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THE RELATIONSHIP BETWEEN STOCK MARKET CAPITALIZATION AND MONEY DEMAND IN TANZANIA: EVIDENCE FROM ARDL APPROACH AND GRANGER CAUSALITY TEST

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ABSTRACT

This paper investigates the relationship between stock market capitalization (MC) and money demand in Tanzania between 2000 and 2010. Findings show the presence of a long-run relationship between MC, extended broad money (M3) and interest rate when real GDP serves as dependent variable. Furthermore, saving deposit rate/real interest rate, M3 and MC variables were found to have a positive and significant influence on real GDP. However, the study captures the absence of long-run relationship between MC and money demand when M3 act as dependent variable. Also the study found a unidirectional relationship between MC and real GDP with causality running from MC to real GDP. This suggests that MC plays a vital role in promoting economic growth in Tanzania. Moreover bidirectional causality between M3 and MC was found. This implies that MC has an impact on M3 in the short run. In turn, unidirectional causality running from broad money (M2) to MC was found meaning M2 has an impact on MC growth. Given the obvious impact of MC in economic growth in Tanzania, the paper concludes by strongly recommending for policies geared towards promoting MC growth including controlled expansionary monetary policies.

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INTRODUCTION

Stock market is one of the most important pointers of financial health of world economies. It does so by indicating the mood of investors and playing a major role in pooling domestic savings and foreign capital for investment to sustain economic growth. It follows that stock market development is an important ingredient for growth providing liquidity to investors and serving as an avenue for risk diversification (Aboudou, 2010). This is because stock market development is central to boosting the capital market particularly through encouraging public participation to accelerate the rate of financial deepening which in turn promotes the long run economic growth (Caporale, 2004). Indeed according to Demirguc-Kunt (2006), **"**The stock market, helps to mobilize and pool savings, provide payments services that facilitate the exchange of goods and services as well as efficient allocation of capital among others which enhance long-term economic growth**".**

Meanwhile, the demand for money is and has always been at the center of monetary economics. Research on the demand for money has been an important source of inspiration for innovations in both monetary theory and econometric techniques. Specifically, in controlling money demand through monetary policy, the Bank of Tanzania continues to influence the rate of growth of money supply through targeting reserve money (MO), Broad Money supply (M2) and Extended broad money supply (M3) and narrow money supply (M1) through open market operations (OMO) as its main policy instrument.

Note that a study by Agarwal (2001) supports the argument by Levine and Zervos (1998a) that well-developed stock markets may be able to offer a different kind of financial services than the banking system; and that the stock market provides an extra impetus to economic activity (the two main parameters of capital market development namely, size and liquidity are found statistically significant to explain the economic growth). This suggests that the capital market may cause an increase in demand for money. The implied instability of the demand for money function is very likely to occur.

However studies addressing the dynamic causal relationship between stock market capitalization and demand for money are very scant (see Yi, 2004; and Leigh, 1997). Even where such studies have been undertaken, the empirical findings on the direction of causality have been largely inconclusive and differ from country to country overtime (e.g. Thornton, 1998; and Mao, 2007).

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Most studies in the area (e.g. Aboudou, 2010; Al-Faki, 2006; Demirguc-Kunt, 2006; and Caporale, 2004)have attempted to explain the link between stock markets and economic growth. Methodologically though studies (such as Aboudou, 2010; Al-Faki, 2006; Demirguc-Kunt, 2006; and Caporale, 2004) used maximum likelihood test based on Johansen and Juselius (1990), Engle and Granger (1987) cointegration techniques. Nevertheless, these techniques are not necessarily suitable when the sample size is too small as studies mentioned above proved to be (see Nerayan and Smyth, 2005).

Moreover, studies such as that by King and Levine (1993) about stock market and economic growth over relied on the cross-sectional data, which may not adequately address the country specific issues. Indeed, according to Forbes (2000), "results of cross sectional studies were not useful in providing policy implications**''.** He argues correctly that cross sectional studies tend assumes all countries possess homogeneous economic characteristics an assumption which at best is unrealistic.

