ACTA UNIVERSITATIS AGRICULTURAE ET SILVICULTURAE MENDELIANAE BRUNENSIS

Volume 67 93 Number 4, 2019

# IMPACT OF STOCK MARKET DEVELOPMENT ON ECONOMIC GROWTH: EVIDENCE FROM SELECTED SUB-SAHARAN AFRICAN COUNTRIES

Daniel Kwabena Twerefou[1], Emmanuel Abbey[1], Emmanuel A. Codjoe[1], Peter Saitoti Ngotho[1]

[1]Department of Economics, University of Ghana, P. O. Box LG 57, Accra, Ghana

To link to this article: https://doi.org/10.11118/actaun201967041071
Received: 16. 1. 2019, Accepted: 29. 3. 2019

To cite this article: TWEREFOU DANIEL KWABENA, ABBEY EMMANUEL, CODJOE EMMANUEL A., NGOTHO PETER SAITOTI. 2019. Impact of Stock Market Development on Economic Growth: Evidence from Selected Sub-Saharan African Countries. *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis*, 67(4): 1071–1083.

## Abstract

This paper examines the impact of stock market development on economic growth in Sub-Saharan Africa using a balanced panel data of five selected countries over the period 1993–2013 and the system generalised method of moments dynamic panel estimation framework. The paper finds a positive impact of stock market development proxied by the *turnover ratio of domestic shares and market capitalization on economic growth though* minimal. Furthermore, investment, lagged gross domestic product and human capital were found to have a significantly positive impact on growth while trade and foreign direct investment negatively impacted on growth, even though the results for foreign direct investment is not significant in all the models and consequently, not very robust. There should be policy measures aimed at enhancing economic growth using the development of the stocks market as a channel. Such policies should focus on developing the appropriate mix of taxation of investors as well as the development of requisite technology, institutional and regulatory framework that will facilitate an increase in the size and liquidity of the market in the sub-region.

Keywords: stock markets, economic growth, generalised method of moments, market capitalization, turnover ratio, sub Saharan Africa

## INTRODUCTION

The argument that economies with advanced financial sectors tend to experience faster economic growth is widely accepted in the literature and has been theoretically demonstrated by Bencivenga and Smith (1991). Nevertheless, as noted by Khan and Semlali (2000), the theoretical underpinnings of the relationship between financial depth and economic growth can be traced to the work of Schumpeter (1934), McKinnon (1973) and Shaw (1973). The general argument is that a developed financial system reduces information asymmetry and transaction costs which results in a better allocation of resources, risks diversification, improvement in productivity (Boyd and Prescott, 1986) and consequently, stimulates growth.

Two main channels have been identified through which the financial sector could influence growth. These are through stock market development and

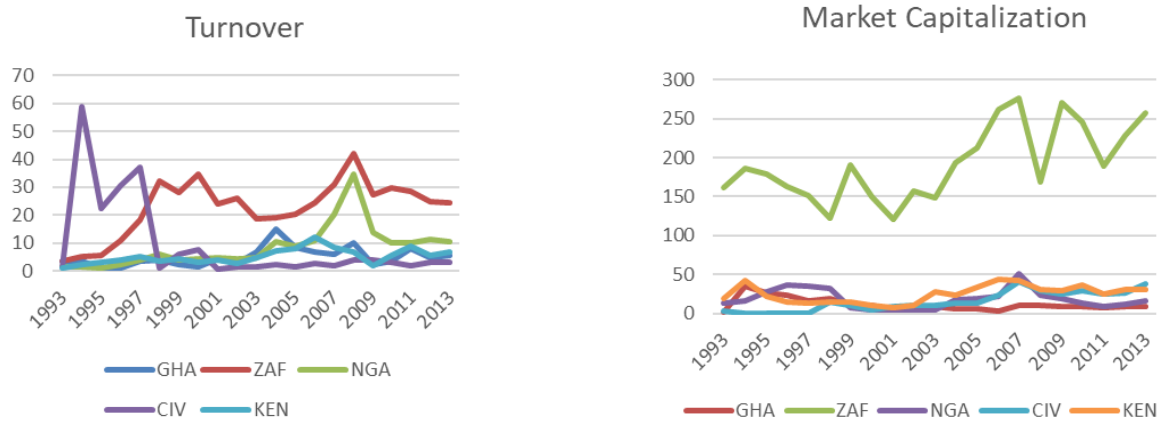
banking sector development (Beck and Levine, 2004; Adusei, 2013). Unlike short-term lending by banks, stock markets provide long-term capital in the primary markets, improve efficiency in the allocation of capital to profitable projects, provide owners of stocks with an avenue to dispose of their stake in companies on the secondary market, and its growth and development reflect an increase in investor confidence in the performance of the local economy (Tachiwou, 2010).

Liberalization and reforms in the financial sector of many Sub-Saharan African (SSA) countries in the 1990s, spearheaded by the International Monetary Fund (IMF) and the World Bank, has led not only to an increase in the number of stock markets but also their development. Specifically, the number of stock markets has increased from 9 as at the end of 1992 to over 20 in 2013 (Adjasi and Biekpe, 2006), although many of them are at different stages of development. With regards to key stock market development indicators, such as market capitalization and turnover (stocks traded as a percentage of Gross Domestic Product (GDP)), there have been some improvement in these indicators. For instance, in South Africa (ZAF), market capitalization as a percentage of GDP has increased from 160 percent in the early 1990s to 257 percent by 2013 ( See Fig. 1). Similarly, for the Abidjan (CIV) Stock market, it has increased from 3 percent to 37 percent over the same period. Other countries, such as Ghana (GHA), Kenya (KEN) and Nigeria (NGA) have witnessed an unbalanced growth in these measures, even though they were adjudged best performers in the early 2000s (Adjasi and Biekpe, 2006). With regards to turnover, with the exception of Ghana, a generally marginal increase can be observed. These developments are expected to have significant impact on economic growth (Beck and Levine, 2004; Adusei, 2013; Tachiwou, 2010)

