E-ISSN:2693-1478

Research Article

Finance and Economics

International Journal of Economics Business and Human Behaviour

2021 Volume 2 Number 1 Jan-March

Publisher

OPEN VECTORS

www.openvectors.com

Causal Relationship between Macroeconomic Variables and Sri Lankan Share Market Index

Wijesooriya R.[1*]

DOI: 10.5281/zenodo.4646782

[1*] Ruwanga Wijesooriya, Assistant Lecturer, Department of Finance, Faculty of Management Studies and Commerce, University of Sri Jayewardenepura, Gangodawila, Nugegoda, Sri Lanka.

An attempt has been made through this study to examine the availability and nature of causal relations between pre-specified macroeconomic variables and share market index; All Share Price Index (ASPI) of Sri Lanka by using correlation analysis, unit root test for stationarity and Granger causality test. Monthly data has been collected for 11 years from January 2007 to December 2017 for all the variables considered; ASPI, nominal exchange rate (EXR), total imports (IMP), 3-months T-Bill rate (TBR) and wholesale price index (WPI). Unit root test confirmed all the variables are not stationary at levels thus integrated of order one. Granger causality test resulted with one bidirectional causality between IMP and ASPI variables at 5% level of significance. Despite of having strong correlation with ASPI, EXR and TBR variables indicate unidirectional relationships with the share market index of Sri Lanka. However, availability of bidirectional causal relations violates the efficient market hypothesis assumed by Fama (1970) since it enables investors to develop profitable trading rules to predict future stock prices. Therefore, it is concluded that Sri Lankan stock market fails to maintain informational efficiency as observed by many of the related studies.

Keywords: Share Price Index, Colombo Stock Exchange, Granger Causality, Macroeconomic variables, Market Efficiency

Corresponding Author

Ruwanga Wijesooriya, Assistant Lecturer, Department of Finance, Faculty of Management Studies and Commerce, University of Sri Jayewardenepura, Gangodawila, Nugegoda, Sri Lanka.

Email: ruwangawijesooriya@sjp.ac.lk

How to Cite this Article

Ruwanga Wijesooriya, Causal Relationship between Macroeconomic Variables and Sri Lankan Share Market Index. IJEBHB. 2021;2(1):-.

Available From

https://ijebhb.com/index.php/ijebhb/article/view/25

To Browse

Manuscript Received	Review Round 1	Review Round 2	Review Round 3	Accepted
2020-12-23	2020-12-23	2021-01-15	2021-03-16	2021-03-18

Conflict of Interest	Funding	Ethical Approval	Plagiarism X-checker	Note
No	No	Yes	No	No

Introduction

Stock market can be defined as the market in which shares of publicly held companies are issued and traded either through exchanges or over the counter markets. People invest their funds in stocks to generate returns thus they are keen on the factors which determine the performance of such equity exchanges. Return realized through share trading consists of two main sources as the capital gains; the difference between share prices at two different periods and the dividend gains; the profit declared for common shareholders by business organizations out of their annual profits. However, these returns or simply the sources of returns change with various factors which in return determine the performance of respective share markets. According to Nijam, Ismail, and Musthafa (2015) performance of a share market is reflected through its composite stock market index that represents all the listed equity securities of the exchange. Therefore, the factors affecting capital gains and dividend yield of individual shares will ultimately influence the composite share market index of the economy.

Since the performance of a share market is one of the vital determinants in economic soundness of a country, it has given much attention throughout the world to highlight the factors affecting stock performance. Broadly, these factors consist of forces which are indigenous to a business entity, industry specific factors and finally macroeconomic factors; domestic and international economic conditions. Collective impact of all these factors and forces cause stock price volatility which in return links with the stock return. Volatility in stock returns is simply the risk associated with the investment and it can be classified into two main categories as systematic and unsystematic risks (Garthika & Rajapakse, 2018). Unsystematic risk arises from the influences specific to the organization and the factors common to the industry. However, a well-diversified portfolio will eliminate this component of risk from the total risk of the investment. In contrast, it is impossible to diversify the systematic risk of an investment which comes with macroeconomic factors. Even these macroeconomic factors are common to all the business entities the respective impact may vary across them.

The concepts of stock performance which is reflected through share prices, macroeconomic influence and systematic risk relate to each other when applying stock valuation models based on discounted cash flow method in which the intrinsic value or the current price of an equity share is determined by the present value of future cash flows attached to the stock. Expected cash flows to a stock comprised of dividend payments and capital gains as mentioned earlier that are affected by macroeconomic changes. Chen, Roll, and Ross (1986) confirmed that these macroeconomic shocks produce systematic influences on intrinsic value of equity shares through their impact on future cash flows attached to a stock plus the discount rate.

According to the Efficient Market Hypothesis (EMH) of Fama (1970), intrinsic value of a share is said to be equal to its market price and investors are less likely to realize abnormal profits continuously from trading activities using the current set of information. This information subset includes current and previous information on macroeconomic changes thus equity prices should reflect all this information clearly to hold EMH which prevents investors from using such information to generate an effective trading rule to make above-average returns consistently.

