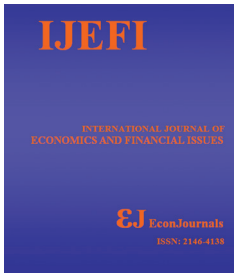

International Journal of Economics and Financial Issues

ISSN: 2146-4138

available at http: www.econjournals.com

International Journal of Economics and Financial Issues, 2018, 8(4), 10-15.

Does Regulatory Quality Matters for Stock Market Development? Evidence from Africa

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ABSTRACT

The recent global financial crisis in 2008 have awakened discussion on the necessity for wide-ranging regulations of stock markets to rescue market capitalization from further decline and restore investors' confidence. Despite efforts of previous policy reforms to sanitize the financial system and increase investment in Africa, the situation did not improve and stock markets are yet to recover from the aftershock of the crisis. This paper empirically investigates the impact of regulatory quality on African stock market development by employing pooled mean group model for the sample period of 1996-2016. The findings suggest that quality regulation has a positive impact on stock market development. There is a need for far-reaching policy reforms that will ensure effective regulation of financial markets to improve market development and restore the declining investors' confidence. When strong and sound regulations of financial markets are enforced, there will be a greater expectation for the growth and development of stock market to endure the repercussion of future financial crisis.

Keywords: Market Capitalization, Regulatory Quality, Pooled Mean Group Model
JEL Classifications: G12, E43, K22, O40

1. INTRODUCTION

The financial market plays a vital role in growth and development of every economy (Levine, 2005). African stock markets have gained a considerable and appreciable level of progress from 1980's as a result of financial reforms implemented under the auspices of the World Bank and International Monetary Fund (Quartey and Gaddah, 2007). Although there is a clear intent to promote sustainability among the world's stock exchanges, most African Stock markets are not developed to be able to offer long-term financing for investment (Dahou et al., 2009). Similarly, Asiedu and Afful (2014) observe that Africa is classified as one of the most underdeveloped continents because most of the countries are not likely to meet the United Nation Millennium development goals. In addition, Asiri and Abdalla (2015) affirm that stock markets provide facilities that allow companies to raise capital at lower cost and make them less dependent on bank financing.

Furthermore, in the African continent, the global financial crisis of 2008 is one of the major factors that create fear to investors and has led to a significant decline in their investment. Billmeier and Massa (2009) affirm the investor's confidence in the African stock market is continuously degrading due to the traditional barriers of stock market development in the region including small size, low liquidity and lack of transparency. In addition, Kale and Akkaya (2016) assert that the consumer and investor confidence are two critical indicators of perception and expectation. In fact, the financial crisis has led to a substantial decline in foreign investment inflow to Africa with a consequential loss in market capitalization (Boamah et al., 2017). It is evident that external finance is necessary to augment domestic savings in order to accelerate investment (Asiedu, 2002). Nevertheless, the financial crisis was originated from the United States; it spreads to almost all nations with varying degree of damages to the economies. Iqbal (2010), states that developing economies are not responsible for the financial crises but are seriously affected through the channels of trade and finance while Ali and Afzal (2012) affirm that the net capital inflow from advanced to the emerging nations declines significantly from the beginning of the crises. Furthermore, the African Economic Outlook Report (2016) evidently show that African portfolio flows witnessed a decrease and the market

capitalization continues to decline even after the financial crisis period.

Therefore, the evidence from the statistics may have contributed to the low development of African Stock Markets. Griffith-Jones and Ocampo (2009) view foreign capital inflow as one of the most important contributing channels for transmitting financial crises from the advanced to the emerging economies. Consequently, the global financial crisis, as well as weak regulation, are among the major source of concern to the international portfolio investors seeking diversification opportunities on the African stock markets as these factors create uncertainty in the minds of investors and if not addressed can further aggravate its threat on investment. Beck et al. (2011) observe that the African capital markets experienced a rapid decline in capital flows which reduces the stock market indexes throughout the continent and constrained the government and firms to cancel bond and stock issues.

