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CAPITAL MARKET DEVELOPMENT AND ECONOMIC GROWTH EVIDENCE FROM RWANDA

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Abstract

Government of Rwanda sees capital market as a channel for long-term savings and investment as opportunity for all peoples. In Rwanda most of Private Sectors have a negative attitude towards listing on the stock market which causes the limit of attractiveness of the capital market for domestic and foreign investors and limited numbers of listed companies in the market. This study was used time series analysis where Ordinary Least Square (OLS) method was employed. In order to understand very well and to expose the bi-direction between capital market development and economic growth, researcher was decided to learn on statistical analysis for catching up the relationship between two variables. Researcher found that all independents variable were positive contributed to economic growth. The value of R2 (0.055132) this show the goodness of fit the model and Augmented Dickey-Fuller test statistic show that critical value (-1.961409) is greater than ADF value (-4.927723). CMA has to maintain state of the art technology like automated trading and settlement practice, electronic fund clearance and eliminate physical transfer of shares.

Keywords: Capital Market, development, economic growth, investors, Rwanda

INTRODUCTION

Capital market is a highly specialized and organized financial market and indeed essential agent of economic growth because of its ability to facilitate and mobilize saving and investment. To a great extent, the positive relationship between capital accumulation and economic growths has long affirmed in economic theories (Anyanwu, 2012).

Capital market is the prime tool that drives any economy on its path to growth and development because it is responsible for long term growth and capital formation by issuing of funds for long term investment, ensure an efficient and effective allocation of scarce resources for optimal benefits to the economy, reduce over reliance of the corporate sector on short term financing for long term projects and encourage inflow of foreign capital. The growing importance of capital market around the world has reinforced the belief that finance is an important ingredient for growth. The focus is mainly on capital market development and economic growth. (Levine & Zarkos, 2008) argued that various measures of capital market development have explained part of the variation of economic growth. Many studies have concentrated on cross section regressions which as pointed by (Levine & Renelt, 2011) among others should be viewed with caution. Time series analysis can address the issue of endogeneity and causality.

A capital market across the world has reinforced the general conviction that finance is an important element of economic growth. As such, the importance has remained on economic growth and stock market development. Being an important pillar of the economy of a country, the capital market plays a key role in the growth of the industry and business which ultimately affects the economy of the country to a large extent. This is the rationale that the industrial bodies, government advisors and even the central bank of any country keep a close eye of observation on the activities of the capital market (Nazir & Gilani, 2010).

The importance of the capital market as an efficient channel of financial intermediation has been well recognized by different researchers, academicians, and policy makers as a primary determinant of the economic growth of a country, both developed and developing. Economic growth in a modern economy hinges on an efficient financial sector that pools domestic savings and mobilizes foreign capital for productive investments. Underdeveloped or poorly functioning capital markets typically are illiquid and expensive which deters foreign investors. Furthermore, illiquid and high transactions costs also hinder the capital raising efforts of lager domestic enterprises and may push them to foreign markets (Mishra, et al., 2010).

According to (Levine et al.,2009), specifying the channels for economic progress through the capital market opine that it provides opportunities for companies to borrow funds needed for long-term investment purposes. It also provides avenue for the marketing of shares and other securities in order to raise fresh funds for expansion of operations leading to increase in

output/production. It creates a means of allocating the nation's real and financial resources between various industries and companies. (Sule & Momoh, 2009), argue further that through the capital formation and allocation mechanism the capital market ensures an efficient and effective distribution of the scarce resources for the optimal benefit to the economy and it reduces the over reliance of the corporate sector on short term financing for long term projects and also provides opportunities for government to finance projects aimed at providing essential amenities for socioeconomic development.

The overarching goal of Rwanda's Vision 2020 is to transform the country into a middle income economy by improving its competitiveness while ensuring unity and inclusive growth. Capital Market Authority (CMA) is a Government Agency charged with the development of Capital Market and the financial market as well has developed Guidelines to facilitate the market (CMA, 2015).

Problem Statement

Capital market might face serious challenges in developing countries and may not perform efficiently and that it may not be feasible for such economies to promote capital markets given the huge costs and the poor financial structures. These problems are magnified in developing countries with their weaker regulatory institutions and greater macroeconomic volatility. Government of Rwanda sees capital market as a channel for long-term savings and investment as opportunity for all peoples. Even though the policy changes in Rwanda have had some positive impact on capital market development, there are many challenges and problems that remain to be addressed in order to promote a functioning capital market development and economic growth in Rwanda. The major problems in capital market authority are limited number of listings companies in capital market.

