A MULTIDIMENSIONAL STUDY OF WEAK-FORM EFFICIENCY FOR FINANCE STOCKS IN MALAYSIA

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FACULTY OF BUSINESS, ECONOMICS AND ACCOUNTANCY
UNIVERSITI MALAYSIA SABAH
2017

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THESIS SUBMITTED IN FULFILLMENT FOR THE DEGREE OF DOCTOR OF PHILOSOPHY (FINANCIAL ECONOMICS)

FACULTY OF BUSINESS, ECONOMICS AND ACCOUNTANCY
UNIVERSITI MALAYSIA SABAH
2017

UNIVERSITI MALAYSIA SABAH

BORANG PENGESAHAN STATUS THESIS

JUDUL: **SATU KAJIAN MULTIDIMENSI KECEKAPAN BENTUK-LEMAH UNTUK SAHAM-SAHAM KEWANGAN DI MALAYSIA**

IJAZAH: **DOCTOR OF PHILOSOPHY (FINANCIAL ECONOMICS)**

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DECLARATION

I hereby declare that the material in this thesis is my own except for quotations, excepts, equations, summaries and references, which have been duly acknowledged.

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ACKNOWLEDGEMENT

After six semesters of intensive study on part-time basis, I submitted my thesis for final viva voce. I passed the oral examination on 12 February 2017. The completion of my PhD study is very meaningful indeed not only to me, but to the people around me who have been so much supportive and helpful including my supervisors, my family members, and friends.

Foremost, I am thankful for God's blessings which give me strength to overcome many obstacles throughout my study.

I would particularly like to express the highest gratitude to my main supervisor, Associate Professor Dr Qaiser Munir for his invaluable support, help, guidance, and advices. Dr Munir has been very patience, committed, enthusiastic, and kind in conveying his rich knowledge in terms of academic research, thesis writing, applied econometrics, and various economic theories. In the past few years, his continuous support and encouragement, as well as experience have convinced me that I can complete my study as long as I will not give up.

My co-supervisor, Professor Dr Arsiah Bahron is another important person that I rely on for support, help, guidance, and advices. I would like to express my sincere gratitude to Dr Arsiah, especially for the caring and encouragement. Her integrity makes me feel motivated in facing many job- and study-related challenges. No doubt, I benefit so much from her rich knowledge in academic research and thesis writing.

Besides my supervisors, I would like to thank my family members, especially my parents, husband, sister, and mother in law, as well as friends, for being so much caring and for their wise counsel. They are always there when I need help, advice, or comfort. I must say that I am owing to them for unable to spend more time together during the period of my study.

I would like to take this opportunity to express my appreciation to the respected Dean of the Faculty of Business, Economics and Accountancy, Associate Professor Dr Raman Noordin, our Professor in Economics, Professor Dr Datuk Kasim Mansur, the Dean of the Centre of Postgraduate Studies, Professor Dr Rasid Mail, for their kind support and encouragement throughout my study period.

Last but not least, I would like to thank the examiners who have spent time correcting and improving my thesis (Professor Dr Lean Hooi Hooi, Associate Professor Dr Fumitaka Furuoka, etc.) I am particularly impressed by a statement made by the Chairperson of the Viva Voce Committee, Professor Dr Hashim Awang, that 'there is no perfect'. These simple but meaningful words are kind of encouragement to me for continue learning and improving my knowledge.

