

DO MACRO-ECONOMIC VARIABLES INFLUENCE ON STOCK PRICES IN SRILANKAN STOCK MARKET?

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ABSTRACT

The purpose of this study is to investigate the effect of macroeconomic variables on stock prices in the Sri Lankan stock market. The relationship between stock price and macroeconomic vary is well documented for Sri Lanka and other major economies. The monthly data on the inflation rate, interest rate, money supply, exchange rate and stock price are taken from the period of January 2006 to June 2019. The correlation and multiple regression analysis were used to determine whether there was a statistically significant relationship between stock market prices and macro factors as an independent variable. The alternative hypothesis which states that selected macro-economic variables are impacting on stock price accepted at 0.05 level of significance in all stocks. The results showed that the higher R Square value is 86%, which justifies the higher explanatory power of macroeconomic variables in explaining stock prices. The findings revealed that money supply, inflation rate and exchange rates had a significant positive effect on stock market returns; however, interest rates had a significant negative effect on stock market returns. Have verified the findings of this research, combined with the actual situation of Sri Lanka's economic development process and then analyze and discuss the feasibility of high specific policy proposals, such as policy formulation in line with current inflation and future trends, respect for objective facts and reasonable policies to improve investment decisions, thus increasing the net worth of this economy in Sri Lanka.

Keywords: inflation rate, interest rate, money supply, exchange rate and stock price

INTRODUCTION

Stock market performance depends on many factors. It is extremely volatile to countries economic and political conditions. If the whole macroeconomic condition of a country is good, then the stock market usually has better returns and if the overall macroeconomic condition of a country is poor, then the stock market prices are usually not good. The impact of macro-economic variables on stockprice is uncontrollable. It provides some indication about the impact of macroeconomic variables on stock prices. This study is focused on the matters regarding the effect of macroeconomic variables on Stock prices in Sri Lankan Stock Market. Economic stability in a country can be measured by macroeconomics variables. Inflation, interest rate, exchange rate, unemployment rate, gross domestic product and money supply are

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some macroeconomics variables that show economic condition in srilanka. Normally political changes, changes of Board of Directors of the company, policy changes, inflation rate, interest rate, war, monetary policy, exchange rate and some other factors can affect the share prices changes.

The effect of macroeconomic variables on stock prices have been examined by various researchers of various countries around the world and those studies revealed the relationship between macro-economic variables on stock prices. There are a large number of investors that have invested in both domestic and international stock market in Sri Lankan context. The observation of the effect of macroeconomic variables on stock prices in Sri Lanka would benefit not only for portfolio managers, but also economic policy makers. Also the influence on macroeconomic variables on stock prices are useful to evaluate, how a portfolio manager invests in stock to hedge against macroeconomic variables. The impact of macroeconomic variables on stock prices has been the matters of growing theoretical and empirical investigation. The central issue in this literature is that the size and nature of this impact. The economic theory suggests that stock prices should reflect expectations about future organization performance.

Many other variables which have significant influence on stock returns are important to predict the stock exchange movement such as money supply, gold prices, oil prices, exchange rates, real economic growth rate, money supply, the political uncertainty and terrorism etc.

Although there are a number of macroeconomic variables affecting the Stock Price changes, this study focuses on the effect of interest rate, inflation rate, money supply and exchange rate. The effect of macroeconomic variables on stock prices may differ from one country to another. The main objective of this study is to investigate the effect of selected macroeconomic variables on stock prices in Sri Lankan Stock Market.

The majority of the analysis concentrates on the financial markets of the developed countries, which are efficient enough and do not suffer from the inefficiency problems found in less developed countries. Considering this matter, the subject of financial markets in developing countries still needs lengthy analysis and additional research attention. Various researchers have worked on stock exchange market and macroeconomic variables on different aspects. Various study related to this helps to know the relationship between macroeconomic variable and stock price.

Hence this study is focus to identify macroeconomic variables effect on share prices in Sri Lankan Stock Market. Hence the problem statement addressed in the present study is:

“Do macroeconomic variables effect on share prices in Sri Lankan Stock Market?”

LITRETURE REVIEW

Lakmali and Madhusanka (2015) examine that the result of capital market research will be important for local and foreign investors, policy makers, stock market regulators, stock market analysts etc. The impact of macroeconomic variables on stock prices and little attention of the responsible parties and the lack of knowledge of this issue in the Sri Lankan context could not be added to the information set available to the mentioned parties here. Elangkumaran and Jenitta (2014) research focused on that how macro economic variables influence the stock prices of CSE in Sri Lanka. For this purpose four macro independent variables interest rate, exchange rate, balance of payment and gross domestic product were taken under consideration to measure influences of these factor on dependent variable of all share price index.

