

Testing the Effectiveness of the Behavioral Capital Asset Pricing Model in Inefficient Markets

"Applied Study on Listed Companies in the Egyptian Stock Exchange"

تقييم فعالية نموذج تسعير الأصول الرأسمالية السلوكي في الأسواق غير الكفؤة

"حراسة تطبيعية على الشركات المدرجة بالبورصة المصرية"

A Thesis

Submitted in Partial Fulfillment of the Requirements for the Master of Science in Business Administration

By Mostafa Yousef Hassan Mahmoud

Supervised by

Prof. Hayam Wahba

Professor of Finance Vice Dean for Postgraduates Studies and Research Faculty of Business / Ain Shams University

Dr. Hossam Abdel-Kader

Assistant Professor of Economics

Faculty of Business / Ain Shams University



Ain Shams University Faculty of Business

Testing the Effectiveness of the Behavioral Capital Asset Pricing Model in Inefficient Markets

"Applied Study on Listed Companies in the Egyptian Stock Exchange"

تقييم فعالية نموذج تسعير الأحول الرأسمالية السلوكي في الأسواق نير الكفؤة

"حراسة تطبيقية على الشركات المدرجة بالبورصة المصرية"

A Thesis

Submitted in Partial Fulfillment of the Requirements for the Master of Science in Business Administration

By

Mostafa Yousef Hassan Mahmoud Graduated in 2015

Supervised by

Prof. Hayam Wahba

Professor of Finance Vice Dean for Postgraduates Studies and Research Faculty of Business – Ain shams University Dr. Hossam Abdel-Kader

Assistant Professor of Economics

Faculty of Business - Ain shams University

Approval Sheet

Researcher

Mostafa Yousef Hassan Mahmoud

Testing the Effectiveness of The Behavioral Capital Asset Pricing Model in Inefficient Markets: Applied Study on Listed Companies in The Egyptian Stock Exchange

Thesis Submitted in Partial Fulfillment of The Requirements for The Master's Degree in Business Administration

Examination committee:

Professor Hayam Hassan Wahba

Professor of Finance | Business Administration Department | Vice Dean for Postgraduate Studies and Research | Faculty of Business | Ain Shams University

Professor Mahmoud Abdel-Hady Sobh

Professor of Finance | Business Administration Department | Faculty of Business | Ain Shams University

Mr. Ahmed Abou El-Saad

Member of the Egyptian Stock Exchange | President of CFA Society Egypt | Managing Director of Azimut Egypt for Asset Management.

Defense Date: 29 September 2019

Approved by Faculty Council on / / 2019

Approved by University Council on / / 2019

ACKNOWLEDGMENT

I would like to express my sincere gratitude for you Professor **Hayam Wahba** for consistently giving all the guidance, assistance and support for me. I am proud that you are my mentor and supervisor.

I must express my very profound gratitude to **Professor Mahmoud Sobh** for the guidance during my postgraduates studies.

I would like surely to express my sincere gratitude for **Mr. Abou El-saad** for the insightful guidance and comments. For providing me with unfailing support.

This accomplishment would not have been possible without the great effort Of this Committee.. Thank You!!

To my life-coach, **my mother**: because I owe it all to you. Many Thanks!

Testing the Effectiveness of the Behavioral Capital Asset Pricing Model in Inefficient Markets

Applied Study on Listed Companies in the Egyptian Stock Exchange

Abstract

This research examined whether a behavioral capital asset pricing model based on investor sentiment has more explanatory power in explaining stocks returns over other theoretical and empirical asset pricing models. In this attempt to test the explanatory power of this newly behavioral asset pricing model. A principal component analysis method was used to construct a sentiment index based on two underlying proxies, market turnover and volatility premium. This study contributes to the literature as there are no studies examined the behavioral capital asset pricing theory validity in the Egyptian Stock Exchange. This research has two main empirical results. First, the Fama and French three-factor model has little explanatory power within the Egyptian Stock market. Although the size factor is priced within sample stocks average returns, the value factor showed no effect on stock returns. Second, investor sentiment has a significant effect on stocks average returns. This result support the existence of the noise trader effect within the Egyptian Stock market.

Keywords: Traditional Finance, Behavioral Finance, Asset Pricing, Behavioral Asset Pricing Theory, Investor Sentiment, Efficient Market Hypothesis

Contents

1	INT	CRODUCTION	15
	1.1	Theoretical Background and Literature Review	18
	1.2	Research Gap	21
	1.3	Research Question	23
	1.4	Research Hypotheses	23
	1.5	Importance of the Study	24
		1.5.1 For Academics	24
		1.5.2 For Practitioners	25
	1.6	Research Variables	25
		1.6.1 Dependent Variable: Excess Return $(R - R_f)$	26

