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Stock Market Development and Economic Growth: New Evidence from South Africa

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ABSTRACT

This Paper Examines The Relationship Between Stock Market Development And Economic Growth In South Africa. The Paper Employs Auto-Regressive Distributed Lags (ARDL)-Bounds Testing Approach And Multi-Dimensional Stock Market Development Proxies To Examine This Relationship. The Paper Finds That In The Long Run, Stock Market Development Has Minimal Impact On Economic Growth. However, Stock Market Development Has Some Short-Run Impact On Economic Growth In South Africa. The Paper, Therefore, Concludes That It Is Rather The Increase In Credit To The Private Sector And An Increase In The Gross National Expenditure That Drives The Real Sector Development And Economic Growth In South Africa.

keywords: *Economic Growth; Stock Market Development; Ardl-Bounds Testing Approach; South Africa.*

INTRODUCTION

The theory of financial liberalisation has advanced from focusing on credit markets and the public sector to include the private sector. in most recent studies, the debate has been focused on the dynamics of stock market development and their impacton economic growth in emerging markets. the purpose of this paper is to empirically investigate and provide new insight into the impact of stock market development on sustainable economic growth in south africa. in this investigation, the paper constructs a stock market development index, which combines all the 3 stock market indicators into one factor. also, the paper employs the auto-regressive distributed lags (ardl) -bounds testing approach (pesaran et al, 2001) to establishing a long-run relationship between stock market development and economic growth in south africa using annual data from 1975 to 2016 sourced from world bank's world development indicators (2018). the rest of the paper is divided into three sections. in section ii, the paper reviews some of the existing theoretical and empirical literature. section iii describes the methodology used, the empirical analyses, as well as the discussion of the results. section iv concludes the paper.

THEORETICAL AND EMPIRICAL LITERATURE REVIEW

Bekaert and harvey (1995) argued that capital account liberalisation leads to increase in international capital inflow – resulting in lower cost of capital; it allows for risk diversification; it encourages investment in projects with higher returns; and ultimately, it leads to integration into the world financial system and economic growth. according to the endogenous growth literature, recent theoretical studies have focused on the links between endogenous growth and stock markets. bencivenga and smith (1991) and levine (1991) were among the pioneers to propose endogenous growth models to identify the channels through which financial markets affect long-run economic growth. they emphasised that stock markets help to diversify the liquidity and investment risk of agents. additionally, they argued that it helps to attract more savings into productive investment and prevent the early withdrawal of capital invested in the long run projects. king and levine (1993) also proposed another approach to identifying the channel of transmission between financial markets and economic growth. thus, financial markets help the function of efficient resource allocation. therefore, in an economy with well-functioning financial markets, there will be higher productivity growth rate (owusu, 2016).

in a 21st century economy, banks and stock markets constitute a major part of the Financial System. Although they may perform different roles in the process of economic development, their uniqueness can hardly be underestimated within the framework of economic growth.

another perspective on the relationship between financial development, investments and economic growth in endogenous growth models is concerned with financial markets, savings, investments and economic growth. available evidence indicates that stock markets do not perform savings function very well. thus, more recent research on the role of the stock markets in many economies has emphasised the role of a developed stock market to enhance the efficiency of investment and hence, leading to higher economic growth. moreover, stock markets can enhance economic growth through investment productivity rather than the savings function (caporale et al 2003; owusu, 2016).

In recent years, extensive empiricalstudies have been conducted on the dynamic relationship between stock market development and economic growth in many countries but with mixed results. for example, arestis, demetriades, and luintel (2001), while using time-series analysis and data from five developed countries for the period of 1968 to 1998, found that stock market developments have a significant impact on economic growth in three of the five countries. also, quinn and toyoda (2008) tested whether stock market development leads to economic growth using pooled time series data from 93 developed and developing countries. their findings showed that capital account liberalisation has a positive association with economic growth in both developed and emerging economies.

Furthermore, owusu and odhiambo (2014), employedardl-bounds testing approach and multidimensional stock market development proxies to examine this linkage in ghana. their findings supportedthenumerouspaststudies,whichhaverep ortednegativeorinconclusive results on the impact of stock market development on economic growth.they concluded, however, that it is the increase in credit to the private sector, rather than stock market development that drives the real sector development in ghana.in another study, nyasha and odhiambo (2015) investigated the dynamic causal relationship between bankbased financial development, stock market development and economic growthinsouth africa between 1980 and 2012 using a multivariate granger-causality model. their results revealed thatthere is a distinct short and long run uni-directional causal flow from stock market development to economic growth in south africa. the results also indicated that there is a uni-directional causal flow from bank-based financial development to stock market development in the short run. they concluded that there is a link between economic growth and stock market development in south africa.

Finally, osakwe and ananwude (2017) explored the short run and long-run relationship between stock market development and economic growth in nigeria and south africa from 1981 to 2015 using ardl co-integration methodology. they found that there is a long-run relationship between stock market development and economic growth in nigeria but not in south africa. they conducted further analysis using granger causality and concluded that economic growth in south africa is significantly affected by market capitalisation but not so in nigeria. their study found support for the theory in nigeria but not in south africa.