Kpanie, Vivian and Awudu (2014) examine that the dynamic relationship between macroeconomic variables such as interest rate, money supply, inflation rate, exchange rate and oil prices and the Ghana stock market. The main findings of this study explained that there is a long run relationship between some of the macroeconomic variables and the stock market. Chetna (2013) examine that various macroeconomic variables on Indian stock market, here variable to study on selected macroeconomic variables liked reverse repo rate, CRR, SLR, Repo rate, inflation rate, CPI, Index of industrial production, gold rate, oil rate, exchange rate to identify its relationship with stock market movement and predict market behaviour in future. Main objectives of this study are to find out inter relationship between macroeconomic variables and its impact. Guneratne, W (2011) examine that the validity of the semi-strong form of the efficient market hypothesis. The results indicate that, both short and long-run causal relationships between stock market prices and macroeconomic variables. These finding refute the validity of the semi-strong version of the efficient market hypothesis for the Sri Lankan stock exchange market and have implications for investors, both domestic and international.

Menike, L (2006) examined the impact of Macroeconomic Variables on Stock Prices in Emerging Sri Lankan Stock Market fousing monthly data for the period from September 1991 to December 2002. Researcher has selected macroeconomic variables such as money supply, exchange rate, inflation rate and interest rate for this study and multivariate regression has been used for data analysis. The strong relationships between macroeconomic variables and stock prices have been revealed by the fitted regression model.

Hence this research is focus to identify macroeconomic variables effect on stock prices in Sri Lankan Stock Market.

Previous research findings relate to international context Mousa et al. (2012), AAMD.Amarasinghe, (2015), Khan and Muhammad (2014), Kalyanaraman and Tuwajri (2014), Dharmendra singh (2010), Kumar and Puja (2012), Haroon and Jabeen (2013), found out contra version relationship of macroeconomic variables on stock prices. Therefore, this research examines the relationship between the macro economic variables (especially money supply, exchange rate, interest rate, inflation rate) and the stock prices of Srilankan stock market. Hence this study is focus to identify macroeconomic variables effect on stock prices in Sri Lankan Stock Market. The aim of this research is to determine, the effect of macroeconomic variables on stock prices in Srilankan Stock Market.

METHODOLOGY

The conceptual framework of this research indicate the relationship between interest rate, inflation rate, exchange rate, and money supply (independent variables) and stock market returns (dependent variables) as measured by the CSE All Share price Index. The empirical analysis is included monthly data. The population of this study includes all the companies listed (297) in Colombo Stock Exchange. Therefore, population of this study has been taken as the sample. This research study mainly depends upon secondary data collection method. The sample period spans from January 2006 to June 2019. The study was carried out by using 162 monthly observations.

This study uses stock prices which were collected from the Colombo Stock exchange after identifying the last trading day of each month. Inflation rate is measured by changes in the Colombo Consumer Price Index (CCPI) which was collected from Annual Reports of the Central Bank of Sri Lanka, and publications of the Department of Census and Statistics. Interest rate is measured by threemonth primary market Treasury bill yield rate as used by Menike, L (2006) and Haroon and Jabeen (2013). Primary market Treasury bill rates data were collected from the annual report Central Bank of Sri Lanka. The researcher used the nominal exchange rate as the measurement of exchange rate variable and nominal exchange rate is defined as domestic currency units (Rs.) Per unit of US dollar as used by Menike, L (2006). The Exchange rate data were collected from the annual report of the Central Bank of Sri Lanka. The money supply data consists of broad money supply (M2) used by Chen et al. (2005) these Data were collected from the Annual report of the Central Bank of Sri Lanka.