Despite the effort of the researchers to explore the causes of the low development of stock markets in Africa, the problem remains unsettled and the market capitalization continues to decline even after the global financial crises. This may not be unconnected to the studies concentrating on the general macroeconomic determinants of stock market development (Babayemi et al., 2013; Addo and Sunzuoye, 2013). Secondly, other studies are country specific (Nyasha and Odhiambo, 2015; Aduda et al. 2012). Thirdly, the few panel studies in the region used traditional panel models that do not allow for dynamic interaction of series (Asiedu and Afful, 2014; Andrianaivo and Yartey, 2010).

Due to scant and mixed findings in existing literature, this paper will take into account the importance of quality regulation in predicting the development of stock market using pooled mean group (PMG) model that is suitable for small sample data regardless of the order of integration of variables. Furthermore, the study considers the global financial crisis in the estimation process to account for the structural change. To the best of knowledge, this is one of the few studies that try to link regulatory quality with stock market development taking into account the unique characteristics of the African continent. The remaining part of the paper is organized in the following order: Section two reviews theoretical and empirical literature, section three describes data and methodology, section four discusses empirical finding while section five is for conclusion and policy implications.

2. REVIEW OF THE RELATED LITERATURE

Although existing security market theories do not suggest precise factors predicting the variation of a stock market, the arbitrage pricing theory of Ross (1976) is the most suitable theory that links stock market with other variables. The theory suggests that securities return is a function of investment sensitivity to several common factors. It is straight to say that several risk factors can predict changes in stock markets.

Needless to say, however, due to the importance of regulation in doing business, this paper empirically examines its impact in forecasting stock markets. When regulations relating to financial sector development are well established and enforced, issues regarding information asymmetry, insider trading, inadequate and weak financial disclosure among others that usually deprive investors' rights can be drastically reduced. Empirically, however it is argued that sound and effective regulation of financial market is a precondition for market development nevertheless most of the studies concentrate on advanced countries with little evidence from emerging economies. For instance, Akyol et al. (2014) posit that securities regulation increases the quality of financial reporting, transparency, and maintain investors' confidence. Similarly, Levine (1999) states that financial markets are strongly established in countries with efficient regulatory and legal system.

Similarly, Yartey and Komla (2007) affirmed that strengthening of property right could enhance appeal and confidence in equity investment. Therefore, the development of good quality institution, stable political climate and enforcement of quality regulation among others can derive more foreign investment. For example, Milyo (2012) conjectures that a poor institutional quality regarding information disclosure, investors' protection and quality regulation among others can contribute to immature stock markets. Similarly, Yartey (2010) states that stock markets are major channels for foreign capital flows to transition economies while their regulation enhances the viability of external finance. Therefore, with proper and sound policy reforms, African stock exchanges can exploit the full potential of equity investment.

Therefore, taking a look at the existing relationship between financial market and its regulatory agencies, Shi et al. (2013) observe that the recent global financial crisis in 2008 has re-ignited discussion on the necessity for wide-ranging regulations in capital markets. The interaction between stock markets and regulatory quality has been investigated in developed economies but the findings are inconclusive. It is found empirically that securities regulation increase stock market returns (Eng, et al., 2013; Frost et al., 2006) is positively related to market growth (Ng et al., 2015; Demirgüç-kunt and Maksimovic, 1998), leads to increase in trading volume (Bailey et al., 2003) and raises Market turnover (Bagnoli et al., 2008).

Accordingly, the above empirical evidence confirm how the securities regulation promotes activities of the stock market in different aspects and has gone a long way in boosting economic activities as more investment opportunities emerge. Secondly it sanitizes the financial market environment because the informational advantage that was accessible to selected few individuals (asymmetric information) to the detriment of minority shareholders will be reduced when strong securities laws are enacted and enforced. In fact, confidence of investors in a particular market can be restored through the provision of the adequate and strong regulation that can eliminate the utilization of insider information and market manipulation

Additionally, the information disclosure regulation in securities market is an important driving factor for investors' confidence

because the absence of such laws can instill fear in the mind of the general public. For that reason, Porta et al. (2006) note that disclosure regulation improves stock market activities because investors believe that there will be strong legal and contractual penalties for misreporting. The author's further state that financial markets do not succeed when left to market forces alone. Likewise, Hail and Leuz (2006) reveals that financial markets development is linked to extended information disclosure. Consequently, the inability of firms to unveil private information about their operation can send a bad signal to both existing and potential investors.

