

**Evidence on Efficiency and Day of the Week Effect in
The Sri Lankan Stock Market**

BY

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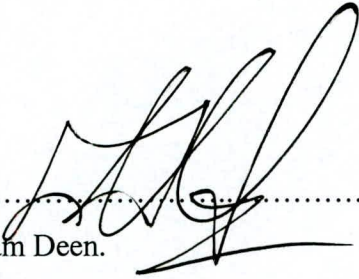
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DECLARATION OF THE CANDIDATE

I hereby certify that this dissertation does not incorporate acknowledgement of any material previously submitted for a degree or diploma in any university, and to the best of my knowledge and belief. It does not contain any material previously published or written by another person or myself expect where due reference is made in the next text.



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DECLARATION OF THE SUPERVISOR

I have supervised and accepted this dissertation for the submission of the degree.



A handwritten signature in blue ink, appearing to read 'Y.K. Weerakoon', is written above a dotted line.

A handwritten date '4/8/2014' in blue ink is written above a dotted line.

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ABSTRACT

The paper analyses the autocorrelations of stock returns for short term and long term holding periods and the day of the week effect of the Sri Lankan stock market. The All Share Total Return Index (ASTRI) was used for the analysis. For daily returns the autocorrelation of all 20 industries were statistically significant, however there were only three industries, Beverage Food and Tobacco, Diversified Holdings and Oil Palms (industries with larger market capitalization) which produced strong autocorrelations between 15% to 33%. Returns were more predictable for monthly holding periods with the ASTRI showing 24% predictability. Half of the industries showed a higher return predictability compared to daily holding periods ranging from 12% to 39%. Almost all the industries with larger market capitalization showed statistically significant and strong autocorrelations which is indicative of the fact that monthly returns were more predictable than daily returns. The ASTRI also showed negative and increasing autocorrelations for 12 to 24 month holding periods indicating mean reverting properties. The outcome of the day of the week effect study indicated that a profitable trading pattern can be established based on returns of the sample period. These results are consistent with previous studies done on the Sri Lankan stock market where one can reject the random walk behavior and the weak form efficiency.

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CHAPTER 1

BACKGROUND

1.1 Introduction

STOCK MARKET EFFICIENCY is a prominent concept, in terms of an understanding of the working of the capital markets. The efficiency of the emerging markets assumes greater importance as the trend of investments is accelerating in these markets as a result of regulatory reforms and removal of other barriers for the international equity investments. The term market efficiency is used to explain the relationship between information and share prices in the capital market literature. Fama (1970 and 1991) provides the formal definition of “Market Efficiency”. He classifies market efficiency into three categories namely, weak form, semi strong form and strong form. In its weak form, market efficiency hypothesis (EMH) states that the stock returns are serially un-correlated and have a constant mean¹. In other words, a market is considered weak form efficient if current prices fully reflect all information contained in historical prices, which implies that no investor can create a trading rule based solely on past price patterns to earn abnormal returns. A market is semi strong efficient if stock prices instantly reflects any new publicly available information and Strong form efficient if prices reflect all types of information whether available publicly or privately available.

¹ Please see section 2.2 for further elaboration.

Market Efficiency has an influence on the investment strategy of an investor because if securities markets are efficient trying to pick winners will be a waste of time. Since in an efficient market, the prices of securities will reflect the market's best estimate of their expected risk and return, taking into account all that is known about the stock. Therefore, there will be no undervalued securities offering above average returns, given their risk. So, in an efficient market, an investment strategy concentrating simply on the overall risk and return characteristics of the portfolio will be more sensible. If however, markets are not efficient, and excess returns can be made by correctly picking winners, then it will be profitable for investors to spend time finding these undervalued securities.

This study is different to previous studies in two different ways. One is that the previous studies on the Sri Lankan stock exchange uses the All Share Price Index (ASPI) published by the Colombo Stock Exchange (CSE), which is a value weighted index and does not consider dividend payments into account. The current study uses the All Share Total Return Index (ASTRI) which incorporates dividend payments into calculation². Therefore the study presents a more comprehensive analysis³. Secondly most studies conducted on the Sri Lankan stock market are focused on researching the short term efficiency, whereas the current study focuses on studying the market on a long term basis as well.

² Refer section 3.2

³ The CSE still Publishes the ASPI to which investors have access to. ASTRI data was obtained via an Internal source at the Securities and Exchange Commission.

1.2 Problem Statement

The Colombo Stock Exchange (CSE) is the main stock exchange in Sri Lanka. It is one of the most modern exchanges in South Asia, providing a automated trading platform The headquarters of the CSE has been in Colombo since 1995 representing 20 business sectors⁴ and has a market capitalization of over USD 19 billion⁵. Although comparatively small in market capitalization, on a global scale, the CSE has on numerous occasions proven to be one of the actively traded markets in the region. However the it is a known fact that the number of local and global participants in the market are limited, mainly due to lack of reliable information. It is essential that every investor locally and globally has information about the Sri Lankan market which will boost their confidence. The focus of the following study will be analyzing the ASTRI with the aim of testing the markets degree of efficiency and whether it is subject to any day of the week effect, which will give the investor a better perspective and a holistic view of the Sri Lankan stock market.

