FAMA-FRENCH SIX FACTOR: EVIDENCE FROM INDONESIA SHARIA STOCK INDEX (ISSI)

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ABSTRACT

This study aims to examine the effect of Five Factors Model Fama and French and Momentum Factor on stock returns on companies listed in the Indonesia Sharia Stock Index (ISSI) for the period 2013-2017. In the Five Factor Model uses five variables namely risk premium, company size, book-to-market ratio, profitability and investment. This study using Ordinary Least Square (OLS) with monthly data frequency to test the relevance of the Five Factors Model to the expected stock return of the company. From the results of the study, obtained variables that have a positive effect on expected stock returns, namely the risk premium, book-to-market ratio, investment and momentum. While the size and profitability variable does not affect the expected stock return.

Keywords: Five factor model, momentum, portofolio excess return, ISSI.

INTRODUCTION

In investing, of course, investors will be careful in choosing a stock portfolio. This is because the capital market is an investment that has a high risk (Sudiyatno and Irsad, 2011). The decision to invest depends on determining the level of risk faced with the level of return that will be obtained (Acaravci and Karaomer, 2017). Hartono (2014: 285) revealed that return and risk are two inseparable things, because the consideration of an investment is a trade-off of the two factors. There are two types of returns, namely realized returns and expected returns. The accuracy of the method in calculating stock portfolio returns also needs to be considered. Given that it is very influential on investor decisions.

In 1992, Fama and French combined CAPM and APT in an effort to develop a stock pricing model. Stock beta as an indicator of market risk is believed not to be the only factor that can explain the level of stock returns, but there are other explanatory factors, namely size (SMB) and book-to-market ratio (HML). Small Minus Big (SMB) is a return on a small-sized stock portfolio minus the return on a large-sized stock portfolio, while High Minus Low (HML) is a return on a portfolio of value stocks minus the return on a growth stocks portfolio (Sutrisno and Ekaputra, 2016).

Before Fama and French developed their research, in 1997 Carhart developed the Fama and French Three Factor Model research by adding one factor, namely momentum. This momentum factor is believed by Carhart to reduce the error pricing of portfolio returns. The model offered by Carhart in Candika's research (2017) states that the strength of Carhart's model of the four factors on stock excess returns in Indonesia influences excess returns and can be used in valuing stock prices.

The development of the three-factor model is complemented by the latest research, namely in 2015 by introducing the Fama and French five-factor model. This model adds two

factors that can capture premium returns, namely profitability and investment. This five-factor model is motivated by the dividend discount model and previous empirical findings which found that profitability and investment factors influence the rate of return on assets (Fama and French, 2018).

Acaravci and Karamoer (2017) found that the Fama and French five-factor model not only applies well to Borsa Istanbul (BIST), but can also explain variations in excessive portfolio returns. These findings are in line with research Yang, et al (2017) and Yufang (2017). Indonesian researchers, Sutrisno and Ekaputra (2016) find that the Fama and French five-factor model better explains the excess return of a stock portfolio in Indonesia compared to the Fama and French three-factor model. The same thing was also found by Wijaya, Murhadi and Utami (2017).

The momentum itself was first examined by Jagadeesh and Titman (1993) where stock returns on the U.S. show momentum. Good stocks over the past year have a tendency to continue to improve. The existence of momentum effects can be defined as the tendency of stocks that have good performance and the tendency of stocks that have poor performance in one period until sustained which has an abnormal performance during that period (Bodie et al., 2008).

The existence of a new model, in this case is the Fama and French Five Factors Model that emerged after the CAPM and APT and the refinement of the Fama and French Three Factor Model is an alternative to find out the level of return on investment or returns that are increasingly representative. Then researchers assume that the momentum factor needs to be tested to determine the extent of investor response to stock returns listed in ISSI. Whether there is a momentum effect also affects sharia stock returns in Indonesia.

LITERATURE REVIEW

Fama and. French (2015) initiated research on "A Five-Factor Asset Pricing Model". This research was conducted on all NYSE, AMEX and NASDAQ shares. His research revealed that the FF5FM model was better than the FF3FM model. However, the main problem of this five-factor research model is its failure to capture low returns on small stocks whose returns behave like companies that invest heavily even though profitability is low. With the addition of profitability and investment factors, the value factor in the FF3FM model becomes excessive for visualization of average returns in the sample under study.

Sutrisno and Ekaputra (2016) found that in explaining the excess return of stock portfolios in Indonesia, the Fama-French five-factor model has a better ability than the Fama-French three-factor model, although profitability and investment factors have a weak effect on excess return. Research conducted by Acaravci and Karaomer (2017) entitled "Fama-French Five Factor Model: Evidence from Turkey" aims to test the validity of the Fama and French five-factor model in Borsa Istanbul (BIST) over a period of 132 months, showing that there are no errors prices according to the results of Gibbons et all. (1989) GRS-F test of FF5FM. Therefore, FF5FM can be said to apply well in BIST. The other goal is to be able to explain variations on excessive portfolio returns.

"Analysis of the US Sector of Service with a New Fama-French 5-Factor Model" investigated by Yang, et al (2017). The results of this study are that with EGARCH volatility and abnormal errors, the Fama-French 5-factor model is still alive. The new model is more in line with the data studied than the Fama-French 5-factor model. In addition, the model with GARCH has a slightly better volatility than the volatility in EGARCH. Wijaya, Murhadi and Utami (2017) examined "Fama Analysis of the French Five Factor Model and Three Factor Models in Explaining Stock Portfolio Returns". This study found that market risk and profitability had a significant positive effect on return. Size and investment have a significant negative effect on return. In the book-to-market factor, the effect is not significant on return.