Needless to say, when financial regulations are weak and ineffective, investor's portfolio may seem to be less protected and can lead to confidence erosion, capital flight and panic selling of financial assets. Senbet and Otchere (2005) note that Sub-Saharan Africa has the highest percentage of private wealth held abroad than any other region ranging from 30-40 percent. In the same way, Bumgarner and Prime (2000) postulate that government policies have an influence on investors' confidence. In fact weak regulation is a compromise to market abuse and a setback for market development as Hussain et al. (2015), note that, in the absence of a strong regulatory framework, the economic policies have restricted power on stabilizing emerging economies.

Further exploring the importance of regulation in financial market reveal a negative relationship (Jain et al., 2010; Ramiah, et al., 2015; Cai, 2010; Giannetti, and Koskinen, 2010; Stulz, 2005; Chou et al., 2005). This portrays that little effort is made on part of the policymakers at ensuring compliance and enforcement of new regulation in the markets. Therefore, if the government and other relevant agencies play their role effectively, it will facilitate efficient operation through mitigation of market abuse that is prevalent in most developing economies financial markets.

Other Studies reveal that information about market regulation has no effect on stock prices and returns (Prevoo and Weel, 2010; Liu et al., 2009) as the information is already reflected in the prices. These studies report that most of the advanced stock markets are efficient as no investor can beat the markets through abnormal returns. However, Klapper and Love (2002) reveal mixed findings whereby the countries having strong regulations have a significant effect than weak regulation nations. Therefore, one of the motives behind regulation is to ban firms from releasing information to analysts and investment professionals before unveiling to the general public. Usually, major investors target equity of firms that exert weak investor protection in order to have control shareholding of those firms. Although strong protection leads to higher return and portfolio investors turn from investing in firms with poor protection as it dampens their motivation to partake in the markets.

However, evidence reveals that a good number of studies were conducted on the relationship between regulatory quality and stock markets in advanced economies, but they produced ambiguous findings. Secondly, different aspects of securities regulations are enacted and enforced in advanced countries ranging from fair disclosure regulations and investor protection laws, trading halts and stock splits among others and has contributed to shaping the operations of stock markets. However, most of these laws are not found in Africa due to the low advancement of the capital market in the region thus the results cannot be generalized to Africa. Hence a further study is needed to investigate how regulatory quality contributes to changes in emerging stock market with evidence from selected African countries as little effort is made to exploit the relationship especially the continent's stock markets do not recover from the aftermath of the recent global financial crisis in 2008.

The motivation of this study is despite human and financial resources committed to ensuring strong and developed stock markets in the region, the previous policies could not yield a positive outcome and the market continues to lose investment. Secondly, the African region is characterized by weak regulation, illiquid stock markets and erosion of investors' confidence. Thirdly, the level of market capitalization, as well as foreign investment, has been declining even after the global financial crisis. Fourthly, there are scarce, inconsistent and mixed findings in the literature on the causes of low stock market development in Africa. This paper will contribute to filling the existing gap by examining the impact of regulatory quality on stock market development using PMG model estimation. Unlike the traditional fixed and random effect models that impose homogeneity in the slope of parameters, PMG model overcomes this limitation as it allows dynamic interaction among series, it controls for omitted variables and is suitable for small and finite data.

