Impact of Macroeconomic Variables on Stock Market Performance in Sri Lanka

W. M. T. Jayamali

Department of Economics and Statistics, University of Peradeniya, Sri Lanka

Keywords: *ASPI; Macro economic variables; Stock market; Sri Lanka*

Introduction

The stock market in any country leads to economic growth and development of that nation since it mobilizes the domestic resources in the country and leads them to productive investments. After the liberalization in 1977, the financial market in Sri Lanka was developed to a greater extent. The Colombo Stock Exchange (CSE) is a major part of the financial market in Sri Lanka. It has 290 companies representing 20 businesses sectors as at 30 June 2019, with a market capitalization of Rs. 2523.38 Bn. CSE has two main price indices, All Share Price Index (ASPI) and Standard and Poor's Index (S & P SL 20). These index values are calculated on an ongoing basis during the trading session. ASPI measures the movement of share prices of all listed companies. ASPI recorded a decreasing trend in Sri Lanka from 1997 to 2000 while it shows an increasing pattern from 2000 to 2005. However, fluctuations can be seen in the ASPI from 2010 to 2020 (Source: https://www.cse.lk/pages/market-capitalization/market-capitalization.html).

The performance of the stock market in any country depends on various macro-economic factors. Menike (2006) found a negative relationship between Treasury bill rate and stock market prices. Badullahewage and Jayawardenepura (2018) found that exchange rate and Gross Domestic Product have a positive relationship with ASPI. Addy et al. (2014) identified the relationship between macro-economic variable in Ghana stock exchange which revealed that there is a long run relationship between some of the macro economic variables and the stock market. Caroline et al. (2011) studied the relationship between stock market, expected inflation rate, unexpected inflation rate, exchange rate, interest rate and GDP in the case of

Malaysia, US and China. They suggest that these variables have a significant impact on stock market performance in the long run.

Several studies have been carried out to examine the relationship between macro-economic variables and stock market performance. But, there are no in-depth studies that investigate the association between macro-economic variables and stock market performance in the context of Sri Lanka. Thus, this study attempts to bridge this gap by examining the connection between macro-economic variables and stock market performance in order to draw economic policy implications and to have a proper understanding of the stock market in Sri Lanka and its subsequent status.

Objectives

The objective of the study is to examine the impact of macroeconomic variables on the stock market performance in Sri Lanka.

Methodology

The All Share Price Index (ASPI) was used as a proxy variable for stock market performance which is the dependent variable of this study. Inflation rate (INF), Exchange Rate (ER), Interest Rate (IR), Gross Domestic Product (GDP), Foreign Direct Investment (FDI) and Broad Money Supply (M2) are employed as macroeconomic (independent) variables. This study uses time series data from the World Bank database and Central Bank of Sri Lanka over the period 1997 – 2019. All variables except INF and IR are transformed to natural logarithm form. Following a study conducted by Paudel (2009), the functional model of this study is given below:

$$\mathrm{LASPI_t} = \alpha_0 + \alpha_1 \mathrm{INF_t} + \alpha_2 \mathrm{IR_t} + \alpha_3 \mathrm{LER_t} + \alpha_4 \mathrm{LFDI_t} + \alpha_5 \mathrm{LGDP_t} + \alpha_6 \mathrm{LM2} + \mu_t \quad (1)$$

Where $\alpha_0, \dots\dots, \alpha_6$ are coefficients of determinant variables; μ_t is error term and subscript t is time period

The All Share Price Index (ASPI) is the broad market index of the CSE, and is designed to measure the movements of the overall market price. The index is calculated in real-time as a market capitalization weighted index, which constitutes all voting and non-voting ordinary shares listed on the CSE.

The study adopted Augmented Dickey Fuller (ADF) unit root test method to check the order of integration of variables and Akaike Information Criterion (AIC) was employed to determine the optimal lag length of each series. Since the series are stationary with mixed orders of I(0) and I(1), Autoregressive Distributed Lag (ARDL) Bounds test procedure which was developed by Pesaran et al. (2001) is adopted to investigate the effects of macroeconomic determinants on ASPI and to investigate the existence of cointegration among the variables. Error Correction representation of ARDL mechanism is adopted to determine the short run dynamic relationship between the variables and long run adjustment of the model. These tests were conducted through E- views 10 statistical software.

Results and Discussion

The ADF test confirmed that, IR is stationary at level while the other variables are stationary at their 1st difference implying that variables are of mixed order. Akaike Information Criteria (AIC) suggested the use of ARDL (1, 2, 0, 2, 2, 2, 2) model for this analysis. The below table shows the results of ARDL Bounds test.

Table 1: Results of F- Bound Test

F-Bound test	95% Level of Confidence		90% Level of Confidence	
F- Statistics	I(0) Bound	I(1) Bound	I(0) Bound	I(1) Bound
7.374303	2.27	3.28	2.88	3.99

Above results reveal that there exists cointegration among the variables since we reject the null hypothesis of no cointegration as the calculated F-statistic (7.3743) I greater than the I(1) critical value at 5% level of significance (3.28). Since we confirmed the cointegrating relationship between the variables through the Bound test, there should be a long run association among the variables. The result is given below:

Table 2: Long run Results of ARDL (1, 2, 0, 2, 2, 2, 2) Model

Constant	INF	IR	LER	LFDI	LGDP	LM2	R^2
0.235	0.160**	-0.088***	4.688**	0.129	4.314***	-2.795**	0.998
(0.016)	(0.026)	(0.009)	(0.014)	(0.155)	(0.005)	(0.015)	

Note: probability values are given in parentheses. *, **, and *** show variables are significant at 10%, 5% and 1% level respectively.

