Stock Market Development and Economic Growth: War and Post War Evidence from Sri Lanka

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Abstract

This paper aims to investigate the relationship between stock market development and economic growth in Sri Lanka for the period of 2004 to 2014. Interestingly this period includes the extensive civil war period and post war period prevailed in Sri Lanka. For the purpose of measuring the stock market development four proxies applied in this paper namely; Market Capitalization Ratio, Change in number of Listed Companies, Total Value Traded Ratio and Turnover Ratio. The economic growth is measured by the changes in Gross Domestic Production at constant price. We use Johansen Cointegration test to explore long term relationship between stock market development and economic growth. Previous literature suggests that it is the most relevant model to examine long run equilibrium between variables. By employing Granger Causality test, we investigate causal relationship between stock market development and economic growth. All the statistical tests are carried out for both the war and post war period. The results confirmed the existence of long term equilibrium between stock market development and economic growth. Also, the results demonstrate causality between stock market development and economic growth both during the war period and post war period.

Keywords: Stock Market Development, Economic Growth, Johansen Cointegration test, Granger causality test

Background

It is widely believed fact that the capital market is one of the key determinants of economic growth in more advanced economies and as well as in emerging economies. However, some argue that economic development matters for the stock market development. This paper proceeds with the premise that stock market development matters for the economic development. The fact is that the stock market promotes the new investments in the publicly traded companies by mobilizing funds from the excess units to deficit units in the economy which subsequently lead to increase the total output of the economy in several ways. In the recent past, there has been a significant development in the emerging stock markets in the world in terms of market capitalization, large investor base, expansion of Initial Public Offerings (IPOs) and use of automated trading systems etc. However, some countries could not sustain the development in the stock markets due to several reasons such as civil war uprising, political instability, economic bust etc. In case of Sri Lanka, the conflict environment which prevailed 30 years in the country prevented the smooth operation of Colombo Stock Exchange (CSE) to a greater extent.

This largely led to lose the confidence of the prospective investors both local and foreign. As a result the market became largely shrinking and unpopular during this period. Nowadays, there has been a big improvement in the CSE due to the peace after ending the conflict. According to the CSE sources there is a significant improvement such as foreign investor base, new listing of companies is in an upward trend, liquidity of the market well established. These evidences support the view that currently, the market has regained the confidence of the investors and the business community. Further it seems big improvements in stock market and economy in the recent past.

These developments claim the need of new research base information for the investors and other stakeholders largely. The existing body of literature in finance has paid attention on core areas of finance such as asset pricing, stock market volatility and stock market efficiency. However, the finding of previous research evidences on this field is vague and open to further investigations. Also, some emerging determinants (such as number of listed companies, market size, and liquidity) of stock market development are not explored or limited in the emerging market literature. It suggests that objectively determined stock market development indicators which spur economic growth is dire in the excising body of knowledge to a greater extent particularly in emerging markets. To investigator's best knowledge in Sri Lankan context this is the first attempt which looks at the relationship between stock market development and economic growth in post war episode and this has not been the focus of previous evidences in the global literature which consider war and post war situation.

The paper very specifically, investigates the long run relationship between stock market developments under two economic scenarios such as war period, post war period. Therefore, the finding of this paper will be useful for the policy makers of the other emerging countries largely. The existence of long run relationship between two variables explains that by observing the past behavior of one variable the other variable can be predicted. Therefore, the findings of this paper will be useful for the investors in re-balancing their portfolios and ultimately maximize their wealth maximization.

Objectives of the Study

The prime aim of this study is to explore the determinants of stock market development and secondly, to investigate whether the development of the stock market contributes for the economic growth particularly in an emerging market context. This study also attempts to look at the war period and post war period modalities between stock market development and economic growth. Hence, this study is designed to investigate the following objectives.

a. To explore the long term relationship between stock market development and economic growth.
b. To investigate the causal relationship between stock market development indicators and economic growth (GDP)
c. To distinguish the war and post war modalities of stock market development and economic growth.

Importantly, this study also attempts to shed light on new thinking on how the capital markets and economic growth integrate war period and post war period. Previous research evidences suggest that early studies have neglected the capital market in their studies as a predominant determinant of economic growth.

Instead, it appears in the previous literature that ample of studies have focused on the relationship between economic growth with the banking sector and other financial intermediaries without much attention to the stock market development.

Related Previous Studies

There are adequate previous studies on the relationship between Stock market development and economic growth in developed countries and emerging countries. The first study on relationship between financial markets and real sector activity was conducted by Gurley & Shaw in 1955. The study implied that one of the differences between developed and developing countries is that the financial system is more developed in the former and financial markets contribute to economic development through enhancing physical capital accumulation. Subsequently, many scholars have focused on stock market development and economic growth. For example, a positive correlation between growth and indicators of financial development was documented by Goldsmith (1969), McKinnon (1973) and Shaw (1973). On the other hand, Harris (1997) argued that there is no significant relationship between stock market and economic growth over the period from 1980 to1991 covering forty nine economies.