Kok Sook Ching
13 March 2017

ABSTRACT

Finance sector plays a vital role in financial system. Nevertheless, it is exposed to systematic default risk, bank run, and shocks emanating from financial system. This thesis primarily aims to determine the weak-form efficiency for finance stocks in Malaysia, covering financial holding companies, commercial banks, investment banks, insurance companies, capital market intermediaries, and finance companies. The specific objectives of this study are: to examine the random walk properties for finance stock prices in Malaysia based on a random walk model that incorporates cross-sectional dependence (CD) and structural breaks; to examine nonlinearity and threshold effect of finance stock prices in Malaysia through a two-regime threshold autoregressive (TAR) approach, allowing for evaluating the random walk properties in separate regimes; to investigate the existence of calendar anomalies in the market of finance stocks in Malaysia by focusing on the day-of-the-week effect, month-of-the-year effect, turn-of-the-month (TOM) effect, and holiday effect; and to investigate the presence of short-term momentum effect and return reversal in the market of finance stocks in Malaysia. This study shows the following findings: 1) The prices of all finance stocks follow a random walk process hence weak-form efficiency is validated; 2) There is strong CD among the cross-sectional units of financial firms in Malaysia; 3) Each finance stock price series displays several structural changes throughout the study period; 4) The prices of all finance stocks are nonlinear and showing the threshold effect, thus reflecting basic human psychological influence that causes tension threshold and changing behaviour of efficiency across different regimes in the finance stock prices. The finance stocks are either fully or partially complying with the random walk properties and weak-form efficiency; 5) Calendar anomalies occur in the market of finance stocks; 6) Short-term momentum effect and return reversal exist in the market of finance stocks, in which they are unexplainable within the efficient market paradigm; 7) As calendar anomalies, short-term momentum effect and return reversals are evident, the weak-form efficiency in short-term is invalid. The above findings suggest that the selected finance stocks in Malaysia are efficient in the weak-form sense based on a random walk model that incorporates CD and structural breaks, but inefficient in short-term. In addition, finance stock efficiency may change during times of extreme sentiment as finance stock prices reflect the effect of tension threshold.

ABSTRAK

SATU KAJIAN MULTIDIMENSI KECEKAPAN BENTUK-LEMAH UNTUK SAHAM-SAHAM KEWANGAN DI MALAYSIA

Sektor kewangan memainkan peranan penting dalam sistem kewangan. Namun, ia terdedah kepada risiko kegagalan sistematik, larian bank dan kejutan yang berpunca daripada sistem kewangan. Tujuan utama tesis ini adalah untuk menentukan kecekapan bentuk-lemah bagi saham-saham kewangan di Malaysia, yang meliputi syarikat pemegangan kewangan, bank perdagangan, bank pelaburan, syarikat insurans, pengantara pasaran modal, dan syarikat kewangan. Objektif-objektif khusus kajian ini adalah: untuk menguji ciri-ciri perjalanan rawak untuk harga saham kewangan di Malaysia berdasarkan model perjalanan rawak yang menggabungkan kebergantungan keratan rentas (CD) dan perubahan struktur; untuk memeriksa ketaklinearan dan kesan ambang harga saham kewangan di Malaysia melalui satu pendekatan autoregresif ambang dua-rejim (TAR), yang membolehkan penilaian ciri-ciri perjalanan rawak dalam rejim berasingan; untuk menyiasat kewujudan anomali kalendar dalam pasaran saham kewangan di Malaysia dengan memberi tumpuan kepada kesan "day-of-the-week", kesan "month-of-the-year", kesan "turn-of-the-month" (TOM), dan kesan percutian; dan untuk menyiasat kehadiran kesan momentum dan pembalikan pulangan jangka pendek dalam pasaran saham kewangan di Malaysia. Kajian ini menunjukkan penemuan-penemuan yang berikut: 1) Harga kesemua saham kewangan mengikuti proses perjalanan rawak, dengan itu kecekapan bentuk-lemah disahkan; 2) Terdapat CD yang kuat di kalangan unit-unit keratan rentas firma kewangan di Malaysia; 3) Setiap siri harga saham kewangan memaparkan beberapa perubahan struktur di sepanjang tempoh kajian; 4) Harga kesemua saham kewangan adalah tak linear dan menunjukkan kesan ambang, dengan itu mencerminkan pengaruh asas psikologi manusia yang menyebabkan ambang ketegangan dan perubahan tingkah laku kecekapan di rejim yang berbeza dalam harga saham kewangan. Saham-saham kewangan adalah sama ada mematuhi sepenuhnya atau sebahagian ciri-ciri perjalanan rawak dan kecekapan bentuk-lemah; 5) Kalendar anomali berlaku dalam pasaran saham kewangan; 6) Kesan momentum dan pulangan pembalikan jangka pendek wujud dalam pasaran saham kewangan, di mana ianya tidak dapat dijelaskan dalam paradigma pasaran yang cekap; 7) Disebabkan anomali kalendar, kesan momentum dan pulangan pembalikan jangka pendek adalah jelas, kecekapan bentuk-lemah dalam jangka pendek adalah tidak sah. Penemuan-penemuan di atas menunjukkan bahawa saham-saham kewangan terpilih di Malaysia adalah cekap secara bentuk-lemah berdasarkan model perjalanan rawak yang menggabungkan CD dan perubahan struktur, tetapi tidak cekap dalam jangka pendek. Di samping itu, kecekapan saham kewangan boleh berubah ketika berlaku sentimen melampau kerana harga saham kewangan mencerminkan kesan ambang ketegangan.