The value of R-squared illustrates that approximately 99 percent of the variation in ASPI in Sri Lanka is explained by the explanatory variables included in this study. As expected by theory and some of the existing empirical literature (e.g., Balagobei, 2017) Inflation, Exchange Rate and Gross Domestic Product affect ASPI significantly and positively wheres Interest rate and Money Supply have a negative effect on ASPI in the long run. However, FDI Does not have statistically significant impact on ASPI in the long run.

The table below represents the results of short run dynamics and long run adjustment.

Table 3: Results of Error Correction version of ARDL (1, 2, 0, 2, 2, 2, 2) Model

Panel A: Results of Short run							
Lag Order	ΔLASPI	ΔINF	ΔIR	ΔLER	ΔLFDI	ΔLGDP	ΔLM2
0		-0.078*	-0.176**	2.308*	0.143	0.845	5.448*
		(0.054)	(0.033)	(0.064)	(0.123)	(0.197)	(0.062)
1	2.899**	-0.139**	0.163*	-4.15**		-0.811	11.12**
	(0.037)	(0.036)	(0.052)	(0.099)		(0.277)	(0.040)
2		-0.038**	0.171**	-9.51**		-8.47**	-13.87**
		(0.039)	(0.027)	(0.048)		(0.031)	(0.044)
Panel B: Long run Adjustment Coefficient							
ETC(-1)	-0.649* (0.071)						

Note: probability values are given in parentheses. *, **, and *** show variables are significant at 10%, 5% and 1% level respectively.

Accordingly, as expected, coefficient of error correction term [ETC (-1)] is negative weakly significant, which indicates that there should be an adjustment towards steady state line at the speed of 64.91 % in each year one period after the exogenous shocks. The current and past year (lagged 1 and 2) inflation, current year interest rate past year exchang rate (lagged 1 and 2), past year GDP (lagged 1 and 2) and past year money supply (lagged 2) have significant and negative impact on ASPI in the short run whereas last year ASPI, past year interest rate, current year exchange rate, current and last year money supply have positive and significant impact on ASPI in the short run.

Conclusion

The results of this study have shown the existence of a long run and short run relationship between macro-economic variables and All Share Price Index (ASPI). Gross Domestic Product has a significant and positive impact on ASPI in the long run while current value of GDP does not affect ASPI in the short run. In contrast, past value of GDP affect ASPI negatively in the short run. Further, there is a negative relationship between M2 and ASPI in the long run and a positive correlation between these two variables in the short run. These findings are consistent with Balagobei (2017) and Rathnayaka and Seneviratna (2017); they concluded that the Colombo Stock Exchange (CSE) is highly sensitive to macroeconomic variables such as real gross domestic product and broad money supply. Next, interest rate has a negative effect on ASPI in both long run and short run while past value of interest rate affects ASPI positively in the short run. This finding is consistent with Menike (2006) and Balagobei (2017) and they confirmed that there is a negative relationship between interest rate and stock market returns. Moreover, there is a positive and significant relationship between inflation and ASPI in the long run while a negative relationship exists between these two variables in the short run. Exchange rate affects the ASPI positively and significantly both in the short run and in the long run while past value of exchange rate affects it negatively in the short run.

Therefore, this study suggests that the government should consider about stock prices and other macro-economic variables when implementing government policies such as privatization, foreign exchange control and monetary policy. Also the findings of the study may be useful to the public and the economy especially stock market investors to focus on macroeconomic variables for making effective decisions to enhance their stock market returns.

References

Addy, F.M., Sampson, V. and Yakubu, A. S. (2014). Relationship between stock market performance and macroeconomic variables in Ghana, *Issues in Business management and Economics*. 2(3), 46-53.

Badullahewage, S.U. and Jayewardenepura, C. (2018). The effects of macroeconomic factors on the performance of stock market in Sri Lanka. *International Journal of Innovation and Economic Development*, 3(6), 33-41.

Balagobei, S. (2017). Macroeconomic variables and stock market returns in Sri Lanka. *Asian Journal of Finance and Accounting*, 9(2), 206-218.

Caroline, G., Rosle, M., Vivin, V.C. and Victoria, C. (2011). The relationship between inflation and stock market: evidence from Malaysia, United States and China. *International journal of Economics and Management Science*. 1(2), 1-16.

Menike, L.M.C.S. (2006). The effect of macroeconomic variables on stock prices in emerging Sri Lankan stock market. *Sabaragamuwa University Journal*, 6(1), 50-67.

Rathnayaka, R.M.K.T. and Seneviratna, D.M.K.N. (2018). Impact of macroeconomic variables on stock market returns: a case study of Colombo Stock Exchange, Sri Lanka. *Kelaniya Journal of Management*, 6.