Moreover, Biswal & Kamaiah (2000) explored the empirical relationship between stock market development indicators and economic growth in Indian context. They confirmed existence of positive relationship between stock market size and economic growth. They also reported that stock market liquidity has not significantly related with economic growth. Conversely Caporale et al. (2004) attempted to study the linkage between stock market development, financial development and economic growth. They provided supportive evidence of seven countries which have well established stock markets and contended that stock market development impact on economic growth in long run. The markets covered in the study are Argentina, Chile, Greece, Korea, Malaysia, Philippine and Portugal. Further, Nieuwerburgh et al. (2006) examined the relationship between financial market development and economic growth in Belgium and suggested that capital market development substantially affect the economic growth in Belgium.

Similarly, Shahbaz et al. (2008) reported that existence of strong relationship between stock market development and economic growth which covers the period from 1971 to 2006 in Pakistan. Vazakidis and Adamopoulos (2009) explored the relationship between stock market development and economic growth in France for the period 1965-2007 and have documented that economic growth has a positive effect on the stock market development. Boubakari & Jin (2010) examined causality relationship between stock market and economic growth in five Euronext countries; Belgium, France, Portugal, Netherland and United Kingdom. It confirmed that the existence of long run relationship between stock market growth and economic growth. It revealed that positive relationship between the stock market development and economic growth for countries which have highly liquid and highly active stock markets. Furthermore, Countries with small and less liquid stock markets demonstrated absence of causal relationship between stock market development and economic growth.

Moreover, the relationship between stock market development and economic growth in Mauritius during the period from 1989 to 2006 is investigated by Nowbutsing and Odit (2011). Their findings suggested that stock market development is an important aspect for economic growth in Mauritius in short run and long run. Wang & Ajith (2013) found insignificant positive impact of stock market development on economic growth in china as a developing economy. They used total market capitalization as a proxy for stock market development. It has been remarked that stock market development does not play a key role of economic growth in developing economies. Bayar et al. (2014) reported evidence of unidirectional causality and long run relationship among economic growth and stock market capitalization, total value of stocks traded and turnover ratio of stocks traded of

Turkish economy. Recently, Srinivasan & Prakasam (2015) examined the direction of causality between stock market development and economic growth and they elaborated that the market capitalization and turn over positively drive on Indian economic growth.

However, there is limited evidence on the causal relationship between stock market development and economic growth in Sri Lanka. A unidirectional causal relationship between stock market development and economic growth is in Sri Lanka reported by Athapaththu & Jayasinghe (2012). Jahfer & Inoue (2014) explored the relationship between stock market development and economic growth in Sri Lanka covers the period from 1996 to 2011. Their findings concluded that stock market development does positively contribute to economic growth and stock market development is the key aspect of economic development in Sri Lanka. In summary, most of previous empirical studies have suggested a relationship between stock market development and economic growth. Although the relationship demonstrated is a causal relationship.

The literature review revealed that the investigation of stock market development and economic growth during war period and post war period is the vacuum in the previous literature. The findings of those are not conscious across counties and considerable numbers of research questions are yet to be addressed. In emerging stock markets, though the previous evidences limited, now there is a growing interest among academics and practitioners in these markets. Thus, contribution of this paper to the existing body of knowledge is the focusing on war and post war period in estimating the model specifications.

Data and Sample Period

As previously mentioned, this analysis uses Stock market indicators and economic indicators on Sri Lankan economy from 2004 to 2014. This period assures the inclusion of both war and post war effect in Sri Lankan market. In order to achieve war and post war modalities of stock market development and economic growth, the original series was divided into two sub periods known as war period and post-war period. The war period comprises of 2004 1Q – 2009 2Q and post war includes 2009 3Q – 2014 4Q. The other economic indicators and stock market indicators are obtained from annual reports of Central Bank of Sri Lanka and CSE Data Library issued by the CSE. This study applied the quarterly data due to the fact that the Central Bank issues the GDP data on quarterly basis.

Description of Variables

Stock market development is measured by the stock market size and liquidity on Colombo Stock exchange. The proxies for stock market size are; (1) Market Capitalization Ratio (MCR) and (2) changes in the number of domestic listed shares (COM). Market Capitalization Ratio is derived by dividing the value of listed companies by GDP. (3) Total Value Traded Ratio (STR) and (4) Turnover Ratio (TR) were selected to represent stock market liquidity. Total Value Traded ratio (STR) calculated by dividing the total value traded from the GDP and Turnover Ratio (TR) obtained from Total value of shares traded during the period divided by the total market capitalization of the period. This study utilized Changes in the GDP based on constant price as an indicator for the growth of Sri Lankan economy. For example, Caporale, Howells & Soliman (2004), Boubakari & Jin (2005) Nowbutsing & Odit (2009), Filer et al. (1999) used Market capitalization ratio as a variable for representing stock market size and value traded ratio, turnover ratio as proxies for market liquidity. In 1999, Filer et al. used Changes in the number of domestic listed shares for indicate stock market size.