METHODOLOGY AND EMPIRICAL ANALYSIS

Methodology

This paper adopts a modified version of naceur et al. (2008) and specifies four equations for economic growth. all the equations include foreign direct investments, gross national expenditure and credit to the private sector, as independent variables. in addition to the above independent variables, the three proxies for stock market development indicators, .i.e. stock market capitalisation, values of traded stocks and stock turnover, have been included independently in the first three equations to capture the effect of stock development on economic growth. however, in the fourth equation, a stock market development index has been included in the growth equation, in order to capture the combined effects of all the three stock market development proxies on economic growth. the required equations are specified as follows:

$$\mathrm{Ln}gdp_t = \phi_0 + \phi_1 Fdi_t + \phi_2 \mathrm{Ln}gnexp_t + \phi_3 \mathrm{Ln}mc_t + \phi_4 \mathrm{Ln}cps_t + \varepsilon_T \quad (1)$$

$$\mathrm{Ln}gdp_t = \delta_0 + \delta_1 Fdi_t + \delta_2 \mathrm{Ln}gnexp_t + \delta_3 \mathrm{Ln}stv_t + \delta_4 \mathrm{Ln}cps_t + \varepsilon_T \quad (2)$$

$$\mathrm{Ln}gdp_t = \theta_0 + \theta_1 Fdi_t + \theta_2 \mathrm{Ln}gnexp_t + \theta_3 \mathrm{Ln}stt_t + \theta_4 \mathrm{Ln}cps_t + \varepsilon_T \quad (3)$$

$$\mathrm{Ln}gdp_t = \mu_0 + \mu_1 Fdi_t + \mu_2 \mathrm{Ln}gnexp_t + \mu_3 Sind_t + \mu_4 \mathrm{Ln}cps_t + \varepsilon_T \quad (4)$$

Where:

$Gdp_{t,}$ = Real Gdp At Constant Local Currency(Economic Growth Indicator)

Mc_t = Stock Market Capitalisation (% Of Gdp)

Stv_t = Stock Value Traded (%Of Gdp)

Stt_t = Stock Market Turnover (%)

$Gnexp_t$= Gross National Expenditures (% Of Gdp)

Fdi_t = Foreign Direct Investments As A % Of Gdp

Cps_t = Real Credit To The Private Sector As A % Of Gdp

Sind = Stock Market Development Index;

$\phi_{0,}$ $\delta_{0,}$ θ_0 and μ_0 = constant parameters; ε_t = the white noise error term; and ln = natural log operator. the equations are run on annual time series data from 1975 to 2016 sourced from world bank, world development indicators (2018).

According to neo-classical economic thinking, liberalisation of the capital markets will lead to economic growth, as a result of the inflow of investments from outside the liberalised economy. to test the impact of stock market development on economic growth, therefore, real gdp, a measure of economic development and growth indicator, is modelled as a function of stock market development indicators and other macroeconomic factors.

The credit to the private sector (cps), as the ratio of total credit extended to the private sector by the banks to the gdp, measures the level of activities and efficiency of the financial intermediation. an increase in the financial resources, especially credits, to the private sector is expected to increase private sector efficiency and production, consequently leading to economic growth (owusu and odhiambo, 2012). the other control variable used is the foreign direct investment (fdi), which serves as an effective means of transferring technology across countries. fdi inflow tends to foster economic growth through its effect on the amount of gdp,as well as its growth.

Beck et al. (2000) outlined three key stock market indicators in measuring size, activity, and efficiency. the ratio of stock market capitalisation to gdp (mc), for example, measures the size of the stock market, because it aggregates the value of all listed shares in the stock market. however, the size of the stock market does not provide any indication of its liquidity. to measure stock market liquidity, beck et al. (2000) proposed the use of the value of stock traded to gdp variable (stv). this indicator is equal to the value of the trades of domestic stocks divided by gdp. lack of liquidity in the stock market reduces the incentive to invest, as it diminishes the efficiency at which resources are allocated; and hence,it affects economic growth and development. in order to capture the efficiency of the domestic stock market, they suggested the use of the stock market turnover ratio (stt), which is equal to the value of trades of shares on the stock markets divided by market capitalisation (naceur et al., 2008). other writers, including bencinvenga et al. (1995) are also of the view that, a more efficient stock market can foster better resource allocation and spur growth.

To account for the combined effect of stock market development on economic growth, combined index of the three proxies of stock market development (sind) is included. sind is a composite index of the three stock development indicators, constructed by using their growth rate. to derive the index, the paper first computes the annual growth rate for market capitalisation (mc), the ratio of total stock value traded to gdp (stv), and the turnover ratios (stt) for each year. thereafter, anaverage of the growth rates is taken, in order to obtain an overall index of the stock market development for each year. this index allows us to examine the overall effects of stock market development on economic growth in south africa.

Finally, gross national expenditures (gnexp) is calculated as a ratio of gdp and it is the sum of household or private final consumption expenditure, general government final consumption expenditureand gross capital formation. this variable was included because it is expected to crowd-out private investments. this has consequences on the stock market and hence economic growth. barro and sala-i-martin (1995) argued that national expenditure does not directly affect productivity but will lead to

distortions in the private sector. one can argue that national expenditure can be economic growth enhancing too. this is mostly the case in the emerging countries, like south africa, where the bulk of investments come in the form of government expenditure. nurudeen and usman (2010) for example, showed that government expenditures in the transport, communication and health sectors have a positive impact on economic growth in nigeria (owusu, 2012).all the coefficients are expected to be positive.