It is against this brief background that this paper intends to use time series data so as to accommodate country specific economic characteristics. Moreover, instead of employing cointegration techniques using maximum likelihood test, The Autoregressive Distributed Lag (ARDL) approach to cointegration is used to examine the relationship between stock market capitalization and money demand (Johansen and Juselius, 1990). Furthermore the residual-based cointegration test associated with Engle and Granger (1987) is used in this study due to its suitability on small sample size. Also the paper intends to use Pairwise Granger test to ascertain whether market capitalization influences demand for money or the other way round. The possible presence of two-way relationship is also explored.

Thus tis study intends to fill the gaps existing in previous literatures by examining

i) the directional causality between stock market capitalization and money demand;
ii) Long run relationship between stock market capitalization and money demand.

The rest of the paper is organized as follows. Section two outlines an overview of Dar es Salam Stock exchange and the performance in market capitalization. Section three presents empirical literature review. Section four outlines the econometric model and estimation techniques. Section five presents findings and discussion. Conclusion is presented in the last section.

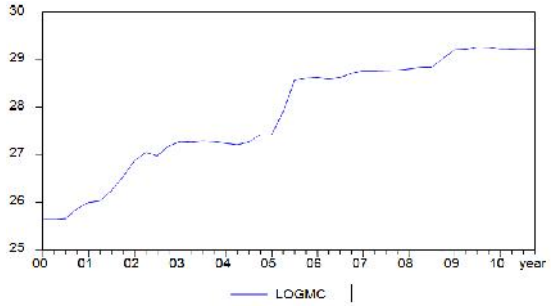
An Overview of Dar es Salaam Stock Exchange

The Dar es Salaam Stock Exchange (DSE) was incorporated in September 1996 as a private company under the Capital Market and Securities Act (CMSA) of 1994.Trading activities commenced on 15th April 1998 after two years of background preparatory work under the stewardship of the Government through the CMSA. With effect from 15th December 2006, trading has been conducted at the DSE trading floor through an automated electronic trading system which matches bids and offers (DSE, 2008). Matched orders are displayed on the computer terminal in the trading room and projected in the public gallery.

Dar es Salaam stock exchange consists of 17 numbers of listed companies. The Company includes, TOL Gases Limited, Tanzania Breweries Limited, Tanzania Tea Packers Limited, Tanzania Cigarette Company Limited, Tanga Cement Company Limited, Swiss port Tanzania Limited, Tanzania Cement Company Limited, Precision Air Services, Dar es Salaam Community Bank, National Microfinance Bank, Kenya Airways Limited, East African Breweries Limited, Jubilee Holdings Limited, Kenya Commercial Bank Limited, CRDB Bank Company, Media Group Limited and African Barrick Gold.

The Performance of Dar es Salaam Stock Exchange in Market Capitalization

Since its inception in 1998, the performance of the Dar es Salaam Stock Exchange (DSE) in market capitalization has been very positive.Figure1 below indicates the trend of market capitalization for 10 year period starting from 2000.



Source: Authors' estimation (2013)

The above graph indicates that, the trend of market capitalization has been on the increase for more than a decade. A notable slowdown is however noted between 2006 and 2009 due to Global Financial Crisis. The overall performance of DSE on stock market capitalization is largely attributed to the availability of substitute investments, change of investor preferences, activities of government and general performance of the economy.

1.0 Empirical Literature Review

Mao (2007) investigated the linkage between monetary policy and stock market in China mainland, by analyzing the monthly data of money supply and interest rate, the composite indices, sector indices of SSE (Shanghai Stock Exchange) and SZSE (Shenzhen Stock Exchange) during the period of Jan 1996 to Dec 2006. Results showed that there is only unidirectional Granger causality from interest rate to stock market and from stock market to money supply within the sample range.

On the other hand, Thornton (1998) examined the role of real stock prices in the long-run demand for M1 money balances in Germany for the period 1960-1989. Results indicate that real stock prices have a significant and positive effect on the long-run demand for narrow money balances in Germany. Furthermore, granger causality test through ECM showed that, in Germany there are feedback effects between real M1 balances and interest rates and unidirectional causality running from real money balances

to real income, real income to interest rates, and from interest rates to real stock prices.
Furthermore, Choudhry's (1996) study estimated the money demand functions of the US and Canada. He found that the stock market performance of these two countries has a significant role in the long-run real M1 and M2 demand functions.