3. DATA AND EMPIRICAL METHOD

The regulatory quality indicates how government articulates and executes policies that protect and promotes private sector investment. To examine the impact of regulatory quality on stock market development in selected African countries, this paper obtains data from World Development Indicators (WDI) databank of 2016, World governance indicators (WGI) database (2016) and Financial Development and Structure database developed by (Beck et al., 2010). The annual sample of the data for 12 African countries is from 1996 to 2016 and this gives 252 numbers of observations. The selected countries based on data availability are Côte d'Ivoire, Egypt, Ghana, Kenya, Malawi, Mauritius, Morocco, Namibia, Nigeria, South Africa, Uganda and Zambia. Moreover, market capitalization is used as the proxy of stock market development as a dependent variable while regulatory quality is the explanatory variable. This paper controls for the gross domestic product (GDP), interest rates, exchange rates (ERs) and structural break. A dummy variable of 1 stands for break dates and 0 for the pre-crisis period to capture the impact of structural change on African stock markets.

However, this paper considers the expected theoretical link between stock market and the selected variables. The paper hypothesizes a positive relationship between regulatory quality and stock market development. For the control variables, the paper assumes a positive relationship between stock market and GDP. Moreover, both ERs and interest rates are expected to have an inverse relationship with the stock market development based on previous empirical findings (Amarasinghe, 2015; Moya-Martínez et al., 2015; Tripathi and Seth, 2014).

This paper uses the PMG model of Pesaran et al., (1999) to investigate the relationship between the selected variables and stock market development of some African countries. This technique (PMG) has several advantages over traditional and other dynamic models. Due to the common features of the African economies, the model is suitable as the similarity is expected to impact the long-term parameters in a similar way. Also, it has additional an advantage over other heterogenous models by constraining long-run estimates to be similar, it can be estimated irrespective of the order of integration of the variables. Lastly, the estimates of the PMG seem quite robust to misspecification bias, outliers and lag order selection. The study specifies equation 1 as the initial model for this study. It incorporates the dependent variable, independent variables and a set of control variables as follows:

$$MK_{it} = \alpha_0 + \alpha_1 RQ_{it} + \alpha_2 LGDP_{it} + \alpha_3 IR_{it} + \alpha 4_4 ER_{it} + \alpha 5_5 Break_{it}\varepsilon_{it} \quad (1)$$

Where *MK* stands for market capitalization, *LGDP* is a log of GDP, *IR* represents interest rates, *ER* symbolizes ERs and break stand for structural change. The epsilon ε means error term, whereas *i* represent country and *t* denotes the period of time. However, i = 1, 2, 3….12 for the selected African countries while t = 1, 2, 3...21 is for the number of years to be covered, thus the unrestricted PMG model specification is shown below:

$$MK_{it} = \sum_{n=1}^{r} \theta_{ij} MK_{i,j-e} + \sum_{n=1}^{s} \gamma_{ij}^{'} \zeta_{i,g-1} + \delta_i + \varepsilon_{it} \quad (2)$$

Where MK_{it} is the dependent variable representing stock market development $x_{i,t-j}$ is the vector of explanatory variables (regulatory quality, *LGDP*, ERs, interest rates and break) for country *i*. The subscript, *t* = 1, 2, 3 …. T for time *t* and *i* = 1, 2, 3 … N, for countries in the sample. The symbol δ_i represents country-specific effect while μ_i denotes fixed effect parameterization. Similarly, the equation can be rewritten as vector error correction model as shown in Equation 2:

$$\Delta MK_{it} = \gamma i \left(MK_{it=} MK_{i,t-1} - \partial_i^{'} \zeta_{i,g-e} + \delta_i + \varepsilon_{it} \right) + \sum_{n=1}^{r-1} \theta_{ij} \Delta \rho_{i,g-e} + \sum_{n=1}^{s-1} \gamma_{ij}^{'} \Delta \zeta_{i,g-e} + \varepsilon it \quad (3)$$

Whereλ_i is the error correction term (ECT) coefficient and β_i represents long-run parameters, which are assumed to be common across entities. The primary interest is the speed of adjustment, λ_i and coefficient of the long-run estimates. Furthermore, the inclusion of δ_{0i} in the model indicates that a non-zero mean of the long-term relationship is allowed. The model is estimated using pooled maximum likelihood estimation to compute the average long-run estimates and group-specific short-run coefficients. Therefore, the coefficient of λ_i is expected to be negative and significant if the model exhibits a usual return to long-run equilibrium. Accordingly, the estimates of PMG parameters are consistent and asymptotically normally distributed for both stationary and non-stationary regressors (Pesaran et al., 1999).

