FIRM SIZE, BOOK TO MARKET EQUITY, AND SECURITY RETURNS: EVIDENCE FROM THE INDONESIAN SHARI'AH STOCKS

BY

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ABSTRACT

Capital market is one of indicators which may give measurement on economic growth of a country, including Indonesia. In the country, main reference for any investment decisions which related with Islamic capital market instruments is based on Shariah Securities List (SSL) issued by Bapepam-LK Investors who put funds in the Indonesian Shariah Stocks can make investment decisions by monitoring the performance of these stocks This can be done through using return measurement methods such as Capital Asset Pricing Model (CAPM) proposed by Sharpe (1964). However, Fama and French (1992) argue that size, EPR, debt-to-equity and book-to-market ratio have explanatory power to stock returns. Further, Fama and French (1993) find that the most significant variables among those mentioned above in explaining the stock returns are size, book-to-market ratio, and market beta. This study finds that the market beta alone is not sufficient to describe the variation in average equity returns for Indonesian Shariah Stocks over the period of 14 September to 25 September 2009. Additionally, this study also finds that even though size and value premia exists in the Indonesian Shariah Stocks; the market factor is still most important factor among the Fama & French Three Factors Model.

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ملخص البحث

في هذا البلد .رأسمال السوق من المؤشرات التى قد تعطينا مقياس النمو الاقتصادي لبلد ما بما في ذلك إندونيسيا المرجع الأساسي لأي قرار استثمار متعلق بآليات رأسمال السوق الإسلامي مبني على قائمة الأوراق المالية فالمستثمرون الذين يضعون أموالاً في الأسهم .الموافقة للشريعة التي أصدرتها مصلحة الإشراف الوطنية يمكن القيام بهذه العمليات .الإسلامية الإندونيسية بوسعهم أخذ أي قرارت استثمار بمراقبة عمليات هذه الأسهم المقترح من طرف تارب (نمودح تسعير الأصول الرأسمالية) CAPM باستعمال طرق قياس الأرباح مثل معنى EPR يرون أن الحجم ومؤشر (Fama &French) 1992، غير أن فاما وفرنش (1964) (Sharp) ونسبة القيمة الأصولية للسوقية (debt to equity)الربح الصافي للسهم الواحد ونسبة الدين إلى الممتلكات (Fama &French)علاوة على ذلك يرى .، لديها قدرة تبرير عائدات الأسهم(book-to-market ratio) أن المتغيرات المعتد بها من تلك المذكورة آنفاً في تفسير عائدات الأسهم هي الحجم ونسبة القيمة الأصولية 1993 هذه الدراسة توصلت إلى beta. ومقياس حساسية السعر لمتغير السوق (book-to-market ratio)إلى السوقية أن هذا الأخير ليس كافياً وحده لوصف التغيير في معدل عائدات الأسهم الشرعية الإندونيسية خلال الفترة الممتدة بالإضافة إلى ذلك وجدت هده الدراسة أنه على الرغم من سيطرة .من ١٤ سبتمبر ٢٠٠٧ إلى ٢٥ سبتمبر ٢٠٠٩ الحجم والقيمة الموجودة في الأسهم الشرعية الإندونيسية، يبقى معامل حساسية السعر لمتغير السوق الأهم من بين (Fama &French).العوامل الثلاثة المقررة في نموذج

APPROVAL PAGE

I certify that I have supervised and read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a research paper for the degree of Master of Economics.

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This research paper was submitted to the Department of Business Administrations and is accepted as a partial fulfilment of the requirements for the degree of Master of Science in Finance.

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Khaliq Ahmad
Dean, Kulliyah of Economics
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DECLARATION PAGE

I hereby declare that this dissertation is the result of my own investigations, except where otherwise stated. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at IIUM or other institutions.

Ilham Reza Ferdian

Signature..

Date...7 December 2009...

INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

DECLARATION OF COPYRIGHT AND AFFIRMATION OF FAIR USE OF UNPUBLISHED RESEARCH

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Signature

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Date

To My Beloved Wife and Son,

Miranti Kartika Dewi and Faiz Muhammad Reza

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In the Name of Allah, the Beneficent, the Merciful

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LIST OF ABBREVIATIONS AND MATHEMATICAL CONVENTIONS

ABBREVIATIONS

ADF	Augmented Dickey Fuller
AMEX	American Express
APT	Arbitrage Pricing Theory
ASX	Australian Stock Exchange
BAPEPAM-LK	Country's Capital Market and Financial Institutions Supervisory Agency
BE/ME	Book Equity to Market Equity
CAPM	Capital Asset Pricing Model
CFO	Chief Financial Officer
CRISIL-500	Credit Rating and Information Services of India Limited 500
DJIM	Dow Jones Islamic Market
DSN-MUI	Indonesia's National Shariah Body of the country's Ulama Council
EPR	Earning Price Ratio
FEUI	Faculty of Economics, University of Indonesia
FF	Fama & French
FTSE	A British Provider of Stock Market Indices
ICAPM	Intertemporal Capital Asset Pricing Model
IDX	Indonesia Stock Exchange
ISE	Istanbul Stock Exchange
JCI	Jakarta Composite Index
JII	Jakarta Islamic Index
JSX	Jakarta Stock Exchange
K	Kurtosis value
KLSI	Kuala Lumpur Shariah Index
LM	Lagrange Multiplier
ln	Logarithm
LQ 45	Liquid 45
NASDAQ	American Stock Exchange
NYSE	New York Stock Exchange
OLS	Ordinary Least Square
PEBS	Center for Islamic Economics and Business
PP	Phillips Peron
S&P	Standard and Poor
SDF	Stochastic Discount Factor
SSL	Shariah Securities List
UK	United Kingdom
USA	United States of America
VIF	Variance Inflating Factor

a_{pt}	Difference in expected return of the portfolio estimated from the time series
β_i	Systematic Risk of an asset i (Beta)
$\beta_1, \beta_2, \delta, \alpha_1, \ldots \alpha_m$	Set of parameters to be estimated
B/H	Portfolio contains stocks that are in the big size group and also in the high BE/ME group
B/L	Portfolio is made up of stocks that are in the big size group and also in the low BE/ME group
B/M	Portfolio contains stocks that are in the big size group and also in the medium BE/ME group
ε_t	Noise error term
$E(R_i)$	Expected return (or cost of equity) on asset i
$E(R_m)$	Expected return of market portfolio
HML	Difference between the average returns of the two portfolios with highest BE/ME (S/H and B/H) and the average returns of the two portfolios with lowest BE/ME (S/L and B/L)
MF	Portfolio is composed of the return of market index minus risk free rate
P_t	Closing price of the stock "p" "t" period
P_{t-1}	Closing price of the stock "p" at "t-1" period
$\bar{R}^2$	Adjusted R-square
R_{ft}	Return of risk free rate a certain security
R_{mt}	Return of market portfolio
R_{pt}	Return of a certain portfolio at "t" period
S/H	Portfolio comprises stocks that are in the small size group and also in the high BE/ME group
S/L	Portfolio contains stocks that are in the small size group and also in the low BE/ME group
S/M	Portfolio consists of stocks that are in the small size group and also in the medium BE/ME group
SMB	Difference between the average return of the three small stock portfolios (S/L, S/M, and S/H) and the average returns of the three big-stock portfolios (B/L, B/M, and B/H)
t	Time or trend variable
Y_t	Variable of return
Δ	Differencing operator

CHAPTER ONE

INTRODUCTION

1.1. BACKGROUND

The recent global financial crisis has brought more dynamic challenge not only to the US capital market, but also to the stock markets in the emerging economies. Investors now realized the importance of thoroughly analyze their portfolio components before coming up with their final decision. Likewise, companies as well as individuals are also compelled to carefully calculate the cost of capital prior to important managerial decisions making related to issue such as capital budgeting and cost-benefit analysis. Likewise, essential capability in measuring asset pricing is needed in providing information related to risk and return needed for tackling other economic problems.