Finally in his study on the relationship between stock market development and money demand in China, Yi (2004) found out that the development and expansion of the stock market has reduced the demand for both the narrow and broad money in China.

Model Specification and Estimation Techniques

In order to test cointegration using bounds testing procedure, the ARDL representation of demand for money (M = M1**,** M2**,** M3**)**, real GDP (Y), interest rate (R) and DSE (market capitalization) was constructed as follows:-

$$\Delta L(M)_t = \alpha_0 + \sum_{i=1}^{q} \alpha_{1i}\Delta L(M)_{t-i} + \sum_{i=0}^{q} \alpha_{2i}\Delta L(Y)_{t-i} + \sum_{i=0}^{q} \alpha_{3i}\Delta(R)_{t-i} + \sum_{i=0}^{q} \alpha_{4i}\Delta L(DSE)_{t-i} + \lambda_1 L(M)_{t-1} + \lambda_2 L(Y)_{t-1} + \lambda_3 (R)_{t-1} + \lambda_4 L(DSE)_{t-1} + \mu_t \quad (1)$$

$$\Delta L(Y)_t = \alpha_0 + \sum_{i=1}^{q} \alpha_{1i}\Delta L(M)_{t-1} + \sum_{i=0}^{q} \alpha_{2i}\Delta L(Y)_{t-i} + \sum_{i=0}^{q} \alpha_{3i}\Delta(R)_{t-i} + \sum_{i=0}^{q} \alpha_{4i}\Delta L(DSE)_{t-i} + \lambda_1 L(M)_{t-1} + \lambda_2 L(Y)_{t-1} + \lambda_3 (R)_{t-1} + \lambda_4 L(DSE)_{t-1} + \mu_t \quad (2)$$

$$\Delta L(R)_t = \alpha_0 + \sum_{i=1}^{q} \alpha_{1i}\Delta L(M)_{t-1} + \sum_{i=0}^{q} \alpha_{2i}\Delta L(Y)_{t-i} + \sum_{i=0}^{q} \alpha_{3i}\Delta(R)_{t-i} + \sum_{i=0}^{q} \alpha_{4i}\Delta L(DSE)_{t-i} + \lambda_1 L(M)_{t-1} + \lambda_2 L(Y)_{t-1} + \lambda_3 (R)_{t-1} + \lambda_4 L(DSE)_{t-1} + \mu_t \quad (3)$$

$$\Delta L(DSE)_t = \alpha_0 + \sum_{i=1}^{q} \alpha_{1i}\Delta L(M)_{t-1} + \sum_{i=0}^{q} \alpha_{2i}\Delta L(Y)_{t-i} + \sum_{i=0}^{q} \alpha_{3i}\Delta(R)_{t-i} + \sum_{i=0}^{q} \alpha_{4i}\Delta L(DSE)_{t-i} + \lambda_1 L(M)_{t-1} + \lambda_2 L(Y)_{t-1} + \lambda_3 (R)_{t-1} + \lambda_4 L(DSE)_{t-1} + \mu_t \quad (4)$$

Where Δ denotesthe first difference operator, L is the natural logarithm and q is the optimal lag length, R is the real interest rate/saving deposit rate, M is the demand for money, DSE is the Dar es Salaam Stock Exchange's market capitalization variable. The first until fourth expressions ($\boldsymbol{\lambda_1 - \lambda_4}$) on the right-hand side correspond to the long-run relationship.

The remaining expressions with the summation sign($\boldsymbol{\alpha_1 - \alpha_4}$) represent the short-run dynamics of the model.

From equation 1 up to 4, each variable was considered as a dependent variable, and the calculated F statistics was determined by joint null hypothesis of the lagged variables in level form. More interestingly about this model is that, instead of deciding on the dependent variable; the ARDL method determines what constitutes the dependent and independent variable to be estimated.