⁴ Refer section 4.1

⁵ Market capitalization is approximately LKR2.454.9billion. source, http://www.cse.lk/list_by_market_cap

1.3 Significance of the Study

Availability of data transparency are keys to success of markets around the globe. In this respect Sri Lanka lags somewhat behind when it comes to availability of certain data. Research performed on the Sri Lankan has been very limited. Previous researches have using the ASPI have provided a reasonable perspective, however there studies have not been performed recently and frequently on which investors can rely upon. This study unlike other studies is focused on providing a broad overview of the stock market, and unlike previous studies analyses the day of the week effect and uses the ASTRI as the index with the aim of providing a better perspective to the investor.

1.4 Scope and Limitations

The current study is confined to examining the analysis of the efficiency of the Sri Lankan stock market and whether a day trading pattern can be established based on the ASTRI data. The scope was also expanded to determine the effects of on the 20 industries defined by the CSE. However examining behavior based trading, comparison to other indexes/markets, impact of taxation and regulations implemented time to time is outside the scope of this study.

1.5 Chapters

The study is presented in six chapters the second chapter provides the literature review and the theoretical base built upon. Chapter three discusses the methodology applied in the study. Chapter four provides the data used and provides an overview of the important descriptive statistics.

Chapter five discusses the outcome of the analysis. Chapter six provides a conclusion to the study the basic objectives, findings compared to other studies and future scope for study has been provided in the chapter.

CHAPTER 2

LITERATURE SURVEY

2.1 Introduction

The literature survey is divided into mainly two sections. The first section emphasizes elaborately on the Efficient Market Hypothesis (EMH). The definition, who pioneered the study, the implications and assumptions arising out of it and the forms of efficiency have been explained. The second section focuses on previous studies performed on the EMH. The EMH has been vastly researched area in the past and various markets have produced results which are different from each other. This study is limited to the Sri Lankan Stock Exchange and more focus has been placed on establishing relationships unique to it.

2.2 The Efficient Market Hypothesis (EMH)

When money is put into the stock market, it is done with the aim of generating a positive income on the capital invested. Many investors try not only to make a profitable return, but also to outperform/ beat the market.

However, market efficiency - pioneered in the efficient market hypothesis (EMH) formulated by Eugene Fama in 1970, suggests that at any given time, prices fully reflect all available information on a particular stock and/or market. Thus, according to the EMH, no investor has an advantage in predicting a return on a stock price because no one has access to information which is otherwise not available to everyone else.

The Effect of Efficiency is non-predictability. The nature of information does not have to be limited to financial news and research alone. Information about political, economic and social events, combined with how investors perceive such information, whether true or rumored, will be reflected in the stock price. According to EMH, as prices respond only to information available in the market, and, all market participants are privy to the same information, no one will have the ability to out-profit anyone else.

In efficient markets, prices become not predictable but random, so no investment pattern can be distinguished. A planned approach to investment, therefore will not be successful, and the returns will be par with that of what others expect.

This "random walk" of prices is commonly spoken about in the EMH thought process. Any effort made to beat the market consistently will result in failure. The suggestion of EMH would be due to transaction costs involved in managing a portfolio, it would be more profitable for an investor to put his or her money into an index fund.

However, it is a proven fact that there are obvious arguments against the EMH. Warren Buffett, whose investment strategy focuses on undervalued stocks, made millions and set an example for numerous followers. There are portfolio managers who practically have better track records than peers, and there are investment banks with more renowned research analysis than others. So how can performance be random when people are clearly profiting from and beating the market?

Counter arguments to the EMH state that consistent patterns are present. Here are some examples

of some of the predictable anomalies thrown in the face of the EMH: the January effect is a pattern that shows higher returns tend to be earned in the first month of the year; "blue Monday on Wall Street" is a saying that discourages buying on Friday afternoon and Monday morning because of the weekend effect, the tendency for prices to be higher on the day before and after the weekend than during the rest of the week.

Studies in behavioral finance, which look into the effects of investor psychology on stock prices, also reveal that there are some predictable patterns in the stock market. Investors tend to buy undervalued stocks and sell overvalued stocks and, in a market of many participants, the result can be anything but efficient.

Paul Krugman, MIT economics professor, suggests that because of the mass mentality of the trendy, short-term shareholder, investors pull in and out of the latest and most talked about stocks. These results in stock prices being distorted and the market being inefficient. So prices no longer reflect all available information in the market. Prices are instead being manipulated by profit seekers.

The EMH does not dismiss the possibility of anomalies in the market that result in the generation of superior profits. In fact, market efficiency does not require prices to be equal to fair value all of the time. Prices may be over- or undervalued only in random occurrences, so they eventually revert back to their mean within a fair amount of time. Therefore, since the deviations from a stock's fair price are in themselves random, investment strategies that result in beating the market cannot be