4. EMPIRICAL FINDINGS

Table 1 reports Im Pesaran and Shin unit root test results which indicate that MK, LGDP and ER are having unit root while the other variables are stationary at level. To confirm stationary variables, the t-statistic in each case should be greater than the critical value at all known levels of significance (1%, 5% and 10%). However, the variables with the unit root problem become stationary after first difference.

Going by the results of unit root tests, which show evidence those variables are integrated of mix-order, the PMG is presented in Table 2 in order to determine how much of equilibrium is being corrected every year, as well as to examine the long-run relationship among the variables.

As presented in Table 2, the coefficient of the ECT goes in line with Im et al. (2003), where it is negative, significant, and <1. These are necessary to show the convergence, as well as the rate of convergence to long-run equilibrium. Hence, the coefficient of the ECT (−0.66) reveals the disequilibrium that causes the preceding year temporal shock is adjusted by 66% per annum. Also, the impact of RQ on MK is positive and statistically significant. The results indicate that an index increase of regulatory quality leads to increase market capitalization by 6.22%. This is line with the findings of Eng et al. (2013) as strong and effective regulation can lead to improvement in market returns.

The results also show that the control variables in the model are essential in predicting the stock market as the coefficient for LGDP reveals a significant positive relationship with the MK. The coefficient reveals that a 1% increase in GDP will bring about 21% increase in market capitalization. This is in support of the demand following hypothesis proposed by Robinson (1952) that where enterprise leads finance follows.

Furthermore, the impact of the ER on market capitalization is negative and statistically significant. In other words, a depreciation of local currency against US dollars by 1% will lead to a decline in MK by 1.6% which is also consistent with the formulated hypothesis. Although the coefficient of interest rates supports the set hypothesis by showing a negative sign, it is not statistically significant. Furthermore, the results show the existence of a structural break in the relationship and this confirms the negative impact of the 2008 global financial crisis on stock markets in the African region.

5. CONCLUSION AND POLICY IMPLICATION

This paper empirically investigates the forecasting power of quality regulation on African stock market development employing PMG for the sample period of 1996-2016. The findings suggest that quality regulation exert a positive impact on stock market development. Similarly, the global financial crisis represents a major structural change in African financial market as it impacts negatively with a sharp decline in market capitalization.

Table 1: Stationary test results

Variables	Im, Pesaran and		Shin	
	I (0) Constant	Constant and Trend	I (1) Constant	Constant and Trend
MK	−1.008	−1.353	−3.451***	−3.603***
RQ	−1.470	−1.833*	−4.060***	−4.099***
LGDP	−0.102	−1.442	−3.421***	−3.521***
IR	−1.981**	−1.859*	−3.744***	−4.123***
ER	−1.282	−1.805	−3.248***	−3.239***
BREAK	−0.809	−2.090***	−4.359***	−4.235***

*, ** and ***indicate rejection of null hypothesis at 1%, 5% and 10% levels of significance, respectively. GDP: Gross domestic product, ER: Exchange rate

Table 2: PMG estimates

Dependent variable=MK				
Variable	Coefficient	Standard error	Z-Statistic	P*
Long run equation				
RQ	6.224	2.217	2.81	0.005
LGDP	20.75	4.540	4.57	0.000
IR	−0.10	0.049	−0.21	0.832
ER	−1.61	0.920	−1.75	0.079
BREAK	−12.18	2.053	−5.93	0.000
ECT	−0.66	0.156	−4.19	0.000

*P-values and any subsequent tests do not account for model selection. GDP: Gross domestic product, ECT: Error correction term, ER: Exchange rate

There is a need for far-reaching policy reforms that will ensure effective regulation of financial markets to restore the declining investors' confidence in the region. When policy reforms are considered in the continent's financial system, there will be a greater expectation for the growth and development of stock market to escape or endure the repercussion of future financial crisis.

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