American Journal of Humanities and Social Sciences Research (AJHSSR)
e-ISSN : 2378-703X
Volume-5, Issue-11, pp-199-205
www.ajhssr.com
Research Paper Open Access

Capital Market and Economic Growth nexus in Sri Lanka: Johanson Cointegration Approach

S.Maheswaranathan and K.M.N.Jeewanthi

ABSTRACT : The Capital Market is the market for trading assets for greater than one year, facilitating long-term funds. It primarily encourages the effective mobilization of savings into investments, thereby contributing to economic growth. The paper attempts to investigate the impact of the Sri Lankan stock markets on the country's economic growth from 1990 to 2019 using Johansen cointegration and Granger causality checks. The results confirm that the Sri Lankan stock market and economic growth are cointegrated, which means that the financial market and economic development in Sri Lanka have a long-term relationship. The causality findings suggest unidirectional causation between the GDP and Market Capitalization (MC), Number of Shares Traded (NS) and Value of Shares Traded, indicating that the stock market has a favorable effect on the country's economic development. Initiation of policies would encourage more companies to access the market and be more proactive in their surveillance role to check sharp practices that undermine market integrity and erode investors' confidence.

KEYWORDS: *Capital Market; Economic Growth; Market Capitalization; Number of Shares Traded; Value of Shares Traded*

I. INTRODUCTION

The stock market is vital for all financial markets because it encourages foreign investment, government borrowing, private sector capital raising, economic growth, and lower capital costs. With a healthy capital market, both the private and the government sectors domestic and foreign assets and guide them to productive investments, resulting in increased economic growth, wages, profits, and living standards. As a result, the stock market is one of the most dynamic industries, contributing significantly to the economy's wealth.
The primary objective of all countries is to maintain economic growth and development. World Bank (2020) estimated that developing countries would need roughly US$4.0 trillion in yearly investment to meet the Sustainable Development Goals by 2030, which is achieved by capital market development and strengthens for mobilizing commercial financing.

In modern economies, the stock market is vital for achieving a high economic growth rate. It is the principal source of long-term financing for businesses, and a well-developed, efficient stock market makes acquiring capital for new enterprises and expands existing enterprises easier. An increase of domestic savings uplifts the quality through the increasing quantity of investment with the development of the stock market, which is the main reason for accelerating the country's economic growth (Singh, 1997).

Researchers confirmed that there is a strong positive association between the capital market and the growth of the economy Ahmed and Mmolainyane (2014); Brasoveanu, Dragota, et al. (2008); Andelinovic (2016) and Kolapo and Adaramola (2012). Furthermore, according to the World Bank Group (2019), capital market development fuels, economic growth and GDP drives capital market development. Bekaert and Harvey (1997) concluded that poorly and weakly functioning capital markets will delay foreign investors due to limited market liquidity and high transaction costs. Algaeed (2021) concluded that liquidity and capitalization have significantly negatively influenced per capita economic growth. Further, he revealed that the capital markets harm the economy's growth in underdeveloped countries like Nigeria, Turkey, Mexico, and Indonesia.

Schumpeter (1912) emphasized that the development of the financial sector is vital for the economy to achieve sustainable progress. Maheswaranathan and Jeewanthi (2021) confirmed that financial advances significantly impacted Sri Lankan economic growth from 1990 to 2019.

Ahmed and Mmolainyane (2014) show that the development of financial markets plays a leading role in the economy's growth by reducing the costs of information and operation, encouraging the transfer of technology, reducing risk management and promoting savings mobilization. However, growing literature reveals a strong

positive association between growth and finance and the underdevelopment of the financial sector and low levels of financial openness, both of which are significant challenges for Sub-Saharan African countries. Exploring the capital market's impact on researches related to economic growth is too narrow and lacks empirical evidence when representing a developing country like Sri Lanka. As a result, utilizing time-series data from 1990 to 2019, this study will look into the effects of the capital market on growth in Sri Lanka.

The rest of the research preparations are as follows: the second part focuses on the empirical literature, following this methodology with empirical findings, and the last part is the research conclusion.