The procedure estimation is based on the F or Wald statistic as the first stage of the ARDL cointegration method. The null hypothesis was tested by considering the unrestricted error correction model (UECM) in the equations above. The null and alternative hypotheses tested between the examined variables are as follows:

H_O: $\lambda_1 = \lambda_2 = \lambda_3 = \lambda_4 = 0$ means no cointegration relationship between the variables or (no long-run relationship exist)

H_1:$\lambda_1 \neq \lambda_2 \neq \lambda_3 \neq \lambda_4 = 0$ means cointegration relationship between the variables or (a long-run relationship exist)

Cointegration – ARDL Estimation Techniques

The ARDL that is bounds testing approach were used to examine the long-run cointegration relationship between stock market capitalization and money demand variable. It was originally introduced by Perasan and Shin (1999) and later extended by Perasan *et al*. (2001).

The ARDL cointegration approach has numerous advantages in comparison to other cointegration methods. Firstly, unlike other cointegration techniques, the ARDL does not impose a restrictive assumption that all the variables under study must be integrated of the same order. In other words, the ARDL approach can be employed regardless of whether the underlying regressors are integrated of order one, I (1), order zero, I (0) or fractionally integrated. That said, the model requires that the dependent variable be I (1) and none of the explanatory variables to beI (2) or higher. Secondly, while other cointegration techniques are sensitive to the size of the sample, the ARDL test is suitable even if the sample size is relatively small that is between 30 to 80 observations(See Narayan and smith, 2005).

Thirdly, the ARDL technique is not only capable of distinguishing between dependent and explanatory variables (and hence it avoids the problem of endogeneity) but can also simultaneously estimate long run and short run parameters of the model. This approach also removes the problems associated with the omitted variables and autocorrelation. Moreover, the estimates obtained from the ARDL approach to cointegration are unbiased and efficient since they avoid the problems that may arise due serial correlation and endogeneity (Pesaran, Shin and Smith, 2001).

ARDL test involves asymptotic critical value bounds, depending on whether the variables are I (1) or I (0). Consequently, two sets of critical value are generated namely I (1) series and I (0) series. Critical values for I (1) series are referred to as upper bound critical values; while the critical values for I (0) series are referred to as lower bound critical values.

The lower bound critical values assume that the explanatory variables are integrated of order zero I(0) while the upper bound assumes that explanatory variables are integrated of order one I(1) (Perasan (2001). Ultimately, when the F test statistic exceeds their respective critical values, the conclusion is that there is a statistical evidence of the presence of a long run relationship between the variable regardless of the order of integration of the variables. On the other hand, when the

test statistic is below the upper critical values, the null hypothesis of no cointegration holds. On the other hand, if the computed *F*-statistic falls between the lower and upper bound values, then the results are inconclusive.

Data Sources and Definition of Variables used in the Study

In view of data sources, time series data ranging from 2000 to 2010 are used as a secondary source of information for data estimation procedure. The analysis of this study was based on quarterly time series data. Money demand (M1, M3, and M2), real interest rate/saving deposit rate and real GDP were extracted from the Central Bank of Tanzania. Quarterly data for DSE-stock market capitalization was obtained from the Dar es Salaam Stock Exchange.

Note that the narrow money (M1) is defined as the sum of currency outside the banks and demand deposits of commercial banks. Meanwhile, the broad money (M2)is equivalent to M1 plus time deposits and savings deposits of Tanzanian residents in banks. On the other hand, the extended broad money (M3) consists of M2 plus foreign currency deposits of Tanzanian residents in banks. Saving deposit rate is defined as the rate paid by commercial banks for demand, time, or saving deposits.

Besides, the market capitalization refers to the value or capitalization the market puts on a company. It is calculated by multiplying the price of the stock by the number of stocks shares issued. Stock market capitalization variable relate directly to the amount of money involved in the stock market. Levine and Zervos (1996) used it as an indicator of market development as it measures the size of the market.

Finally, Real GDP is gross domestic product in constant dollars. It is measured as nation's total output of goods and services adjusted for price changes.

Empirical results

Before estimation of the model for the investigation of the relationship between stock market capitalization and money demand in Tanzania, transformation of the data into logarithmic form was carried out to establish the normalcy and stationarity of variables.