There are so many theoretical justifications to expect a relationship between macroeconomic variables and stock prices (such as (Homa & Jafee, (1971); Mandelker and Tandon, (1995); Boudoukh and Richardson,(1993). According to this research following multiple regression model was developed.

$$\text{ASPI} = \alpha + \beta 1 (\text{CCPI}) + \beta 2 (\text{TBR}) + \beta 3 (\text{ER}) + \beta 4 (\text{M2}) + \epsilon t$$

Where, α is Intercept; $\beta 1, \beta 2, \beta 3, \beta 4$ are Coefficients of CCPI, TBR, ER and M2 respectively; ϵt is error term; ASPI is Stock market price; CCPI is Colombo Consumer Price Index; TBR is Three month Treasury bill rate; M2 is Broad Money Supply and ER is Exchange Rate. Quantitative data analysis method was used for data analysis. The Data analysis was made utilizing (SPSS 16.0). The following statistical tools were utilized:1) Descriptive analysis 2) Pearson's Correlation Coefficient Analysis 3) Multiple Regression Analysis.

FINDINGS

Pearson's correlations coefficient analysis was used to establish the relationship between inflation rate, interest rate, exchange rate and money supply.

Table 1: Pearson's coefficient of correlation matrix.

	ASPI	CCPI	T-Bills	MS	ER
Pearson correlation	1	.853**	-.681**	.761**	.706**
ASPI Sig(2- tailed)		.000	.000	.000	.000
N	162	162	162	162	162
Pearson correlation	.853**	1	-.457**	.906**	.923**
CCPI Sig(2- tailed)	.000		.000	.000	.000
N	162	162	162	162	162
Pearson correlation	-.681**	-.457**	1	-.467**	-.368**
T-Bills Sig(2- tailed)	.000	.000		.000	.000
N	162	162	162	162	162
Pearson correlation	.761**	.906**	-.467**	1	.941**
MS Sig(2- tailed)	.000	.000	.000		.000
N	162	162	162	162	162

Pearson correlation	.706**	.923**	.923**	.941**	1
ER Sig(2- tailed)	.000	.000	.000	.000	
N	162	162	162	162	162

** . Correlation is significant at the 0.01 level (2-tailed).

Table 1, indicated that the relationship between the various independent variable and dependent variable used in the study. As it is observed in the table the correlation value were found to be mixed (both positive and negative) between the variable. The Pearson of correlation coefficient between CCPI and ASPI are positive correlation. ($r = 0.853$). This means CCPI increases that time ASPI also increases. The significant value (P value = $0.00 < 0.05$) is lesser than the tested value. Therefore, this research shows that there is statistically significant correlation and high degree of positive correlation exists between inflation rates (CCPI) and stock prices (ASPI). The Pearson of correlation coefficient between TBILLS and ASPI are negative correlation. ($r = -0.681$). This means TBILLS increases that time ASPI decrease. The significant value (P value = $0.00 < 0.05$) is lesser than the tested value. Therefore, this research shows that there is statistically significant correlation and moderate negative correlation exists between interest rate (TBILLS) and stock prices (ASPI). The Pearson of correlation coefficient between MS and ASPI are positive correlation. ($r = 0.761$). This means MS increases that time ASPI also increases. The significant value (P value = $0.00 < 0.05$) is lesser than the tested value. Therefore, this research shows that there is statistically significant correlation and high degree of positive correlation exists between money supply (MS) and stock prices (ASPI). The Pearson of correlation coefficient between ER and ASPI are positive correlation. ($r = 0.706$). This means MS increases that time ASPI also increases. The significant value (P value = $0.00 < 0.05$) is lesser than the tested value. Therefore, this research shows that there is statistically significant correlation and moderate positive correlation exists between exchange rates (ER) with stock prices (ASPI).

The regression analysis is a statistical method for evaluating the relationship between more independent variable and one dependent variable. This section presents results on the multiple regression analysis which is used to test the relationship macroeconomic variables and stock prices of Srilanka.

Table 2: The results of regression

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson	F	Sig.
0.929 ^a	0.863	0.860	757.62296	2.174	247.458	.000 ^b

R is the multivariate analysis which shows the relationship between the study variables. R could be considered to be one measure of the quality prediction of the dependent variable. According to this research R is 0.929. Hence, it could be concluded that there is a positive linear correlation between macroeconomic variables and stock prices of srilanka. R square (R^2) is variation of dependent variable due to the changes in the independent variables. R^2 is the proportion of variance in the dependent variable that could be explained by the independent variables. From the findings as shown in table the value R square was of 0.863, an indication that there was variation of 86.3% there is a relationship between macroeconomic variables and 13% there is no relationship between those variables. Stock prices are attributed another variables. Adjusted R Square becomes more relevant as a diagnostic tool once used in multiple regressions. According to this research adjusted R Square is 86%. Here Durbin Watson explain 2.174. Its explain there is no auto correlation. ANOVA (F- value) indicated that the model explains the most possible combination of predictor variable that could contributed to the relationship with dependent variable, F and significant values are 247 and 0.000 respectively. It reflected that the F significance value is significant at 0.05 levels. Therefore at 5% significant level, it can be statistically concluded that there is strong significant relationship between macroeconomic variables and stock prices. The multiple regression statistical models can be established in this way:

$$\text{ASPI} = \alpha + \beta 1 (\text{CCPI}) + \beta 2 (\text{TBR}) + \beta 3 (\text{ER}) + \beta 4 (\text{M2}) + \epsilon t$$

$$\text{ASPI} = 5574.044 + 0.782(\text{CCPI}) - 0.322 (\text{TBILLS}) + 0.154(\text{MS}) - 0.543 (\text{ER}) + \epsilon t$$

As shown in the multiple regression equation above holding Inflation rate, interest rate, money supply, exchange rate would be 5574.044. It was found out that a unit increase in inflation rate (CCPI) would cause an increase in stock price (ASPI) by 0.782. A unit increase in Interest rate (TBILLS) would cause decrease in stock price (ASPI) by 0.322. A unit increase in money supply would cause an increase in stock price by 0.154. And also a unit increase in exchange rate would cause decrease in stock price (ASPI)

Table 3: Coefficients

Model	Unstandardized coefficients		standardized Coefficients Beta	t	Sig
	B	Std.Error			
Constant	5574.044	1027.449		5.425	.000
CCPI	95.974	7.43	.782	12.917	.000
TBILLS	-181.843.	20.057	-.322	-9.066	.000
MS	.001	.000	.154	1.596	.000
ER	-64.75.107	12.664	-.543	-5.114	.000

- a. Predictors: (Constant), ER, TBILLS, CCPI, MS
- b. Dependent Variable: ASPI

Above table 3, the Coefficients having p-values less than alpha are statistically significant. Thus all of the P values for CCPI, TBILLS, Money supply, Exchange rate are less than 0.05; therefore all of these are statistically significant. This shows that there is a positive relationship between inflation rate, money supply and stock price in Sri Lankan stock market. And also there is negative relationship between interest rate exchange rate and stock price in Sri Lankan stock market.

CONCLUSION AND RECOMMENDATION

This study investigated the relationship between macro-economic variables (Interest rate, Inflation rate, Exchange Rate and Money supply) and stock prices in Sri Lankan stock market using monthly data of 162 observations for the period from January 2006 to June 2019. Descriptive analysis, Pearson's correlation coefficient analysis and multiple regression models were used to investigate the relationship between macro-economic variable and stock prices. The correlation analysis explains the relationship between CCPI and ASPI, are strong positive correlation ($r = 0.853$) this implies stocks of these companies provide effective inflation hedge and other factors shows M2 ($r = 0.761$) and ER ($r = 0.706$) positive correlation between ASPI. T BILLS and ASPI are shows negative correlation ($r = -0.681$). Whenever the interest rate on treasury securities increases, the investors tend to switch out of stocks causing fall of stock prices. A multiple regression model was used to find out relationships and examining the impact of macroeconomic variables on stock prices. The results indicate that there is a significant relationship between macroeconomic variable and stock prices of Sri Lankan stock market. Among these four independent variable, inflation rate (CCPI) has around 85.3% of the influence on the dependent variable. Other three independent variables have less influence on the dependent variable compared to Inflation rate.

The foregoing research findings demonstrate that various sectors of a country's economy are interrelated and interdependent. What happens in one section of the economy has an impact on the other sectors. The magnitude of the impact will depend on the strategic importance of a particular sector. Fluctuations in the stock prices arising from movement in foreign exchange rates can cause panic among portfolio managers. This will induce them to liquidate portions of their equity portfolio to hedge against currency losses. The net impact would be a slump in the CSE index an indicator of poor trading conditions on the stock market. The effectiveness of exchange rates on CSE can be enhanced by adopting supportive policies. Even though Sri Lanka has adopted a flexible exchange rate system which is the appropriate policy, devaluation and revaluation of domestic currency should be looked at. Because, high volatility in the foreign exchange market and hence in the stock market will have a greater impact on the development of CSE. The government through the central bank of Sri Lanka need to intervene in the foreign exchange market, there is also need to introduce derivatives to help investors manage risk costs effectively. Futures and options should be introduced and investor education enhanced.