The common and one of the earliest asset pricing models is Capital Asset Pricing Model (CAPM) proposed by Sharpe (1964) and supported by Lintner (1965). CAPM method has offered satisfactory forecast regarding asset pricing and has been widely accepted and used to estimate stock return by many schools of finance. This has been proved through a survey conducted by Graham and Harvey (2001) where it was revealed that, 73.5% of 392 CFOs in the U.S. relies on the CAPM method for the estimation of cost of equity. According to CAPM method, there is a linear relationship between the expected return of individual assets with their systematic risk which can be measured by the market beta. CAPM method specifically stress that, the expected returns of various assets may vary according to their market beta.

Several prior studies conducted, among which are Black, Jensen, and Scholes (1972) and Fama and MacBeth (1973), support the CAPM method. Though, the

significant contribution of CAPM had attracted the interest of many researchers to conduct study using this technique, however, some anomalies have been discovered during 1980s and 1990s. Some of the anomalies that includes, earnings-price ratio, size, leverage, and book-to-market ratio showed that, market beta is not sufficient to explain expected stock returns (Lam, 2005).

Basu (1977) finds that expected returns on stocks with high earning-price ratio are higher than what are predicted by CAPM. While, Banz (1981) discovers that, stocks with low market value earn higher return when compared to the value predicted by CAPM. Moreover, Bhandari (1988) proves that, leverage which is measured by book value of debt over market value of equity, has positive relationship with expected returns. Likewise, Fama and French (1993, 1996) came up with the same conclusion as other studies mentioned previously which states that, market beta only is not sufficient to explain stock returns. They discovered in their researches on stocks listed in NYSE, NASDAQ, and AMEX during 1963 to 1992 that, there are three factors which can better explain the expected stock returns. Those three factors include market beta itself, size, and book-to-market ratio. Afterward, the formula that comprises these three factors is known as Fama and French Three-Factor Model. A significant number of studies agree that, this model is one of the most popular models and recognized as complimentary to CAPM in estimating expected stock returns in many countries. Gokgoz (2007) in their studies that includes basic indices of Istanbul Stock Exchange within 2001-2006, discovers that both CAPM and Three-Factor Model are applicable and viable for assessing prices of assets. However, he finds that the latter model is more reliable when compared to the former in assessing excess returns of Turkish financial assets. Furthermore, Connor and Sehgal (2001) who conducted a study on stock that comprises CRISIL-500, a broad-based and value-

weighed stock market index in India, from June 1989 to March 1999 discovered the existence of pervasive market, size, and book-to-market factors in Indian stock returns. They also find that, cross-sectional mean returns are explained by their exposures to these three factors, and not by the market factor alone. In line with the previous findings, a study by Drew and Veeraraghavan (2002) on Australian stock returns from June 1985 to June 2000 finds that, measuring performance of fund managers using CAPM alone is inconclusive .

1.2. RESEARCH PROBLEM

Capital market is one of the indicators that can be used to determine the extent of economic growth of a country. During the worst period of the recent global financial crisis, the World Bank noted that only three countries of which Indonesia is one of them, experienced positive economic growth. In Indonesia, capital market condition can be observed through movement of the Indonesia composite index. Most of the investors, domestic and foreign ones, invest funds in the Indonesia Stock Exchange (IDX) easily make their investment decision by monitoring the performance of this index. In addition to this, they are able to conduct both fundamental and technical analyze in respect of the targeted investee companies. To support this analysis, many estimation methods especially with regard to stock returns have been found.

In addition, those who are more concern with investing in Shariah-compliance securities can conduct their analysis on Shariah Securities List (Daftar Efek Syariah) issued by the country's Capital Market and Financial Institutions Supervisory Agency (Bapepam-LK). Though numerous studies have been conducted in relation to stock performance using various methods, however, there no study exist on the finding

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about which of the return estimation methods is most suitable to be used for estimating securities returns of companies listed in the SSL.