Currently in Rwanda capital market are only 8 listed companies (CMA, 2015). This signifies that the instruments for resource mobilization in the capital market are still few and in the process of formation. Capital market structure in its present form is not suitable for small and medium enterprises to raise capital in the form of equity securities. Unlike the US, where capital market structures are developed for small and medium-sized firms to raise capital in the Over the Counter (OTC-NASDAQ) markets, there are no such second tier markets in Rwanda to attract small firms that cannot be listed on the capital market authority.

In Rwanda most of Private Sectors have a negative attitude towards listing on the stock market which causes the limit of attractiveness of the capital market for domestic and foreign investors and the majority of Rwanda they don't have a culture of saving and investing for long term products such as bond and share because they fear to lose managerial control to

shareholders; more so, private companies do not want to be pioneer in going public, they prefer bank loans as a source of capital to finance their businesses. In Rwanda, researches done relating to capital market and economic growth do not show directly its contribution. That's why the present study was initiated.

Research Hypothesis

Assume 5% level of significance, and test the following null and alternative hypothesis:

- H0=0, There is no relationship between capital market development and economic growth.
- H1≠0, There is positive relationship between capital market development and economic growth.

RESEARCH METHODOLGY

Research design is the blue print for the collection, measurement, analysis of data and a plan to obtain answers to research questions. This study was used Ordinary Least Square (OLS) method was employed in analyzing time series data captured over the period under study. Granger casualty test was used to test causality relationship between capital market development and economic growth.

Source of Data and Data Collection Procedures

The study was used secondary data. The data is a quarterly time series data spanning from 2009:Q1 to 2016:Q4. The annual data was extrapolated into quarterly series to increase the data points for analysis. Data for study was obtained from the Capital market Authority and National Institute of Statistics of Rwanda.

Model Specification

In line with the conceptual framework, the model of this study was composed by GDP as dependent variable and market capitalization, turnover and volume of shares traded as independents variable.

Model in linear-from $GDP=\beta0+\beta1MCAP+\beta2TN+\beta3VOT+\varepsilon t$

GDPt = Gross domestic product at time t;

MCAPt = Market Capitalization at time t;

TNt =Turnover at time t;

VOT: Volume of share traded at time t;

β0= intercept; ε_t = Error term; t after each variable is the time subscript.

β_1& β_3= Coefficients of each of the independent variable.

Model Development

Economic growth or GDP = dependents variable x_1 –x_3 are independent variables (f) represents the functional notation. This can be specifically stated as:

*GDP= f (*MCAP*, TN, VOT) ……..….. (2)* Where; GDP = Gross Domestic Product (proxy for economic growth) MCAP = Market Capitalization TN = Turnover VOT = Volume of share traded. The explicit form of equation (i) is represented as: *GDP*=β*0* + β*1* MCAP + β*2TN*+ β*3VOT*+ε ……. *(3)*

Where: β_0 = intercept of relationship in the model / constant β1-β3 = Coefficients of each of the Independent variables ε = stochastic/ Error terms By loglinearising, the model becomes;

log (GDP) = β*0* + β*1log(*MCAP*)* + β*2log(TN)* + β*3log(VOT)* + ε ……...….*(4)*

Where; Log = Natural log from equation (4) model can be specified in a time series forms as;

log(GDP)t = β*0* + β*1log(*MCAP*)t* + β*2log(TN)t* + β*3log(VOT)t*+ ε ……...….*(5)*

$\Delta log(GDP) = \beta 0 + \sum_{i=0}^{n} \beta 1 log(\mathrm{MCAP})t - 1 + \beta 0 + \sum_{i=0}^{n} \beta 2 \log(\mathrm{TN})t - 1 + \beta 0 + \sum_{i=0}^{n} \beta 3 \log(\mathrm{VOT})t - 1 + \beta 0 + \sum_{i=0}^{n} (\mathrm{ECM})t - 1 + \beta 0 + \sum t \ldots\ldots\ldots\ldots\ldots (6)$

Table 1. Signs

Variables	GDP	MCAP	TN	VOT
Expected signs	+	+	+	+

ANALYSIS

Table 2. Unit root test

Unit root test at second different							
Variables		**ADF**	**CV**	**Prob**	**R squared**	**DW**	**LAG**
GDP	Intercept	-7.487206	-3.052169	0.0000	0.788906	2.322868	3
MCAP	Intercept	-5.014716	-2.963972	0.0003	0.473163	1.953331	5
Unit root test at level							
TN	Intercept	-4.654608	-2.960411	0.0008	0.427617	2.133743	3
Unit root test at level at fist different							
VOT	None	-22.33286	-1.954414	0.0000	0.992123	1.681913	5

Source: Computed by Researcher using E-views version 7

Referring to above table, researcher observes that GDP and MCAP were stationary at second different in intercept at lag 3 & 5. TN was stationary at level in intercept in lag 3 while VOT was stationary at first different in lag 5.