However, the existence of a causality relationship between macroeconomic variables and stock prices violates the fundamental hypothesis suggested by Fama (1970) because it enables investors to design a mechanism to predict stock returns using the available set of information. Causality relations play a critical role in the related literature to identify informational efficiency in major stock exchanges around the world (Javed & Azhar, 2017; Javed & Husain, 2020) According to Singh (2010) and , bidirectional causality of two data series occurs when lagged values of some of the pre-determined macroeconomic factors cause movements in stock prices and at the same time-lagged stock prices cause changes in macroeconomic variables. This behaviour is also named as the feedback relationship by Wickremasinghe (2011) which reflects the possible informational inefficiency in the stock exchange. In contrary, if two data series do not cause each other or seem to be independent then respective stock exchange is believed to maintain the informational efficiency.

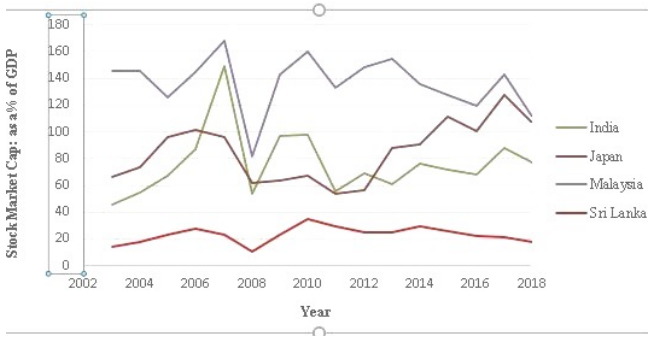
Sole purpose of the current study is to identify the causal relationship between the Sri Lankan composite share market index (ASPI) and selected macroeconomic variables; nominal foreign exchange rate between Sri Lanka and USA, total imports, treasury bill rate, wholesale price index using monthly data collected for the period 2007 to 2017. Further, this study intends to extend its focus on informational efficiency of Colombo Stock Exchange (CSE) by following the same methodology employed by Cornelius (1993), Singh (2010), Ali (2011) and Wickremasinghe (2011). The organization of this paper as follows. Section two provides a brief introduction to the Sri Lankan Share Market (CSE) along with a comparison of few regional stock exchanges. A comprehensive literature review on this area is presented in section three. Followed that specific objectives of the study and methodology are discussed in section four and five respectively. Section six explains the data analysis of this study and then discussion and conclusion will be covered in the final two sections of the paper.

Performance of the Sri Lankan Share Market

The Colombo Stock Exchange (CSE) is the only authorized share market in Sri Lanka which was formed in 1985 by amalgamating two stock brokerage associations: the Share Brokers Association and the Colombo Brokers Association. Although the historical dates go back to 1896, formalized share trading activities initiated in 1985 with new legislation enacted by the government for share trading. Currently, CSE facilitates capital raising, price discovery and extending investment opportunities to foreign investors while creating a credible environment to make rational investment decisions which ultimately contributes to promote investor confidence. However, investor protection has been secured up to a satisfactory level by the mandatory rules and regulations enacted by CSE itself and the Securities and Exchange Commission of Sri Lanka (SEC) for the listed companies. CSE consists of 289 listed companies relating to different business sectors with the market capitalization of LKR 2851.30 Billion by the end of the year 2019. Sri Lankan share market possesses two main Stock indices to represent the share trading activities of the listed entities. All Share Price Index (ASPI), which is the broad market index of CSE measures the movements of all the listed equity securities while S&P Sri Lanka 20 highlights the performance of top 20 – blue-chip companies listed in CSE.

Figure 1 illustrates the percentage contribution of share market capitalization on Gross Domestic Product in few regional countries for the period 2003 to 2018. After terminating the 30 – year civil war in 2009, Sri Lankan stock market reported a significant growth in terms of share trading along with the rapid economic growth by rebuilding investor confidence throughout the world(Javed, Khan, & Farooqi, 2020). Even though CSE is considered to be an emerging stock market in the Asian region its contribution to GDP is still not up to the satisfactory level compared to other few regional neighbours. According to figure 1 stock market capitalization of all the counties except Sri Lanka as a percentage of GDP is well above 60% in recent years. However, Sri Lankan contribution is around 20 to 30 percent throughout the same period even after exhibiting a significant growth until the year 2010. Therefore, further studies are highly recommended to identify the reasons for these changes within the Sri Lankan stock market.

Figure 1: Market Capitalization as a percentage of Gross Domestic Product (GDP)



Source: Compiled based on World Bank data, 2003-2018

Literature Review

The relationship between macroeconomic variables and share market performance has been given much attention in all the contexts by now. (Javed, Husain, &

Ali, 2020) With the backdrop of Arbitrage Pricing Theory (APT) Chen, Roll, & Ross (1986) examined the applicability of macroeconomic factors in determining stock returns of US equity markets. The study concluded that industrial production, changes in risk premium, unanticipated inflation and twist in the yield curve significantly associated with stock returns during the reference period. Following the same ideology, Rjoub, Tu¨rsoy, and Gu¨nsel (2009) tested the macroeconomic impact on Istanbul stock exchange by employing the Ordinary Least Square (OLS) technique with pre-specified macroeconomic variables. Only unanticipated inflation, term structure of interest rate, risk premium and money supply variables indicated significant relationships with stock market index. However, the overall explanatory power of the test was comparatively lower thus implied the availability of some other critical factors affecting stock performance other than the tested ones (Albashabsheh, Alhroob, Irbihat, & Javed, 2018; Husain & Javed, 2019; Khan & Javed, 2017; Rutskiy et al., 2020).

Impact of macroeconomic variables; inflation rate, government expenditure, interest rate, foreign exchange rate, manufacturing output and money supply on Nigerian share market performance was studied by Nkoro and Uko (2013) using annual data from 1985 to 2009. They claimed that stock returns are positively related with government expenditure and inflation while reporting negative associations with interest rate and manufacturing output.