Prior studies conducted to assess the validity of CAPM in IDX focus mainly on conventional indices. Husnan (1993) uses same model as Black, Jensen, and Scholes (1972) and finds that market beta calculated in the study are statistically significant and CAPM is found invalid to be applied in Jakarta Stock Exchange (JSX)[1]. More importantly, he finds that zero-beta CAPM is valid to be used in JSX. This result is consistent with what was found by Sumanto (1993) who observed monthly return of 120 individual stocks listed in Surabaya Stock Exchange from 1991 to 1993. Karambe and Tandelilin (2003) discovered that, market beta is not the only factor that can predict the return of stocks listed in IDX from the period of January 1992 to June 2000. They suggest that Arbitrage Pricing Theory is more valid in explaining the stock returns. Saputra (2008) conducted a study on portfolio return variation of stocks listed on LQ45 for the period of February 2000 to July 2007 using CAPM and Fama and French Three-Factor Model and found that, CAPM was able to provide better explanation about the variation in returns than the latter model.

The above studies revealed that, returns on the stocks listed in IDX can be explained through different model at different time. Moreover, studies that specifically focus on assessing the performance of shariah-compliant stock is also lacking. Thus, this study attempts to address this issue by feeling this research gap. More specifically, this study attempts to examine the validity of two estimation methods, CAPM and Fama & French Three-Factor Model, in estimating returns of the stocks listed in the SSL from 14 September to 25 September 2009. in addition to this, the

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[1] Jakarta Stock Exchange and Surabaya Stock Exchange were merged in 2008 became Indonesia Stock Exchange as known today.

study will attempt to identify which of the two methods is the best. It is hoped that, the findings of this study can be of benefit for investors, issuing companies, and other stakeholders for their investment-related decision

1.3. OBJECTIVES OF THE RESEARCH

As stated earlier, the primary objective of this study is to compare and identify which of the two methods is the best in estimating stock return of companies listed in the Indonesian SSL. This study also attempts to see whether the beta coefficient of the CAPM is the sole measurement of risk that influences asset return. Relevant data of all stocks obtained from the list of Indonesian SSL for the period 14 September 2007 to 25 September 2009 will be analyzed using CAPM and Fama & French three-factor model. Specifically, the objectives of this study can be summarized as follows:

1. To determine whether the size and value premia exists in the Indonesian Shariah Stocks.

2. To observe whether the size and value premia (without market factor) only could more describe the expected return of portfolio than CAPM in the Indonesian Shariah Stocks.

1.4. SIGNIFICANT OF THE RESEARCH

Early studies examining expected returns of stocks employed CAPM as estimating model. After years of usage, this model has been criticized by researchers, among which are: Roll (1977), Merton (1973) with the introduction of alternative concept called inter-temporal CAPM. In line with this, Ross (1976) also came up with another alternative called concept of Arbitrage Pricing Theory (APT). The most recent and

famous development and critics to CAPM was made by Fama & French (1995) with their three-factor models.

As one of the earliest methods, CAPM has been widely used in estimating stock return. However, with the development of Fama & French three-factor model and other advantages attributed to this model, researchers as well as practitioners in capital market area have developed strong interest and confidence in the model. Studies which examine expected stock return using comparison of both CAPM and Fama & French three-factor model have been conducted in countries like USA (Fama & French, 1995), Australia (Drew & Veeraraghavan, 2002), Turkey (Gokgoz, 2007). However, based on the knowlegde of the researchers, no study has been found comparing the two models in estimating stock returns listed in developing countries such as Indonesia. Apart from this, studies that focus on shariah-compliant stocks does not exisist.

Given the merits of each method, the present study will use both methods to estimate return of Indonesian stocks. More importantly, this will be the first study that compare and determine which of the two model namely CAPM and Fama & French three-factor model is the best in estimating return of stocks of companies listed in Indonesia Shariah Securities List.

1.5.   ORGANIZATION OF THE CHAPTERS

This research is structured as follows: Chapter 2 discusses the literature review on CAPM, Fama and French Three-Factor Model, and selected previous studies that used these two models.   Chapter 3 covers an overview of Indonesian Islamic Capital Market and Shariah Stocks. Chapter 4 discusses the research method followed by a

discussion on the empirical results in chapter 5. Chapter 6 includes conclusion, the

implications of the results, the limitations of the study and the directions for future

research.