In spite of these developments, stock markets in the sub-region can still be considered as less developed, financially shallow and highly illiquid compared to well-developed markets in Asia, Europe and North America (Farid, 2013). Apart from the Johannesburg stock exchange in South Africa, that has had turnover ratios above the 50 percent mark and the Zimbabwe, Nairobi, Nigeria and Lusaka stock exchanges that have ratios of between 40 and 20 percent , all the other stock markets have had turnover ratios lower than 20 percent for the past two decades. The underdeveloped nature of the markets is also partially evidenced by the relatively large number of economies, such as, Nigeria, Senegal, Zambia and Kenya that are issuing euro bond in developed markets, largely as a result of the inability of the markets in SSA to lend huge amounts to the government.

On the broader economic front, the macroeconomic and financial environment in SSA was stable in the 1990s and 2000s. The average growth of real GDP more than doubled from just about 2 percent in the 1990s to about 5 percent between 2001 and 2014. However, since 2014, growth has been more moderate with SSA economies affected by headwinds from the global economy. Despite slight deterioration in the economic performance of some key economies such as Nigeria, the rest of SSA was able to maintain stable rates of GDP growth.

One of the biggest challenges facing SSA is the mobilization of resources internally to fund large projects as well as the promotion of




1: *Market capitalization and turnover of stocks markets considered (percent)*
Source: World Development Indicators (WDI), World Bank

the growth of businesses. An important dimension of this domestic resource mobilization is that of financial market development, particularly that of stock markets. Stock markets can play an important role in commerce (from the point of view of investors) and can also have long-run impact on growth (from the point of view of the government). When firms want to raise funds for expansion or establish new ventures, they have to either take a loan from financial institutions or issue shares through the stock market. The same applies to the case of government. Thus, the stock market can be an important source of resource mobilization for many SSA countries that are financially constrained.

Even though the role of the stock market in simulating growth has been well researched in the developed world, empirical studies on the topic in SSA is not adequate. There have been some studies that have examined various aspects of stock markets and financial markets generally on economic growth in SSA. Notable among these are Tachiwou (2010) and Enisan and Olufisayo (2009). However, these works have only established minimal effects of stock market development on economic growth and have used unbalanced panel data.

Since the liberalization and reforms in the financial sector of many Sub-Saharan African (SSA) countries in the 1990s, not much has been done to assess the impact of stocks market development on economic growth. The question that arises is whether stock market development has impacted growth in SSA favourably since the implementation of the financial sector reforms in the 1990s. This paper addresses this issue by using a balanced panel of five countries drawn specifically from the subregion for the period 1993–2013. The difference in our approach from previous studies is to select the most vibrant and well-developed stock markets in SSA, for which consistent and comparable data is available, whilst at the same time achieving some form of representation for the various sub-regions in SSA. Analysis of this issue is quite important as it will help examine the extent to which stock markets development has contributed towards growth and consequently inform policy choices aimed at pushing SSA to be one of the next growth frontiers.

The rest of the paper is organized as follows: Section 2 presents a discussion of the relevant literature on the topic whilst Section 3 discusses the materials and methods. In Section 4, we present and discuss the results. The last section concludes the paper and makes policy recommendations.

## Literature Review

### *Theoretical Review*

The theoretical foundations of the impact of stock markets development on economic growth have been broadly dealt with in the literature. Diamond (1967) presents a theoretical model that argues that stock markets function as indemnity in general equilibrium models where risks generated by technological uncertainty are shared. It thus links research and development that firms make to the investment decisions of consumers and firms. As such, stock markets may influence long term growth by influencing saving rates, investment decision, technological innovations and specialisation of firms (Arestis *et al.*, 2001).

Romer (1986) presents an endogenous growth model in which knowledge and capital accumulation bring technological spillovers. This technological spillovers, he argues, result in externalities and is responsible for economic growth. The implication of the non-rivalry argument by Romer is linked to market size and innovation that attracts investments in capital stock and research and development. Lucas (1988) also models a human capital approach to the technological spillover that he argues, is responsible for economic growth. In summary, both authors suggest that preferences and technology motivate "learning by doing" of firms which could influence investment, the production processes and consequently growth (Acemoglu, 2007).

Economic theory suggests that stock markets aid capital allocation and provide a variety of financial instrument to investors at low cost and minimizes investor risk (Caporale *et al.*, 2005; Dökmen *et al.*, 2015). Caporale *et al.*, (2005) reviews the theoretical channels through which stock markets influence long-run economic growth to include the markets' ability to diversify consumers and firm's liquidity and investment risk within the endogenous growth model. Ludvigson and Steindel (1998) argue that the aggregate wealth effects of households' return on portfolio investments in the stock market may influence their consumption and hence long-term economic growth while Kirchhoff (2016) contends that countries with liquid stock markets tend to impact more on economic growth than in countries where the stock market are risky and costly to trade.

The effect of stock markets on growth has also been linked to the strength of the financial market as Devereux and Smith (1994) argue that stronger integration of the financial markets can decrease stock market volatilities and increase the level of returns. Nonetheless, stronger integration of

financial markets will require quality institutions to regulate human incentives in the markets (Acemoglu, 2007).