Stock performance is affected not only by the well-known macroeconomic factors but also by wide range of forces reside in the business environment. Thus, Chen (2007) attempted to observe the link between Chinese hotel stock returns and macroeconomic and non-macroeconomic influences by analysing data for 84 monthly periods. OLS test results claimed that Chinese hotel stock returns are less sensitive to the industry-related variable; tourism arrivals, compared to other general macroeconomic factors. Further, it was observed that total imports negatively associated with stock returns which is consistent with the earlier work of Asprem (1989). Moreover, the empirical results highlighted a significant impact from non-macroeconomic events namely natural disasters, Financial crisis, terrorist attacks, political events, wars and sport events on stock performance.

Ali (2011) observed the microeconomic and macroeconomic influence on the performance of Dhaka Stock Exchange with a Multivariate Regression Model and Granger Causality Test. Empirical results showed that only inflation and foreign remittance variables have significant negative impacts on stock market index. In contrary, industrial production index, market P/E ratio, monthly percentage average growth in market capitalization reported positive impacts on stock performance. Granger Causality test confirmed the non-availability of unidirectional causality within the variables except one that occurs among stock price and market P/E ratio. However, the study concluded that Dhaka Stock Exchange is informationally inefficient with these limited number of Granger Causality relationships.

Informational efficiency of the Indian stock exchange (BSE Sensex) was revisited by Singh (2010) while examining causal relationships between macro factors and stock performance using correlation analysis and Granger Causality test. Causality test results claimed that BSE Sensex is exhibiting informational efficiency concerning two factors; foreign exchange rate and inflation rate which is proxied by the wholesale price index. Industrial production index is the only variable indicating a bidirectional causality with stock prices which enable investors to predict future stock returns with the lagged effect.

The linkage between foreign exchange rate and share price behaviour was observed by Muhammad and Rasheed (2002) using monthly data collected from India, Pakistan, Sri Lanka and Bangladesh. Bi-directional long-run causal relations were evidenced only in Sri Lanka and Bangladesh for the reference period. Remaining countries reported no significant relationship between the variables. A similar study was conducted by Abdalla and Murinde (1997) and observed a causality relation between exchange rates and stock prices in Pakistan, India and Korea. In addition, they claimed that stock prices cause exchange rates in the Philippines stock market.

Being an emerging stock

Exchange in the developing world, considerable amount of studies conducted in the Sri Lankan context as well to fill the literature gap to identify the relationship exists within stock performance and the broad macroeconomic factors. Even though most of the recent studies reported mixed results, their contribution to the existing literature is worth addressing.

Gunasekarage, Pisedtasalasai and Power (2004) observed the macroeconomic impact on performance of CSE for 17 years supported with unit root tests, cointegration, VECM, impulse response functions and variance decompositions analysis. The test results indicated that except for the interest rate all other variables show insignificant impact on the stock market index.

A notable contribution to the existing knowledge was given by Wickremasinghe (2011) with his study on the causal relationships between stock prices and macroeconomic variables to examine the validity of the semi-strong form efficient market hypothesis in the Sri Lankan stock exchange. The study observed both short run and long run bi-directional (feedback) causal relationships between the variables thus concluded the non-availability of semi-strong form of market efficiency in CSE. These conclusions are consistent with the previous works of Abeysekera (2001), Worthington and Higgs (2003) and Samaratunga (2008).

Pallegedara (2012) conducted a study to examine the dynamic relationships between daily share prices of CSE and short term interest rate for the period 2004 to 2011 by employing unit root test, cointegration test, VECM, Granger-Causality test and Impulse response functions. A negative cointegration relationship was found between the two variables in long run. However, the test results failed to capture any short-run causality relation between the variables.

Another study was conducted by Nijam, Ismail & Musthafa (2015) to investigate the availability of any significant association between ASPI and pre-specified macroeconomic variables using the OLS technique. They observed that LKR/US foreign exchange rate, GDP and interest rate variables are positively related with ASPI. On the other hand, inflation rate which is proxied by the wholesale price index (WPI) of Sri Lanka highlighted an inverse impact over the stock Performance while the balance of payment variable was found to be insignificant in explaining the movement of stock prices.

Garthika & Rajapakse (2018) have tried to identify the macroeconomic influence on the performance of CSE with five macro variables by analysing the quarterly data for the period 2004 to 2016. Performance of the CSE was reflected by two indicators; ASPI and Market Capitalization (MC) of CSE which are the dependent variables of the study. They observed bi-directional causality relations between money supply and ASPI, money supply and MC, inflation rate and ASPI, inflation rate and MC along with two unidirectional causalities which are running from real gross domestic output to ASPI and from average prime lending rate to ASPI. However, the lower R-squared values resulted from VECM models concluded the possibility of having some other factors which can affect the performance of Sri Lankan share market.

Objectives of the study

As Naik and Padhi (2012) and Nijam, Ismail, & Musthafa (2015) highlighted, the findings of studies would generate dissimilar results at same context when they are performed with different periods and with different frequency of data. Even though we can observe fair amount academic works in Sri Lanka investigating the relationship between macroeconomic factors and share market performance, there is no common agreement among them to rationalize the exact causality relations exist among the variables. Most of the recent studies ended up with mixed results thus encourage further studies on this area to contribute to the existing body of the knowlegde. With that motive, the current study attempts to identify the availability and nature of causal relations between pre-specified macroeconomic variables and ASPI of Sri Lanka by using the data collected for 11 years from 2007 to 2017.

