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EFFECTIVENESS OF FAMA AND FRENCH THREE FACTOR MODELS IN INDONESIAN STOCK EXCHANGE

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Abstract. This study investigates the Fama and French Three Factor Model that is applied in the Indonesian Stock Exchange or known by the Indonesian as the Indeks Harga Saham Gabungan (IHSG). This research focuses on finding secondary information, or evidence from previous paper that support or oppose the use of the said model within the mentioned scope. The main objective of this study is to provide evidence that will contribute to explain the Three Factors of the Fama and French Models in IHSG as one of an emerging markets. As a multi-beta factor of the earlier model called Capital Asset Pricing Model (CAPM) which only utilizes the systematic risk, Fama and French added two new factors which are the size factor that derives from the firm size and value factor which is measured in book to market value. Overall, we can conclude that there are market risk premium, size premium, and value premium which can elaborate the excess return in Indonesia, Fama and French is also proven to be a superior model than CAPM. Although there are several findings that considers other factors to further enhance the result.

Keywords: Fama and French Three Factor Model; CAPM; IHSG;Market risk premium; Size premium; Value premium

INTRODUCTION

The scope of this study is limited to the Indonesian Stock Exchange Market (IHSG) as well as their indices, such as LQ 45. Meanwhile, the main objective of this study is to provide various evidence that will help explain the Three Factors of the Fama and French Models in IHSG as one of the emerging markets. Capital market investment is well known for its high exposure to risks, which is why investors tends to be are mindful when choosing the best stocks or securities to be purchased. This prudence is very reasonable, because every investor will think towards the maximization of their expected return of each cent they invest in securities. In order for this to happen, it is essential for investors to pay attention and estimate all important factors that can affect the return of their investment in the future.

As a basic model, CAPM (Sharpe 1964) contains several anomalies which is why Fama and French (1992), developed a model for determining stock prices (Sudiyatno, Irsad, 2013). Also known as the three-factor model, it applies additional factor which are size and value besides the traditional factor of beta that derives from CAPM's systematic risk. Fama and French suggest that beta is not sufficient enough as an indicator to explain stock return. This insufficiency could be filled with the addition of size and book to market ratio. By taking in account small capitalization and value firm that are able to outperform the market they provide a more accurate and better result than the previous model. The purpose of this study is to reexamine the factors that influence stock returns using three factors, the Fama and French models. With a scope focusing on the Indonesian real estate market.

LITERATURE REVIEW

In order for CAPM to work several assumptions must be made. The assumptions that are made by this model have been deemed to unrealistic and could not be applied to real situation occurring in the market. Not only that, this model is also becoming more and more obsolete due to findings of earlier studies on the anomalies of the said model. Stated by Amanda and Husodo (2015) CAPM is not adequate to explain stock return due to numerous anomalies that are discovered within the model such as firm size which can be seen from market capitalization (Banz, 1981; Reinganum, 1981), book to market ratio or value factor (Fama and French, 1992), momentum (Jegadeesh and Titman, 1993), price reversal (DeBondt and Thaler, 1985), liquidity measured by ILLIQ (Amihud and Mendelson, 1986), and assets growth (Cochrane, 1996).

Fama and French Model was formed with CAPM as the base and is used to test the previous model. Developed by Eugene Farma and Kenneth French this model is used in asset pricing and portfolio management to elaborate on stock return. If CAPM only uses systematic risk as a factor on its model to determine the expected return of an asset, the newer model added two factors to further explain the expected return of the market. These two factors are the firm size and market to book ratio, each will give more detail on the factor affecting the return. Eraslan (2013) stated that Fama and French (1996, p.56) point out that the model captures many of the variations in the cross-section of average stock returns, and it absorbs most of the anomalies that have been a common occurrence on the Capital Asset Pricing Model. Fama French Three Factor Model aim to explain the return on three factors which

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includes the excess market portfolio return that derives from CAPM, difference in excess return of small size firm and big size firm, and difference between high-book to market stock and low-book to market stock on their excess return (Eraslan, 2013). As an extension of CAPM, the model stated that small market capitalization and stocks with a high book-to-market value have outperformed the others. Small Minus Big (SMB) is used to describe the firm size often through the market capitalization level of the company and High Minus Low (HML) represent the spread in return between value stock which have a higher yield compared to growth stock.

METHODOLOGY

This study explores Fama French Three Factor Model in Indonesian stock exchange market (IHSG). The objective of this research is to find evidence about the effect from market beta, size factor, and value factor to the stock *excess return* in Indonesia. Data collected in this study will be from secondary data of various research regarding the use of Fama and French Model in the stock exchange. Firstly, desk research is conducted to obtain information regarding the Fama and French Model. This research will be emphasized but not limited to research on the company listed in the Indonesian stock exchange market (BEI) or Indonesian indices such as LQ45. Second step will be the explanation of all factors and model that will be used in this research. The last will be literature review, to provide detailed explanation and possible further use of the research in the future. Analysis is conducted after the completion of desk research. The analysis will be based on how effective is the Fama and French Three Factor Model on the return of Indonesian firms within the stock exchange market or indices. First, factors and sample used will be analyzed among others. Next, the result of stock return will be compared to the three factors used within the Fama and French Model. Thirdly, the results of each research will then be compared to one another and conclusion will be made regarding the function of these factors on the stock return.