The role of the financial sector in economic growth is generally accepted as positive, despite arguments to the contrary advanced by Mayer (1988) and Stiglitz (1994) in respect of the effect of stock markets on corporate finance decisions and their overall impact on economic growth. As observed by Levine (1997), economists hold different views regarding the importance of the financial system for economic growth. Nevertheless, the important intermediation function played by the financial sector in modern economies is recognised, and it is now generally noted that financial development and economic growth are linked. What is of critical importance is the efficiency with which the financial sector performs its functions, and the effectiveness with which it is able to ensure the accumulation of physical capital in any economy (Stiglitz and Weiss, 1984).

### *Empirical Review*

The empirical evidence on stock market–economic growth nexus is varied and mixed. Seetanah *et al.* (2008) estimated a panel Vector AutoRegressive (VAR) model that accounts for potential endogeneity, causation issues and country-specific effects using the Generalised Method of Moments (GMM). After eliminating fixed effects for 27 developing countries over the period 1991–2007, they obtained a positive and significant effect of stock markets and banking industry growth on economic growth. Also, bank development was found to have a higher effect on growth than stock market development and that investment was seen as a channel through which these variables affect growth. Unlike Seetanah *et al.* (2008), Naceur and Ghazouani (2007) estimated a dynamic panel model with system GMM estimators for 10 Middle East and North African countries and concluded that stock markets and bank development are not useful in explaining economic growth.

Using Ordinary Least Squares (OLS), GMM and an alternative estimation technique that gives minimum weight to outliers, Cooray (2010) estimated a stock market augmented Mankiw et al (1992) production function of 35 developing economies and established that stock markets development contributes significantly and positively to per capita income growth and that irrespective of the choice of the stock markets variable used, the contribution of stock markets to growth per capita is not affected. Caporale and Spagnolo (2011) investigated the linkage between stock market and economic growth for three Central and Eastern European Countries and established a unidirectional causality from stock markets to growth improving more under the European Union accession, and attributed the situation to the existence of more quality institutions. In a comparative study of Pakistan and Bangladesh on the impact of stocks market development on growth, Ahmad *et al.* (2012) conclude that stock market development leads to growth in each of the two countries.

A study by Dökmen *et al.* (2015) examined the linkages between market capitalisation and economic growth, and economic growth response to shocks in the market capitalisation rates using Panel-Vector Autoregressive Models for 8 emerging countries over the period 1991–2012. They concluded that there is a positive and significant economic growth response shocks in the market capitalisation rates. The work of Bilal *et al.* (2016) examined the impact of stock market development on economic growth for a panel of 20 lower-middle income countries for the period 1990–2012 using fixed and random effects estimations and three measures of stock market development: ratio of total value of stock traded, market capitalisation ratio and turnover ratio. Their results indicated that the value of stocks traded and market capitalisation ratios had a significant impact on economic growth, while turnover ratio had an insignificant relationship with economic growth. The insignificant impact was attributed to weak institutions of lower middle-income countries, omitted variables and unobserved country-specific effect (Beck and Levine, 2004).

Some studies in addition to stock market development have tested for other financial market indicators such as bank development. The work of Levine and Zervos (1998) established a positive and significant contribution of stock markets and bank development to economic growth for 47 countries for the period 1976–1993 and further established that the ease of trading in stocks promote growth and not its mere introduction. This work was criticized by Beck and Levine (2004) for using the OLS methodology which does not account for unobserved country heterogeneity, simultaneity, omitted variable bias and the use of initial values of financial development indicators that leads to loss of information. To partially address

these limitations, Beck and Levine (2004) used the system GMM estimator that addresses these issues for 40 developed and developing countries for the period 1976–1998 and established that bank development and stock market development promote income per capita growth.

Studies in Africa on the topic are not that much. Using countries in the West African Monetary Union, Tachiwou (2010) established a positive relation between stock market development and per capita income growth. The study also argued that investor perceptions about the economy is revealed by the performance of the stock market and that there is high confidence in the economy which allows the stock markets to drive growth when the market is deeper and liquid. A stable long run relationship between stock market development and economic growth was established by Enisan and Olufisayo (2009) for South Africa and Egypt using the Autoregressive Distributed Lag bounds test model but the reverse was the case in Zimbabwe, Kenya, Morocco, and Cote D'Ivoire.

Using three measures of stock market development: shares traded ratio, market capitalization ratio and turnover ratio and the GMM dynamic estimation procedure, Adjasi and Biekpe (2006) investigated the impact of stock market development on economic growth in 14 selected African countries. While market capitalization ratio and the turnover ratio had no significant impact on growth, the total value of shares traded to GDP ratio had a positive and significant effect on economic growth for the entire sample. They also established that stock market development does not contribute to growth in low and lower middle-income countries but significantly and positively contributed to growth in upper middle-income countries. The authors requested that their result be interpreted with caution since their sample size was small and the fact that they did not control for initial income and human capital development.

Empirically, there are a lot more literature that establishe a positive relationship between stock market development and economic growth while a few established a negative relationship, indicating that results of these studies do not usually converge. This may be due partly to methodological differences and unobserved heterogeneity across countries (Haber, 2010). Also, majority of the work focuses on developed countries and did not use balance panel data. It is in this regard that this study becomes very imperative.

## MATERIALS AND METHODS

### Conceptual Framework and Estimation Technique

To examine the relationship between stock market development and economic growth, we begin with the specification of the standard neoclassical Solow-Swan growth model which is based on the work of Solow (1956) and Swan (1956). This is because the model provides a basis for analysing empirically the major factors of economic growth; what is generally understood to be a growth accounting framework. Nevertheless, in the original standard formulation, the role of finance is not incorporated. In the basic Solow-Swan framework, the two important factors in the growth process are physical capital and the labour force, with technological progress exogenously given. An augmented version of this model has been discussed by Mankiw *et al.* (1992) and this includes human capital. It has several advantages over earlier models by addressing several anomalies in the original Solow-Swan growth model especially when one is dealing with cross-country studies. We therefore start our specification of the model by restating the version by Mankiw *et al.* (1992) as equation (1):

$$Y(t) = K(t)^{\alpha}H(t)^{\beta}(A(t)L(t))^{1-\alpha-\beta} \quad (1)$$
$$\alpha + \beta < 1$$

Where $Y(t)$ is output at time t, $K(t)$ is physical capital at time t, $H(t)$ is the stock of human capital, $L(t)$ is labour at time t and $A(t)$ is technology. Theoretically, $L(t)$ and $A(t)$ are assumed to grow exogenously. As argued by Mankiw *et al.* (1992), with the inclusion of human capital, for any given rate of human capital accumulation, the accumulation of physical capital and population growth results in a higher level of income and human capital. Additionally, human capital accumulation may be correlated with saving rates and population growth rates.

