UNIVERSITI PUTRA MALAYSIA

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FEP 2011 19

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DOCTOR OF PHILOSOPHY

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2011

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By

POOYA SABETFAR

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfillment of the Requirements for the Degree of Doctor of Philosophy

July2011

To

My dear Parents, who always like to see me in PhD degree,

My supportive husband Reza and,

My Cute Son Eliya

Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfillment of the requirement for the degree of Doctor of Philosophy

TESTING THE ARBITRAGE PRICING THEORY ON THE TEHRAN STOCK EXCHANGE

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July 2011

Chair: Cheng Fan Fah, PhD

Faculty: Economics and Management

The equilibrium-pricing model using Arbitrage Pricing Theory (APT) has become one of the central models of modern financial theory. However, the APT is too general in determining the factors which influences expected returns. Many empirical studies on the APT have already been conducted in free enterprise systems but, no attention has been given in full *Sharia* compliant close economy. Since there was no previous research on the study of APT in full *Sharia* compliant sanction economy, an empirical support for the APT by employing macroeconomic variables in Tehran Stock Exchange (TSE) which works in full *Sharia* compliant sanction economy was examined as the main objective of the research. However, this study identifies the macroeconomic variables that may have significant high impact on the stock market returns in the arbitrage pricing relationship. Also, this research aims to see whether economical and financial sanctions adversely affect stock market returns. This study undertakes to

identify the number of common factors, priced factors and the macroeconomic variables that significantly affect on TSE by employing factor analysis with principal component method from 1991-2008. Canonical Correlation Analysis (CCA) is also used to see effect of macroeconomic variables on stock returns in TSE. In this study, all the procedure is done by using individual security and grouping according to different size of portfolios separately.

The evidence points to at least one factor to three factors that explain the cross-section of expected returns in TSE from 1991-2008. Financial and economical sanctions are affecting stock market returns and the negative sign of coefficients show the opposite reaction of investors to the announcement of sanctions in TSE. The principal component analysis results suggest that there are four groups of macroeconomic variables in the test period that affect stock returns. According to CCA results in the samples, the sources of systematic risk in the period are export of the crude oil and interest rate proxy in TSE.

The results show the validly but, weak applicability of APT to estimate expected returns of the securities in full *Sharia* closed economy. Nevertheless, the macroeconomic variables that influence stock market returns change over time in Iranian context. This probably is a typical aspect of sanctioned market. The results also recommend the dissimilar strategies are needed to invest successfully in Iran because it is more sensitive to sanctions and different macroeconomic variables.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

UJIKAJI TEORI ARBITRAJ HARGA KE ATAS BURSA SAHAM TEHRAN

Oleh

POOYA SABETFAR

Julai 2011

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Model keseimbangan-harga dengan menggunakan Arbitrage Pricing Theory (APT) telah menjadi salah satu model utama teori kewangan moden. Namun begitu, APT adalah terlalu umum untuk menentukan faktor yang mempengaruhi jangkaan pulangan. Banyak kajian empirikal terhadap APT telah dijalankan dalam sistem perdagangan bebas tetapi tiada perhatian yang diberikan kepada ekonomi tertutup yang sepenuhnya mematuhi Syariah. Memandangkan belum ada lagi kajian APT yang dilakukan terhadap ekonomi yang sepenuhnya mematuhi Syariah, kajian ini memenuhi jurang di dalam penyelidikan dengan membawa objektif utama bagi membina sokongan empirikal untuk APT menggunakan pembolehubah ekonomi makro di Bursa Saham Tehran (TSE) yang beroperasi di dalam ekonomi tertutup yang sepenuhnya mematuhi Syariah. Kajian ini mengenalpasti pembolehubah makroekonomi yang mungkin membawa kesan ketara yang tinggi ke atas pulangan di bursa saham di dalam hubungan harga arbitraj. Kajian

ini juga bermatlamat untuk mengkaji samada sekatan-sekatan ekonomi dan kewangan memberi kesan buruk kepada pulangan di bursa saham. Penyelidikan ini dilakukan untuk mengenal pasti beberapa faktor umum, faktor harga dan pembolehubah ekonomi makro yang secara signifikannya mempengaruhi TSE dengan menggunakan analisis faktor dengan kaedah komponen utama untuk jangkamasa dari tahun 1991 hingga ke tahun 2008. Canonical Correlation Analysis (CCA) juga digunakan untuk melihat kesan pembolehubah ekonomi makro terhadap pulangan saham di TSE. Di dalam kajian ini, kesemua prosedur dijalankan dengan menggunakan sekuriti individu dan berkumpulan secara berasingan mengikut saiz portfolio yang berbeza.