The methodology used in this paper is based on the ardl-bounds testing approach, which was popularised by pesaran et al. (2001). this approach involves two stages. in the first stage, the ardl model of interest is estimated by using the ordinary least squares (ols), in order to test for the existence of no long-run relationship among the relevant variables in the equation, a wald f-test for the joint significance of the lagged levels of the variables is performed. if the f-statistics is above the upper critical value, the null hypothesis of no long-run relationship can be rejected, irrespective of the orders of integration for the time series. conversely, if the test f-statistics falls below the lower critical value, then the null hypothesis cannot be rejected. however, if the f-statistics falls between the upper and the lower critical values, then the result is inconclusive.

Once the long-run relationship or cointegration has been established, the second stage involves the estimation of the longrun coefficients (which represent the optimum order of the variables after selection by aic or sbc). thereafter, a general error-correction model (ecm) can be formulated as follows:

$$\Delta \text{LnGDP}_t = c_0 + \sigma_1 \text{Ln}GDP_{t-1} + \sigma_2 FDI_{t-1} + \sigma_3 \text{Ln}GNEXP_{t-1} + \sigma_4 \text{Ln}MC_{t-1} + \sigma_5 \text{Ln}CPS_{t-1} + \sum_{i=1}^{p} \alpha_i \Delta \text{Ln}GDP_{t-i} + \sum_{i=0}^{q} \zeta_k \Delta FDI_{t-k} + \sum_{i=0}^{q} \phi_m \Delta \text{Ln}GNEXP_{t-m} + \sum_{i=0}^{q} \eta_n \Delta \text{Ln}MC_{t-n} + \sum_{i=0}^{q} \lambda_r \Delta \text{Ln}CPS_{t-r} + \varepsilon_t \quad (5)$$

$$\Delta \text{Ln}GDP_t = c_1 + \delta_1 \text{Ln}GDP_{t-1} + \delta_2 FDI_{t-1} + \delta_3 \text{Ln}GNEXP_{t-1} + \delta_4 \text{Ln}STV_{t-1} + \delta_5 \text{Ln}CPS_{t-1} + \sum_{i=1}^{p} \alpha_i \Delta \text{Ln}GDP_{t-i} + \sum_{i=0}^{q} \zeta_k \Delta FDI_{t-k} + \sum_{i=0}^{q} \phi_m \Delta \text{Ln}GNEXP_{t-m} + \sum_{i=0}^{q} \eta_n \Delta \text{Ln}STV_{t-n} + \sum_{i=0}^{q} \lambda_r \Delta \text{Ln}CPS_{t-r\ z} + \upsilon_t \quad (6)$$

$$\Delta \text{Ln}GDP_t = c_2 + \varphi_1 \text{Ln}GDP_{t-1} + \varphi_2 FDI_{t-1} + \varphi_3 \text{Ln}GNEXP_{t-1} + \varphi_4 \text{Ln}STT_{t-1} + \varphi_5 \text{Ln}CPS_{t-11} + \sum_{i=1}^{p} \alpha_i \Delta \text{Ln}GDP_{t-i} + \sum_{i=0}^{q} \zeta_k \Delta FDI_{t-k} + \sum_{i=0}^{q} \phi_m \Delta \text{Ln}GNEXP_{t-m} + \sum_{i=0}^{q} \eta_n \Delta \text{Ln}TR_{t-n} + \sum_{i=0}^{q} \lambda_r \Delta \text{Ln}CPS_{t-r} + \mu_t \quad (7)$$

$$\Delta \text{Ln}GDP_t = c_3 + \mu_1 \text{Ln}GDP_{t-1} + \mu_2 FDI_{t-1} + \mu_3 SIND_{t-1} + \mu_4 \text{Ln}CPS_{t-1} + \mu_5 \text{Ln}GNEXP_{t-1} + \sum_{i=1}^{p} \alpha_i \Delta \text{Ln}GDP_{t-i} + \sum_{i=0}^{q} \zeta_k \Delta FDI_{t-k} + \sum_{i=0}^{q} \eta_n \Delta SIND_{t-n} + \sum_{i=0}^{q} \lambda_r \Delta \text{Ln}CPS_{t-r} + \sum_{i=0}^{q} \theta_p \Delta \text{Ln}GNEXP_{t-p} + \chi_t \quad (8)$$

Where: σ_i, δ_i, φ_i and μ_i= long run multipliers corresponding to long-run relationships; c_0, c_1, c_2 and c_3 = drifts; and ε_t, υ_t, μ_t and χ_t= white noise errors.

The short-run effects in the above equations are captured by the coefficients of the first-differenced variables in the unrestricted error correction (uecm) model. according to bahmani-oskooee and brooks (1999), the existence of a long run relationship does not necessarily imply that the estimated coefficients are stable. there is, therefore, the need to perform a series of diagnostic tests on the model established. this involves testing of the residuals for homoscedasticity, serial correlation, functional form and normality as well as stability tests – to ensure that the estimated model is statistically robust (owusu, 2012).the general uecm model is tested downwards sequentially, by dropping the statistically non-significant first differenced variables for each of the equations –to arrive at a "goodness-of-fit" model – using a general-to-specific strategy (owusu, 2012).