In addition, this study also found that the 5FF Model could explain returns better than the 3FF model.

Candika (2017) also conducted research related to "Testing the Strength of the Four Factor Carhart Model Against Stock Excess Returns in Indonesia". The results of his research are the excess market return variable is positively related to all models. SMB also had a significant impact on 5 portfolios. The HML variable is significant for portfolio return. While the UMD variable is only significantly positive for the return of 2 portfolio models. Kubota and Takehara (2018) show that RMW profitability and CMA investment are not statistically significant when GMM tests are carried out by Hansen-Jagannathan measurements. The conclusion of their study is that the original version of the Fama and French Five Factor Model is not a good benchmark for models in Japan with a sample period from 1987 to 2014.

Fama-Frech Five Factor Model

Fama and French (2015) found that the model described by size, value, profitability, and investment in average stock returns performed better than the Fama and French three-factor model of shares in the United States. This five-factor model is motivated by the dividend discount model and previous empirical findings which state that the profitability and investment factors affect the rate of return on assets. This model has the following formula.

$$R_{pt} - R_{ft} = \alpha_p + \beta_p (R_{mt} - R_{ft}) + s_p SMB_t + h_p HML_t + r_p RMW_t + c_p CMA_t + e_{pt}$$

In this equation Rpt is portfolio excess return in period *t*. $R_{mt} - R_{ft}$ is the historical market return. R_{ft} itself is the average monthly risk free rate. SMB Small Minus Big, which is the difference between small stock portfolio return with large stock portfolio. HML High Minus Low, which is the difference between stock portfolio return BE / ME is high with a stock portfolio that BE / ME is low. RMW Robust Minus Weak, which is the difference in return of high profitability stock portfolio (robust) with a low profitability stock portfolio (weak). CMA Conservative Minus Aggressive, which is the difference in return on conservative stock portfolios (conservative) with high profitability (aggressive) stock portfolios. α is an Intercept. Whereas for βi is the market Beta or regression coefficient. S_p, h_p , r_p, c_p are the regression coefficients for each factor.

Market risk or systemic risk is described by the market beta. Where this market beta is a risk that cannot be eliminated through diversification. Beta is a systematic risk gauge of a security or portfolio relative to market risk (Hartono, 2014: 444). Beta itself shows the sensitivity between security returns to market returns. The higher the beta, the more sensitive the security returns are to market changes (Candika, 2017).

Market risk premium (RPm) shows the premium demanded by investors to assume average stock risk. Market risk of a stock can be measured from the extent to which the stock tends to move up or down following the market (Sudiyatno and Irsad, 2011). Beta equal to 1 explains that there is a relationship if market returns move up (down), securities or portfolio returns also move up (down) as much as following market returns (Hartono, 2014: 444).

Size in Fama and French research is measured using market capitalization. Market capitalization can be obtained from the calculation of stock prices multiplied by the number of shares issued in that year (Rakhmawati and Priyadi, 2015). Thus, the market capitalization of a company shows the size of the company. In the theory of size effects, small-value stocks with also small capitalization have an average historical return that is higher than the market portfolio. In addition, small stocks with high market risk, tend to provide a high return even with a higher accounting beta (Berk and De Marzo, 2014: 454).

Zubir (2013: 244) mentions that there are 3 reasons why small companies provide greater returns than companies with large market capitalization, namely 1) Companies with

small market capitalization value have greater risk than large companies, so investors will determine the returns that are greater than. 2) There was a price correction due to an error in determining the share price of small companies. 3) Small companies tend to have high growth rates. Where will directly affect the cash flow that affects the stock price. Fama and French (1992) in Candika (2017) stated that small companies tend to use their profits for business expansion, so that the portion of retained earnings will be greater than the dividends distributed. Size is proxied with Small Small Minus (SMB). SMB is the difference between the average (average) each month from the return on three small stock portfolios or small companies (S / L, S / M, and S / H) with the average (average) per month of the return on the three portfolios large shares or big companies (B / L, B / M, and B / H) (Wijaya, Murhadi and Utami: 2017).

Book-to-Market Ratio (B / M) is a ratio of book equity with market equity of all companies that are the object of research (Wijaya, Murhadi and Utami: 2017). The book value per share shows the net assets owned by the shareholders. Where net assets are equal to total shareholders' equity (Hartono, 2014: 182). While the market value shows the product of the number of shares outstanding with the close price of each company.

Based on BE / ME factors, shares are grouped into three groups, namely: 30% Low (L), 40% Medium (M), 30% High (H). After a group is formed based on size and BE / ME factors, then S / L, S / M, S / H, B / L, B / M, and B / H portfolios can be formed. Furthermore, the book to market ratio will be proxied by High Minus Low (HML). High Minus Low (HML) which is the difference every month between the average return on two portfolios that have a high book-to-market ratio with the average return on two portfolios that have a low book-to-market ratio (Sutrisno and Ekaputra, 2016).