FINDINGS AND ARGUMENT

Sudiyatno and Irsad (2013) conducted a research to compare the ability of the Fama and French three factor model against CAPM in explaining the variance of expected stock returns and portfolio performance evaluations formed from a three-factor model with Sharpe index gauge, Treynor index, and Jensen-Alpha in the Indonesia Stock Exchange (IHSG) 2003 - 2006 period. They observed an index of IHSG called LQ 45 which contains 45 of Indonesia's leading stocks. From the results of the analysis and discussion it can be concluded that in general, Fama and French asset pricing models are superior in explaining the expected variation in stock returns compared to Sharpe's CAPM model.
The result of their study is after going through a long series of regression analysis and testing of model testing can be concluded as:

a. Market returns have a positive and significant effect on stock returns. The higher the risk premium, the higher the stock excess return.
b. Size factor (SMB) or market capitalization value has a negative effect but not significant to stock returns.
c. Book-to-market ratio or value factor (HML) has a negative but not significant effect on stock returns.

Given that from the results of testing the hypothesis only the risk premium (risk premium) is significant effect, the implications of this study are the results of this study support and are in accordance with portfolio theory and CAPM, although the statistical test size (SMB) and book-to-market ratio (HML) are not significant at the level of significance 5%, and only significant at the level of 23.7% and 14.0%, but both of these variables need to get attention from investors. Efforts that can be made by investors to achieve a high portfolio return with all the consequences can be done by investing in stocks that have a high-risk premium, market capitalization value and low book-to-market value. In a study conducted by Sutrisno and Nasri (2018) Fama and French Model is tested against the CAPM model in the IHSG for the period of 2005 through 2015. Data used for the study are secondary data which are accumulated from the Datastream database. The use of the Datastream database helps solve the survivorship bias because Datastream samples include active and non-active companies. Survivorship bias itself is an error of concentrating on the stocks that made it past some selection process and overlooking those that did not, normally in light of their absence of perceivability (Elton, Gruber, Blake 1996). This can prompt false ends in a few different ways.

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Table 1: Comparison between Fama and French Model with CAPM of IHSG.
Source: Sutrisno and Nasri (2018)

	Adj R^2	GRS	SR(α)	|α|	s(α)
CAPM	0.23	4.64***	0.88	0.47	0.61
FF3	0.35	4.16***	0.69	0.41	0.53
	Adj R^2	GRS	SR(α)	|α|	s(α)
CAPM	0.19	6.77***	1.39	0.54	0.31
FF3	0.27	6.11***	1.34	0.45	0.27

They found out that the average adjusted R^2 value for the Fama-French three-factor model has outperform the Capital Asset Pricing Model, As shown in table 1. Their result also showed that the average absolute value of the intercept and the average standard error of intercepts for the Fama and French three-factor model are lower than the CAPM. This result cemented the superiority and supportability of the Fama and French three factor model. When alluding to the GRS numbers of each model, both produce an F-statistic which is significant at 1% level. However, their perceived value for the GRS of Fama and French three factor model is lower than the CAPM, which they interpreted that the Fama and French three factor model outperforms CAPM. The Sharpe ratio for the Fama and French three factor model is smaller than the CAPM where these discoveries affirm the prevalence of the Fama and French three factor model compared with their predecessor. Although their findings lean on the supportability of Fama and French they stated that the result that they captured suggest that there are other factors that could explain the stock return more thoroughly.

In other research paper by Amanda and Husodo (2015), they analyse the effects of three factors of Fama and French Three factor model which are the market factor, size factor, and value factor. Not stopping there, they added an additional factor which is the illiquidity premium. Following the study by Amihud (2002) they use liquidity as the fourth factor. They suggest that even though Indonesia is an emerging country that has superb growth within the stock market there are still many illiquid stocks, their market seems to be not so liquid. Their paper use time-series regression with data gathered from a monthly basis from 2003 to 2013.

Amanda and Husodo (2015) explained that liquidity of an asset is a pivotal factor. An asset is said to be liquid if it can be traded in large quantities, within a short time range, with small transaction cost and without largely affecting the price and value of it (Amihud and Mendelson, 1991). Amanda and Husodo (2015) uses Amihud's (2002) study that uses liquidity as a factor. The measure of stock illiquidity, is called ILLIQ

Recommendation and Conclusion

From the research gathered, Fama and French Three Factor Model are proven to be able to outperform the CAPM model and are able to reflect the stock return of Indonesian Stock Exchange. Although the level of significance differs from one paper to another, the factors brought by Fama and French still holds importance in forming stock portfolios. Sudiyatno and Irsad (2013) mentioned their findings as a result that is in accordance but could not support the statement of Fama and French due to their low level of significance in their data, they find out that risk premium significantly affects the stock return compared to the other two factors. While Amanda and Husodo (2015) are able to prove that factors of Fama and French along with Amihud illiquidity factor can explain the excess return of stock portfolio in Indonesia. Sutrisno and Nasri (2018) discovered that their data are able to support Fama and French but they also mentioned other factors beside the three traditional factors should also be used to obtain optimal return in Indonesian market.

Because of this, we are able to conclude that it is better to utilize Fama and French three factor model compared to CAPM in Indonesian Stock Exchange. Although investors should also keep in mind other factors beside the *market risk premium, size premium, and value premium.* Future studies should explore more towards risk factor outside of traditional one and investors could also utilize different techniques and model to compare the asset pricing model.

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