Methods

As this study involves time series data for the investigation, it is necessary to look at whether the data series are stationary. This is necessary condition for a linear regression model. For the purpose of testing the unit root behavior of the data series two different unit root tests are applied namely, Augmented Dickey-Fuller (ADF) test and Phillips Perron (PP) test. The statistical properties of the two tests are stated in equations (1) and (2) respectively

$$\Delta y_t = a_0 + a_1 y_{t-1} + \sum_{J=1}^{p} a_i \Delta y_{t-i} + \varepsilon_t \quad (1)$$

The Phillip Perron test involves fitting the following regression,

$$y_i = a + p y_{i-1} + \varepsilon_t \quad (2)$$

The null hypothesis of the test is that the data series are non- stationary

Two or more series are themselves non stationary, but a linear combination of those could be stationary, and then the series are said to be cointegrated (Engel & Granger (1987). In economics, cointegration test utilizes to explain long run linkage between two or more variables. Therefore, we used Johansen Cointegration test to explain whether there is long run equilibrium between Stock market development and economic growth. The Trace test and Maximal Eigen value are the joint tests that infer the null hypothesis of no cointegration (H_0: r = 0) against the alternative hypothesis of cointegration (H_1: r ≤ 0). The test results, if provides evidence to reject H_0, it indicates the existence of long run equilibrium between stock market development and economic growth. Caporale (2004), Liu and Sinclair (2008), Buelens et al (2006), Bayar et al (2014), Iskenderogul et al (2011),Tang (2013), Osamwonyi & Kasimu (2013), Shahbaz (2008) also employed Johansen cointegration to investigate long term linkage between economic growth and stock market development.

To analyze causality between economic growth and stock market development, this study employed Granger causality test. Granger causality test was originally processed by Granger (1969), and then was developed by Hamilton (1994). Granger causality test investigates the direction of relationship between two variables. Granger-Causality means the lagged Y influence X significantly in equation (3) and the lagged X influence Y significantly in equation (4). The test involves estimating the following simple equations (3) (4),

$$X_t = \sum_{i=1}^{n} a_i y_{t-i} + \sum_{j=1}^{n} \beta_j X_{t-j} + \mu_{1t} \quad (3)$$

$$Y_t = \sum_{i=1}^{m} \lambda_i y_{t-i} + \sum_{j=1}^{m} \delta_j X_{t-j} + \mu_{2t} \quad (4)$$

Test Results

As stated above in testing Stationarity of stock market and economic growth indicators, we use the ADF test and PP test. The statistical output of the tests is presented in Table 1. Importantly, both ADF and PP test results demonstrated that in level series of GDP is stationary at 1% significant level and TR is stationary at 5% significant level in full period and war period. It is seen that the first difference series of GDP and TR are stationary in full period, war and post war period. On the other hand, COM and STR are stationary at

1% significant level in war period under two techniques and post war series of MCR is stationary at 1% significant level shows that the stationary under ADF test. However, all non-stationary variables become stationary in first different series under both tests at 1% significant level.

Table 1. Test results of the unit root tests for the full sample periods and war period and post war period

Variable	Series	2004/2014		War Period		Post war	
		ADF	PP	ADF	PP	ADF	PP
		t stat	t stat	t stat	t stat	t stat	t stat
GDP	Level	-6.57*	-21.48*	-8.61*	-14.14*	-1.74	-10.69*
	1st	-6.21*	-52.28*	-11.95*	-41.77	-8.17*	-37.78*
MCR	Level	-1.09	-1.22	-2.35	-2.26	-4.17*	-2.36
	1st	-6.19*	-6.23*	-6.14*	-6.14*	-4.37*	-3.24**
STR	Level	-2.61	-2.26	-3.89*	-3.88*	-2.48	-1.82
	1st	-3.28**	-7.64*	-10.14*	-10.15	-3.75**	-4.83*
TR	Level	-3.08*	-3.07*	-4.18*	-4.28*	-1.94	-1.61
	1st	-10.0*	-10.0*	-6.83*	-8.82*	-4.54*	-4.86*
COM	Level	-1.94	-2.32	-3.93*	-4.71*	-2.54	-2.49
	1st	-9.20*	-9.17*	-7.29*	-7.59*	-6.12*	-6.14*
		1% = - 3.60		1% = - 3.05		1% = -3.05	
		5% = -2.94		5% = -3.88		5% = 3.88	

Notes:* (**) shows significant at 1% (5%) significant level

The results of Johansen Cointegration test for full period, war period and post war period are summarized in the Table 2.