Unit Root Test

In order to determine the order of integration of the variables, 2 unit root tests are applied. These are the Augmented Dickey Fuller (ADF) and the de-trended Dickey-Fuller (DF-GLS).

Running regression using ordinary least squares (OLS) requires that all the variables included in the model are integrated of order zero that is stationary. This ensures that the estimated regressions are not spurious. All variables were tested to determine whether they are stationary or not. Both Standard ADF and ADF-GS tests for unit root were used in this study to test for stationarity of each variable**.**

For time series data, ADF test is a test for unit root, but not powerful enough. It has been generally noted that the ADF have problems of lower power in rejecting the null hypothesis of a unit root as shown in (Gujarati, 2004). The DF-GLS found to have very large powers over the conventional unit root test; as such they are used to serve as complementary to the results of ADF.

Table 1 Unit root Test

Variable	ADF test statistic At level	ADF test statistic At first difference	DF-GLS test statistic At level	DF-GLS test statistic At first difference
LGDP	-6.40*****	-	-6.56*****	-
LM1	-3.08	-8.60*****	-3.25	-8.83*****
LM2	-3.26	-7.28*****	-2.78	-7.42*****
LM3	-2.50	-5.85*****	-2.47	-5.84*****
LMC	-2.17	-4.56*****	-1.16	-4.34*****
R	-5.31*****	-	-1.45	-3.84*****

Source: Researchers' Computation

Note: The asterisks * indicate 1% significance level, ADF is Augmented Dickey Fuller and DF-GLS is Dickey Fuller Generalized Least Square. R = the real interest rate/saving deposit rate, LMC= logarithm of market capitalization, LGDP= Logarithm of Real Gross Domestic Product, LM3= Logarithm of extended broad money LM2= Logarithm of broad money, LM1= Logarithm of narrow money

The results from Table 1 show that, most of the variables are stationary after differencing once except for real GDP which is stationary at levels. From the computation of ADF, the real interest rate/ saving deposit rate was found stationary at levels while DF-GLS proved that the real interest rate becomes stationary at first difference but not in levels (see Table 2 below decision making criteria throughout the analysis). These results confirm the low power of ADF test in rejecting the null of unit root while the data are non-stationary.

Table 2 Bounds Test for Cointegration Analysis

Critical Values	Lower Bound I(0)	Upper Bound I(1)
1%	7.763	8.922
5%	5.264	6.198
10%	4.214	5.039

Source: Turner P. (2006)

To test the existence of a long run relationship (cointegration) of the variables, the order of lags in the ARDL are selected by either the Akaike information criterion (AIC), Shwarz Bayesian criterion (SBC) or Hannan-Quinn criterion (HQC). This is intended to help with the selection of the optimal lag length order of the model. This is very important because the appropriate lag length selection helps in identifying the true dynamics of the models. The result from Table 3 show that, up to 5 lags were experimented to all first differenced variables and found that, both AIC, SBC and HQC selects lag order 5 as the optimal lag order for model fit.

Table 3 VAR Lag Length Selection

Lag	p(LR)	AIC	SBC	HQC
1	-	-16.98	-14.91	-16.24
2	0.00	-17.33	-13.71	- 16.04
3	0.00	-17.94	-12.77	-16.10
4	0.00	-20.00	-13.28	-17.61
5	0.00	-31.61*	-23.33*	-28.66*

Source: Researchers' Computation

Note: The asterisk* indicate the best (that is, minimized) values of the respective information criteria, AIC = Akaike criterion, SBC = Schwartz Bayesian criterion and HQC = Hannan-Quinn criterion

Table 4above which shows the bounds test demonstrates that the null hypothesis of no cointegration against its

alternative is easily rejected at 1% significance level. The computed F-statistic of 5.19 is greater than the upper critical bound value of 5.039 cited from Turner, thus indicating the existence of a long-run relationship among real GDP, extended broad money (M3), market capitalization and real interest rate. However, since cointegration exists between real GDP and its determinants in the ARDL model, long run coefficient estimates from equation (2) can be established. The estimated coefficients of the long-run relationship between real GDP, market capitalization, interest rate, money demand (M3) are computed in Table5 below.