Test of Residuals

Table 3. Residuals test

Null Hypothesis: R has a unit root				
Exogenous: None				
Lag Length: 0 (Automatic - based on SIC, maxlag=6)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-4.927723	0.0001
Test critical values:	1% level		-2.699769	
	5% level		-1.961409	
	10% level		-1.606610	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(R)				
Method: Least Squares				
Date: 09/06/17 Time: 15:02				
Sample (adjusted): 2010Q1 2016Q4				
Included observations: 28 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
R(-1)	-0.883704	0.472104	-1.871843	0.0001
R-squared	0.953128	Mean dependent var		338.3694
Adjusted R-squared	0.095128	S.D. dependent var		2307.612
S.E. of regression	2195.110	Akaike info criterion		18.26091
Sum squared resid	1.30E+08	Schwarz criterion		18.30849
Log likelihood	-254.6528	Hannan-Quinn criter.		18.27546
Durbin-Watson stat	1.131954			

Source: Computed by Researcher using E-views version 7.

Referring to the above Table 3 the residual is stationary, t-statistic (-4.927723) is less than critical value (-1.961409) and the probability (0.0001) is less than 5% and this table shows that the Durbin- Watson Stat is greater than R^2 which is (1.131954) >(0.953128). Basing on those results, the researcher found that R-squared is significant at 95%. This means that three independents variables contributed to economic growth of Rwanda and there is positive relationship between capital market development and economic growth of Rwanda.

Table 3. Co-integration

Dependent Variable: GDP
Method: Least Squares
Date: 09/06/17 Time: 17:46
Sample: 2009Q1 2016Q4
Included observations: 32

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MCP	5.265210	1.712110	3.418454	0.0019
TN	4.012108	2.911208	1.274603	0.0066
VOT	2.516107	2.082507	1.351976	0.0072
C	0.022778	624.2051	0.455424	0.6523

R-squared	0.055132	Mean dependent var	1467.438
Adjusted R-squared	0.219610	S.D. dependent var	2282.372
S.E. of regression	2016.240	Akaike info criterion	18.17232
Sum squared resid	1.142408	Schwarz criterion	18.35554
Log likelihood	-286.7572	Hannan-Quinn criter.	18.23306
F-statistic	3.907913	Durbin-Watson stat	1.691052
Prob(F-statistic)	0.018909		

Source: Computed by Researcher using E-views version 7.

Estimation Equation:

GDP = C(1)* MCAP + C(2)*TN+C(3)*VOT

Substituted Coefficients:

GDP =5.265210 * MCAP +4.012108*TN+2.516107*VOT

β0=0.022778

GDP=0.022778+5.265210 MCAP +4.012108TN +2.516107VOT

Co-integration is an econometric property of time series variables. If two or more variables are themselves non-stationary, but a linear combination of them is stationary, the theory of time series are said; to be co integrated it is often said that co integration is a means for correctly testing hypothesis concerning the relationship between two variables having unit roots. Testing co integration, there are two most popular approaches, the Engle Granger (EG) two steps method and Johansen procedure. The first is analysis of stationarity for the residuals from the levels regression. The variables were co- integrated; all variables have a long run relationship between them. Therefore, the researcher confirms that all variables are co-integrated and there is long run relationship between variables.

The results of the relationship of capital market development and economic growth presented in Table 4. It is clearly visible from the results that capital market development influences the process of economic growth of Rwanda. Both variables of the study model (size of the capital market) affected the economic growth positively and significantly.

GDP=0.022778+5.265210 MCAP +4.012108TN +2.516107VOT

The results shows that all independent variables have positive impact on GDP, all coefficients of variables have positive sign, (5.265210) MCAP, (4.012108) TN and (2.516107) VOT. This shows that capital market has been contributed positively on the economic growth in Rwanda from 2009Q1-2016Q4. When MCAP increased 1 unit, holding TN and VOT constants, GDP expected to increase (5.265210) and when TN increased 1 unit, holding other variables constants GDP is expected to increase 4.012108 while when VOT increased 1 unit holding MCAP and TN constants GDP expected to increase 2.516107. This shows that all variables were contributed positively on the economic growth. R^2 (0.055132) this show the goodness of fit the model. Even if R^2 is still small but the variables used on this research are not only contributed to the economic growth in Rwanda, they were others variable which was contributed to the economic growth in Rwanda.

Error Correction Model (ECM)

Error Correction Models (ECMs) is a category of multiple time series models that directly estimate the speed at which a dependent variable.