Bukti menunjukkan sekurang-kurangnya terdapat antara satu hingga tiga faktor yang menjelaskan lintas-bahagian jangkaan pulangan di TSE untuk jangkamasa dari tahun 1991 hingga ke tahun 2008. Sekatan-sekatan kewangan dan ekonomi mempengaruhi pulangan di pasaran saham dan tanda angkali negatif menunjukkan reaksi berlawanan pelabur terhadap pengumuman sekatan di TSE. Keputusan analisis komponen utama mencadangkan bahawa terdapat empat kumpulan pembolehubah ekonomi makro dalam tempoh ujian yang mempengaruhi pulangan saham.

Berdasarkan keputusan-keputusan CCA terhadap sampel kajian, sumber risiko sistematik untuk jangkamasa kajian adalah eksport minyak mentah dan proksi kadar faedah di TSE. Keputusan-keputusan kajian mengesahkan aplikasi APT yang lemah untuk menganggarkan jangkaan pulangan sekuriti di dalam ekonomi tertutup yang sepenuhnya mematuhi Syariah. Namun begitu, pembolehubah ekonomi makro yang mempengaruhi pulangan pasaran saham sentiasa berubah dari masa ke semasa di Iran. Ini mungkin merupakan aspek umum bagi sesebuah pasaran yang disekat. Keputusan-keputusan juga mengesyorkan bahawa strategi yang berbeza diperlukan untuk mendapatkan pelaburan yang berjaya di Iran kerana ia lebih peka terhadap sekatan dan terhadap pembolehubah ekonomi makro yang berbeza.

ACKNOWLEDGEMENT

Many people assisted me in conducting this research that I could never adequately thank them all. First and foremost, I would like to acknowledge my deepest gratitude to Associate professor Dr. Cheng Fan Fah, my supervisor for his great considerations, invaluable comments, and keen suggestions throughout the study and preparation of the thesis. Special thanks and admiration are due also to the other members of my supervisory committee, Professor Dr. Shamsher Mohamad, Associate professor Dr. Bany Ariffin and Associate professor Dr. Sazali Zainal Abidin for their helping and advanced insights into the study. I would also like to express my sincere appreciation to Professor Dr. Mohammad Ariff and Associate professor Dr. Taufiq Hassan for their contribution on this thesis.

I would like to express my thanks to my family members, especially my mother and my brother, Sina, for their continual love and support over the years and for giving me the confidence in myself to go after my dreams. I love you.

I would like to express my love to my husband, Reza, who have given me a peaceful refuge whenever the problems of the thesis seemed beyond me. He has been a source of encouragement and support throughout this study and I wish to thank Reza for his love and support. Last, but not least, I wish to express my thanks and love to my cute son, Eliya, who at age four didn't understand what Arbitrage Pricing Theory was but who has tried to be patient when I retreated to my study to write the thesis. Thank you for being my best friends.

APPROVAL

I certify that an Examination Committee met on 18 of July 2011 to conduct the final examination of Pooya Sabetfar on her Doctor of Philosophy thesis entitled " Testing the Arbitrage Pricing Theory on the Tehran Stock Exchange" in accordance with Universities and University college Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the candidate be awarded the Doctor of Philosophy.

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This thesis is submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfillment of the requirement for the degree of Doctor of Philosophy. The members of the Supervisory Committee were as follows:

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DECLARATION

I declare that the thesis is my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously, and is not concurrently, submitted for any other degree at Universiti Putra Malaysia or at any other institution.

POOYA SABETFAR

Date: 18 July 2011

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