One important component of the economic growth process is the accumulation of domestic financial capital which depends on the ability of the financial system to mobilise domestic capital. Besides, with the advent of globalization, many economies in SSA are attracting portfolio investment as a result of the expansion of stock markets in the subregion. Thus, stock markets serve as a channel for attracting both domestic and foreign financial capital that can be harnessed for economic growth. Consequently, Cooray (2009),

extends Mankiw *et al.* (1992) by including financial sector in the formulation as equation (2):

$$Y(t) = K(t)^{\alpha}H(t)^{\beta}F(t)^{\gamma}(A(t)L(t))^{1-\alpha-\beta-\gamma} \quad (2)$$
$$\alpha + \beta + \gamma < 1$$

where $F(t)$ is financial capital, which captures the value of financial assets in contrast to physical assets. Based on the above theoretical framework, the empirical specification of our regression equation will be of the form:

$$\dot{Y}_t = aX + b(\text{STOCK}) + u \quad (3)$$

Where, $Y_t$ is real GDP per capita, $X$ is a set of explanatory variables in the growth equation as well as other control macroeconomic variables that may be associated with economic growth, STOCK is a measure of stock market development and u is the error term.

Several estimation techniques have been proposed for the above empirical model to deal with econometric issues such as biasness, endogeneity and heterogeneity. For instance, Adjasi and Biekpe (2006) used the Arellano and Bond's (1991) GMM dynamic instrumental variable modelling approach while Dökmen *et al.* (2015) used a Panel Vector Autoregressive model. Bilal *et al.*, (2016) however used a fixed and random effects estimator. There is also a notable problem of the relationship between economic growth and sock market development being dynamic. In such a situation, one needs to estimate the model in such a way that it captures not only the dynamic effect but also the country specific and time effects which may be correlated with the explanatory variables and consequently, introducing errors and biases. The Arellano and Bover's (1995) system GMM dynamic instrumental variable estimation approach is noted for addressing these issues. The technique uses lagged values of the dependent variables and difference of the independent variables as valid instruments to control for biases. The use of the instruments is based on the fact that the lagged dependent variable may correlate with the lagged error terms. The GMM is based on the assumption of no serial correlation in the error term and weak exogeneity of explanatory variables. The validity of the instruments can be checked by the Sargan test of over- identifying restrictions which test for correlation between the instruments and the model residuals and the AR test that checks whether the differenced error terms are first and second order serially correlated. In estimating the model, we correct for potential heteroscedasticity and use the STATA software for the analysis. Accordingly, the model that was estimated is equation (4):

$$\dot{Y}_t = pY_{t-1} + aX + b(\text{STOCK}) + u \quad (4)$$

## Data and measurement

Capasso (2008) notes that measurement of stock market development can be quantitative or qualitative or a combination of both. In the case of quantitative measures, Demirgüç-Kunt and Levine (1996) note that there is no uniform concept accepted by economists. Nevertheless, two important concepts of stock market development identified by Demirgüç-Kunt and Levine (1996) and Capasso (2008) are worth mentioning because of their impact on economic growth. These are *stock market size*, measured as market capitalization ratio and defined as the value of listed shares divided by nominal GDP and *stock market liquidity*, which refers to the ability to easily buy and sell securities. Capasso (2008) observes that stock market size is important because the level of savings mobilization and risk diversification depends strongly on this indicator. On the other hand, Levine (1996) observes that liquidity is important because many profitable investments require a long-term commitment of capital and liquid equity markets make investments less risky and more attractive. *Liquidity* is measured by several indicators such as total value of shares traded divided by nominal GDP; value of traded shares as a percentage of market capitalization (or the *turnover ratio*) and value-traded ratio divided by stock price volatility.

In this study we used market capitalization as a percentage of GDP, stock traded as a percentage of GDP and turnover rate of domestic shares (percent) as the measures of stock market development following from the work of Adjasi and Biekpe (2006). The macroeconomic variables that were considered included real GDP per capita, investment proxied by gross fixed capital formation, human capital proxied by primary school enrolment, trade openness which is the sum of exports and imports to GDP and Foreign Direct Investment (FDI). Regional dummies (West Africa, East Africa and South Africa – with South Africa used as the Reference Region) were also included as control variables. As per the literature, it is expected that all these variables will positively affect growth. The time period considered for the estimation is from 1993 to 2013 and the data used were obtained from the WDI provided by the World Bank.

It is worth mentioning that, to make this study essentially different from other similar studies, two important things were done. The first was to ensure that the panel is balanced, its time dimension is long enough, and consists of the most vibrant stock markets in SSA. Some earlier studies, such as Adjasi and Biekpe (2006), Tachiwou (2010) and Yartey and Adjasi (2007), found very minimal effect of the stock market development on growth and the reason may be the inclusion of other stock markets that were underdeveloped and have not been in operation long enough to impact on growth. We therefore limited the analyses to stock markets that were developed in the early 1990s and have complete datasets for the period under consideration. The datasets available from the WDI shows that the countries that met our specifications are Ghana, South Africa, Nigeria, Cote D'Ivoire and Kenya. Inspite of the limited number of stock markets considered, we believe that our results will have sub regional implication. The reason is that these five markets together constitute about 80 percent of the total market capitalization (as a percentage of GDP), 95 percent of total value of stocks traded and 89 percent of turnover rate of domestic shares in SSA in 2013. More importantly, these proportions are equally higher in subsequent years.