Profitability describes the level of profit of companies whose measurements use the ratio of return on equity (ROE), namely by comparing net profit before tax with shareholder equity (Wijaya, Murhadi and Utami, 2017). Fama and French (2015) use operating profit in defining profitability measures. Where annual income is reduced by cost of goods sold, interest expense, sales and general and administrative expenses during the previous fiscal year divided by the ending book value of equity. Whereas Acaravci and Karaomer (2017) use net income divided by book equity ratio for reasons of data availability. In this model, profitability is proxied by Robust Minus Weak (RMW). RMW is the difference between the average monthly return of a company with a high level of profitability (robust) with a return of a company with a low level of profitability (weak) (Sutrisno and Ekaputra, 2016).

The level of investment of a company is measured based on the growth rate of total assets from the fiscal year ending in year t-2 to the fiscal year ending t-1 divided by total assets in year t-2 (Fama and French, 2015). Conservative Minus Aggressive (CMA) is the difference every month between the average return on two portfolios with conservative investment and the average return on two portfolios with aggressive investment (Sutrisno and Ekaputra, 2016).

Momentum Factor

Jagadeesh and Titman (1993) were the first researchers to capture the effects of momentum on stocks in the U.S. This momentum can be used as a strategy for investing known as the momentum investment strategy. Momentum strategy is an investment strategy where positive (negative) returns in the past will continue for a certain period in the future (Beigi, Hosseini, and Qodsi, 2016). Jagadeesh and Titman's research (1993) in Candika (2017) shows that stocks with good (winner) or bad (losser) performance for 3 to 12 months tend not to experience significant changes for the next period. The profit obtained by investors is based on the abnormal return assumption. Abnormal return is the difference between the actual profit level and the expected profit level (Husnan, 2009).

Charhart (1997) developed the Fama and French Three Factor research model by adding one factor, namely momentum. This factor is taken because the Fama-French (1996) model cannot explain the short-term reversal pattern. Where momentum will reduce the error pricing of portfolio returns (Candika, 2017). Momentum is also a phenomenon in stock movements where current stock prices are influenced by past stock prices. This theory is in line with the theory of market efficiency in a weak form (Ross et al, 2015: 496). The UMD or Up Minus Down formula in Carhart's (1997) model is used to test the momentum factor of the price of a security. UMD itself is a stock portfolio return with winner shares reduced by stock portfolio returns with losers shares. If the UMD value is positive, it will be in accordance with the momentum phenomenon which states that a good or bad stock performance for one to three years tends not to experience significant changes (still good or bad) for the next period (Candika, 2017).

Risk premium (Market) and its effect on stock portfolio excess returns

Market risk premium in this study was measured using beta. Beta itself is a regression coefficient between two variables, namely the excess level of market portfolio profits (excess return of market portfolio) (Husnan, 2009: 166). In CAPM theory, beta acts as a risk gauge. The use of this beta is in accordance with portfolio theory which states that if financiers diversify well, then the risk gauge is the contribution of risk from additional shares into the portfolio. In the market portfolio held by investors, beta is a contribution of risk itself (Husnan, 2009: 177). The higher the beta, the more sensitive the stock returns are to market changes. The higher the beta, the higher the volatility of the stock so that investors will ask for additional returns on these shares (Candika, 2016). Research on the effect of risk premium on excess portfolio returns is mostly done in Indonesia, as has been done by Sudiyatno and Irsad (2011). Similar studies have also been conducted by Pasaribu (2010) and Gleny and Tjong (2014) which show that risk premium has a positive effect on excess return in Indonesia.

Size and its effect on stock portfolio excess returns

Firm size is the size of a company. Banz (1981) in Tandelilin (2010, 237) in the theory of market efficiency, the relationship between returns and company characteristics revealed a size effect, which is the tendency for small company shares to have a higher return than large company shares. Reinganum (1981) in Tandelilin (2010, 237) also revealed that there was an abnormal return on shares of small companies. Where small companies generally have relatively lower beta. Firm size variable in the asset pricing model is stock excess return, which is the difference between stock portfolio returns and large market capitalization.

Market capitalization is obtained by multiplying the closing stock price by the number of shares issued. The size in this study was proxied by Small Minus Big (SMB) (Sudiyatno and Irsad, 2011). The company size variable in the asset pricing model is stock excess return, which is the difference between stock excess return with small market capitalization and stock excess return with large market capitalization. Size which is proxied by Small Minus Big (SMB) has a positive effect on expected portfolio returns. Banz's research (1981) in Candika (2016) concluded that company size has a large influence in explaining returns. Research by Groot et al (2012) shows that low market capitalization will bring higher returns compared to companies that have high market capitalization. Rakhmawati and Priyadi (2015) also found a similar thing, firm size which is proxied by Small Minus Big (SMB) has a positive effect on the excess return of stock portfolios.

Book-to-Market Equity and its effect on stock portfolio excess returns

Fama and French (1991), Lakonishok, Shleifer and Vishny (1993), and Chan, Hamao and Lkonishok (1991) in Tandelilin (2010, 237-238) stated that based on empirical test results related to the book-to-market relationship with returns showed that stocks that have a high book-to-market will tend to have a greater rate of return when compared to shares of companies with book-to-market with low value Tandelilin (2010, 237-238). If the stock price on the market is lower than the book price, causing a high ratio, the stock is called undervalued. Conversely, when the price on the market is higher than the price contained in the book, then the share price is considered to be overvalued so that it has a low ratio (Hartono, 2014: 180).