Significance of the outcomes of this study can be seen from different perspectives. Firstly this would assist both policymakers and potential investors to have some understanding of the impact of broad macroeconomy over the share market performance of the counrty. It will encourage such investors to make rational investment decisions in future while

Creating a credible environment for policymakers to set up effective and efficient policy decisions which will ultimately propel the domestic economy. On the other hand, knowledge on the nature and direction of causal relations facilitate revisiting the semi-strong form of market efficiency of CSE which in return measure the degree to which informational efficiency is maintained in the Sri Lankan stock exchange.

Data Collection Research Methodology

This study collected data for 11 years starting from January 2007 to December 2017 for five variables to examine the causal relationships. Share market performance is reflected through the monthly values of All Share Price Index of Sri Lanka which is the capital weighted index covering all the listed securities of CSE. To represent the macroeconomic impact, it has employed four variables and all the details are presented in Table 1 with respective sources of data.

Table 1: Sources of Data (Insert Here)

To address the research objectives properly, it needs to apply several statistical and econometrics techniques followed by a fundamental analysis of the Descriptive Statistics of the variables. Descriptive statistics are simply the summary measures assist in defining the basic characteristics of the data set under the consideration. It includes measures of central tendency; mean, median, mode and measures of dispersion; variance, standard deviation, minimum and maximum values, range and finally skewness and kurtosis. The current study supports these descriptive statistics with a trend analysis in which the variables are graphically presented separately.

As the next phase correlation analysis is employed to understand whether the variables use to examine the causal relations are related with each other or not. Moreover, relative strength of pair-wise correlations can also be observed, and the values range from -1 to +1.

The fundamental analysis technique employed in this study to examine the causal relations among the variables is the Granger Causality Test. However, the test requires statistical Prerequisites in time series data, and it should be free from the unit root issues. These stochastic properties of the variables are addressed by one of the widely accepted unit root test; Augmented Dickey Fuller (ADF) test as employed by Gunasekarage, Pisedtasalasai, & Power (2004), Singh (2010) and Garthika & Rajapakse (2018). Hypotheses for unit root test as follows,

H_0: There is a unit root problem (Data series is not stationary)

H_1:There is no unit root problem (Data series is stationary)

Once the variables are corrected for unit root problem then Granger Causality test is employed to observe the availability and nature of causality relationships exist among the variables. Depending on nature, three different causal relationships can be observed. If two variables are causing each other it reflects a bidirectional causal relation. If only one variable is causing the remaining, then it is a unidirectional causal relation and the direction of causality is imperative. If none of the variable cause each other there is no causal relationship between the two variables. For example, if we have two variables as "A" and "B" then hypotheses for the test are,

H_0: "A" does not Granger Cause "B"

H_0: "B" does not Granger Cause "A"

If these two null hypotheses are rejected then it is an evidence for a bidirectional causality. If one hypothesis is rejected, unidirectional causality is concluded. However, if two null hypotheses are accepted, no causal relationship exists within the variables.

Data Analysis

All the variables are initially converted into the natural log values to smoothen the data series. Some of the descriptive statistics for these selected variables are provided in Table 2. By converting into natural log values, the data set becomes standardized thus it aids to minimize the dispersion around central value of the variables. Standard deviation and range (difference between maximum and minimum) prove this feature within the data series and it is common for all five variables. Even the skewness values

Indicate that individual distributions are approximately symmetric around zero. However negative signs imply that some distributions

Table 2: Descriptive Statistics (Insert Here)

Figure 2 exhibits the behaviour of all the selected variables during the reference period using X and Y diagrams. ASPI the composite index of CSE reported a rapid growth just after the 30th observation until the 50th observation covering the period June 2009 to January 2011. After eradicating 30-year civil war in 2009, Sri Lanka was able to improve its economic stability and managed to regain investor confidence as one of the lucrative investment destinations. Many foreign investors put their money in Sri Lankan stock exchange to realize the potential gains of an emerging market. In 2010 CSE was considered as the world second-best performing stock exchange due to its outstanding share trading activities.

Total imports indirectly link with the real activity of a country and used as an alternative factor for consumption by Chen (2007). According to figure 2 total imports represents a clear reflection of ASPI and follows the same trend even in the triggered periods. Moreover, exchange rate and inflation rates also exhibit an increasing trend during the 11 years. Nominal exchange rate between Sri Lanka and USA is given in direct quotations which explains number of domestic currency units required to purchase one unit of foreign currency. However, increase in the rate throughout the period means the continuous depreciation of Sri Lankan rupees against US dollars. WPI employed as a proxy for inflation since consumers' price index of Sri Lanka required to be adjusted with different base years. On the other hand, 3-months treasury bill rate is the only variable that is not in-line with remaining variables and depicts a downward trend during the period.

Figure 2: Monthly Observations of the Variables (Insert Here)

Next step of the analysis is to observe the pair-wise correlations of the selected variables to determine to what extent they are related. According to Table 3 all the variables are strongly correlated except for LTBR and LEXR.

However, all the four macroeconomic variables are strongly correlated with share market index confirming the fundamental thoeries developed by previous scholars. Only the interest rate variable (LTBR) is negatively correlated with other variables and it agrees with the trend analysis which exhibits a downward trend over the 11 years.