II. LITERATURE REVIEW

A financial market is an important aspect of a country's growth. It allows for resource transfers between deficit and surplus units, provides financing, and makes it simple to start profitable businesses. Herath (2020) evidenced the rate of turnover, time interval and the market value ratio positively impacted GDP in Sri Lanka from 1990 to 2019. Algaeed (2021) used FMOLS, Johansen tests, and the ARDL model to examine the effect of capital market development on Saudi Arabia's economic growth from 1985 to 2018 and found the negative signs of capitalization and liquidity on its economic growth. Further, his Granger causality findings confirm no causal relationship between the number of shares exchanged, market value, stock price index, and GDP growth.
Ubesie et al. (2020) used ordinary least squares (OLS) analysis to examine the impact of capital markets on Nigeria's economic growth from 1990 to 2018. Apart from the labor force, they found that all other variables, such as gross fixed capital formation, savings accumulation, and stock market capitalization, significantly impact Nigeria's economic growth. Simultaneously, Alam and Hussein (2019) investigated the effect of the capital market on Oman's economic development, concluding a strong connection between Oman's capital market and economic growth from 1993 to 2015. Applying the ARDL technique, Tan and Shafi (2020) investigated the effect of the capital market on the growth of the Malaysian economy from 1998 to 2018. They found a universality of the long-term stability between capital market and Malaysian economic growth. They also discovered that the components of the bond market have an insignificant positive effect on economic development. Using the Johansen cointegration test, VECM, and Granger causality test, Khetsi and Mongale (2015) discovered a positive connection between South Africa's economic growth and the capital market. According to Bolbol et al. (2005), capital market development has supported Egypt's economic growth.

Kehinde et al. (2013) intend to investigate the impact of the capital market on Nigeria's economic growth using annual data from 1981 to 2010. Their findings show that market value and market index are statistically significant at 10%. Simultaneously, Edame and Okoro (2013) studied the impact of the capital market on Nigeria's economic growth from 1980 to 2010 and discovered a strong significant association between the capital market and Nigeria's economic growth. They also ascertain that the number of transactions, market value, and transaction value among the capital market variables have a significant positive connection, supporting Nigeria's economic development. Applying Cointegration analysis, error correction mechanism and Granger causality test Athapathu and Prabhath Jayasinghe (2005) investigated the relationship between GDP growth rate and market performance in Sri Lanka. Their findings suggest an existing long-run relationship between the variables and a unidirectional causal relationship between capital market development and economic growth. Chijioke N. Ofurum et al (2019) confirm the existence of a long-run relationship between Gross Domestic Product (GDP), Government Securities (GS), Equities (Eqt) and Corporate Bonds/Preference Shares (CBPS).

Further, they depicted that the GDP has a unilateral causal relationship with GS and EQT while CBPS and GDP have a bilateral causal relationship. Odo et al (2017) carried a study from 1986 to 2016 by applying an Autoregressive Distributed Lag (ARDL) model to examine the impact of Capital Market Indicators and Economic Growth in Nigeria. The findings exposed, market capitalization has a significant positive effect on economic growth in the short run, while stock traded total value indicated an insignificant negative link with economic growth. Further, the findings illustrate that market capitalization and stock traded total value are an insignificant negative association with economic growth in the long run. Yadirichukwu and Chigbu (2014) investigate the capital market's impact on Nigeria's economic growth. New issues and the value of transactions show a favorable link with economic growth, whereas market capitalization and total listing show an opposite and statistically significant relationship. Similar to the above findings, Laura et al (2008) confirmed that capital market development is positively correlated with economic growth in Romania.

Further, they concluded that the long-run relationship between the variables suggests interdependence between financial development and economic growth to change and develop the country. By applying ARDL, FMOLS and Johansen test Abdulaziz (2021) investigate the impact of capital market development on Saudi Arabian per-capita GDP growth for the period 1985-2018 by employing the stock market indicators such as share price index, capitalization, liquidity, number of share transactions, and number of shares. Liquidity and capitalization

negatively correlate with GDP, which indicates contradictory findings with the previous research findings. On the other hand, the share price index, number of shares traded, and the ratio of share transactions have a positive relationship. Further, the Granger causality test suggests no granger cause runs between share price index, market capitalization, number of shares traded, and per-capita GDP. According to Echekoba et al. (2013), Nigeria's capital market has not significantly impacted economic growth.