Book-to-market equity in this study is proxied by High Minus Low (HML). HML is the difference between a monthly return on stocks that have a high book-to-market ratio and stocks with a low book to market (Zubir, 2010). Research by Fama and French (1992) in Gleny and Tjong (2014) shows that with a high book-to-market ratio, it will be a risk because of low market value and can be defined as a problematic company. But on the other hand, companies with high ratios will reflect inefficient market conditions. Giving rise to risk for investors. Sutrisno and Ekaputra (2016) and Fama and French (2015) also mentioned that book-to-market which is proxied by High Minus Low (HML) has a positive relationship to stock portfolio excess returns.

RMW profitability and its effect on stock portfolio excess returns

Profitability describes the level of corporate profits. The higher the company's profit, the higher the rate of return to be obtained by investors. Profitability which is proxied by Robust Minus Weak (RMW) is the difference every month between the average return on two portfolios that have high operating profitability with the average return on two portfolios that have low operating profitability (Sutrisno and Ekaputra, 2016). Research by Fama and French (2015) shows that profitability has a positive relationship with return. This is supported by research by Chiah, Chai and Zhong (2015). The findings of Wijaya, Murhadi and Utami (2017) state that companies with a high level of profitability (robust) will produce a higher return than companies with a low level of profitability (weak). Therefore, the fourth alternative hypothesis is

CMA investment and its effect on stock portfolio excess returns

Investment shows the level of investment of all companies that issue Islamic shares listed in the ISSI 2013-2017 research period. Conservative Minus Aggressive (CMA) is a form of projection of investment. Where in the CMA calculates the difference between the average low monthly corporate returns with a low level of investment (conservative) with an average high return with a high level of investment (aggressive). The greater the difference between conservative and aggressive shows that company growth is increasing, positive company growth will increase excess return.

The Retention Growth Model theory states that most companies pay or use their net income to be paid as dividends and divested back or retained. The higher the rate of return obtained on retained earnings, the greater the growth rate (Brigham and Ehrhardt, 2015: 391). Fama and France Research (2015); Chiah, Chai and Zhong (2015) and Sutrisno and Ekaputra (2016) show that investment has a positive effect on excess return.

Momentum and its effect on stock portfolio excess returns

The momentum was first examined by Jagadeesh and Titman (1993). In his research conducted on U.S. stock returns. capture the momentum, where stocks that behave well over the past year will continue to behave properly. The strategy of buying winning shares in the

past period and then selling them in the coming period when the stock price rises based on past data is called the momentum strategy (Kowanda and Pasaribu, 2012). Gleny and Tjong (2014) define momentum strategy as the tendency of investor behavior to collect stocks that are considered good and sell shares that are considered bad.

Shares that are considered superior (winners) are stocks that have performed well in the past with historical data such as 3, 6 and also 12 months, and vice versa. The intuition behind this strategy is that looking at stocks that have produced good performance in the past will certainly also do well in the future, according to the findings of Jagadeesh and Titman (1993). This logic is in accordance with the theory of market efficiency in the form of a weak firm, where decision making by investors is only based on past prices (Samsul, 2006: 28).
Investors in predicting future returns are based on past income and returns (Baker and Filbeck, 2013: 75). The existence of a momentum effect in the momentum strategy indicates that investors tend to follow the positive response arising from good stock performance in the past, which is characterized by buying activity on stocks that show a positive return. Research by Fama-French (2012), Kowanda and Pasaribu (2012), and Gleny and Tjong (2014), found that momentum had a significant positive effect on the entire stock portfolio. In Candika's research (2016) momentum had a significant positive effect on 2 of 10 portfolio models.

RESEARCH METHODS

The method used in this research is a quantitative approach. Quantitative research emphasizes testing theories through measuring research variables with numbers and conducting data analysis with statistical procedures (Indriantoro and Supomo, 2016: 12). As for the type of data used is a secondary data type. The related variable in this study is ISSI stock portfolio excess return. The independent variable in this study is the Fama-French five factors which include market return, size, book to market, profitability and investment as well as momentum factor.

Population, Samples, and Sampling Techniques

The population in this study are companies that are included in the ISSI group from January 2013 to December 2017 which are then formed into time series data with excess monthly stock portfolio excess. The number of samples used were 183 companies. The sampling technique in this study was purposive sampling taken with certain considerations using the following criteria:

1. Shares of companies listed on ISSI from January 2013 to December 2017.
2. Companies that publish annual financial reports during the research period consistently and in succession.
3. Excludes shares included in the financial sector.
4. Do not include stocks with negative equity.

Portfolio Construction

Variables of SMB, HML, RMW, CMA and UMD were obtained by first constructing a portfolio from sample data. The portfolio formation follows the procedures of Fama and French (2015) and Avaravci and Karaomer (2017) for the five factors of Fama and French on an annual basis. SMB calculation is based on market capitalization value, HML is calculated based on book-to market equity value. RMW is the result of a proxy for the profitability obtained from the difference between the average monthly return of companies with high levels of profitability (robust) with returns of companies that have low profitability (weak). CMA is the difference every month between the average return on two portfolios with conservative investment and the average return on two portfolios with aggressive investment (Sutrisno and Ekaputra, 2016), which is the proxy of investment.