TABLE OF CONTENTS

CHAPTER 2: OVERVIEW OF STOCK MARKET, FINANCIAL SYSTEM AND FINANCIAL FIRMS IN MALAYSIA

CHAPTER 3: THEORIES AND CONCEPTS RELATED TO STOCK MARKET INFORMATIONAL EFFICIENCY AND ANOMALIES

CHAPTER 7: DISCUSSION AND CONCLUSION

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

ADF	-	Augmented Dickey Fuller
AEON	-	AEON Credit Service (M) Berhad
AFFIN	-	Affin Holdings Berhad
AFGX	-	Affarsvarldens General Index
AFG	-	Alliance Financial Group Bhd
AIC	-	Akaike Information Criterion
ALLIANZ	-	Allianz Malaysia Bhd
AMEX	-	American Stock Exchange Composite
AMH	-	Adaptive Market Hypothesis
AMMB	-	AMMB Holdings Berhad
ANZAC	-	Australian and New Zealand Army Corps
APEX	-	Apex Equity Holdings Berhad
APR	-	April
ASEAN	-	Association of Southeast Asian Nations
ASX	-	Australian Securities Exchange
AUGUST	-	August
BAFIA	-	Banking and Financial Institutions Act
BDS	-	Brock, Dechert and Scheinkman
BIMB	-	BIMB Holdings Bhd
BURSA	-	Bursa Malaysia Berhad
CAPM	-	Capital Asset Pricing Model
CCR	-	Cumulative Continuous Returns
CIMB	-	CIMB Group Holdings Berhad
CLNY	-	Chinese Lunar New Year
CMP	-	Capital Market Masterplan
CRSP	-	Center for Research in Security Prices
CD	-	Cross-sectional Dependence
CSMAR	-	China Stock Market & Accounting Research Database
DCFM	-	Discount Cash Flow Model

DEA	-	Data Envelopment Analysis
DEC	-	December
DFA	-	Dimensional Fund Advisors
DFIs	-	Development Financial Institutions
DJIA	-	Dow Jones Industrial Average
DOW	-	Dow-Jones 30 Industrials Index
ECM	-	ECM Libra Financial Grp Bhd
EGARCH	-	Exponential Generalized Autoregressive Conditional Heteroskedasticity
ELKDESA	-	ELK-Desa Resources Berhad
EMH	-	Efficient Market Hypothesis
EPF	-	Employees' Provident Fund
EU	-	European Union
FBM KLCI	-	Financial Times Stock Exchange Bursa Malaysia Kuala Lumpur Composite Index
FBMMES	-	FTSE Bursa Malaysia MESDAQ Index
FEB	-	February
FRI	-	Friday
FSMP	-	Financial Sector Masterplan
HLFG	-	Hong Leong Financial Group Bhd
IFC-EMDB	-	International Finance Corporation Emerging Market Database
GARCH	-	Generalized Autoregressive Conditional Heteroskedasticity
GARCH-M	-	Generalized Autoregressive Conditional Heteroskedasticity-in-Mean
GDP	-	Gross Domestic Product
GST	-	Government Service Tax
G7	-	Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States
HLBANK	-	Hong Leong Bank Berhad
HLCAP	-	Hong Leong Capital Berhad