Various academics have suggested that bi-directional causality exists in developed economies, whereas unidirectional causation exists in developing economies, as mentioned above. Therefore, it is important to investigate the direction of causality between the capital market and economic development.

III. Methodology

3.1 Model specification

The stock market's performance provides an impetus for the economic growth and development of a country. Therefore, the present study tries to assess the capital market's influence on Sri Lanka's economic growth by constructing a conventional long-run capital market function for Sri Lanka, as shown in equation 1 below, based on the available empirical research.

Table 1 Variables and Sources used for this study

Variable	Description	Source
GDP	GDP per capita, constant 2010 dollars	WDI
MC	Market Capitalization Rs. Bn	WDI
VS	Value of Shares Traded (Rs. bn)	WDI
NS	Number of Shares Traded (mn)	WDI

This study employs the time series data by achieving the capital market and economic growth nexus in Sri Lanka. It applies the Johansen cointegration test, vector error correction model (VECM) and Granger Causality test. The economic growth was proxied by GDP per capita, constant 2010 dollars (GDP), while the capital market variables include; Market Capitalization Rs. Bn (MC), Value of Shares Traded (Rs. Bn) (VS) and Number of Shares Traded (mn) (NS). The data are gathered from the World Development Indicators Database, containing yearly data from 1990-2019.

Each variable is tested before the cointegration test using the Augmented Dickey-Fuller (ADF) unit root test. In cointegration, can utilize only stationary variables at the first difference I (1).

In order to assess the cointegration, this study uses Johansen's maximum likelihood estimator for the so-called reduced rank model, which starts with a VAR specification for the n x 1 vector of I (1) variables:

$$Y_t = \mu + B_1 Y_{t-1} + \ldots + B_k Y_{t-k} + u_t \quad \ldots\ldots 1$$

Where the error term, u_t, (independent and identically distributed)

Equation 2 shows the VECM, which represents the short-run and long-run responses to the changes in the variables:

$$\Delta Y_t = \mu + \Gamma_1 \Delta Y_{t-1} + \ldots + \Gamma_{k-1} \Delta B_{t-k-1} + \Pi Y_{t-k} + u_t \quad \ldots\ldots 2$$

$$\text{Where, } \Gamma_j = -(I - B_1 - \ldots - B_t) \quad \ldots\ldots 3$$

$$j = 1\ldots, k$$

$$\Pi = -(I - A_1 - \ldots - A_k) \quad \ldots\ldots 4$$

Δ represents changes in the variables,
Y_t is p × 1 vector of variables integrated of order 1,
μ is p × 1 vector of constants, k is a lag structure, and
u_t is a p × 1 vector of error terms.
Y_t is the long-run impact matrix of Π, and it is the rank of this matrix that decides the number of cointegrating vectors. The result of $\Pi = 0$ suggests no cointegration. Γ_j is a p × p matrix reflecting short-term changes among variables given p equations and j lag.

The long-run impact matrix determines the number of cointegrating vectors in Yt, and the rank of this matrix determines the number of cointegrating vectors. The value of ℵ = 0 denotes that there is no cointegration. Given p equations and j lag, j is a p x p matrix that short-term changes among variables.

Under the null hypothesis of r is cointegrating vectors, ℵ transformed into αβ, where α and β are n × r matrices. Since ℵ denotes the long run equilibrium impact, α is interpreted as a "speed of adjustment towards long-run equilibrium" measured by the error correction equations. Because of the short run deviations, a greater implies a faster convergence towards long-run equilibrium. Meanwhile, β is considered as the asymptotically competent estimates of the cointegrating vectors. ®' Y_{t-1} is an error correction term (ECT), which indicates the long-run long-term connections between variables. To rewrite the equation for

$\Delta Y_t = \mu + i=1k-1 \square_1 \Delta Y_{t-1} + \ldots + \square_{k-1} \Delta B_{t-k-1} + \beta\alpha Y_{t-k} + u_t$ 5

Johansen proposed two likelihood ratio test statistics to test the order of cointegration, r, in determining the rank of ℵ.