Table 2. Results of Johansen Cointegration test

2004 - 2014					
		Trace Test		Maximal Eigenvalue	
Variables	H_0	Test Stat	5% C. V.	Test Stat	5% C. V.
GDP & MCR	r = 0	45.44	15.49	34.93	14.26
	r ≤ 1	10.51	3.84	10.51	3.84
GDP & COM	r = 0	58.35	15.49	35.35	14.26
	r ≤ 1	23.00	3.84	23.00	3.84
GDP & STR	r = 0	47.43	15.49	37.27	14.26
	r ≤ 1	10.16	3.84	10.16	3.84
GDP & TR	r = 0	56.91	15.49	37.91	14.26
	r ≤ 1	18.99	3.84	18.99	3.84
War period					
GDP & MCR	r = 0	27.29	15.49	18.44	14.26
	r ≤ 1	8.84	3.84	8.84	3.84
GDP & COM	r = 0	29.98	15.49	17.78	14.26
	r ≤ 1	12.19	3.84	12.19	3.84
GDP & STR	r = 0	38.94	15.49	26.03	14.26
	r ≤ 1	12.91	3.84	12.91	3.84
GDP & TR	r = 0	32.20	15.49	20.05	14.26
	r ≤ 1	12.14	3.84	12.14	3.84
Post war period					
GDP & MCR	r = 0	17.96	15.49	14.56	14.26
	r ≤ 1	4.39	3.84	4.39	3.84
GDP & COM	r = 0	24.64	15.49	15.01	14.26
	r ≤ 1	9.64	3.84	9.64	3.84

GDP & STR	r = 0	19.28	15.49	16.37	14.26
	r ≤ 1	3.90	3.84	3.90	3.84
GDP & TR	r = 0	19.37	15.49	15.28	14.26
	r ≤ 1	4.04	3.84	4.04	3.84

Note: r indicates the number of cointegrating vectors

The test results demonstrated that the GDP was cointegrated with stock market proxies in full period as well as war period and post war period under Trace statistic and Maximal Eigenvalue at both of zero and one vectors. The results of Johansen test suggest that the long run relationship between economic growth and stock market development over the period of 2004 to 2014 and same relationship exist in war and post war period.

The empirical results of Granger causality test are shown in Table 3. In the period of 2004 to 2014, indicated that there is a one way causality between economic growth and stock market development in Sri Lanka. MCR, STR and TR were cause to GDP. On other hand, GDP appears to cause on COM. During the war period, MCR and TR have a cause link to GDP and GDP has a cause link to STR. The post war results indicate that GDP has causality on MCR, STR, and COM variables and TR has causality on GDP. The results of war and post war results also confirm the unidirectional causality between economic growth and stock market development in Sri Lanka. The variable TR has strong impact on economic growth during three periods which considered in this study. Furthermore, GDP appears to cause on three stock market proxies after the war. Namely, MCR, STR and COM but in war period stock market proxies were cause to economic growth.

Table 3. The results of Granger causality test

Direction	2004/2014	War Period	Post war Period
	P value	P value	P value
MCR → GDP	0.08221**	0.04645*	0.99098
GDP → MCR	0.20316	0.40673	0.09570**
STR → GDP	0.08647**	0.26365	0.64824
GDP → STR	0.81389	0.05447 **	0.08238**
TR → GDP	0.07543**	0.08274**	0.00668*
GDP → TR	0.34539	0.46843	0.79255
COM → GDP	0.91510	0.91617	0.93944
GDP → COM	0.07969**	0.74839	0.08569**

Notes:* (**) shows significant at 5% (10%) significant level

Conclusion

The main purpose of this paper is to examine the long run relationship between economic growth and stock market development. The findings revealed the existence of long run relationship between economic growth and stock market performance during the full sample period as well as war period and post war period. Interestingly, no differences in results observed during war period and post war period. These findings imply that the stock market development is largely contributing for the economic development. The test confirmed existence of long run equilibrium relationship between GDP and the stock market proxies used in this paper. The causality test revealed that there is a causal relationship between GDP and stock market development indicators. The finding is useful for the stock market analysts who conduct forecasting of stock market performance for investment decisions. The finding also suggests that one can use these forecasting results

of stock market performance in forecasting future economic growth prospects in the economy. More importantly, there is no significant difference in the findings during war period and post war period. Thus, it can be concluded war situation or post war environment not matters for the long run relationship between stock market development economic growths. This finding can be generalized to the other countries that experienced civil war globally and findings of this paper provide scientific evidence in formulating economic policies for various stakeholders.

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