Interest rates have an impact on stock prices and the government should look at policies to stabilize them. When financing deficits the government is forced to borrow from the public through treasury bills and bonds, by offering

attractive returns (higher interest rates) which may led to “ crowing-out effect”. This means that other borrowers in the economy cannot match the government interest rates and are therefore unable to raise funds for investments, resulting in cut backs in investments. In addition financial institutions usually peg their interest rates on the government and thus if the government rates are high, general interest rates in the economy will be high further curtailing borrowing for investments. Higher returns also on treasury bills would lead to a shift from other investments and the stock market would be the first to suffer from the shift. Because returns from stock cannot match the returns from treasury bills, as stock are usually long term in nature as opposed to treasury bills. Thus policy makers, investors and other players in the economy need to understand the relationship between the stock market and the economy as a whole. On the other hand, the government should be careful in applying monetary and fiscal policies to avoid hurting other sectors of the economy especially the stock market. Investors should also be well educated about the stock market to be able to understand how stock prices relate to the economy. So that they do not blame the company management as being solely responsible for the performance of share prices. They should understand that share prices are a function of many factors.

REFERENCES

Journal Article

AAMD.Amarasinghe, (2015), Dynamic Relationship between Interest Rate and Stock Price: Empirical

Evidence from Colombo Stock Exchange, International Journal of Business and Social Science 6

(4), 92-97.

L.Menike, P. Dunusinghe, and A.Ranasinghe, (2015), Macroeconomic and Firm Specific Determinants

of Stock Returns: A comparative analysis of Stock Market in Sri Lanka and in United Kingdom.

Journal of Finance and Accounting, pp 86-96.

Al.Hunjra,MI Chani, M.Shahzad, M. Farooq,and K.Khan, (2014),The Impact of Macroeconomic Variables

on Stock Prices in Pakistan, international of economics nd empirical research, 2(1), pp 13-21.

L.Kalyanaraman and B.Tuwajri, (2014), Macroeconomic Forces and stock prices, International Journal

of Financial Research, 5 (1), pp 81-90.

A.Kpanie,S.Vivian and Y.Awudu, (2014). Relationship between stock market performance and

macroeconomic variables in Ghana, Issues in Business Management and Economics, 2 (3), pp

46-53.

M. A. Haroon ,H.Jabeen, (2013), Impact of Macro-economic Variables on Share Price Behavior of

Karachi Stock Exchange, Pakistan Journal of Commerce and Social Sciences 7 (3), pp 493-

504.

Dr. Chetna Parmar, (2013), Empirical Relationship among Various Macroeconomics Variables on

Indian Stock Market, International Journal of Advance Research in Computer Science and

Management Studies, 1 (6), pp 190 -197.

K.Pramod and Puja, (2012), The impact of macroeconomic fundamentals, Eurasian Journal of

Business and Economics, 5 (10), pp 25- 44.

Dharmendra Singh, (2010), Causal Relationship Between Macro-Economic Variables and Causal Relationship

Stock Market: A Case Study for India, Pakistan Journal of Social Sciences , 3 (2), pp. 263-274.

J.Boudoukh, M. Richardson, (1993), Stock returns and Inflation. A Long-horizon Perspective,

Economic Review 83, pp 1346-1355.

Mousa, et al ,(2012), The relationship between inflation and stock prices, Ijrras 10 (1), pp 46-53.

K.E.Homa, & D.M.(1971) The supply of money and common stock prices. Journal of Finance 26, pp

1045-1066.

G.Mandelker,K.Tendon (1985), common stock returns, real activity, money and inflation: some

International evidence, Journal of international money and finance, 4, pp 267-286.

Conference papers and proceedings

A.Lakmali, and K.J.S.Madhusanka,(2015),The Effect of Macro-Economic Variables on Stock Prices in Sri Lankan Stock Market, International Research Symposium Rajarata University of Sri Lanka, pp 86-93.

Thesis

Guneratne Wickremasinghe (2011), The Sri Lankan stock market and the macro economy: an empirical investigation, Studies in Economics and Finance, pp. 179-195.

L.M.C.S.Menike, (2006), The Effect of Macroeconomic Variables on Stock Prices in Emerging Sri Lankan Stock Market, 6, pp 50-67.

Reports

Central Bank Annual Reports 2006 January – 2018 June.

CSE publications and Monthly bulletins.

Web site

CSE web site <http://www.cse.lk/home.do>.

Department of Census and Statistics.