Trace = -T i=q+1nlnή1……6

max = -Tlnήq+1 ……..7

The Trace statistics is used to figure out the number of maximum cointegration in this model, whereas the max the test is intended to evaluate particular alternative hypotheses. Models in total rank are rejected since X_t is stationary, and there would be no error correction (Maysami and Koh, 2000). The cointegration equation and extended run model are as follows:

$ECT_{t-1} = LGDP4_{t-1} - LMC_{t-1} - LNS_{t-1} - LVS_{t-1}$ ……..8

Empirical Findings and Interpretations

Table 2 describes the summary statistics of the variables used in this present study. Mean and median are used as measures of central tendency to identify the central position of the data. In contrast, the standard deviation measures the average amount in which data points are different from the mean.

Table 2 Summary Statistics of considered variables

	LGDP4	LMC	LNS	LVS
Mean	7.694952	6.109280	7.487832	3.973635
Maximum	8.296965	8.040737	10.10818	6.346163
Minimum	7.081423	3.608212	3.737670	0.470004
Std. Dev.	0.392891	1.483100	1.744040	1.556789
Skewness	0.103210	0.050307	-0.411887	-0.387846
Kurtosis	1.701422	1.438381	2.117513	2.133192
Jarque-Bera	2.161142	3.060973	1.821735	1.691317
Observations	30	30	30	30

Stationarity of the variables

The Augmented Dickey-Fuller (ADF) unit root test is applied to each variable at the level and the first difference to check for stationarity. The null hypothesis in these unit root tests is that the series has a unit root or is non-stationary. In contrast, the alternative hypothesis is that the time series under consideration is stationary. Table 3 summarizes the results of the unit root test. It is observed that all the variables are non-stationary, or t-statistics are not significant at level. Henceforth, in order to obtain stationary variables, first differencing is performed. It is revealed that all variables such as LGDP, LMC, LNS and LVS are significant at a 1% level. The result suggests that variables are stationary at the first difference and are integrated at order one, I (1). Since all variables are integrated at order one, I (1), Johansen's cointegration test is performed to test the relationship between GDP and each of the proxies for capital market by using two different likelihood-ratio tests, which are maximum eigenvalue and trace statistics.

H0: There exists a Unit Root (not stationary)

H1: No Unit Root exists (stationary)

Table 3 Stationarity of the variables

Variable	P-Value at Level	P-Value First Difference	Order of Integration I(1)
LGDP	0.9116	0.0062***	I (1)
LVS	0.1781	0.0062***	I (1)
LMC	0.6701	0.0001***	I (1)
LNS	0.2514	0.0006***	I (1)

Source: Author's calculation using Eviews

A lag length of 1 is selected based on the information criteria, Schwarz information criterion (SIC), the sequential modified LR test statistic and Akaike Information Criteria (AIC), as shown in Table 4. The Johansen cointegration test was conducted with an appropriate lag length, and the results are shown in Table 5.

Table 4 VAR Lag Order Selection

Lag	LogL	LR	FPE	AIC	SIC	HQ
0	-36.78458	NA	0.000216	2.913185	3.103500	2.971366
1	79.61542	191.2286*	1.69e-07*	-4.258244*	-3.306670*	-3.967339*
2	88.63133	12.23588	3.01e-07	-3.759381	-2.046547	-3.235750

Source: Author's calculation using Eviews

4.3 Cointegration analysis

Because all of the variables are integrated to order one, the Johansen cointegration test is used to determine the existence of cointegration and cointegrated equations. The results of Johansen illustrated in Table 5 reveal that the null hypothesis of no cointegration is rejected at a 5 % level of significance. Both Trace and Maximum Eigenvalue cointegration tests designate the exist one significant cointegrating vector. Moreover, this suggests that there is a unique long-run equilibrium relationship among the variables. Therefore, Engle and Granger's two-step method is used to estimate the error correction model.

Table 5 Johansen's Test for Cointegration

Johansen's Test for Cointegration				
	Trace Test Statistic		Max-Eigen Value	
Ho: No. of Cointegration equations		Prob.**		Prob.**
None *	58.46812	0.0037	30.82690	0.0185
At most 1**	27.64122	0.0869	20.17140	0.0677
At most 2	7.469814	0.5237	6.765628	0.5172
At most 3	0.704187	0.4014	0.704187	0.4014

Source: Author's calculation using Eviews

From Table 5, The results show that variables are cointegrated and significant at a 5% significant level. The trace statistic and maximum eigenvalue statistic value are more significant than the critical value. Therefore, the first null hypotheses cannot be rejected, which means one null hypothesis, r = 0, is accepted. Overall, it can be concluded that both tests indicate the presence of one cointegration equation at a 5% significant level and there exists a long run relationship between economic growth (GDP), capital market variables which represent by LGDP, LMC, LNS and LVS.