CHAPTER TWO

LITERATURE REVIEW

This chapter reviews the theory and empirical research in the area of asset pricing measurements, especially those which incorporate CAPM and Fama & French Three-Factor Model as their analyzing tools. The objective of this review is to build a foundation for a theoretical framework for this study. The following section examines concept of Capital Asset Pricing Model (CAPM). Section 2.2 assesses the concept of Fama & French Three-Factor Model. Section 2.3 discusses the previous empirical researches that compare CAPM and Fama & French Three-Factor Model as measurement tools to estimate asset pricing.

2.1. CAPITAL ASSET PRICING MODEL (CAPM)

The CAPM introduced by Sharpe (1964) and supported by Lintner (1965) provides a foundation of asset pricing theory. In 1990, this model earned Sharpe a Nobel Prize. As a result of this, it becomes an important area of discussion for any investment related courses taught in most universities. It also become an instrument for practitioners in estimating cost of capital of financial asset and means to evaluate the performance of managed portfolios.

In general, CAPM provides important information on how expected returns can be determined and shows that, asset prices are influenced by their risks. This model was developed based on a model of portfolio selection introduced by Markowitz (1959). It is also known as modern portfolio theory. According to Markowitz, investors are risk averse and only care about the mean and variance of their one-period

investment return Thus, they will choose any portfolios which have the following characteristics: (i) minimizing variance of portfolio return, given expected return, and (ii) maximizing expected return, given variance This approach is otherwise known as "mean-variance model." In addition to the above assumptions. Cuthbertson and Nitzsche (2008) extended the model by adding a number of assumptions that includes

(i) All investors maximize the return-to-variability (i.e. Sharpe ratio).

(ii) All investors make the same forecasts of expected returns, variances, and covariance, over the same horizon, and make it possible for all to choose to hold the same market portfolio 'weights' for the risky asset. this is otherwise called 'homogeneous expectations' or beliefs.

(iii) There are no taxes or transaction costs.

(iv) Investors can borrow and lend unlimited amounts at the risk-free rate.

(v) Investment takes place in all publicly traded financial assets (e.g. stocks, bonds, foreign exchange, futures), but the model rules out investments in non-tradable assets such as education and assets provided by the government (e.g. publicly owned power generation, healthcare in some countries).

(vi) Investors may have different endowments of wealth (but no small group of investors dominates the market). Investors can have different degrees of risk aversion (risk tolerance).

(vii) All investors are price takers and they believe that their trading do not have an impact on market prices.

All the above assumptions, was then developed into a CAPM equation which is presented as follows:

$$E(R_i) = R_f + \beta_i\big(E(R_m) - R_f\big) \tag{1}$$

where:

$E(R_i)$.   Expected return (or cost of equity) on asset i

R_f :   Risk-free rate

$E(R_m)$:   Expected return of market portfolio

β_i :   Systematic risk of an asset i which calculated by using formula of

$\frac{cov(R_i,R_m)}{var(R_m)}$ or slope in the regression of excess return $(R_i - R_f)$ on

market's excess return $(R_m - R_f)$

Based on the above equation, it can be inferred that high-risk asset with high market beta should have higher expected return as compared to low-risk asset with low market beta. Additionally, when market beta is zero, the excess return is also zero or investment will only result to return that is equal to risk-free rate return.

Due to CAPM's simple equation, some questionable assumptions, and static nature, several researchers tried to incorporate the model as methodologies used in estimating asset pricing. One of the earliest studies that used CAPM was conducted by Black, Jensen, and Scholes (1972). He argues that limitless risk-free borrowing and lending is an unrealistic assumption. He then, develops a modified CAPM which exclude risk-free borrowing or lending assumption. He concluded that, this exclusion can give better explanation of the asset pricing. Other model developments were also done by Merton (1973) with Inter-temporal CAPM (ICAPM), Breeden (1979) with Consumption CAPM, and Ross (1976) with Arbitrage Pricing Theory (APT). The most recent development on asset returns measurement that argues about the unrealistic assumption utilized by CAPM was made by Fama and French (2002). They believed that no restriction on short sales may result in inefficient market portfolio. With this condition, the CAPM relation with expected return and market beta is lost.