Empirical Analysis

Unit Root/Stationary Tests For Variables

The results of the augmented dickey-fuller (adf) and the phillips and peron (pp) unit root tests for the relevant variables are reported in tables 1 to 4 below.

Table1. *ADF unit root tests for the variables in levels.*

Variable	No Trend	Result	Trend	Result
LnGDP	-0.051	N	-1.843	N
FDI	-1.200	N	-3.716	S
LnCPS	-1.143	N	-2.267	N
LnMC	-1.425	N	-4.086	S
LnSTV	-0.693	N	-2.873	N
LnSTT	-0.871	N	-2.327	N
LnGNEXP	-2.957	S	-4.778	S
SIND	-4.827	S	-4.783	S

Notes: 95% published asymptotic critical value including an intercept but not a trend is -2.934 and the value includingan intercept and a trend is -3.525. s = stationary and n = non-stationary. ln is the natural log operator. source: data output via microfit 5.0

Table2. *Adf Unit Root Tests For The Variables In The First Difference*

Variable	No Trend	Result	Trend	Result
Δ*Lngdp*	-4.157	S	-4.057	S
Δ*FDI*	-5.314	S	-5.216	S
Δ*Lncps*	-4.645	S	-4.954	S
Δ*Lnmc*	-7.535	S	-7.460	S
Δ*Lnstv*	-5.334	S	-5.255	S
Δ*Lnstt*	-4.276	S	-4.467	S

Notes: s = stationary and n = non-stationary. Δ is the difference operator and ln is the natural log operator: 95% published asymptotic critical value including an intercept but not a trend is -2.934 and the value including an intercept and a trend is -3.525source: data output via microfit 5.0

Table 3: *Pp unit root tests for the variables in levels*

Variable	No Trend	Result	Trend	Result
Lngdp	-0.210	N	-1.509	N
FDI	-3.716	S	-5.529	S
Lncps	-0.984	N	-2.789	N
Lnmc	-0.940	N	-4.507	S
Lnstv	-0.155	N	-2.817	N
Lnstt	-0.752	N	-2.307	N
Lngnexp	-2.941	S	-4.389	S
SIND	-6.881	S	-6.781	S

Notes: 95% Published Asymptotic Critical Value Including An Intercept But Not A Trend Is -2.934 And The Value Including An Intercept And A Trend Is -3.525. S = Stationary And N = Non-Stationary. Ln Is The Natural Log Operator.Source: Data Output Via Microfit 5.0

Table 4: *Pp unit root tests for the variables in the first difference*

Variable	No Trend	Result	Trend	Result
Δ*Lngdp*	-4.079	S	-3.950	S
Δ*FDI*	-17.999	S	-17.693	S
Δ*Lncps*	-8.160	S	-8.117	S
Δ*Lnmc*	-15.193	S	-16.286	S
Δ*Lnstv*	-8.367	S	-8.184	S
Δ*Lnstt*	-7.910	S	-7.784	S

notes: s = stationary and n = non-stationary. Δ is the difference operator and ln is the natural log operator: 95% published asymptotic critical value including an intercept but not a trend is -2.934 and the value including an intercept and a trend is -3.525source: data output via microfit 5.0

The results in tables 1 to 4 indicate that all the variables are either i(0) or i(1) – using both the augmented dickey-fuller (adf) and the phillips and peron (pp) unit root tests. the paper,

therefore, rejects the null hypothesis that the variables are non-stationary.

Ardl-Bounds Test

The results of the co-integration tests, based on the ardl-bounds testing approach, are reported in table 5. the resultsshow that, in all the equations, the null hypothesis of no cointegration is rejected. this implies that there is a long run co-integration relationship among the variables in all the equations forsouth africa. the long-run results of the selected equations/models are reported in tables 6 to 9 below.

Table5. *Bounds f-test for cointegration for all the economic growth models*

Dependent Variable	**Functions**					**F-Test Statistics**
Lngdp	F_{lngdp} (Lngdp| Lnmc, Lncps, FDI, Lngnexp) F_{lngdp} (Lngdp| Lnstv, Lncps, FDI, Lngnexp) F_{lngdp} (Lngdp| Lnstt, Lncps, FDI, Lngnexp) F_{lngdp} (Lngdp| SIND, Lncps, FDI, Lngnexp)					5.631*** 3.579* 3.637* 3.543*
Asymptotic Critical Values						
Pesaran Et Al (2001), P.301, Table CI(Iv) Case IV	1%		5%		10%	
	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
	3.81	4.92	3.05	3.97	2.68	3.53

*note: *, ** and *** denote statistical significant at 10%, 5% and 1% levels respectively.source: data output via microfit 5.0*

Table6. *Economic growth and market capitalisation - results of ardl (2, 3, 3 5, 5) long run model selected on AIC*

Regressor	Co-Efficient	Standard Error	T-Ratio	P-Value
C	-2.306	4.978	-4.632	0.000
FDI	-0.070	0.082	-0.847	.0411
Lngnexp	3.989	1.096	3.611	0.003
Lncps	1.444	0.358	4.030	0.001
Lnmc	-0.032	0.138	-0.231	0.821