Table 3: Correlation Matrix (Insert Here)

Since the study is dealing with time-series data it requires to check for the stationarity of the variables as one of the preconditions of Granger Causality test. ADF test has been employed to test for this condition using the Eviews 8 software package. However, ADF test results are sensitive to the lag length selected thus the current study has employed the default value of the software using SIC criteria. Initially, all the variables are tested for the unit root problem at levels and outcomes are summarized in Table 4. Since the respective p-values are greater than 0.05, it is not possible to reject H_0 at levels. In short, this indicates that the variables are consist of unit root problem at levels. Then ADF should be performed on the first differences to confirm the stationarity before proceeding to the causality test. As per the table 4, all the p-values of first differences are highly significant and lower than 0.05 thus we can reject H_0. Therefore, all the selected variables become stationary at their first differences (i.e. integrated of order one). Then Granger Causality test should be performed using these first differences.

Table 4: Unit Root Test Results (Insert Here)

Final step of the analysis is to examine the causal relations between the variables using Granger Causality Test (1969). Following equation explains the theoretical foundation attached to the model.

If there are two variables as "A" and "B", variable "B" is considered to be Granger cause "A" when is different from zero. At such a situation "A" can be predicted using past or lagged values of "B" with greater accuracy. The null hypothesis of equals to zero is tested with F-distribution and if any respective p-value is less than the level of significance then H_0 will be rejected.

$$A_t= \propto_0+ \propto_(1\ ) A_(t-1)+\beta_1 B_(t-1)+\mu_t$$

According to Table 5, three different causal relations are evident. A bidirectional causal relation can be observed between LASPI and LIMP at 5% level of significance. Further, there are two unidirectional causal relations; from LASPI to LEXR and from LTBR to LASPI at 10% level of significance. However, LWPI variable fails to generate any causal relationship with LASPI at any level.

Table 5: Results of Granger Causality Test (Insert Here)

Discussions

The fundamental analysis technique employed in the current study to examine causal relations is the Granger Causality Test. The test results confirmed the existence of three different causal relations within the selected variables. Only one bidirectional or feedback relationship can be observed, and it is reported between share price index and total imports variable at 5% level of significance. Chen (2007) examined the macroeconomic impact on hotel sector stock performance by including monthly imports along with set of other macro-factors. He argued that level of imports has close contact with a country's consumption and investment thus it increases when domestic people consume more goods and services. Level of consumption is triggered by the domestic economic development or the growth in GDP which measures the real activity of the economy.

Thus, imports variable indirectly represents the real activity of the economy. Both Asprem (1989) and Chen (2007) concluded a negative impact of imports on stock performance. Whenever the domestic population increase their level of consumption it plunges the ability to invest causing less demand for equity securities which in return put downward pressure on stock prices.

However, the current study reports a bidirectional causality with a positive correlation. Even the trend analysis reflects a similar movement in monthly observations of the two variables. One possible reason for this positive interaction deals with the economic development of the country. If the country is economically healthy it naturally triggers all the business activities including share trading. Apart from investing it is rational to believe that people allocate fair Amount of money on their consumption purposes. Increased consumption leads to higher amount of imports. On the other hand, current performance of the share market provides positive or negative signs about the future economic activities which have a clear linkage with individual expectations. Thus, healthy share trading would definitely encourage future consumption of individuals expecting they have more money in hand compared to current status.

In addition to the bidirectional causal relation, the study observed two unidirectional causal relations at 10% level of significance. The first unidirectional causality relationship occurs between LASPI and LEXR. However, the most critical fact is the direction of causality and under this case share price index, Granger cause exchange rate but not vice versa. This observation complies with the work of Abdalla & Murinde (1997) in the case of Philippines stock market. Correlation analysis revealed that two variables exhibit a positive association and the trend analysis depicted an upward trend throughout the period.

The behaviour of the exchange rate variable is somewhat similar to the imports variable because increased share performance encourages real activities and ultimately the consumption level of individuals as they have more money to expend. This motivated consumption patterns call for higher imports but adversely impact on foreign exchange rate. Final outcome of this stream of activities is the continuous depreciation of the foreign exchange rate. In the case of Sri Lanka total imports are measured in US dollars and the fx-rate is given in "direct-quotations". So increasing trend in the rate should be viewed as a depreciation of the value of domestic currency; LKR in the foreign exchange market.

The remaining unidirectional causality relation exists between interest rate and share market index. 3-months treasury bill rate Granger cause ASPI at 10% level of significance and the relationship is negative according to table 3 and figure 2. The test results agree with Pallegedara (2012) and Menike (2006) who examined the relationship between share prices and short-term interest rate in Sri Lanka. When the short term interest rate (3-months treasury bill rate) is decreased investors are not willing to keep their money on low earning

Treasury securities. Instead, they would shift to equity securities which in return improve the stock prices with increased demand.

Therefore, negative causality should result as the final outcome. Even though it reports a strong correlation between the inflation rate which is proxied by WPI and ASPI, the p-values failed to reject the null hypothesis and conclude no causal relation between two variables. However, one critical point is worth highlighting that strength of the correlation relationship does not confirm or preclude causality (Singh, 2010).

Conclusion

This study attempts to examine the nature of causal relations between share market index of Sri Lanka and selected macroeconomic variables using Granger Causality test. The test results revealed three different causality relationships; one bidirectional causal relation between ASPI and IMP, two unidirectional causal relations from ASPI to EXR and from TBR to ASPI. Eventhough it reported a strong correlation between WPI and ASPI, causality test results concluded the non-availability of any causal relationship between the variables. Direction of causality of the first unidirectional causal relation occurs from ASPI to EXR but not another way around.