After calculating, then shares are grouped by size (market capitalization) with 50% containing shares with the highest market capitalization value and 50% containing shares with the lowest market capitalization value. For HML, RMW, and CMA are grouped based on 30% of companies with high scores on each factor, 30% with groups of companies having the lowest calculation value of all companies, and the remaining 40% constituting medium composition. Whereas the UMD portfolio is constructed following the Charhart model (1997) with monthly calculations of stock returns. UMD is a stock portfolio return with winner shares reduced by stock portfolio returns with losers shares. For the 30% momentum variable contains stocks with the highest average previous month return (UMDB) and 30% contains shares with the lowest previous month return (UMDS). After grouping the shares, a portfolio is formed as follows:

Table 1 Forming Portfolios by grouping them into size-BE / ME portfolios, size-Op, size-Inv and size-Mom

Panel A: size-BE/ME				Panel B: size-Op		
Size	*Hight* (H)	*Medium* (M)	*Low* (L)	*Robust* (R)	*Medium* (M)	*Weak* (W)
Small (S)	SH	SM	SL	SR	SM	SW
Big (B)	BH	BM	BL	BR	BM	BW
Panel C: size-Inv				Panel D: size-Mom		
Size	*Conservative* (C)	Medium (M)	*Aggressive* (A)	*Up* (U)	Medium (M)	*Down* (D)
Small (S)	SC	SM	SA	SU	SM	SD
Big (B)	BC	BM	BA	BU	BM	BD

Table 2 Summary of Formation of Size, BE / ME, Profitability, Investment, and Momentum Factors

Sort	*Breakpoints*	*Factor and their componen*
2x3 sort on; -Size-BE/ME -Size-Op -Size-Inv -Size-Mom	-size; median value BE/ME, Op., Inv., Mo.; 30%, 40%, dan 30%	$SMB_{BE/ME}=(SL+SM+SH)/3-(BL+BM+BH)/3$ $SMB_{OP}=(SR+SM+SW)/3-(BR+BM+BW)/3$ $SMB_{INV}=(SC+SM+SA)/3-(BC+BM+BA)/3$ $SMB=(SMB_{BE/ME}+SMB_{OP}+SMB_{INV})/3$ HML = (SH + BH)/2 – (SL + BL)/2 RMW = (SR + BR)/2 – (SW + BW)/2 CMA = (SC + BC)/2 – (SA + BA)/2 UMD = (SU + BU)/2 – (SD + BD)/2

2x2 sort on; -Size-BE/ME -Size-Op -Size-Inv -Size-Mom	-size; median value BE/ME, Op., Inv., Mo.; 30%, 40%, dan 30%	SMB=(SH+SL+SR+SW+SC+SA)/6- (BH+BL+BR+BW+BC+BA)/6 HML = (SH + BH)/2 – (SL + BL)/2 RMW = (SR + BR)/2 – (SW + BW)/2 CMA = (SC + BC)/2 – (SA + BA)/2 UMD = (SU + BU)/2 – (SD + BD)/2

Analysis Method

This study uses multiple linear regression analysis. Before conducting the analysis, first conduct a prerequisite test in the form of a stationary test and a classic assumption test. The regression model used is as follows:

$$R_{it} - R_{ft} = \alpha_i + \beta_i (R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + r_i RMW_t + c_i CMA_t + m_i UMD_t + e_{it}$$

Description of Statistics

In panels A and B of table 3, the average value of excess return is 0.92% per month with a standard deviation of 0.036. The average value of the market risk premium (MRP) is -0.02% per month with 0.034 standard deviations. The monthly average for the book-to-market (HML) factor is 0.43% with a standard deviation of 0.046. The monthly average profitability factor (RMW) is 0.66% with a standard deviation of 0.042. The average value of the investment factor (CMA) is 0.17% per month, and the monthly average for the momentum factor (UMD) is 1.44% with the respective standard deviations of 0.044 and 0.043.

Table 3. Summary of Descriptive Statistics

Panel A: Statistical Summary of the Six Factor Portfolio Model 2x3							
Var.	*Excess Return*	MRP	SMB	HML	RMW	CMA	UMD
Obs.	60	60	60	60	60	60	60
Mean	0.0091	-0.0002	0.0052	0.0042	0.0065	0.0016	0.0144
Median	0.011	0.0055	0.0085	0.0002	0.0014	0.0017	0.018
Min	-0.091	-0.084	-0.126	-0.177	-0.071	-0.103	-0.079
Max	0.092	0.065	0.063	0.117	0.181	0.175	0.201
Std.Dev.	0.0357	0.034	0.033	0.046	0.042	0.044	0.043
Panel B: Statistical Summary of the Six Factor Portfolio Model 2x6							
Var.	*Excess Return*	MRP	SMB	HML	RMW	CMA	UMD
Obs.	60	60	60	60	60	60	60
Mean	0.009	-0.00019	0.0038	0.004	0.006	0.002	0.014
Med.	0.011	0.006	0.007	0.0002	0.0013	0.0016	0.018
Min.	-0.091	-0.084	-0.185	-0.177	-0.071	-0.103	-0.079
Max.	0.092	0.065	0.068	0.117	0.181	0.175	0.202
Std.Dev.	0.0357	0.034	0.039	0.046	0.042	0.045	0.043

Source: Secondary data processed by Stata 14

In contrast to the other five factors, the average monthly value of the size factor (SMB) in panel A of table 4.1 which shows the formation of a 2x3 portfolio is 0.52% and in panel B table 4.1 which shows the formation of a 2x2 portfolio is 0.38% per month. With a standard deviation of 3.32% in portfolios formed with 2x3 size and 3.95% in 2x2 portfolio formation. This difference is based on the formation of a 2x2 version of SMB which does not involve portfolios formed on medium size BE / ME, medium size OP, and medium size Inv.