$ECT_{t-1} = 1.000\ LGDP4_{t-1} - 0.081\ LMC_{t-1} - 0.096\ LNS_{t-1} - 0.089\ LVS_{t-1} - 6.105$

Table 6 Findings of the Error Correction Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.057260***	0.009536	6.004330	0.0000
ECT	-0.148007***	0.033122	-4.468511	0.0002
D(LGDP4(-1)	-0.329049*	0.189532	-1.736109	0.0965
D(LMC(-1)	0.004486	0.013087	0.342748	0.7350
D(LNS(-1)	-0.011494	0.014220	-0.808267	0.4276
D(LVS(-1)	0.002370	0.012409	0.191003	0.8503

R^2=0.61; F-statistic =6.83(0.000**); Durbin-Watson stat=2.026 ** denotes significance at 5% level

Source: Author's calculations using EViews

Table 8 indicates that the error correction term has the appropriate negative sign as theoretically predicted and is statistically significant at a 5% level. Since the error correction term is significant, Sri Lanka's capital market adjusts to changes in the independent variables, confirming a steady long-run equilibrium relationship between the variables. Further, this validates the use of the error correction model and confirms that the variables are cointegrated. As revealed by the coefficient of the error correction term, only 14.8 percent of last year's disequilibrium was eliminated this year. These estimates of the error correction model suggest that if there are no further shocks, the gap between reverting to equilibrium would be closed within approximately three years. Thus, it reveals that adjustment takes a relatively long time. Furthermore, the capital market's adjustment to any change in the independent variables takes a considerable time to reach equilibrium.

The findings of the diagnostic analysis of the variables are shown in Table 7. At a 5% significance level, the probability value of the Breusch-Pagan-Godfrey correlation LM test is 0.3062, demonstrating no autocorrelation. Similarly, at a 5% significance level, the Breusch-Godfrey Serial Correlation LM Test 0.4159 shows the non-existence of autocorrelation. The model's Jarque-Bera value (0.545051) indicates the model is normally distributed.

Table 7. Results of Diagnostic Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey	F-statistics: 1.289369 Prob. F(8,19): 0.3062
Breusch-Godfrey Serial Correlation LM Test	F-statistics: 0.916937 Prob. F(2,20): 0.4159
Normality Test	Jarque-Bera :1.213752 Prob. 0.545051

Table 8 Pairwise Granger Causality test

Null Hypothesis:	F-Statistic	Prob.
MC does not Granger Cause GDP	8.38733	0.0018***
GDP4 does not Granger Cause MC	1.03770	0.3703
NS does not Granger Cause GDP	9.00542	0.0013***
GDP4 does not Granger Cause NS	1.48726	0.2469
VS does not Granger Cause GDP	12.1317	0.0003***
LGDP4 does not Granger Cause VS	1.71330	0.2025

Source: Author's calculations using Eviews

Table 8 depicts the results of the pairwise Granger Causality test. At a 5% level of significance, the null hypothesis of "MC does not Granger Cause GDP," "NS does not Granger Cause GDP," and "VS does not Granger Cause GDP" is rejected. As a result, there is unidirectional causation between MC, NS, and VS and GDP.

V. CONCLUSION

The study empirically examines the link of the capital market on economic growth in Sri Lanka from 1990 to 2019. To achieve the objective of the study, a VECM was estimated for economic growth. Findings revealed that all the variables are significant in explaining the economic growth in Sri Lanka. ADF unit root test confirms stationarity of variables at first difference 1(1). The Johansen cointegration test shows a long-run relationship between the capital market and the country's economic growth; also, VECM postulates long run dynamics of the variables taken together, adjusting the duration to each other variations to maintain an equilibrium level. It confirms that the stock market development is a significant factor for economic growth in Sri Lanka. The granger causality test concludes unidirectional causation between the GDP and Market Capitalization (MC), Number of Shares Traded (NS) and Value of Shares Traded (VS).