Thus it can be concluded that only IMP and TBR variables cause changes in ASPI of CSE and the remaining variability is due to some other factors other than the tested ones through this study. Therefore, future studies are highly recommended on this area to examine the impact of various factors covering both macroeconomic and microeconomic variables on share market performance of Sri Lanka.

Apart from that, this study concludes mixed results and some of them may not be in-line with generally accepted economic fundamentals. According to Gunasekarage, Pisedtasalasai, & Power (2004), this behaviour is not surprising since in most of the developing stock exchanges' performance is primarily based upon the speculative decisions made by irrational investors thus economic fundamentals are hardly visible. With insignificant level of liquidity and lower trading volume, Sri Lankan share market is still at its infant stage compared to other regional giants.

Another conclusion can be derived relating to informational efficiency of Sri Lanka supported with Granger Causality test results. EMH of Fama (1970) highlighted that current market prices should reflect all the available information including macroeconomic changes plus past prices which will avoid investors constructing profitable trading rules to outperform the market. As mentioned in the earlier sections, bidirectional causality relations violate this basic hypothesis and even in Sri Lanka investors can predict future stock movements using the changes of IMP variable.

Therefore, these results confirm that CSE is informationally inefficient and it fails to maintain semi-strong form of an efficient market hypothesis as observed by Worthington & Higgs (2003), Samaratunga (2008) and Wickremasinghe (2011).

References

Abdalla, I. S., & Murinde, V. (1997). Exchange Rate And Stock Price Interactions In Emerging Financial Markets: Evidence on India, Korea, Pakistan and the Philippines. *Applied Financial Economics, 7*, 25-35. [Article] [Scholar]

Abeysekera, S. P. (2001). Efficient Markets Hypothesis and the Emerging Capital Market in Sri Lanka: Evidence from the Colombo Stock Exchange. *Journal of Business Finance & Accounting, 28*(1 & 2), 249-261.[Article] [Scholar]

Ali, M. B. (2011). Impact of Micro and Macroeconomic Variables on Emerging Stock Market Return: A Case on Dhaka Stock Exchange (DSE). *Interdisciplinary Journal of Research in Business, 1*(5), 08-16.[Article] [Scholar]

Asprem, M. (1989). Stock prices, asset portfolios and macroeconomic variables in ten European countries. *Journal of Banking and Finance, 13*(4-5), 589-612. doi:10.1016/0378-4266(89)90032-0 [Crossref]

Chen, M. H. (2007). Macro and non-macro explanatory factors of Chinese hotel stock returns. *International Journal of Hospitality Management, 26*(4), 991-1004. [Article] [Scholar]

Chen, N., Roll, R., & Ross, S. A. (1986). Economic Forces and the Stock Market. *The Journal of Business, 59*(3), 383-403. doi:10.1086/296344 [Crossref]

Cornelius, P. K. (1993). A note on the informational efficiency of emerging stock markets. *Review of World Economics, 129*(4), 820-828. doi: 10.1007/bf02707884 [Crossref]

Fama, E. F. (1970). Efficient Capital Markets: A Review of Theory and Empirical Work. *Journal of Finance, 25*(2), 383-417. doi:https://doi.org/10.2307/2325486 [Crossref]

Garthika, S., & Rajapakse, R. (2018). Stock Market Performance and the Macroeconomic Factors: Evidence from Colombo Stock Exchange (CSE). *International Journal of Research, 5*(20), 753-779. [Article]

Gunasekarage, A., Pisedtasalasai, A., & Power, D. M. (2004). Macroeconomic Influence on the Stock Market: Evidence from an Emerging Market in South Asia. *Journal of Emerging Market Finance, 3*(3), 285-304. doi:10.1177/097265270400300304 [Crossref]

Menike, L. (2006). The Effect of Macroeconomic Variables on Stock Prices in Emerging Sri Lankan Stock Market. *Sabaragamuwa University Journal, 6*(1), 50-67. doi:10.4038/suslj.v6i1.1689. [Crossref]

Muhammad, N., & Rasheed, A. (2002). Stock Prices and Exchange Rates: Are They Related? Evidence from South Asian Countries. *The Pakistan Development Review, 41*(4), 535-550. doi:https://doi.org/10.30541/v41i4iipp.535-550 [Crossref]

Naik, P., & Padhi, P. (2012). The Impact of Macroeconomic Fundamentals on Stock Prices Revisited: Evidence from Indian Data. *Eurasian Journal of Business and Economics, 5*(10), 25-44. [Article]

Nijam, H., Ismail, S., & Musthafa, A. (2015). The Impact of Macro-Economic Variableson Stock Market Performance ; Evidence From Sri Lanka. *Journal of Emerging Trends in Economics and Management Sciences, 6*(2), 151-157. [Article]

Nkoro, E., & Uko, A. (2013). A generalized autoregressive conditional heteroskedasticity model of the impact of macroeconomic factors on stock returns: Empirical evidence from the Nigerian stock market. *International Journal of Financial Research, 4*(4), 38-51. doi:10.5430/ijfr.v4n4p38 [Crossref]

Pallegedara. (2012). Dynamic relationships between stock market performance and short term interest rate emprical evidence from Sri Lanka. *SSRN Electronic Journal*. doi:10.2139/ssrn.2156150 [Crossref]

Rjoub, H., Tu¨rsoy, T., & Gu¨nsel, N. (2009). The effects of macroeconomic factors on stock returns: Istanbul Stock Market. *Studies in Economics and Finance, 26*(1), 36-45. doi:10.1108/10867370910946315 [Crossref]

Samaratunga, D. (2008). Stock Market Efficiency and Integration: A Study of Eight Economies in the Asia-Pacific Region. *Staff Studies, 38*(1&2), 95-117.