The second was an attempt to control for the contribution of human capital in the growth process. Within the growth literature, human capital encompasses a range of attributes, such as health status, work experience, innate abilities and formal educational attainment. Critical, however, in building the stock of human capital is investments in education. This is what increases the stock of knowledge and skills embodied in people. Consequently, in several studies, school enrolment rates are used as a proxy of human capital (Barro and Lee, 1993). Three important indicators identified in respect of school enrolment rates are primary enrolment, secondary enrolment and tertiary enrolment. Evidently, higher enrolment rates, especially at the secondary and tertiary levels are indicative of a higher level of human capital compared to lower enrolment rates. Despite this, we find that data on secondary and tertiary enrolment were not available for some of the selected countries. Consequently, we were compelled by data limitation to utilize primary enrolment rates, although this only provides a weak assessment of the level of human capital in the countries under study.

## RESULTS

Tab. I presents the summary statistics of the variables used for the study. The average market capitalization as a percentage of GDP is 52.53, which shows a marked improvement in the degree of integration of such stock markets, especially when compared to that found by Adjasi and Biekpe (2006). Conversely, the average stock traded as a percentage of GDP is 9.78, which is comparatively lower than that of other developing countries. In addition, the average turnover ratio of domestic shares was 10.2.

For the macroeconomic variables, the average of the log of real GDP per capita was 7.43, with a range of 6.7 and 8.9 between the selected countries. Also, the average volume of trade as a percentage of GDP was 66.7, ranging between 31 and 116 between the selected countries. Furthermore, the average investment, FDI (percent of GDP) and the log of primary school enrolment were 16.15, 2.33 and 15.49 respectively. Their respective range between the countries can also be found in Tab. I.

I: *Descriptive Statistics (Overall)*

| Variable | Mean | Std. Dev. | Minimum | Maximum |
|---|---|---|---|---|
| **Log of GDP per capita** | 7.43182 | 0.73039 | 6.72891 | 8.93716 |
| **Trade** | 66.7102 | 16.9032 | 31.0489 | 116.048 |
| **Investment** | 16.1578 | 5.67055 | 5.459 | 30.9269 |
| **FDI** | 2.3343 | 2.24344 | 0.00841 | 10.8326 |
| **Log of Primary Sch. Enrolment** | 15.4913 | 0.8085 | 14.1967 | 16.945 |
| **Market Capitalization (percent of GDP)** | 52.5301 | 74.0286 | 0.23492 | 276.601 |
| **Stock Traded (percent of GDP)** | 9.78094 | 20.2767 | 0.04708 | 86.0759 |
| **Turnover Ratio of Domestic Shares** | 10.1867 | 11.0648 | 0.87378 | 58.8838 |

Source: Authors' estimation with data from the WDI of the World Bank
Note: Observation – N = 105; n = 5, T = 21

As suggested by Hamilton (1986), a pre-condition for running cointegration is for all the variables to be non-stationary at levels, but stationary at their first differences. We realized, using panel cointegration was not appropriate as most of the variables in our model were stationary at level using both the Im, Pesaran and Shin (IPS) and Breitung unit root tests results presented in Tab. II. More importantly, we are mindful of the possible endogeneity of our stock market indicators and the fact that the time period of our panel is relatively short and not much heterogeneity is expected in the data. We therefore chose the GMM dynamic variable modelling approach over the traditional fixed and random effects estimator. In the literature, the GMM estimation method has been used to eliminate country specific and time effects that may be correlated with the explanatory variables. This may introduce errors and bias in estimates (see Arellano and Bond, 1991).

Various specifications of equation (5) were estimated and only results that met the various specification tests were presented. Different indicators of stock market development may be associated with economic growth differently and thus different specifications are presented (Tab. III). The results reported in Column 1 of Tab. III does not include any measure of stock market development. In that specification, the significant determinants of growth are the first lag of the log of real GDP per capita, trade, investment and human capital proxied by primary school enrolment. Specifically, all these significant variables positively affected growth with the exception of trade which had a negative sign, although its coefficient is near zero. These findings are similar to those found in studies such as Yartey and Adjasi (2007), Cooray (2010) and Ngare et. al (2014). For instance, Yartey and Adjasi (2007) found lagged growth and investment to positively affect growth and a negative trade effect on growth. Ngare et. al (2014) also found very similar results for lagged growth, investment and trade.

In the second column, market capitalization as a percentage of GDP is included in the standard specification of equation (5) and its impact on growth was found to be insignificant. Similarly, stock traded as a percentage of GDP was found to have an insignificant impact on growth as shown in Column 3. In the case of the fourth column, where the turnover ratio of domestic shares is included, it was found to be statistically significant and positively affecting growth. In the fifth column where all measures of stock market development are included, both market capitalization as a percentage of GDP and turnover ratio of domestic shares positively affected growth.

In addition, the regional dummies included showed wide disparities in the growth of the selected countries. For instance, the West Africa dummy which is estimated with South Africa as the reference shows a lower growth in GDP per capita for the former than the latter, though the result is insignificant. Similarly, that of the East Africa dummy which is significant in specification 4 and 5 shows a lower growth in GDP per capita for Kenya, which is the only country in East Africa used in our sample. More importantly, the results of the Sargan test suggests that the instruments used in the model are valid.