Further limited findings indicate the bidirectional causation between the capital market and economic growth. However, sustainable economic growth is vital for capital market development as well. Therefore, it recommends that the stock market's performance impact actual sector development, which generates real economic activity and generates domestic savings surplus entities for medium and long-term investment and boosts fixed capital formation (domestic investment).

REFERENCES

[1]. Abdulaziz Hamad Algaeed (2021). Capital Market Development and Economic Growth: An ARDL Approach for Saudi Arabia, 1985–2018Journal of Business Economics and Management, 22 (2), 388–409. https://doi.org/10.3846/jbem.2020.13569

[2]. Ahmed A D, Mmolainyane K K. (2014). Financial Integration, Capital Market Development and Economic Performance: Empirical Evidence from Botswana. Economic Modelling, 42(1), 1-14.

[3]. Algaeed, A H. (2021). Capital Market Development and Economic Growth: An Ardl Approach for Saudi Arabia, 1985–2018, Journal of Business Economics and Management, 22(2),388-409.

[4]. Anđelinovic M, Jakovcevic D, Pavkovic I. (2016) The Effect of Capital Market Development on Economic Growth: Case of Croatia, The 2016 Wei International Academic Conference Proceedings Prague, Czech Republic, 2016: 13-18.

[5]. Bekaert G, Harvey C R. Capital Markets: An Engine for Economic Growth. May 1997: 01-07.

[6]. Brasoveanu L A, Dragota V, et al. (2008). Correlations Between Capital Market Development and Economic Growth: The Case of Romania. Journal of Applied Quantitative Methods, 3 (01), 64-72.

[7]. Bolbol, A, Fatheldin A. and Omran M (2005). Financial Development Structure and economic growth The case of Egypt 1974-2012, Research in International Business Finance, 19(1), 171- 194.

[8]. Chijioke N. Ofurum1, Odunayo J. Ogunyemi, Joy C. Madumere, Marvis N. Okolo (2019), Effects of Capital Market Components on Economic Growth in Nigeria: A Cointegrating Regression Approach, International Journal of Finance and Accounting, 8(2): 65-71 DOI: 10.5923/j.ijfa.20190802.03

[9]. Echekoba Felix Nwaolisa, Ezu Gideon Kasie and Egbunike, Chinedu Francis (2013). The Impact of Capital Market On The Growth Of The Nigerian Economy Under Democratic Rule Sciences, Arabian Journal of Business and Management Review, 3(2) 53-62.

[10]. Kolapo F T, Adaramola A O. (2021). The Impact of the Nigerian Capital Market on Economic Growth (1990-2010). International Journal of Developing Societies,1(1), 11-19.

[11]. Laura Obreja Brasoveanu, Victor Dragota, Delia Catarama and Andreea Semenescu, (2008) Correlations Between Capital Market Development And Economic Growth: The Case Of Romania, Journal of Applied Quantitative Methods,3(1),64-75.

[12]. Maheswaranathan, and K. M. N. Jeewanthi. (2021). The Contribution of FDI and Financial Development on Economic Growth in Sri Lanka. International Journal of Engineering Technologies and Management Research, 8(1), 25-34. https://doi.org/10.29121/ijetmr.v8 .i1.2021.838

[13]. Maysami, R.C., Koh, T.S. (2000), A vector error correction model of the Singapore stock market. International Review of Economics and Finance, 9, 79-96.

[14]. Odo, S.I., Anoke, C.I., Onyeisi, O.S. and Chukwu, B,C (2017). Capital Market Indicators and Economic Growth in Nigeria; An Autoregressive Distributed Lag (ARDL) Model. Asian Journal of Economics, Business and Accounting, 2(3), 1-16.

[15]. Schumpeter, J. A. 1912. Theory of Economic Development, An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle, Harvard University Press

[16]. Singh A, "Financial Liberalization, Stock Markets and Economic Development." The Economic Journal May (1997: 771-782.

[17]. World Bank. "Capital Markets Development Causes, Effects, and Sequencing." International Bank for Reconstruction and Development, The World Bank, December (2020) 5-33.

[18]. Yadirichukwu, E. and Chigbu, E.E. (2014), "The impact of capital market on economic growth: the Nigerian Perspective", International Journal of Development and Sustainability, 3 (4), 838-864.