PANDEMIC OUTBREAK, INVESTOR SENTIMENT AND STOCK MARKET REACTION: EVIDENCE FROM THE FRONTIER MARKET, SRI LANKA

Ravi Dilantha Rathnasekara

[178120V]

Thesis/Dissertation submitted in partial fulfilment of the requirements for the Degree of Master of Science in Financial Mathematics

Department of Mathematics

University of Moratuwa

Sri Lanka

February 2022

DECLARATION, COPYRIGHT STATEMENT AND THE STATEMENT OF THE SUPERVISOR

I declare that this is my own work and this thesis/dissertation does not incorporate without acknowledgement any material previously submitted for a Degree or Diploma in any other University or institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text.

Also, I hereby grant to University of Moratuwa the non-exclusive right to reproduce and distribute my thesis/dissertation, in whole or in part in print, electronic or other medium. I retain the right to use this content in whole or part in future works (such as articles or books).

Signature of the student: ……..…… Date: ……

Ravi Dilantha Rathnasekara [Student Registration No. 178120V]

The above candidate has carried out research for the Masters thesis/ dissertation under my supervision.

Signature of the supervisor: ……..…… Date: ……

Dr Neelangie Nanayakkara
Senior Lecturer
Department of Finance, Faculty of Management Studies and Commerce
University of Sri Jayewardenepura

Signature of the second supervisor: …… Date: ……

Mr Rohana Dissanayake
Senior Lecturer/Head of the Department
Department of Mathematics, Faculty of Engineering
University of Moratuwa

ACKNOWLEDGMENT

First and foremost, I offer my sincerest gratitude to my supervisor, Dr Neelangie Nanayakkara, who accepted to supervise my thesis and supported me throughout my thesis with her patience and knowledge. She shared thoughtful suggestions and valuable comments on my work. Her guidance helped me throughout the research and writing of this thesis. Without her, this thesis could not have been completed. Many thanks also go to my second supervisor Mr Rohana Dissanayake, who has given me constructive suggestions throughout the process of my study.

I would like to express my thanks to my colleagues for their support and all the fun we have had over these past few years. My special thanks to Mr. Rohana Dissanayake, the former course coordinator, an excellent lecturer, and Dr Miuran Jayaweera, the present course coordinator, for their unselfish and patient guidance, and encouragement in so many ways.

Most importantly, none of this could have happened without my family. My grateful thanks go to my mother, and siblings who always provided me with support and understanding.

Finally, I would like to thank everybody who was important to the successful realisation of my thesis, as well as expressing my apology that I could not mention personally one by one.

Any remaining errors are mine.

ABSTRACT

This study examines the impact of COVID-19 pandemic, the resulting investor sentiment in determining stock returns of different sector portfolios, namely, healthcare, telecommunication, banking, insurance, and hotel companies in the Colombo Stock Exchange (CSE), Sri Lanka in the year 2020. The empirical work is drawn on two widely used event study and regression-based econometric analysis. Firstly, the event study methodology focuses on the impact on sector portfolio returns after the World Health Organisation (WHO) declared COVID-19 as a global pandemic on 11th March 2020. Statistically significant positive cumulative average abnormal returns (CARs) are observed surrounding the event day. The most striking phenomenon is positive and persisting CARs perceived after a long Island-wide lockdown curfew, which imposed with effect from 16th March 2020, is lifted on 11th May 2020. CSE investors are likely to be more sensitive to local events than to global news, and persisting CARs indicate market inefficiency. A second-stage regression-based methodology is adopted to evaluate the impact of pandemic related news and to identify the influence of investor sentiment on sector portfolio returns and its persisting effects. Results reveal an initial negative sentiment effect on portfolio stock returns, followed by a positive sentiment thereafter. Initial negative effect is relatively robust on banks and hotel sector stock returns. A positive sentiment might emanate from over-reaction to the subsequent rebound with the removal of lockdown curfew and the Government's COVID-relief moratorium packages offered to businesses. Results indicate that CSE investors are likely to react with investment decisions based on psychological bias or sentiment, signifying irrational investor behaviour in CSE. This study provides current findings of investor sentiment, provoked by COVID-19 pandemic, on different sector portfolio returns in the frontier market, CSE, Sri Lanka.

Keywords: COVID-19 Pandemic, Frontier Market, Investor Sentiment, Market Efficiency

TABLE OF CONTENT

Declaration, Copyright Statement, and the Statement of the Supervisor i
Acknowledgements ii
Abstract iii
Table of Content iv
List of Figures vi
List of Tables vii
List of Abbreviations viii
List of Appendices ix
1.0 Introduction 01
1.1 Background and Introduction 01
1.2 Problem Statement 04
1.3 Research Questions 04
1.4 Hypotheses 05
1.5 Research Objectives and Approach 05
1.6 Significance of the Study 07
1.7 Limitations of the Study 08
1.8 Structure of the Thesis 08
2.0 Literature Review 10
2.1 Efficient Market Hypothesis and Stock Prices 10
2.2 Behavioural Finance and Stock Prices 14
2.3 Event Studies 18
3.0 Data Collection 21
3.1 Description of Data 21
3.2 Descriptive Statistics 25
4.0 Research Design and Methodology 28
4.1 Testing Hypotheses 28
4.2 First-stage Event Study Methodology 29
4.2.1 Estimation window and event window 30
4.2.2 Normal performance model 31
4.2.3 Estimating abnormal returns in the event window 32

4.3 Second-stage Regression Methodology 34
5.0 Empirical Results and Discussion 37
5.1 First-stage Event Study Results 37
5.2 Second-stage Regression Results 41
6.0 Conclusion 47
6.1 Conclusion 47
6.2 Policy Implications 50
6.3 Direction for Future Research 51
References 52
Annexure 1:
a. COVID-19 Pandemic Related News 61
b. Macro Economic News 63
Annexure 2: Sector Portfolios 64
Annexure 3: Regression Diagnostic 66

LIST OF FIGURES

		Page
Figure 3.1	Investor Sentiment and Irrational Behaviour	24
Figure 3.2	FGI for Investor Sentiment triggered from COVID-19 pandemic and Stock Index Performance	26
Figure 3.3	Sector Portfolio Performance	27
Figure 3.4	Daily Returns on Share Indices and Sector Portfolios	27
Figure 4.1	The Estimation Window, the Event and the Event Window	30
Figure 5.1	AARs and CARs on equally-weighted sector portfolios in the Event Window from 26-Feb-2020 to 20-May-2020	39

LIST OF TABLES

		Page
Table 3.1	Descriptive Statistics	26
Table 5.1	AARs and CARs on portfolio classes in the event window	40
Table 5.2	Second-stage regression results - regression equation 8	41
Table 5.3	Second-stage regression results - regression equation 9 – aggregate lagged effect of PRNs and FGI	44

LIST OF ABBREVIATIONS

Abbreviation	Description
AAR	Average Abnormal Returns
ASPI	All Share Price Index
CAPM	Capital Asset Pricing Model
CAR	Cumulative Average Abnormal Returns
CSE	Colombo Stock Exchange
EMH	Efficient Market Hypothesis
FGI	Fear Gauge Indicator
MM	Market Model
OLS	Ordinary Least Squares
PRNs	Pandemic Related News
WHO	World Health Organization

LIST OF APPENDICES

		Page
Annexure 1		
	a. COVID-19 Pandemic Related News	61
	b. Macro Economic News	63
Annexure 2	Sector Portfolios	64
Annexure 3	Regression Diagnostic	66