Macroeconomic variables effect on All share price index in Colombo stock exchange of Sri Lanka

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Abstract- This study was done with the aim of finding the relationship between All share price index of Colombo stock exchange of Sri Lanka and the macro economic variables. There have been 4 major macroeconomic variables under consideration namely, Interest rate, Exchange rate, Inflation rate and Money supply. Annual data has been collected and analyzed in order to arrive at conclusions, which include a null hypothesis stating that above macroeconomic variables have no effect on the stock prices. This study is based on a multi regression model where there is more than one independent variable. The E-views software has been used for the analysis and to reveal all the hidden relationships.This study revealed that, All share price index has a strong relationship with Money supply and exchange rate.

Index Terms— Stock price indices, Interest rate, Exchange rate, Inflation rate, Money supply, All share price index, Macro economic variables.

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1. INTRODUCTION

The main objective of this study was to find the relationship between Macroeconomic variables and All share price index (ASPI) for a selected period of 13 years(2000-2012) and to quantify the effect. Sri Lankan stock market is very sensitive to changes in all the signals, thus this study will add value to the decision makers in the market and the effectiveness and accuracy of their decisions will be enhanced.

Sri Lankan government is offering many incentives to the stock market, because it acts as an important market for capital transactions and the development of Stock exchange will improve the growth of GDP of the country. Companies who are registered in the Colombo stock exchange faces significant risks of volatile share prices in their companies. At the same time the value of the entire company depends on their share value and the demand for company shares in the Colombo stock exchange. This reason further enhances the need of understanding the effects of macroeconomic factors on share price index.

Sri Lanka being an emerging stock market in the world, this study would be useful in many aspects of decision making and understanding of the economy.

2. REVIEW

The review of the effects of macroeconomic variables on stock returns dates back to the late 1970s. Studies were focused on developed, emerging and both developed and emerging capital markets context and the extant literature reveals strong relationships between the above macroeconomic variables and stock returns.
Fama (1981) found that it is only a proxy for a fundamental relationship between anticipated real activities and stock returns. At the same time Geske and Roll (1983) argued that stock returns signal changes under inflationary expectations. Kaul (1987) found that the negative stock returns are caused by money demand and counter cyclical money supply effects. Considering the explanatory power of macroeconomic variables, Lee (1992) argued a separate role of interest rates on stock returns and inflationary effect is minimal on stock return variation while interest rates explain a substantial proportion of stock returns. Further Oystein G., Frode S. (1997) found that real interest rate changes affect with stock prices and oil prices by the study conducted in Norway.

3. METHODOLOGY AND DATA

In this study, I used secondary data which are collected on yearly basis for 13 years. In order to find ASPI data Colombo stock exchange's data library has been used. For other data of the rest of the variables, central bank annual report of year 2012 is used. For the interest rates, there were two ratesthroughout each year and for the study, the average rate for each year has been calculated. Money supply refers to M2 supply in the country during that particular year. At the same time exchange rate is the USD to LKR conversion rate which reflects the appreciation or the depreciation of LKR

E-views software was used to understand hidden relationships of the date set and to identify the dependency of ASPI on given macroeconomic variables. Multi regression model has been developped in order to find the collective dependency on selected macroeconomic variables.

4. HYPOTHESIS

There are 4 main hypothesis and relevant null hypothesis in this study.
H1 a: Money supply causes the Share index to increase.
H1 o: Money supply does not cause the Share index to increase
H2 a: Interest rates and ASPI has a relationship.
H2 o: Interest rates and ASPI has no relationship.

H3 a: Inflation rate causes Share index to increase.
H3 o: Inflation rate does not cause Share index to increase.
H4 a: Exchange rate affects Share index (ASPI).
H4 o: Exchange rate does not affect Share index (ASPI)..

5. MODEL

Following multi regression model has been used for the analysis which reflects the proportionate effect of each macroeconomic variable on all share price index and the error term which reflects the deviation of data from the original linear model.

$ASPI = C(1) + C(2)*EXCHANGE\_RATE + C(3)*INFLATION + C(4)*INTEREST\_RATE + C(5)*MONEY\_SUPPLY+ E$

6. RESULTS

Under the results section I have presented the findings of the research of relationship between all share price index and macroeconomic variables (Inflation, Interest rate, Exchange rate and Money supply)
This table shows the correlation between each variable and our consideration is on the correlation of all the variables and ASPI.

	ASPI	EXCHANGE_RATE	INFLATION	INTEREST_RATE	MONEY_SUPPLY
ASPI	1.000000	0.760537	-0.098583	0.003266	0.912638
EXCHANGE_RATE	0.760537	1.000000	0.085986	0.163718	0.870710
INFLATION	-0.098583	0.085986	1.000000	0.306508	-0.072038
INTEREST_RATE	0.003266	0.163718	0.306508	1.000000	0.156652
MONEY_SUPPLY	0.912638	0.870710	-0.072038	0.156652	1.000000

According to the table, there is a strong and positive relationship between ASPI and exchange rate which means when there is an increase in exchange rate the ASPI will increase accordingly and vice versa.

There is a negative and very weak relationship between ASPI and Inflation rate. Since this correlation figure is even less than 1%, it's assumed, there is no relationship between the two variables. In this test the null hypothesis has becomes true.

There is a positive but low correlation coefficient exists between ASPI and Interest rates, which indicates the fixed deposit interest rate in the country has a negligible effect on Share prices. In this test null hypothesis has become true.

There is a positive and strong relationship between ASPI and Money supply (M2). If there is an increase in the Money supply within the country, the ASPI or the share prices will rise.

Based on the above figures Exchange rate and Money supply has a considerable affect in determining stock prices or the "All share price index".

Following table explains the significance of each variable in determining share index and the dependency of ASPI on the considered variables,

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2675.015	4077.867	0.655984	0.5302
EXCHANGE_RATE	-23.99179	46.52938	-0.515627	0.6201
INFLATION	9.638604	38.32001	0.251529	0.8077
INTEREST_RATE	-126.3425	119.2555	-1.059427	0.3203
MONEY_SUPPLY	0.003226	0.000866	3.722838	0.0058

R-squared	0.857821	Mean dependent var	2674.955
Adjusted R-squared	0.786731	S.D. dependent var	2119.775
S.E. of regression	978.9338	Akaike info criterion	16.89453
Sum squared resid	7666491.	Schwarz criterion	17.11182
Log likelihood	-104.8144	Hannan-Quinn criter.	16.84987
F-statistic	12.06676	Durbin-Watson stat	1.838748
Prob(F-statistic)	0.001811		

According to this table there are some relationships to be identified.

R squared – R2 is the coefficient of determination. This figure has come to 0.8578 which emphasize 85.78% of the share price index is determined by considered 4 variables and the balance 14.22% is determined by other non considered variables in this study.

T statistics – The probabilities of this test explains the significance of a variable in determining the independent variable. If the probability is less than 0.05 that particular variable is known to be significant. As per the above table, only variable that satisfies this criteria is Money supply. Money supply is the only individual variable that has a significant effect on ASPI.

F statistics – This describes the collective significance of all the variables under consideration, on the dependent variable. For this to be strong, the probability should be less than 0.05. According to the above probability there is a collective significance of the 4 variables on share price index.

7. CONCLUSION

There are few conclusions made using the generated information and figures. There are two major factors that affect the all share price index, they ate Money supply and Exchange rate. Other two variables (Inflation rate and FD interest rate) have no considerable effect on ASPI. Considered 4 independent variables determine 85.78% of the share price index. Money supply is the only variable that has an individual significance on ASPI. All 4 variables have a collective significance in determining all share price index.

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