II: *Unit Root Test*

| Variable | IPS | | Breitung | |
|---|---|---|---|---|
| | Level | 1st Diff. | Level | 1st Diff. |
| **Log of GDP per capita C** | 0.8823 | 0.0001*** | 0.9962 | 0.0000*** |
| **Trade** | 0.0056*** | - | 0.2284 | 0.0000*** |
| **Investment** | 0.0186** | 0.0000*** | 0.1348 | 0.0001*** |
| **FDI** | 0.0001*** | - | 0.0296** | 0.0000*** |
| **Log of Primary Sch. Enrolment** | 0.0460** | 0.0000*** | 0.0367** | 0.0000*** |
| **Market Capitalization (percent of GDP)** | 0.0004*** | - | 0.0006*** | - |
| **Stock Traded (percent of GDP)** | 0.0036*** | - | 0.0136** | 0.0005*** |
| **Turnover Ratio of Domestic Shares** | 0.008*** | - | 0.0025*** | - |

Source: Authors' estimation with data from the WDI of the World Bank
Note: Observation – N = 105; n = 5, T = 21

III: *Model Results – Common Panel*

| VARIABLES | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| **L.LGDPPC(–1)** | 1.047*** | 1.031*** | 1.039*** | 0.954*** | 0.881*** |
| | (0.118) | (0.119) | (0.118) | (0.120) | (0.123) |
| **L.LGDPPC(–2)** | –0.109 | –0.119 | –0.136 | –0.093 | –0.052 |
| | (0.109) | (0.120) | (0.123) | (0.115) | (0.119) |
| **Trade** | –0.001* | –0.1** | –0.001** | –0.002*** | –0.001*** |
| | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) |
| **Investment** | 0.005* | 0.005*** | 0.005*** | 0.005*** | 0.005*** |
| | (0.003) | (0.001) | (0.001) | (0.001) | (0.001) |
| **FDI** | –0.007 | –0.007** | –0.007** | –0.007** | –0.005 |
| | (0.006) | (0.003) | (0.003) | (0.003) | (0.003) |
| **Log of Primary Sch. Enrolment** | 0.029** | 0.031** | 0.030** | 0.029** | 0.034*** |
| | (0.013) | (0.012) | (0.012) | (0.012) | 0.012 |
| **Market Capitalization (percent of GDP)** | | 0.000 | | | 0.001** |
| | | (0.000) | | | (0.000) |
| **Stock Traded (percent of GDP)** | | | 0.001 | | –0.001 |
| | | | (0.001) | | (0.001) |
| **Turnover Ratio of Domestic Shares** | | | | 0.002** | 0.002*** |
| | | | | (0.001) | (0.001) |
| **Constant** | Yes | Yes | Yes | Yes | Yes |
| **West Africa dummy** | –0.012 | –0.014 | –0.037 | –0.095 | –0.089 |
| | (0.089) | (0.089) | (0.092) | (0.092) | (0.091) |
| **East Africa dummy** | –0.114 | –0.120 | –0.149 | –0.229** | –0.224** |
| | (0.119) | (0.102) | (0.109) | (0.109) | (0.109) |
| **Time dummy** | Yes | Yes | Yes | Yes | Yes |
| **Regional dummy** | Yes | Yes | Yes | Yes | Yes |
| **Observations** | 95 | 95 | 95 | 95 | 95 |
| **Number of Countries** | 5 | 5 | 5 | 5 | 5 |
| **Sargan** | 0.1199 | 0.1201 | 0.1188 | 0.1966 | 0.3386 |

Source: Authors' estimation with data from the WDI of the World Bank
Standard errors in parentheses
***p < 0.01, **p < 0.05, *p < 0.1

## DISCUSSIONS

For the results reported in Column 1 of Tab. III which does not include any measure of stock market development, the significant determinants of growth are the first lag of the log of real GDP per capita, trade, investment and human capital proxied by primary school enrolment. In line with our results, Cooray (2010) found a positive effect of human capital on growth. While the positive effect of lagged growth, investment and human capital are quite intuitive from the theoretical literature since an increase in previous growth levels, higher school enrolments as well as increased physical capital spending could drive growth, the negative effect of trade is a little surprising. However, Sachs and Warner (1997) attribute this to the fact that most African countries trade in primary products

whose prices at the international market are highly volatile which affects them negatively. Similar explanation of the negative effect of trade on growth, through trade in primary products are provided by Sala-i-Martin (1997) and Bleaney and Greenaway (2001).

On the average results from column 2 to 5, indicate that the effect of these stock market indicators on growth do not exceed 2 percent (2 percent for market capitalization as a percentage of GDP and 1 percent for turnover ratio of domestic shares). It needs, however, to be stated that the impact of turnover ratio of domestic shares on economic growth appears to be much more robust than that of market capitalization as a percentage of GDP (as shown by its significance in Columns 4 and 5). More importantly, all the other explanatory variables maintained their significance and signs, but with FDI becoming statistically significant, though negatively affecting growth in Columns 2–4. While this negative effect of FDI appears counterintuitive, Borensztein, Gregorio and Lee (1998) found similar effects for some selected developing countries and suggested that could be possible because of low levels of human capital development in such countries.

The significant result of the stock markets development positively affecting growth agrees with the works of Adjasi and Biekpe (2006), Yartey and Adjasi (2007), Tachiwou (2010) and Ngare et. al (2014). For instance, Adjasi and Bikpe (2006) found the total value of shares traded to GDP ratio to be significant and positively affecting growth. Similarly, Tachiwou (2010) found market capitalization as a percentage of GDP to positively affect growth in the short run, while the volume of share traded as a percent of GDP affected growth in the long run.