Notes: Dependent Variable: Lngdp. Source: Data Output Via Microfit 5.0

Table7.*Economic growth and value of stock traded - results of ardl (3, 3, 3, 2. 1) long run model selected on AIC.*

Regressor	Co-Efficient	Standard Error	T-Ratio	P-Value
C	-3.356	10.213	-3.286	0.004
FDI	-0.663	0.229	-2.900	0.009
Lngnexp	8.090	2.371	3.412	0.003
Lncps	-0.857	0.681	-1.258	0.222
Lnstv	0.452	0.128	3.534	0.002

notes: dependent variable: lngdp. source: data output via microfit 5.0

Table 8.*Economic growth and stock turnover - results of ardl (4, 2, 4, 4, 4) long run model selected on AIC.*

Regressor	Co-Efficient	Standard Error	T-Ratio	P-Value
C	-4.489	9.534	-0.471	0.645
FDI	0.239	0.132	1.806	0.091
Lngnexp	0.422	2.135	0.198	0.846
Lncps	0.727	0.555	1.310	0.210
Lnstt	0.097	0.117	0.829	0.420

notes: dependent variable: lngdp. source: data output via microfit 5.0

Table 9.*Economic growth and stock market developments - results of ardl (2, 4, 3, 5, 1) long run model selected on AIC.*

Regressor	Co-efficient	Standard Error	T-Ratio	p-value
C	-2.744	8.238	-3.331	0.004
FDI	-0.287	0.155	-1.853	0.081
LnGNEXP	4.575	1.750	2.614	0.018
LnCPS	1.8231	0.366	5.004	0.000

Regressor	Co-efficient	Standard Error	T-Ratio	p-value
SIND	0.109	0.156	0.696	0.496

notes: dependent variable: lngdp. source: data output via microfit 5.0

Table 6 shows that the coefficient of market capitalisation (lnmc) has a statistically insignificant negativeeffect on economic growth (lngdp) in the long run. however, lngnexp and lncps have statistically significant coefficient but fdi has an unexpected negative sign though statistically insignificant. this may suggest that contrary to a priori expectation, in the long run, stock market capitalisationtogether with foreign direct investment has a negligible andnegative impact on economic growth in south africa. on the other hand, table 6 shows that the coefficient of the credit to the private sector and gross national expenditure are both significant at 1% level. this may suggest, for example, that a 1% increase in the amount of credit extended to the private sector leads to an approximately 1.4% increase in economic growth. the results in table 6 suggest that stock market capitalisation has no impact on economic growth in south africa in the long run.

In table 7, the coefficients of the value of stock traded (lnstv) is positive and statistically significant. however, contrary to the results in table 6, the coefficient of the credit to the private sector has an unexpected negative sign and is also statistically insignificant. note also that, the coefficient of foreign direct investment is negative as in table 6. the results indicate that stock market liquidity has some effect on the economy in south africa in the long run. unlike in tables 6 and in table 7, all the variablesincluding lnstt, are statistically insignificant in table 8.this outcome may suggest that the efficiency as seen in the stock market is not translated in the real economy in south africa in the long run.

In table 9, the paper also finds that the coefficient of the composite index of the three proxies of stock market development (sind) has the expected positive sign, but statistically insignificant. however, all the other variables are statistically significant with fdi having a negative coefficient

In summary, stock market development has no or negligibleimpact on the economic growth in south africa in the long run. these findings are interesting and surprising, as south africa has one of the largest and most developed and efficient stock market in the world and for that matter in africa.note however that, frank (2004), as well as osakwe and ananwude (2017), made similar findings. the reasons behind this are outside the scope of this paper. and, it would be an interesting area of research.the results of the shortrun dynamics emanating from the longrun relationships are shown in tables 10 to 13.

Table 10. *Economic growth and market capitalisation - results of ardl (2, 3, 3, 5, 5) ecm model selected on AIC.*

Regressor	Co-efficient	Standard Error	T-Ratio	p-value
$\Delta LnGDP_{-2}$	0.330	0.165	2.002	0.061
ΔFDI_{-1}	-1.010	0.006	-1.527	0.144
ΔFDI_{-2}	0.004	0.009	0.449	0.659
ΔFDI_{-3}	0.010	0.007	1.574	0.133
$\Delta LnGNEXP_{-1}$	0.404	0.144	2.798	0.012
$\Delta LnGNEXP_{-2}$	-0.773	0.194	-3.974	0.001
$\Delta LnGNEXP_{-3}$	-0.491	0.129	-3.821	0.001
$\Delta LnCPS_{-1}$	-0.003	0.048	-0.068	0.946
$\Delta LnCPS_{-2}$	-0.144	0.066	-2.150	0.045
$\Delta LnCPS_{-3}$	-0.259	0.068	-3.837	0.001
$\Delta LnCPS_{-4}$	-0.228	0.054	-4.218	0.001
$\Delta LnCPS_{-5}$	-0.125	0.045	-2.764	0.013
$\Delta LnMC_{-1}$	0.106	0.012	0.854	0.404
$\Delta LnMC_{-2}$	0.068	0.022	3.089	0.006
$\Delta LnMC_{-3}$	0.060	0.023	2.603	0.018
$\Delta LnMC_{-4}$	0.051	0.020	2.485	0.023
$\Delta LnMC_{-5}$ ecm(-1)	0.025	0.016	1.593	0.129
	-0.169	0.036	-4.625	0.000
R-Squared 0.885	R-Bar-Squared	0.703		
S.E. of Regression	0.013F-Stat.	F(18,18)	5.963[0.000]	