Results in Table 5 indicate that market capitalizations, saving deposit rate/real interest rate and extended broad

Table 4 Evidence of ARDL Bound Testing

Dependent	Independent variable	F-statistics	Lag order	Probability	Relationship
F_{M1} (M1	Y,MC,R)	1.47	1 to 5	0.26	No cointegration
F_{M2} (M2	Y,MC,R)	1.18	1 to 5	0.36	No cointegration
F_{M3} (M3	Y,MC,R)	1.20	1 to 5	0.35	No cointegration
F_Y (Y	M1,MC,R)	2.44	1 to 5	0.09	No cointegration
F_Y (Y	M2,MC,R)	3.54	1 to 5	0.03	No cointegration
F_Y (Y	M3,MC,R)	5.19	1 to 5	0.01*	Cointegration
F_{MC} (MC	M1,Y,R)	1.40	1 to 5	0.28	No cointegration
F_{MC} (MC	M2,Y,R)	1.53	1 to 5	0.24	No cointegration
F_{MC} (MC	M3,Y,R)	2.92	1 to 5	0.06	No cointegration
F_R (R	M1,Y,MC)	2.48	1 to 5	0.09	No cointegration
F_R (R	M2,Y,MC)	4.75	1 to 5	0.01	No cointegration
F_R (R	M3,Y,MC)	1.23	1 to 5	0.34	No cointegration

Source**:** Researcher's Computation
Note: The asterisks * indicate 1% significance level

Table 5 Estimated Long Run Relationship

OLS estimates using the 39 observations 2001:2-2010:4 Dependent variable: D_LOGGDP				
Variable	**Coefficient**	**Std. Error**	**T-statistic**	**P-value**
constant	18.5191	6.45132	2.8706	0.01060**
LOGM3_1	2.21531	1.17934	1.8784	0.07758*
LOGGDP_1	-1.25366	0.160583	-7.8070	<0.00001***
R_1	0.703727	0.332669	2.1154	0.04946**
LOGMC_1	1.2198	0.401032	3.0417	0.00737***
D_LOGMC_1	-1.3943	0.763654	-1.8258	0.08549*
D_LOGM3_2	0.924307	1.27364	0.7257	0.47788
D_R_2	0.223629	0.350493	0.6380	0.53195
D_LOGGDP_3	0.160328	0.1336	1.2001	0.24657

Source**:** Own Computation
Adjusted R^2 = 0.747904, Unadjusted R^2 = 0.88722,
F-statistic (21, 17) = 9735.64 (p-value < 0.00001), Durbin-Watson statistic = 2.22712
Note: The asterisk *, ** and *** indicate at 10%, 5% and 1% respectively

From the unrestricted error correction model (UECM) based on the assumption made by Pesaran *et al.* (2001), the long- run elasticities are the coefficient of the one lagged explanatory variable (multiplied with a negative sign) divided by the coefficient of the one lagged dependent variable. In equation (2), the long-run market capitalization indicated by DSE, interest rate and money demand (M3) elasticities on real GDP are (λ_4/λ_2), (λ_3/λ_2) and $(\lambda_1/\lambda_{2)}$ respectively. The short-run effects are captured by the coefficients of the first-differenced variables in equation (2).

The estimated coefficients of the long-run relationship between real GDP, Money demand (M3), DSE market capitalization, and interest rate elasticities computed from Table 5above are

$$\Delta \mathbf{L(Y)}_t = 18.5191 + 1.8\mathbf{log}\boldsymbol{M3}_t + 0.56\boldsymbol{R}_t + 0.97\mathbf{log}\boldsymbol{DSE}_t$$

run. Specifically, if there is one percent increase in both saving deposit rate and extended broad money (M3), real GDP increases by 0.56 percent and 1.8 percent respectively. Similarly, an increase of one percent in market capitalization result to increase in real GDP by 0.97 percent. This analysis demonstrates that, in the long-run, saving deposit rate/real interest rate, extended broad money (M3) and market capitalization variables have significant and positive influence on real GDP over a period examined.