Stationarity

This study uses a data stationarity test using the Augmented Dickey-Fuller (ADF) method at the data level. Stationarity test results on each study variable showed a t-statistic value that was smaller than the critical value (table 4 panels A and B). That is, all research variables are stationary (do not have a root unit) at the data level

Tabel 4. Stationarity Using ADF Method

Panel A: Six Factor of Variable Portfolio 2x3		
	Test Statistik	Prob.
Excess Return	-4.823	0.0000
MRP	-4.350	0.0004
SMB	-5.011	0.0000
HML	-4.489	0.0002
RMW	-5.380	0.0000
CMA	-5.071	0.0000
UMD	-5.935	0.0000
Panel B: Six Factor of Variable Portofolio 2x2		
Excess Return	-4.823	0.0000
MRP	-4.350	0.0004
SMB	-5.524	0.0000
HML	-4.489	0.0002
RMW	-5.380	0.0000
CMA	-5.071	0.0000
UMD	-5.935	0.0000

Nilai Kritis α (1%, 5%, 10%) berturut-turut adalah (-3.569, -2.924, -2.597).
Sumber: Data Sekunder diolah STATA 14

Classical Assumptions

The Ordinary Least Square (OLS) method must meet several assumptions to produce the Best Linear Unlock Estimator (BLUE) (Nugroho et.all, 2015: 26). Ghazali (2013) in Nugroho et.all (2015: 26) states that there are five assumptions that must be fulfilled, namely normality, multicollinearity, heteroscedasticity, autocorrelation, and linearity. The following Table 4.3 shows the results of the classic assumption test. The normality test in this study uses the Shapiro-Wilk W Test model.

Table 5. Classic assumption test

Portofolio 2x3						Portofolio 2x2					
MRP	SMB	HML	RMW	CMA	UMD	MRP	SMB	HML	RMW	CMA	UMD

S-Wilk W. (Prob>z)	0.34623						0.66207					
estat VIF	1.6	1.4	1.5	1.52	1.8	1.3	1.6	1.4	1.5	1.51	1.8	1.3
B-Pagan(Prob> chi^2)	0.0971						0.2809					
B-Godfrey (Pro>chi^2)	0.1674						0.3107					

Source:annex 2.2

Based on the results of the normality test shows that the probability value of the Shapiro-Wilk W 2x3 portfolio test is 0.34623 and 0.66207 for the 2x2 portfolio, both of which are greater than 5% (0.05). Thus the data in this study are normally distributed or free from normality assumptions.

The multicollinearity test uses the Variance Inflation Factor (VIF) model with a significance level <10. In table 5 the value of each VIF for each variable <10. So that in the regression model for both 2x3 or 2x2 portfolios there is no multicollinearity problem.

This heteroscedasticity test uses Pagan Breusch. The test results can be declared free from heteroscedasticity when the Chi-Squre probability value is> 5%. Heteroscedasticity test results show that the Chi-Squre probability of 0.0971 and 0.2809 is greater than 5%.

The research model is declared free from autocorrelation problems if the chi-squared probability value is higher than the significance level of 5%. Based on the test results show that the prob. Chi-square of 0.1674 and 0.3107, respectively more than 0.05 (table 4.3). So that the regression model is free from the autocorrelation problem.

Correlation Test Between Variables

Panels A and B in table 6 show the magnitude of the correlation coefficient between variables. Although the six-factor regression model passes the classical assumptions multicollinity test, it does not mean there is no correlation at all between the independent variables. The size, investment and momentum factors are negatively correlated with market factors, while the book-to-market and profitability factors are positively correlated to market factors. However, only investment factors that have a significant correlation to the market.

Book-to-market factors have a significant positive correlation with size factors, while other factors have a negative correlation. The three factors of profitability, investment and momentum are negatively correlated to the HML factor with a significance below 5%. Investment factors are negatively correlated with profitability factors and positively correlated with momentum factors.

Table 6. Correlation Between Variables

Panel A: Correlation Between Variables of the Six Factor Model 2x3							
	Excess Return	MRP	SMB	HML	RMW	CMA	UMD
Excess Return	1	0.7619*	-0.1529	0.3127**	0.0809	-0.3139**	0.1466
MRP	0.7619*	1	-0.2106	0.1758	0.0253	-0.5378*	-0.0262
SMB	-0.1529	-0.2106	1	0.2392***	-0.3487*	-0.1125	-0.333*
HML	0.3127**	0.1758	0.2392***	1	-0.4161*	-0.3705*	-0.3129**
RMW	0.0809	0.0253	-0.3487*	-0.4161*	1	-0.0328	0.4128*
CMA	-0.3139**	-0.5378*	-0.1125	-0.3705*	-0.0328	1	0.0971
UMD	0.1466	-0.0262	-0.333*	-0.3129**	0.4128*	0.0971	1
Panel B: Correlation Between Variables of the Six Factor Model 2x2							
	Excess Return	MRP	SMB	HML	RMW	CMA	UMD
Excess Return	1	0.7619*	-0.1618	0.3127**	0.0809	-0.3139**	0.1466
MRP	0.7619*	1	-0.1368	0.1758	0.0253	-0.5378*	-0.0262
SMB	-0.1618	-0.1368	1	0.3057**	-0.3452*	-0.221***	-0.328**
HML	0.3127**	0.1758	0.3057**	1	-0.4161*	-0.3705*	-0.3129**
RMW	0.0809	0.0253	-0.3452*	-0.4161*	1	-0.0328	0.4128*
CMA	-0.3139**	-0.5378*	-0.221***	-0.3705*	-0.0328	1	0.0971
UMD	0.1466	-0.0262	-0.328**	-0.3129**	0.4128*	0.0971	1

*,**, and*** show significance at 1%, 5%, and 10%, respectively.