Singh, D. (2010). Causal Relationship Between Macro-Economic Variables and Stock Market: A Case Study for India. *Pakistan Journal of Social Sciences, 30*(2), 263-274. [Article]

Wickremasinghe, G. (2011). The Sri Lankan stock market and the macroeconomy: an empirical investigation. *Studies in Economics and Finance, 28*(3), 179 - 195. doi:10.1108/10867371111141954. [Crossref]

Worthington, A., & Higgs, H. (2003). Weak-form Market Efficiency in Asian Emerging and Developed Equity Markets: Comparative Tests of Random Walk Behaviour. *Working paper series , 05*(03).

Albashabsheh, A., Alhroob, M., Irbihat, B., & Javed, S. (2018). Impact Of Accounting Information System In Reducing Costing In Jordanian Banks. *International Journal of Research Granthaalayah*, *6*(7), 210–215. Doi:10.5281/zenodo.1336672. [Crossref]

Husain, U., & Javed, S. (2019). Stock Price Movement And Volatility In Muscat Security Market (MSM). *International Journal of Research - Granthaalayah*, *7*(February), 68–84. Doi:10.5281/zenodo.2580535 [Crossref]

Javed, S., & Azhar, A. (2017). Forecasting Employee Turnover for Human Resource Based on Time Series Analysis. *International Journal Of Economics Research*, *14*(16), 445–456. Retrieved from [Article]

Javed, S., & Husain, O. (2020). An ARDL investigation on the nexus of oil factors and economic growth : A timeseries evidence

From Sultanate of Oman. *Cogent Economics & Finance*, *8*(1), 0–17. Doi:10.1080/23322039.2020.1838418. [Crossref]

Javed, S., Husain, U., & Ali, S. (2020). Relevancy of Investment Decisions And Consumption With Asset Pricing : GMM And CCAPM Model Approach. *International Journal of Management*, *11*(8), 10–17. Doi: 10.34218/IJM.11.8.2020.002. [Crossref]

Javed, S., Khan, M. S., & Farooqi, A. R. (2020). Impact Of Population, Trade Openess, Education, Life Expectancy And Gross Capital Formation On The Economy Of Indian Sub-Continent. *International Journal of Psychosocial Rehabilitation*, *24*(06), 8034–8044. Doi: 10.37200/IJPR/V24I6/PR260811.[Crossref]

Khan, A. A., & Javed, S. (2017). A study of volatility behaviour of S & P BSE BANKEX return in India : A pragmatic approach using GARCH model. *International Journal of Advanced and Applied Sciences*, *4*(4), 127–132. Doi:10.21833/ijaas.2017.04.018.[Crossref]

Rutskiy, V., Javed, S., Azizam, S. H., Chudopal, N., Zhigalov, K., Kuzmich, R., & Pupkov, A. (2020). *The Price Determinants of Bitcoin as a New Digital Form of Money*. (R. Silhavy, P. Silhavy, & Z. Prokopova, Eds.). Springer International Publishing. Doi:10.1007/978-3-030-63322-6. [Crossref]

Table 1: Sources of Data

Variable	Abbreviation	Data Source
All Share Price Index	ASPI	CSE Database
Nominal Exchange Rate (USD/LKR)	EXR	Central Bank monthly bulletin
Total Imports	IMP	Central Bank monthly bulletin
Interest Rate (3 Months T-Bill Rate)	TBR	Central Bank monthly bulletin
Inflation (Wholesale Price Index)	WPI	Central Bank monthly bulletin

Source: Compiled by the author

Table 2: Descriptive Statistics

Variable	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness
LASPI	8.4699	8.6945	8.9616	7.3152	0.4527	-0.9708
LEXR	4.8262	4.8445	5.0354	4.6774	0.1153	0.3248
LIMP	7.2136	7.3052	7.6248	6.4073	0.2685	-0.8838
LTBR	2.2425	2.1592	3.0587	1.7474	0.3467	0.7266
LWPI	8.3756	8.4254	8.6672	7.8586	0.1999	-0.6331

Source: Compiled by the author

Table 3: Correlation Matrix

Correlation Matrix	***LASPI***	***LEXR***	***LIMP***	***LTBR***	***LWPI***
LASPI	1.000				
LEXR	0.602	1.000			
LIMP	0.804	0.5958	1.000		
LTBR	-0.845	-0.438	-0.565	1.000	
LWPI	0.823	0.843	0.815	-0.6747	1.000

Source: Compiled by the author

Table 4: Unit Root Test Results

At Levels					
Series	***LASPI***	***LEXR***	***LIMP***	***LTBR***	***LWPI***
t-statistic	-1.1053	0.0718	-1.7727	-1.4101	-2.1274
p-value	0.7125	0.9624	0.3926	0.5755	0.2344
First Differences					
t-statistic	-9.4315*	-9.2221*	-12.7003*	-8.1895*	-9.0531*
p-value	0.0000	0.0000	0.0000	0.0000	0.0000