HOSE	-	Ho Chi Minh Stock Exchange
HWANG	-	Hwang Capital (Malaysia) Berhad
ICB	-	Industrial Classification Benchmark
IMF	-	International Monetary Fund
INSAS	-	Insas Berhad
IPS	-	Im, Pesaran and Shin
JAN	-	January
JOHAN	-	Johan Holdings Berhad
KAF	-	Kaf-Seagroatt & Campbell Bhd
KENANGA	-	K & N Kenanga Holdings Berhad
KLSE	-	Kuala Lumpur Stock Exchange
KPSS	-	Kwiatkowski, Phillips, Schmidt and Shin
KSS	-	Kapetanios, Shin and Snell
LLC	-	Levin, Lin and Chu
LM	-	Lagrange Multiplier
LPI	-	LPI Capital Bhd
LSPD	-	London Business School Share Price Database
JUN	-	June
JUL	-	July
MAA	-	MAA Group Berhad
MANULFE	-	Manulife Holdings Berhad
MAR	-	March
MAYBANK	-	Malayan Banking Berhad
MAS	-	Malaysia Airlines
MBSB	-	Malaysia Building Society Berhad
MDH	-	Martingale Difference Hypothesis
MNRB	-	MNRB Holdings Berhad
MON	-	Monday
MPHBCAP	-	MPHB Capital Berhad
MSCI	-	Morgan Stanley Capital International
MVR	-	Multiple Variance Ratio

NASDAQ	-	National Association of Securities Dealers Automated Quotations
NBER	-	National Bureau of Economic Research
NBFIs	-	Non-bank Financial Institutions
NOV	-	November
NPL	-	Non-performing Loan
NYSE	-	New York Stock Exchange
NYSE-AMEX	-	NYSE Amex Composite Index
OCT	-	October
OLS	-	Ordinary Least Squares
OSK	-	OSK Holdings Berhad
PBBANK	-	Public Bank Berhad
PESTAR	-	Panel Exponential Smooth Transition Autoregressive Process
P/BV	-	Price-to-book Value
P/CF	-	Price-to-cash Flow
P/S	-	Price-sales
PP	-	Phillips-Perron
P & O	-	Pacific & Orient Berhad
Pre_CHRIS	-	Pre-Christmas
Pre_CLNY	-	Pre-CLNY
Pre_NY	-	Pre-New Year
Pre_RAYA	-	Pre-Raya
Post_CHRIS	-	Post-Christmas
Post_CLNY	-	Post-CLNY
Post_NY	-	Post-New Year
Post_RAYA	-	Post-Raya
RCECAP	-	RCE Capital Bhd
REITs	-	Real Estate Investment Trusts
RHBCAP	-	RHB Capital Bhd
RI	-	Residual Income Valuation Model
RM	-	Ringgit Malaysia

ROA	-	Return on Assets
ROE	-	Return on Equity
SIC	-	Schwarz Information Criterion
S & P	-	Standard & Poor's
SEPT	-	September
SES	-	Stock Exchange of Singapore
SSEC	-	Shanghai Stock Exchange Composite
SSR	-	Sum of Squared Residuals
TA	-	TA Enterprise Berhad
TAKAFUL	-	Syarikat Takaful Malaysia Berhad
TAR	-	Threshold Autoregressive
TGARCH	-	Threshold Generalized Autoregressive Conditional Heteroskedasticity
THU	-	Thursday
TOM	-	Turn-of-the-month
TUE	-	Tuesday
TUNEINS	-	Tuneins holdings Berhad
U.S.	-	United States
USD	-	US Dollar
WED	-	Wednesday
WS	-	Weighted Symmetric

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

The term "efficiency" denotes broad definitions in economics and finance. It could mean allocation efficiency, informational efficiency, operational efficiency, or technical efficiency.[1] This thesis only concentrates on the domain of informational efficiency and other types of efficiency are beyond the scope of the study. As stated by Howell and Bain (2005: 540), informational efficiency means security prices are based on the best information available. Such efficiency is interpreted by Zou (2011) as the effectiveness of market information. According to Latham (1986), the most general implicit definition of this term is security prices will not change if all private information is publicized. Hereinafter, the discussion will be centred on stock price informational efficiency.

In accordance with the meaning of informational efficiency, efficient market as it is generally understood and practiced is a market where investors are unable to earn consistent excess profits from trading securities. A priori assumption of efficient market as articulated by Fama (1965b) is that, the market should contain sufficiently large numbers of rational participants and provide almost free access to all relevant information. The competition among participants in the market will cause stock prices to immediately incorporate all available information. Concisely, as stated by Fama (1970), efficient market is a market where available information

[1] Allocation efficiency means the resources being allocated were going to their most productive use. Operation efficiency indicates trading is carried out quickly, reliably, and at minimum cost (Howells and Bain, 2005: 540). Technical efficiency reflects firm's success in producing maximum output from a given set of inputs (Farrell, 1957).