RESEARCH ANALYSIS

Based on the results of multiple linear regression tests with the Ordinary Least Square (OLS) method using Stata 14 presented in table 7, the regression equation model is obtained as follows

$$R_{pt} - R_{ft} = 0{,}0033891 + 0{,}9182868_{MRP} + 0{,}1175177_{SMB} + 0{,}2958566_{HML} + 0{,}1471286_{RMW} + 0{,}2387784_{CMA} + 0{,}1867158_{UMD} + e_{pt} \quad (1)$$

$$R_{pt} - R_{ft} = 0.0043427 + 0.8811655_{MRP} + 0.0128590_{SMB} + 0.2974452_{HML} + 0.1265457_{RMW} + 0.2175844_{CMA} + 0.1706751_{UMD} + e_{pt} \quad (2)$$

Table 7. Results of the Six Factor Model Regression

	Portofolio 2x3				Portofolio 2x2			
	Coef.	Std. Err.	t	P>|t|	Coef.	Std. Err.	t	P>|t|
MRP	0.9183	0.0948	9.68	0.000	0.8812	0.0958	9.20	0.000
SMB	0.1175	0.0905	1.30	0.200	0.0128	0.0785	0.16	0.871
HML	0.2959	0.0675	4.38	0.000	0.2974	0.0687	4.33	0.000
RMW	0.1471	0.0749	1.96	0.055	0.1265	0.0760	1.67	0.102
CMA	0.2387	0.0766	3.12	0.003	0.2176	0.0795	2.74	0.008
UMD	0.1867	0.0676	2.76	0.008	0.1707	0.0684	2.49	0.016
C	0.0033	0.0029	1.18	0.244	0.0043	0.0028	1.51	0.136
F	23.52				F	22.54		
Prob> F	0.0000				Prob > F	0.0000		
R^2	0.7270				R^2	0.7184		
Adj R^2	0.6961				Adj R^2	0.6866		

F is the F-statistic value for each portfolio. Prob> F shows the probability value of F for each portfolio. R2 shows the value of R2 for each portfolio. Adj R2 is the adjusted R2 average for each portfolio.

Equation (1) shows the regression equation formed with version 2x3 and equation (2) is a regression equation formed with version 2x2. Based on the results of the two regression equations in table 4.5, it can be explained that the influence of risk premium, size, book-to-market equity, profitability, investment and momentum has a positive effect on portfolio excess returns, both in the 2x3 and 2x2 versions. The constant values in the equation are 0.0033 and 0.0043, respectively. In other words, ISSI's stock portfolio excess return will increase by 0.34% in the 2x3 version of the portfolio and will increase by 0.43% in the 2x2 version of the portfolio if market conditions, company size, BE / ME, profitability, investment and momentum do not change or constant.

Determination Coefficient Test (Adjusted R2)

Based on the test results of the coefficient of determination in table 4.5 obtained adjusted R-square value of 0.6961 for portfolios formed in the 2x3 version and 0.6866 for portfolios formed in the 2x2 version. This shows that between the two versions, the regression model formed in the 2x3 version is better in explaining the dependent variable. The ability of the independent variable risk premium, size, book-to-market equity, profitability, investment and momentum in explaining the dependent variable excess ISSI stock portfolio is 69.61%. While the remaining 30.39% is explained by other variables not included in this study.

Test F Statistics

Based on the results of the simultaneous test (statistical F test) presented in table 4.5, all models both formed in the 2x3 and 2x2 versions have a probability value (F-Statistic) of 0.0000. With a significance level of 5% (0.05), Ha is accepted and Ho is rejected. Thus it shows that the risk premium, size, book-to-market equity, profitability, investment and momentum together have a significant effect on ISSI's stock portfolio excess returns in the 2013-2017 study period.

T-statistic test

Noting the results of the coefficient of determination test (adj R-square) that the model formed using the 2x3 version portfolio is the best of the two versions, then in the t-statistic test analysis will only explain the results of the t-statistic test of the factors formed in the version 2x3 in detail. Based on the results of the t-statistic test in table 4.5 obtained the results of the analysis for each independent variable as follows.

1. T-factor Risk Premium Test on ISSI's Stock Return Portfolio

   T test results on the risk premium factor which is proxied by market risk premium (MRP) shows that the regression coefficient obtained is 0.9183 with a significance value of 0,000 (t = 9.68). Probability value t (0,000) <significance value of 5% (0.05), so that Ho is rejected and Ha is accepted. From these results it can be concluded that the risk premium factor partially or individually has a significant positive effect on ISSI stock portfolio excess returns. A positive sign on the coefficient value indicates there is an unidirectional relationship between the two. So if the market risk premium increases by 1 unit, the value of the stock portfolio's excess return will increase by 0.9183.
2. Test the t factor of Size on ISSI's Stock Portfolio Return