Y - Returns to equilibrium after a change in an independent variable - X.

ECMs are useful for estimating both short term and long term effects of one time series on another. ECMs are useful models when dealing with integrated data, but can also be used with stationary data. The dynamic relation established by the model with correction of error ECM is deducted from relation of long term rising from the method of Engel and Granger, the characteristics of the models with correction of the error is to combine in the same specification

of the effects of that short term with those of the long term, thus all the information of long term on the level of variables is stored in the model. Around the long run relationship, the error correction model permits to integrate the short run fluctuations, if the coefficient comes negative it would change model in the long run equilibrium so with E-views the long run model was done the short run model.

Table 4. Error correction model

Dependent Variable: GDP
Method: Least Squares
Date: 09/06/17 Time: 18:04
Sample (adjusted): 2009Q2 2016Q4
Included observations: 31 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.082806	614.2038	1.622068	0.1169
MCP	3.432410	1.94E-10	0.994922	0.0029
TN	0.212108	5.152408	1.790498	0.0050
VOT	2.201208	2.061207	0.252162	0.0029
R(-1)	-0.085066	0.439025	-0.330257	0.0026

R-squared	0.056016	Mean dependent var	1488.290
Adjusted R-squared	0.430018	S.D. dependent var	2316.999
S.E. of regression	1749.268	Akaike info criterion	17.91847
Sum squared resid	79558393	Schwarz criterion	18.14976
Log likelihood	-272.7363	Hannan-Quinn criter.	17.99387
F-statistic	6.658312	Durbin-Watson stat	2.064655
Prob(F-statistic)	0.000790		

Source: Computed by Researcher using E-views version 7

This table shows that R(-1)= -1.085016, this means that as far as time is concerned, the errors will be corrected at time t. The value of R(-1), means that is better to invest in capital market when your expected a long run interest of profit. Is not easy to get profit in short term because this is an investment of long term. All independents variable were positive correlated to growth domestic products. R^2 (0.056016) show the goodness of fit the model. This means that from 2009-2016 capital market has been contributed 5% on Rwanda economic growth.

GDP=0.022778+5.265210 MCAP +4.012108TN +2.516107VOT-1.085016 (R-1)

The findings of the ECM, which incorporate the effect of capital market and economic growth, estimated through ECM testing approach. On the relationship of capital market development and economic growth. As such, market capitalization (5.265210), turnover (4.012108) and volume of transaction (2.516107) have established its positive and statistically significant relationship on growth of the economy. It shows that capital market stimulates the economic activities and development process in the country to a greater extent, which is obvious from the higher positive value of its coefficient. The positive and statistically significant values of all dependents variables. In view of goings on in the capital market over recent years it might be interesting to inquire whether the behavior of the market (as represented, say, by the Dow–Jones Industrial Average) can be modeled as a case of "long-run equilibrium plus error correction".

CONCLUSION

The increasing importance of financial markets has reinforced the researcher to study the effect of capital market development on economic growth, evidence from Rwanda. The present study was attempted to investigate this relationship of capital market development and economic growth. The effect of independents variables is empirically tested on GDP as a dependant variable for the period of 2009q1 to 2016q4. As such, the results reported the expected positive signs which are statistically significant at some level of significance. The development of capital markets is important in sustaining economic growth. However, size of the market is low, but the measured by market capitalization, turnover and volume of shares traded in the market have influenced the economic growth in Rwanda from 2009-2016. The co-integration test illustrates that the variables were co-integrated and implying that a long run relationships exists on the economic growth in Rwanda. Therefore researcher accepts H1#0 and fails to reject H0.

A researcher has faced some limitations during the research process they include the following: The accessibility of second data during the study process, financial constraints and inadequate source of relevant local researchers.

RECOMMENDATIONS

Based on the results of findings of the study, the following recommendations were made in order to wish Capital Market Authority to be a pivotal force in Rwanda on economic growth. The following recommendations are put forward.

1. Currently Rwanda has known as hub of technology in East African Region. Capital Market has to use automated trading and settlement practice in electronic fund clearance in order to eliminate physical transfer of shares.

2. Capital Market should continue to educate the local investors from different sector the importance of buying shares and bonds in the market in order to boost the development of Capital Market in Rwanda.

3. As markets become more complicated, there need to increasing the number of investment advisors and other personnel who are capable of analyzing complex financial concepts such as options and other derivatives investment.

4. Increasing the number of listed companies there is need to ensure stable macroeconomic environment, encourage foreign multinational companies (MNCs) or their subsidiaries to be listed on the Rwanda Stock Exchange.

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