	1.6.2	Explanatory Variable 1: Market Risk Premium $(Rm -$	
		Rf)	26
	1.6.3	Explanatory Variable 2: Size Factor (SMB)	27
	1.6.4	Explanatory Variable 3: Value Factor (HML)	27
	1.6.5	Explanatory Variable 4: Investor Sentiment S_{INDEX} .	27
1.7	Data		28
1.8	Metho	odology	31
	1.8.1	Normality Testing	31
	1.8.2	Testing the Efficiency level of the Egyptian Stock Mar-	
		ket - Wald Wolfowitz Test	31
	1.8.3	Fama-MacBeth Two-Step Regression	32
	1.8.4	Pooled OLS Regression	34
1.9	Resear	rch Limitation	34
	1.9.1	Sample Companies	34
	1.9.2	Sample Period	35
	1.9.3	Sentiment Proxies	35
	1.9.4	Three Factor Model	36

2	\mathbf{BEI}	HAVIO	DRAL CAPITAL ASSET PRICING MODEL AND	
	STO	OCKS	RETURNS	37
	2.1	Tradit	cional Approach to Financial Markets and Asset Pricing	40
		2.1.1	Efficient Capital Market Theory	40
		2.1.2	Weak- Form Efficient Market Hypothesis	41
		2.1.3	Semi-Strong Form Efficient Market Hypothesis	42
		2.1.4	Strong Form Efficient Market Hypothesis	42
		2.1.5	The Egyptian Stock Market Efficiency Level	43
	2.2	Sharp	e Black Lintner Traditional Capital Asset Pricing Model	44
	2.3	Marke	ets anomalies as Risk Factors in empirical Asset Pricing .	45
	2.4	Fama-	French Three Factor Model	48
	2.5	Fama-	French Five Factor asset pricing model	49
	2.6	Behav	ioral Approach to Financial Markets and Asset Pricing .	51
		2.6.1	Noise Trader effect as an alternative to the Market efficiency hypothesis	51
		2.6.2	Overconfidence and Excessive Trading	53
		2.6.3	Buying Vs Selling	55

		2.6.4 Prospect theory
	2.7	Behavioral Capital Asset Pricing Theory
	2.8	Investor Sentiment
		2.8.1 Volatility Premium
		2.8.2 Market Turnover
		2.8.3 Research Gap
3	RES	SEARCH METHODOLOGY 70
	3.1	Research Question
	3.2	Research Hypotheses
	3.3	Variables
	3.4	Data
	3.5	Testing the efficiency level of EGX30 Stock Market 8
		3.5.1 Normality Testing
		3.5.2 Wald WoLfowitz Test
	3.6	Fama-MacBeth Two-Step Regression
	3 7	Pooled OLS Regression

	3.8	Research Limitation	. 90	
		3.8.1 Sample Companies	. 90	
		3.8.2 Sample Period	. 90	
		3.8.3 Sentiment Proxies	. 90	
		3.8.4 Three Factor Model	. 91	
4	AN	ALYSIS AND FINDINGS	92	
	4.1	Market efficiency	. 93	
		4.1.1 Normality	. 93	
		4.1.2 Wald WoLfowitz Test (Runs Test)	. 95	
	4.2	Sentiment Index Estimation	. 97	
	4.3	Portfolio Sorting	. 104	
	4.4	Pooled OLS Panel Regression	. 104	
5	DIS	CUSSION AND CONCLUSION	112	
	5.1	Efficiency	. 113	
	5.2	Behavioral Asset Pricing Model Validity	. 113	
	5.3	Further Research	11/	

\mathbf{B}	Vol	atility	Premium	131
\mathbf{A}	Fan	ıa Frer	nch 3 factors and Sentiment Index	117
	5.4	Propo	sed Action Plan	. 116
			kets	. 115
		5.3.6	Machine Learning and Asset Pricing in Emerging Mar-	
		5.3.5	Other Behavioral Factors than Sentiment	. 115
		5.3.4	Direct Measures of Sentiment	. 115
		5.3.3	Other Indirect Measures of Sentiment	. 115
		5.3.2	Other Indexes within the Egyptian stock Exchange	. 114
		5.3.1	Other Asset Pricing Models	. 114

List of Tables

2.1	Summary of empirical studies
4.1	Moments
4.2	Basic Statistical Measures
4.3	Tests for Location
4.4	Tests for Normality
4.5	Efficiency - Wald WoLfowitz Test Results
4.6	PCA Analysis
4.7	Co Variance Matrix
4.8	Simple Statistics
4.9	Standardized Data (Z-Scores)
4.10	Eigenvalues

4.11	EigenVector
4.12	small Capitalization, Low Value portfolios
4.13	small Capitalization, Medium Value portfolios 105
4.14	small Capitalization, high Value portfolios
4.15	Big Capitalization, Low Value portfolios
4.16	Big Capitalization, Medium Value portfolios
4.17	Big Capitalization, Big Value portfolios
4.18	Descriptive Analysis
4.19	Nonlinear GMM Summary of Residual Errors
4.20	Nonlinear GMM Parameter Estimates α
4.21	Parameter Estimates
4.22	Descriptive Analysis
5.1	A proposed action plan to promote capital markets efficiency and better measurement of investor sentiment

Chapter 1

INTRODUCTION