Regressor	Co-efficient	Standard Error	T-Ratio	p-value
Residual Sum of Square	0.002DW-statistic		2.361	
Akaike Info. Criterion	105.139	Schwarz Bayesian Criterion	86.614	

source: data output via microfit 5.0

Table11. *Economic growth and value of stock traded - results of ardl (3, 3, 3, 2, 1) ecm model selected on AIC.*

Regressor	Co-Efficient	Standard Error	T-Ratio	P-Value
$\Delta Lngdp_{-2}$	0.458	0.164	2.799	0.010
$\Delta Lngdp_{-3}$	-0.349	0.168	-2.078	0.048
$\Delta FDI_{-1}\Delta FDI_{-2}$	-0.019	0.008	-2.287	0.031
ΔFDI_{-3}	0.037	0.013	2.925	0.007
$\Delta Lngnexp_{-1}$	0.025	0.009	2.892	0.008
$\Delta Lngnexp_{-2}$	0.646	0.179	3.612	0.001
$\Delta Lngnexp_{-3}$	-0.666	0.179	-3.711	0.001
$\Delta Lncps_{-1}$	-0.211	0.148	-1.421	0.168
$\Delta Lncps_{-2}$	-0.098	0.059	-1.655	0.110
$\Delta Lnstv_{-1}$	0.094	0.059	1.581	0.126
Ecm(-1)	0.021	0.009	2.311	0.029
	-0.103	0.003	-3.084	0.005
R-Squared 0.725	R-Bar-Squared	0.516		
S.E. Of Regression	0.016F-Stat.	F(12,25)	4.625[0.001]	
Residual Sum Of Square	0.005DW-Statistic	2.026		
Akaike Info. Criterion	98.436Schwarz Bayesian Criterion		84.517	

source: data output via microfit 5.0

Table 12. *Economic growth and stock turnover - results of ardl (4, 2, 4, 4, 4) ecm model selected on AIC.*

Regressor	Co-efficient	Standard Error	T-Ratio	p-value
$\Delta Lngdp_{-2}$	0.116	0.216	0.539	0.596
$\Delta Lngdp_{-3}$	-0.263	0.191	-1.378	0.184
$\Delta Lngdp_{-4}\Delta FDI_{-1}$	0.444	0.193	2.301	0.033
ΔFDI_{-2}	0.007	0.007	0.940	0.359
$\Delta Lngnexp_{-1}$	-0.013	0.008	-1.700	0.105
$\Delta Lngnexp_{-2}$	0.665	0.196	3.387	0.003
$\Delta Lngnexp_{-3}$	-0.249	0.202	-1.232	0.233
$\Delta Lngnexp_{-4}$	-0.339	0.200	-1.695	0.106
$\Delta Lncps_{-1}$	-0.601	0.219	-2.748	0.013
$\Delta Lncps_{-2}$	0.133	0.062	2.147	0.045
$\Delta Lncps_{-3}$	0.098	0.077	1.282	0.216
$\Delta Lncps_{-4}$	0.011	0.077	0.146	0.885
$\Delta Lnstt_{-1}$	-0.070	0.062	-1.115	0.279
$\Delta Lnstt_{-2}$	0.021	0.011	1.829	0.083
$\Delta Lnstt_{-3}$	-0.026	0.012	-2.128	0.047
$\Delta Lnstt_{-4}$ Ecm(-1)	-0.037	0.014	-2.720	0.014
	-0.039	0.013	-3.12	0.006
	-0.121	0.035	-3.515	0.002
R-Squared0.831	R-Bar-Squared	0.583		
S.E. of Regression	0.014	F-Stat. F(18,19)	4.100[0.002]	
Residual Sum of Square	0.003	DW-statistic	2.109	
Akaike Info. Criterion	101.662Schwarz Bayesian Criterion		82.829	

source: data output via microfit 5.0

Table 13.*Economic growth and stock market developments index - results of ardl (2, 4, 3, 5, 1) ecm model selected on AIC.*

Regressor	Co-Efficient	Standard Error	T-Ratio	P-Value
$\Delta Lnrgdp_{-2}$	0.368	0.174	2.121	0.046
$\Delta FDI_{-1}\Delta FDI_{-2}$	-0.016	0.009	-1.655	0.113
ΔFDI_{-3}	0.025	0.017	1.494	0.150