What appears similar between the works cited above and our study is the finding of a positive effect of stock market development on economic growth, even though the effect is minimal. One possible explanation for this is the fractured nature of many African stock markets and the low technology penetration, inadequate regulatory regime and unfair taxation which reduces the efficiency and ability of the markets to influence growth. Farid (2013), for instance, noted that a small clique of blue chip companies dominates the stock markets in SSA which makes it difficult in terms of information flow.

## CONCLUSION

In this paper, we investigated the extent to which stock market developments have impacted on economic growth in selected SSA countries using a balanced panel of five countries drawn specifically from the sub-region for the period 1993–2013. Overall, the results indicate that stock market size proxied by market capitalization as a percentage of GDP and stock market liquidity proxied by turnover ratio of domestic shares positively impacts on economic growth, even though the impacts is minimal. Also, lagged GDP, investment and human capital were found to have a significantly positive impact on growth while foreign direct investment and trade negatively impacted on growth. The results for foreign direct investment was however not significant in all the models and consequently, not very robust.

Whilst this finding is not significantly different from similar studies, what it demonstrates is that in spite of selecting the most vibrant markets in SSA for which consistent and comparable data are available, we find that the effect of stock markets development on economic growth has been positive but not as impressive as anticipated following the introduction of the financial sector reforms in the 1990s. Although we are unable to provide comprehensive reasons why this may be so, it is undeniable that most stock markets in SSA are largely undeveloped compared to those in developed and newly industrialised countries. Further, most SSA economies are themselves not very developed, thereby possibly limiting both the growth of stock markets and their impact on economic growth.

The results of the study suggest that the appropriate mix of policies that affects the size and liquidity of the stock markets should be encouraged as they facilitate growth. These policy measures should centre not only on the appropriate taxation regime but also on the requisite information technology and regulatory framework that will encourage activity in the stock markets as elaborated by Enisan and Olufisao (2009) and Cooray (2010). Instituting an appropriate mix of these policies should also take into consideration the different country characteristics and should encourage savings and investments in the capital markets of Africa as well as ensuring greater financial integration between the countries.

We propose that future research should focus on detailed micro-level studies of listed companies on the stock markets to investigate their performance vis-a-vis actual growth performance and the rewards that investors receive on their stocks. Further, there is the need to investigate what conditions, peculiar to SSA are more likely to encourage stock markets growth as well as their positive impact on SSA countries' economic growth performance. This is because most of the channels through which financial development lead to economic growth are predicated based on the nature of developed economies, which may not apply to SSA.

## REFERENCES


ARELLANO, M. and BOND, S. 1991. Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *The review of economic studies*, 58(2): 277–297.

ARELLANO, M. and BOVER, O. 1995. Another look at the instrumental variable estimation of error-components models. *Journal of econometrics*, 68(1): 29-51.

ACEMOGLU, D. 2007. *Introduction to modern economic growth*. 1st Edition. Princeton: Princeton University Press.

ADJASI, C. K. and BIEKPE, N. B. 2006. Stock Market Development and Economic Growth: The case of Selected African Countries. *African Development Review*, 18(1): 144–161.

ADUSEI, M. 2013. Financial Development and Economic Growth: Evidence from Ghana. *The International Journal of Business and Finance Research*, 7(5): 61–76.

AHMAD, Z., KHAN, A. A. and TARIQ, A. 2012. Stock market development and economic growth: A comparative study of Pakistan and Bangladesh. *African Journal of Business Management*, 6(8): 29–85.

ARESTIS, P., DEMETRIADES, P. O. and LUINTEL, K. B. 2001. Financial development and economic growth: the role of stock markets. *Journal of money, credit and banking*, 33: 16–41.

BARRO, R. J. and LEE, J. W. 1993. International comparisons of educational attainment. *Journal of monetary economics*, 32(3): 363–394.

BLEANEY, M. and GREENAWAY, D. 2001. The impact of terms of trade and real exchange rate volatility on investment and growth in sub-Saharan Africa. *Journal of development Economics*, 65(2): 491–500.

BORENSZTEIN, E., DE GREGORIO, J. and LEE, J. W. 1998. How does foreign direct investment affect economic growth? *Journal of international Economics*, 45(1): 115–135.

BECK, T. and LEVINE, R. 2004. Stock Markets, Banks, and Growth: Panel Evidence. *Journal of Banking & Finance*, 28(3): 423-442.

BENCIVENGA, V. R. and SMITH, B. D. 1991. Financial Intermediation and Endogenous Growth. *The Review of Economic Studies*, 58(2): 195–209.

BILAL, B., CHEN, S. and KOMAL, B. 2016. Impact of Stock Market Development on Economic Growth: Evidence from Lower Middle Income Countries. *Management and Administrative Sciences Review*, 5(2): 86–97.

BOYD, J. H. and PRESCOTT, E. C. 1986. Financial Intermediary-Coalitions. *Journal of Economic Theory*, 38(2): 211–232.

CAPASSO, S. 2008. Stock market development and economic growth. In*: Domestic Resource Mobilization and Financial Development*. London: Palgrave Macmillan, pp. 10–38.

CAPORALE, G. M., HOWELLS, P. and SOLIMAN, A. M. 2005. Endogenous growth models and stock market development: Evidence from four countries. *Review of Development Economics*, 9(2): 166–176.

CAPORALE, G. M. and SPAGNOLO, N. 2011. *Stock market and economic growth: Evidence from three CEECs*. Economics and Finance Working Paper, 11–16, Sep 2011. Brunel University.

COORAY, A. 2009. The financial sector and economic growth. *The Economic Record*, 85(1): 10–21.

COORAY, A. 2010. Do Stock Markets lead to Economic Growth? *Journal of Policy Modeling*, 32(4): 448–460.