Table 6 Diagnostic Test

Diagnostic test	Test statistic	P- value
LM test for Autocorrelation	5.31	0.04
Ramsey Reset Specification	51.61	0.00
ARCH -test	0.97	0.032
Normality of residual	1.66	0.043

Source: Researchers' Computation

From Table 6, the results suggest that, the model passes all diagnostic tests. There is no evidence of autocorrelation, autoregressive conditional heteroskedasticity and omitted variables or functional misrepresentation. The residual terms are normally distributed and the functional form of the model appears well specified.

Pairwise Granger Causality Test Estimation

Pairwise Granger causality test was conducted to examine the short run relationship between stock market capitalization and money demand. Table 6 below shows thatlag 5 is preferable because it provides the lowest value of AIC, SBC and HQC at the optimal lag order for model fit.

Results above suggest the existence of a unidirectional causality running from market capitalization (MC) to real GDP growth at 1% significance level. This shows that stock market capitalization (MC) caused economic growth (real GDP) for the period under study in Tanzania. This also indicates that, the funds raised by the corporate from the financial markets during the study period played an important role for economic growth in the country.

Furthermore, the results suggest unidirectional causality running from broad money (M2) to market capitalization (MC) at 5% significance level. Broad money (M2) has a positive influence on market capitalization growth. This is

because many people in Tanzania depend on saving deposit as the most convenient way of formal saving. Since their income is very low, they tend to secure money in stock market in the form of shares with the aim of earning more income in the future.

Table 7 Pairwise Granger Causality Test

Pair	Null hypothesis	Observations	Probability
1	D(LOGMC) does not Granger Cause LOGGDP	38	0.00*
	LOGGDP does not Granger Cause D(LOGMC)		0.15
2	D(LOGMC) does not Granger Cause D(LOGM2)	38	0.18
	D(LOGM2) does not Granger Cause D(LOGMC)		0.04**
3	D(LOGMC) does not Granger Cause D(LOGM1)	38	0.63
	D(LOGM1) does not Granger Cause D(LOGMC)		0.78
4	D(LOGMC) does not Granger Cause D(LOGM3)	38	0.05**
	D(LOGM3) does not Granger Cause D(LOGMC)		0.09***

Source: Researchers' Computation

Note: Asterisk *, ** and *** indicate significance at the 1%, 5% and 10% significance levels respectively. The optimal number of lags used = 5

The findings further show that, extended broad money exhibits bi-directional causality with market capitalization, the causality running from extended broad money (M3) to stock market capitalization (MC) and from market capitalization to extended broad money. These suggest that, an increase of money demand (M3) in the Tanzania economy causes an increase in the level of market capitalization.

CONCLUSION

This paper focuses on the relationship between stock market capitalization and money demand in Tanzania between 2000 and 2010 period using quarterly time series data. The paper succeeded in addressing the specific objectives. This is because it firstly estimated the directional causality and thereafter estimated the long run relationship between stock market capitalization and money demands. Specifically, results from Pairwise Granger Causality test show thatmarket capitalization Granger causes both demand for money (M3) and real GDP. This shows that market capitalization plays a vital role in determining both economic growth (real GDP) and demand for money (M3) in Tanzania.

Furthermore, the results suggest unidirectional causality running from broad money (M2) to market capitalization (MC) at 5% significance level. Furthermore broad money (M2) has a positive influence on market capitalization growth. Also the extended broad money (M3) exhibits bi-directional causality with market capitalization, the causality running from extended broad money (M3) to stock market capitalization (MC) and from market capitalization to extended broad money (M3). This suggests that, an increase of money demand (M3) in the Tanzania economy causes an increase in the level of market capitalization under examined period.

The study alsoindicates that when money demand (M1, M2, and M3) serves as dependent variable in ARDL model, there is no long run relationship between money demand and its determinants.

In sum, since this study shows that stock market capitalization leads to economic growth, it is recommended to encourage more active trading in stock market even for the already listed stocks. We also recommend for controlled expansionary monetary policy as both M2 and M3 seem to have a positive impact on MC. Such policies could significantly increase stock market activity which couldin turn accelerate economic growth in Tanzania.

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