Regressor	Co-Efficient	Standard Error	T-Ratio	P-Value
ΔFDI_{-4}	0.029	0.016	1.884	0.074
$\Delta Lngnexp_{-1}$	0.013	0.011	1.132	0.270
$\Delta Lngnexp_{-2}$	0.415	0.207	1.999	0.059
$\Delta Lngnexp_{-3}$	-0.742	0.242	-3.069	0.006
$\Delta Lncps_{-1}$	-0.534	0.195	-2.745	0.012
$\Delta Lncps_{-2}$	0.030	0.061	0.490	0.629
$\Delta Lncps_{-3}$	-0.110	0.085	-1.290	0.211
$\Delta Lncps_{-4}$	-0.261	0.089	-2.918	0.008
$\Delta Lncps_{-5}$	-0.282	0.086	-3.282	0.004
$\Delta SIND_{-1}$	-0.137	0.066	-2.071	0.051
Ecm(-1)	-0.008	0.016	-0.486	0.632
	-0.154	0.049	-3.154	0.005
R-Squared0.738 R-Bar-Squared 0.445				
S.E. Of Regression 0.017 F-Stat. F(15,21) 3.189[0.008]				
Residual Sum Of Square 0.005 DW-Statistic 1.821				
Akaike Info. Criterion 92.953Schwarz Bayesian Criterion 76.844				

source: data output via microfit 5.0

As can be seen from table 10, apart from foreign direct investment, all the other variables, including stock market capitalisation, have a short-run impact on economic growth in south africa. the coefficient of ecm(-1) is found to be small in magnitude but statistically significant at the 1% level and has the expected negative sign. this confirms the existence of co-integration between the variables. the magnitude of the coefficient of the ecm(-1) suggests a slow rate of adjustment aftershock. thus, it takes about 6 years to fully correct any disequilibrium due to economic shock.

In table 11, all the other variables, including stock value traded and foreign direct investment, have a short-run impact on economic growth in south africa. the coefficient of ecm(-1) is found to be small in magnitude but statistically significant at the 1% level and has the expected negative sign. this confirms the existence of co-integration between the variables. the magnitude of the coefficient of the ecm(-1) suggests a slow rate of adjustment aftershock. thus, it takes more than 9 years and 6 months to fully correct any disequilibrium due to economic shock.

Like table 10, all the other variables, including stock market turnover, have a short-run impact on economic growth in south africa apart from credit to the private sector in table 12. again, the coefficient ecm(-1) is found to be small in magnitude but statistically significant at the 1% level and has the expected negative sign. this confirms the existence of co-integration between the variables. the magnitude of the coefficient of the ecm(-1) suggests a slow rate of adjustment aftershock. thus, it takes over 8 years to fully correct any disequilibrium due to economic shock.

Finally, table 13shows that all the variables have a short-run impact on economic growth in south africaapart from the composite stock market development index. the coefficient ecm(-1) is found to be small in magnitude but statistically significant at the 1% level and has the expected negative sign. this confirms the existence of co-integration between the variables. the magnitude of the coefficient of the ecm(-1) suggests a slow rate of adjustment aftershock. thus, it takes about 6 and a half years to fully correct any disequilibrium due to economic shock.in short, all the variables, including the stock market development variables, have some impact on economic growth in the short run in south africa with shocks being eliminated between 6 and 10 years.

Furthermore, the regression for the underlying ardl models fits very well and they pass all the diagnostic tests against serial correlation, functional form, normality and heteroscedasticity based on the lagrange multiplier (lm) test statistics as shown in table 14. finally, an inspection of the cumulative sum (cusum) and the cumulative sum of squares (cusumsq) graphs (not reported here) from the recursive estimation of the model, indicates that there is stability; and there are no systematic changes detected in the coefficient at a 5% significance level over the sample period.

Table14.*ARDL-UECM Models Diagnostic Tests.*

LM Test Statistics Results (P-Value)	Equation 1	Equation 2	Equation 3	Equation 4
R-Square	99.9%	99.8%	99.8%	99.8%

Serial Correlation: CHSQ(1)	2.542(0.111)	0.022(0.882)	0.320(0.572)	0.269(0.604)
Functional Form: CHSQ(1)	0.043(0.836)	0.054(0.816)	0.867(0.352)	1.288(0.256)
Normality: CHSQ(2)	2.279(0.320)	0.121(0.941)	4.014(0.134)	1.295(0.523)
Heteroscedasticity: CHSQ(1)	0.537(0.464)	1.424(0.233)	1.231(0.267)	1.098(0.295)

Source: Data Output Via Microfit 5.0

CONCLUSION

The main objective of this paper has been to empirically examine the impact of stock market development on economic growth in south africa. the employed the ardl-bounds testing approach and unrestricted error correction model (uecm) to examine this linkage. the paper usedthree proxies of stock market development, namely stock market capitalisation, stock market traded value and stock market turnover and a combined index derived from the growth rates of these proxies.the results of this paper suggest that stock market development has mainly short-run impacts apart from stock value traded which has both short and long-run effect on the economic growth in south africa.

One interesting finding is that the composite index for stock market development has neither short nor long-run impact on the economic growth in south africa. this may suggest that whilst south africa has one of the largest capital markets in the world, the possible lack of liquidityand lack of efficiency as well as the ownership structures of the stock market prevent the expected benefits of stock market development from accruing to the real economy.these findings are in contradiction to our expectation, but support the conclusion reached by some of the previous studies. in fact, the findings of this paper show that it is the increase in credit to the private sector and increase in gross national expenditure rather than the stock market development, that have positive impacts on economic growth in south africa.