*denotes rejection of the null hypothesis at 5 % level of significance

Source: Compiled by the author

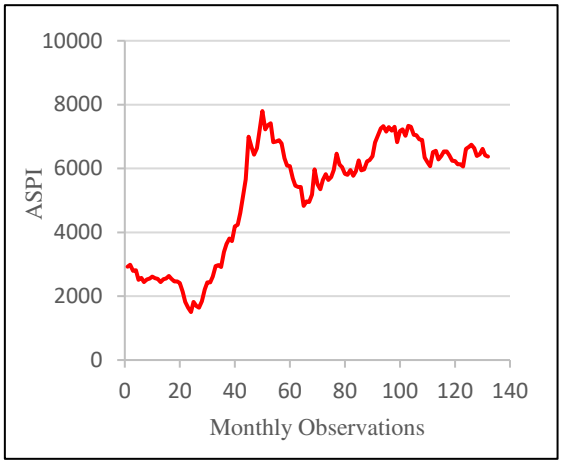
Table 5: Results of Granger Causality Test

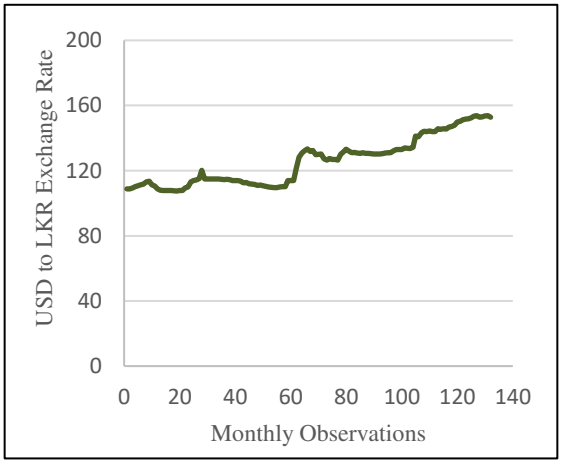
Null Hypothesis	F-Statistic	Probability
LEXR does not Granger Cause LASPI	1.4507	0.2383
LASPI does not Granger Cause LEXR	2.8213**	0.0634
LIMP does not Granger Cause LASPI	3.4108*	0.0361
LASPI does not Granger Cause LIMP	7.1540*	0.0011
LTBR does not Granger Cause LASPI	2.7013**	0.0711
LASPI does not Granger Cause LTBR	1.8538	0.1609
LWPI does not Granger Cause LASPI	2.0412	0.1342
LASPI does not Granger Cause LWPI	0.3252	0.7230

* and ** denote rejection of the null hypothesis at 5 % and 10% level of significance respectively

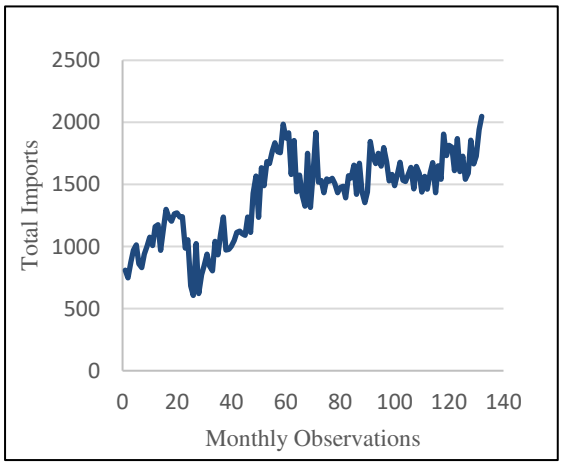
Source: Compiled by the author

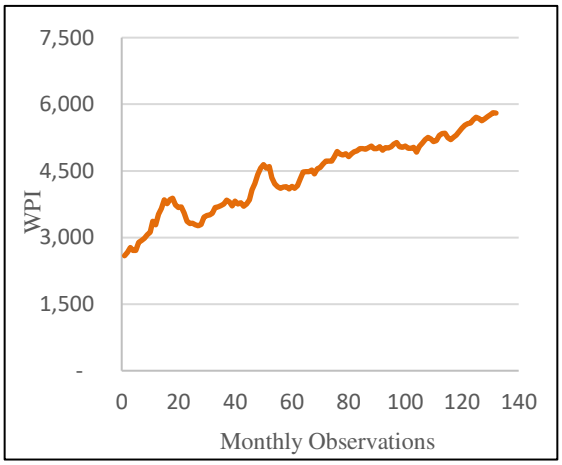
Figure 1: Monthly Observations of the Variables



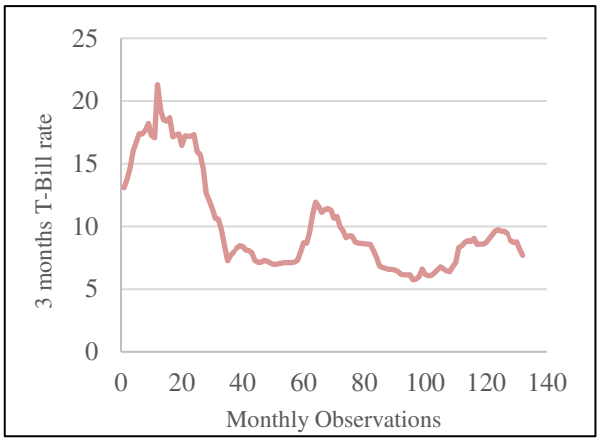


Source: Compiled based on World Bank data, 2003-2018





Source: Compiled based on World Bank data, 2003-2018



Source: Compiled based on World Bank data, 2003-2018