritius; NIG=Nigeria; SAF=South Africa.

Results of individual countries as presented in Table 3 indicate that in three of those

countries: Cote d'Ivoire, Ghana and Kenya, there are no long run relationships between the stock market liberalization and stock market developments. This is because for those countries, the ECT terms are not significant. Assuming 50 percent of the distortion in long run equilibrium would be restored within the year, the different time that it takes each countries to attain equilibrium between the dependent variable and the explanatory variables are thus: Botswana takes 16 years and nine months for stock market liberalization to equilibrate with stock market development after the shock; for Nigeria it takes 22 years and for Mauritius it takes longer time of over 60 years.

7. Conclusion

The result reveals that on average, liberalizing the stock market would increase the development of the stock market in the long run for the selected SSA economies. It is in tandem with Bekaert and Harvey (2000) and Henry (2000) and is also conforming to theoretical expectation. Result of economic growth and financial development proxy as measured in domestic credit to the private sector also conform to theory. On average it can be concluded that liberalizing the stock market of the seven selected SSA nations will enhance the development of the stock market. In addition to this improvement in financial development that arises out of liberalization will improve the development of the stock market in the long run for these countries. Result of foreign interest rate is however contrary to theoretical expectation. The implication of the results on positive foreign interest rate is that other factors that are driving foreigners to invest in the domestic stock markets like market size and return on investment are more overbearing than the increase in foreign interest rate. Also as corroborated by Kagochi *et al.* (2013) and Allen *et al.* (2011) the return on investment in SSA stock market is above 100 per cent. This high return on investment may be the driving force behind investors' interests in the SSA region stock markets rather than the level of interest rate in their respective countries. Based on the findings it is recommended that the respective policy makers in the selected seven SSA should design appropriate financial sector policies that would enhance both the banks and stock market contribution to development, they should also make effort to open up their stock markets to attract more foreign investors as this goes a long way to strengthened the stock markets. The conclusion on adjustment mechanism reveals that PMG takes a shorter time among the three approaches to attain equilibrium of the independent variable with the dependent variable after the shock. This is followed by the MG and the DFE is the last to get back to long run equilibrium

REFERENCES

- Adjasi C. & Biekpe N. (2006). Stock market development and economic growth: The case of selected African countries. *African development Review*, 18(1), 144-161.
- Ahmed, A. D. (2010). Financial liberalization, financial development and growth linkages in Sub-Saharan African countries: An empirical investigation. *Studies in Economics and Finance*, 27(4), 314-339.
- Allen, F., Otchere, I., & Senbet, L. W. (2011). African financial systems: A review. *Review of Development Finance*, 1(2), 79-113.
- Arestis, P., Demetriades, P. O., & Luintel, K. B. (2001). Financial development and economic growth: the role of stock markets. *Journal of Money, Credit and Banking*, 16-41.

Baltagi, B. H., Demetriades, P. O., & Law, S. H. (2009). Financial development and openness: Evidence from panel data. *Journal of Development Economics*, 89(2), 285-296.

Bassanini, A., & Scarpetta, S. (2001). Does human capital matter for growth in OECD countries? Evidence from pooled mean-group estimates. Economics Department working paper 282.

Blackburne, E. F., & Frank, M. W. (2007). Estimation of nonstationary heterogeneous panels. *Stata Journal*, 7(2), 197.

Calderon-Rossell, J.R. (1990), 'The Structure and Evolution of World Stock Markets', in S. Ghon Rhee and Rosita P. Chang (eds), *Pacific Basin Capital Market Research Proceedings of the first Annual Pacific Basin Conference*, Tapei, China, 13-15 March 1989.

Demirgüç-Kunt, A., & Levine, R. (1996). Stock market development and financial Intermediaries: stylized facts. *The world Bank Economic Review*, 10(2), 291-321.

El-Wassal, K. A. (2005). Understanding the growth in emerging stock markets. *Journal of Emerging Market Finance*, 4(3), 227-261.

El Wassal, K. A. (2013). The development of stock markets: in search of a theory. *International Journal of Economics and Financial Issues*, 3(3), 606-624.

Henry, P. B. (2000). Stock market liberalization, economic reform and emerging market equity prices. *Journal of Finance*, 55(2), 529-564.

International country risk guide. Political Risk Services group. 2015

International Monetary Fund, various years. Annual Report on Exchange Arrangements and Exchange Restrictions, various issues, Washington, D.C.

Kagochi, M. J., Al Nasser, O. M. & Kebede, E. (2013). Does financial development hold the key to economic growth?: The case of sub-Saharan Africa. *The Journal of Developing Areas*, 47(2), 61-79.

Kaminsky, G. L., & Schmukler, S. L. (2008). Short-run pain, long-run gain: Financial liberalization and stock market cycles*. *Review of Finance*, 12(2), 253-292.

Levine, R. (1997). Financial development and economic growth: views and agenda. *Journal of Economic Literature*, 35(2), 688-726.

Levine, R. & Zervos, S. (1998). Stock markets, banks and economic growth. *The American Economic Review*, 88(3), 537-558.

Levine, R. (2005). Finance and growth: theory and evidence. *Handbook of economic growth*, 1, 865-934.

Mankiw, G. N., (2011). *Macroeconomics*, 7ed., Worth Publishers, New York.

McKinnon, R. I. (1973). *Money and capital in economic development*. Washington, DC. (USA): The Brookings Institution.

Pagano, M. (1993). The flotation of companies on the stock market: A coordination failure model. *European Economic Review*, 37(5), 1101-1125.

Pesaran, M. H., & Smith, R. (1995). Estimating long-run relationships from dynamic heterogeneous panels. *Journal of Econometrics*, 68(1), 79-113.

Pesaran, M. H., Shin, Y., & Smith, R. P. (1999). Pooled mean group estimation of dynamic heterogeneous panels. *Journal of the American Statistical Association*, 94(446), 621-634.

Prasad, E., Rogoff, K., Wei, S. J., & Kose, M. A. (2003). Effects of financial globalisation on developing countries: Some empirical evidence. *Economic and Political Weekly*, 4319-4330.

Rajan, R. G., & Zingales, L. (2003). The great reversals: the politics of financial development in the twentieth century. *Journal of Financial Economics*, 69(1), 5-50.

Schumpeter, J. A. (1912). *The theory of Economic Development: An Inquiry into Profits, Capital Credit, Interest and the Business Cycle*. Cambridge: Harvard University Press.

Singh, A. (1997). Financial liberalisation, stockmarkets and economic development*. *The Economic Journal*, 107(442), 771-782.

Shaw, E. S. (1973). *Financial deepening in economic development*. New York (USA): Oxford University Press.

Solarin, A. S. & Dahalan, J. B. (2014). Financial development and economic growth in selected African countries: Any role for stock markets? *Economia Internazionale/International Economics* 68,(1), 151-179.

Standley, S. (2010). What Are the Determinants of Financial Market Development in Sub-Saharan Africa?. *Africa's financial markets, Issue*, (5), 17-19.

World Bank (2013) *World Development Indicators*
<http://databank.worldbank.org/data/views/variablesSelection/selectvariables.aspx?source=world-development-indicators>.

Yartey, C. A. & Adjasi, C. K. (2007). Stock market development in sub-Saharan Africa: Critical issues and challenges. *IMF Working Paper*, WP/07/209,

Yartey, C. A. (2008). The determinants of stock market development in emerging economies: is South Africa different?. *IMF Working Papers*, 1-31.