The policy implications arising from the findings are that, to ensure that stock market development plays its relevant theoretical role in economic growth in south africa, policymakers should implement policies which will lead to diversification and reform of the ownership structure in the capital market in order to improve liquidity, ensure that proper information disclosure onthe activities of the stock markets in an attempt to reduce information asymmetries. also, they should implement policies which will lead to increasefinancial deepening by removing bottlenecks in the financial sector. this they can do by providing further public education on the value of stock markets and how they can participate. finally, implement improved and encompassing legal framework that will help shape the financial deepening process in south africa.

REFERENCES

[1] Arestis, P, Demetriades, O.P, And Luintel, K.B. (2001). Financial Development And Economic Growth: The Role of Stock Markets.*Journal of Money, Credit and Banking*, 33(1): 16-41.

[2] Barro, R, and Sala-I-Martin, X. 1995. *Economic Growth*. Ma: Mit Press.

[3] Beck, T, Demirguc-Kunt, A, Levine, R, and Maksimovic, V. (2000). Financial Structure And Economic Development: Firm, Industry And Country Evidence.*World Bank Working Paper Series*, No. 2423

[4] Bencivenga, V.R, Smith, D.B, And Starr, R.M. (1995). Transaction Costs, Technological Choice And Endogenous Growth.*Journal Of Economic Theory*, 67(1):53-77

[5] Bencivenga, V.R. And Smith B.D. (1991).Financial Intermediation And Endogenous Growth, *Review Of Economic Studies*, 58: 195-209.

[6] Bekaert, G And Harvey, C. (1995). Market Integration And Investment Barriers In Emerging Equity Markets, *World Bank Economic Review*,9 (1):75-107.

[7] Caporale, G.M. Howells, P.G.A., Soliman,A.M.(2006). Endogenousgrowthmodelsandstockmarketdevelopment: Evidence From Four Countries. Available Online: Http://Carecon.Org.Uk/Dps/0302.Pdf.

[8] Dickey, D And Fuller, W. (1979). Distribution Of The Estimators For Autoregressive Time Series With A Unit Root. *Journal Of The American Statistical Association*, 74, (1).

[9] Frank, A.G. (2004). The Stock Market And Southafrica's Economic Development. *University Of South Africa*, Pretoria, Http://Hdl.Handle.Net/10500/2501

[10] Levine, R. (1991). Stock Markets, Growth And Tax Policy. *J. Finance*, 64: 1445–1465.

[11] King, R.G.; Levine, R. (1993). Finance And Growth: Schumpeter Might Be Right. *Q. J. Econ.*, 108: 717–737

[12] Naceur, S.B, Ghazouani, S, And Omran, M. (2008). Does Stock Market Liberalisation Spur Financial And Economic Development In The

Mena Region? *Journal Of Comparative Economics*,36:673-693.

[13] Nurudeen, A, And Usman A. (2010). Government Expenditure And Economic Growth In Nigeria, 1970-2008: A Disaggregated Analysis. *Business And Economics Journal*, 2010: Bej-4

[14] Nyasha,S, And Odhiambo, N.M. (2015). Banks, Stock Market Development And Economic Growth In South Africa: A Multivariate Causal Linkage. *Applied Economics Letters*, 22 (18): 1480-1485. Http://Dx.Doi.Org/10.1080/13504851.2015.1042132

[15] Owusu, E.L (2016). Stock Market And Sustainable Economic Growth In Nigeria. Economies, Vol. 4(4): December 2016.

[16] Http://Www.Mdpi.Com/2227-7099/4/4/25

[17] Owusu, E.L, And Odhiambo, N.M., (2014). Stock Market Developments And Economic Growth In Ghana: An Ardl-Bound Testing Approach. *Applied Economics Letter*, 21 (4): 229 – 234.

[18] Http://Www.Tandfonline.Com/Doi/Abs/10.1080/13504851.2013.844315#.Upoar8xfdgg

[19] Owusu, E.L. (2012). Financial Liberalisation And Sustainable Economic Growth In Ecowas Countries, Department Of Economics. *Doctorate Thesis*, University Of South Africa (Unisa), Pretoria, South Africa.

[20] Http://Www.Worldcat.Org/Title/Financial-Liberalisation-And-Sustainable-Economic-Growth-In-Ecowas-Countries/Oclc/830810863&Referer=Brief_Results

[21] Osakwe, C.I, And Ananwude, A.C.(2017). Stock Market Development And Economic Growth: A Comparative Evidence From Two Emerging Economies In Africa – Nigeria And South Africa.*Archives Of Current Research International*,11(1): 1-15, 2017.

[22] Pesaran, M.H, Shin, Y, And Smith R.J. (2001). Bounds Testing Approaches To The Analysis Of Level Relationships. *Journal Of Applied Econometrics*, 16:289-326.

[23] Phillips P.C.B, And Perron P. (1988).Testing For A Unit Root In Time Series Regression. *Biometrica*; 75: 335-346.

[24] Quinn, Dp And Toyoda, Am. (2008). Does Capital Account Liberalization Lead To Growth? *The Review Of Financial Studies*,21(3): 1403–1449

[25] World Bank. (2018). *World Development Indicators, Various Issues To 2018*, Washington Dc.

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