DEMIRGÜÇ-KUNT, A. and LEVINE, R. 1996. Stock market development and financial intermediaries: Stylised facts. *The World Bank Economic Review*, 10(2): 291–321.

DEVEREUX, M. and SMITH, G. 1994. International Risk Sharing and Economic Growth. *International Economic Review*, 35(3): 535–550.

DIAMOND, P. A, 1967. Cardinal Welfare, Individualistic Ethics, and Interpersonal Comparison of Utility: Comment. *The Journal of Political Economy*, 75(5): 765–766.

DÖKMEN, G., AHMET, A. Y. S. U. and BAYRAMOĞLU, M. F. 2015. Linkages Between Market Capitalization and Economic Growth: The Case of Emerging Markets. *Uluslararası Ekonomik Araştırmalar Dergisi*, 1(1): 39–48.

ENISAN, A. A. and OLUFISAYO, A. O. 2009. Stock Market Development and Economic Growth: Evidence from Seven Sub-Sahara African Countries. *Journal of economics and business*, 61(2): 162–171.

FARID, S. 2013. Financial integration in African emerging markets. In: *African Economic Conference 2013 "Regional Integration In Africa"*. October 28–30, 2013, Johannesburg, South Africa.

HABER, S. 2010. The Finance-Growth Nexus: Theory, Evidence and Implications for Africa. In: QUINTYN, M. and VERDIER, G. (EDS.). *African Finance for the 21st Century*. Palgrave Macmillan, pp. 11–32.

HAMILTON, J. D. 1986. State-space models. In: *Handbook of econometrics*. Vol. 4. Elsevier, pp. 3039-3080.

KIRCHHOFF, H. 2016. The Role of the Stock Market in Economic Development. *Pocket Sense*. [Online]. Available at: https://pocketsense.com/role-stock-market-economic-development-5540.html [Accessed: 2019, January 15].

KHAN, M. M. S. and SEMLALI, M. A. S. 2000. *Financial development and economic growth: an overview*. IMF Working Paper No. 0–209. International Monetary Fund.

LEVINE, R. 1996. Stock markets: A spur to economic growth. *Finance and Development*, 33(1): 7–10.

LEVINE, R. 1997. Financial development and economic growth: Views and agenda. *Journal of Economic Literature*, 35: 688–726.

LEVINE, R. and ZERVOS, S. 1998. Stock Markets, Banks, and Economic Growth. *American economic review*, 88(3): 537–558.

LUCAS, R. 1988. On the Mechanics of Economic Development. *Journal of Monetary Economics*, 22: 3–42.

LUDVIGSON, S. and STEINDEL, C. 1998. *How Important is the Stock Market Effect on Consumption?* Research Paper No. 9821. Federal Reserve Bank of New York.

MANKIW, N. G., ROMER, D. and WEIL, D. N. 1992. A contribution to the empirics of economic growth. *The Quarterly Journal of Economics*, 107(2): 407–437.

MAYER, C. 1988. New Issues in Corporate Finance. *European Economic Review*, 32(3): 1167–1188.

MCKINNON, I. R. 1973. *Money and capital in economic development*. Brookings Institution Press.

NGARE, E., NYAMONGO, E. M. and MISATI, R. N. 2014. Stock market development and economic growth in Africa. *Journal of Economics and Business*, 74: 24–39.

NACEUR, S. B. and GHAZOUANI, S. 2007. Stock Markets, Banks, and Economic Growth: Empirical Evidence from the MENA region. *Research in International Business and Finance*, 21(2): 297–315.

ROMER, P. 1986. Increasing Returns and Long-run Growth. *Journal of Political Economy*, 9(5): 1002–1037.

SACHS, J. D. and WARNER, A. M. 1997. Sources of slow growth in African economies. *Journal of African economies*, 6(3): 335–376.

SALA-I-MARTIN, X. 1997. Transfers, social safety nets, and economic growth. *Staff Papers*, 44(1): 81–102.

SCHUMPETER, J. 1934. *Capitalism, socialism, and democracy*. New York: Harper & Row.

SHAW, E. S. 1973. Financial deepening in economic development. New York: Oxford University.

SOLOW, R. M. 1956. A contribution to the theory of economic growth. *The quarterly journal of economics*, 70(1): 65–94.

SWAN, T. W. 1956. Economic growth and capital accumulation. *Economic record*, 32(2): 334–361.

SEETANAH, B., SAWKUT, R., SANNASEE, V. and SEETANAH, B. 2008. *Stock market development and economic growth in developing countries: Evidence from Panel VAR Framework*. CSAE Working Paper Number 41.

STIGLITZ, J. E. 1994. The Role of the State in Financial Markets. In: *Proceedings of the World Bank Annual Conference on Development Economics, 1993*. Washington, D. C.: World Bank.

STIGLITZ, J. and WEISS, A. 1984. Credit rationing in markets with imperfect information. *American Economic Review*, 71(3): 393–410.

TACHIWOU, A. M. 2010. Stock Market Development and Economic Growth: The case of West African Monetary Union. *International Journal of Economics and Finance*, 2(3): 97–111.

WORLD BANK, 2016. World Development Indicators. *The World Bank*. [Online]. Available at: http://data.worldbank.org/data-catalog/world-development-indicators [Accessed: 2016, June 23].

YARTEY, C. A. and ADJASI, C. K 2007. *Stock market development in Sub-Saharan Africa: Critical issues and challenges*. IMF Working Paper No. 7–209. International Monetary Fund.

Contact information
Daniel Kwabena Twerefou: dktwerefou@ug.edu.gh, twerefou@yahoo.co.uk
Emmanuel Abbey: enabbey1@gmail.com
Emmanuel A. Codjoe: ecodjoe@staff.ug.edu.gh
Peter Saitoti Ngotho: psaitoti04@gmail.com