   The results of the analysis in table 4.5 show that the size of the company proxied by Small Minus Big (SMB) does not have a significant effect on ISSI's stock portfolio excess return. This is based on the t-statistic value of 1.30 and the probability of t (0.200)> of the significance value of 5% (0.05). While the size coefficient shows the number 0.1175 which means that any increase in the size factor of 1 unit does not necessarily cause excess ISSI stock portfolio return will increase by 0.1175.
3. Test t factor Book-to-market Ratio of ISSI's Stock Return Portfolio

   The t-statistic test in table 4.5 shows that the significant value of the book-to-market equity factor which is proxied by High Minus Low (HML) is 0,000 (t = 4.38), which means that the significant value is 0,000 <0.05, so Ho rejected and Ha accepted. This shows that the book-to-market equity factor has a significant positive effect on ISSI's stock portfolio excess return. The value of the HML factor regression coefficient of 0.2959 indicates that if other factors are constant, for each increase in 1 unit HML will cause an increase in ISSI stock portfolio excess return of 0.2959.
4. Test the t factor of profitability on ISSI's stock portfolio return

   The results of the analysis in table 4.5 show that the profitability of companies proxied by Robus Minus Weak (RMW) does not have a significant effect on ISSI's stock portfolio excess returns. This is based on the t-statistic value of 1.96 and the probability of t (0.055)> of the significance value of 5% (0.05). While the profitability coefficient indicates the number 0.1471 which means that any increase in the size factor of 1 unit does not necessarily cause excess ISSI stock portfolio return will increase by 0.1471.
5. Investment factor t test of ISSI's Stock Portfolio Return

   The t-statistic test in table 4.5 shows that the significant value of investment factors which are proxied by Conservative Minus Aggressive (CMA) is 0.003 (t = 3.12), which means a significant value of 0.003 <0.05, so that Ho is rejected and Ha is accepted. This shows that partially the investment factor has a significant positive effect on ISSI's stock return excess. The value of the investment factor regression coefficient of 0.2388 shows that if other factors are constant, for every 1 unit HML increase will cause an increase in ISSI stock portfolio excess return of 0.2388.
6. Test the Momentum factor to ISSI's Stock Return Portfolio

   T test results on the momentum factor which is proxied by Up Minus Down (UMD) shows that the regression coefficient value obtained is 0.1867 with a significance value of 0.008 (t = 2.76). Probability value t (0.008) <significance value of 5% (0.05), so that Ho is

rejected and Ha is accepted. From these results it can be concluded that the momentum factor partially or individually has a significant positive effect on ISSI's stock portfolio excess return. A positive sign on the coefficient value indicates a direct relationship between the two. So if the momentum increases by 1 unit, the value of the stock portfolio excess return will increase by 0.1867. (Digilib UIN Sunan Kalijaga, 2019).

DISCUSSION

Effect of Risk Premium on ISSI's Stock Portfolio Excess Return

Based on the magnitude of the beta risk premium coefficient which is proxied by market risk premium = 0.9183 is positive, influences the excess return of the stock portfolio with a t-statistic value of 9.68 and sig-t = 0,000. Thus in accordance with the hypothesis that the authors propose, which accepts Ha1; risk premium has a significant positive effect on excess return on stock portfolios. This shows that the higher the risk premium, the higher the stock portfolio excess return.

The risk premium that is proxied by the market risk premium here is a risk premium in the market portfolio that illustrates the size of the risk (Sudiyatno and Irsad, 2011). Investment risk itself is the difference between the actual rate of return (actual return) with the expected rate of return (expected return) (Tendelilin, 2010: 101). Fahmi (2009: 152) states that risk and return have a strong directional relationship.

In line with the concept of the Capital Asset Pricing Model (CAPM), where the higher the rate of return expected by investors, the higher the investment risk, the high risk high return. The results of this study are consistent with research conducted by Pasaribu (2009), Sutrisno and Ekaputra (2016), Acaravci and Karamoer (2017), Candika (2017), and Wijaya, Murhadi and Utami (2017) who found that market risk had a significant positive effect to the excess return of the stock portfolio. Based on the results of this study indicate that the risk premium (beta) is still a relevant factor in measuring stock portfolio excess returns.

Effect of Size on ISSI's Stock Portfolio Excess Return

The second hypothesis or Ha2 proposed in this study is that size has a significant positive effect on stock portfolio excess returns. Based on the estimation results, the magnitude of the beta coefficient of size is proxied by small minus big (SMB) = 0.1175 with a t-statistic probability value of 0.200. Thus, the size factor does not have a significant effect on excess return on stock portfolios, although it is positively correlated. So this research accepts Ho and rejects Ha2.

The results of this study are not in accordance with the theory of market efficiency which states that the relationship between returns and company characteristics reveals a size effect, namely the tendency of small company stocks (small market capitalization value) to have a higher return than large company stocks (Tendelilin, 2010: 237) . In addition, small stocks with high market risk tend to provide high returns (Berk and De Marzo, 2014: 454). The insignificant size factor in this study illustrates that the size of the company as seen from the market capitalization value of each issuer is not the main factor that is always used by investors as an indicator of making decisions for investment, but rather considers market risk.

The market capitalization value used as the basis for calculating the size factor illustrates that the movement of shares in ISSI is inseparable from the movements of JII and LQ45. According to Yang (1966) in Murwaningsari (2008) when the market capitalization of a stock increases, the share price will rise. The increase in stock prices will have an impact on the increase in stock returns (Husein and Mahfud, 2015). Seeing Indonesia, which is classified as an emerging market, has a stock market whose trading activities are still low (thin trading). Dimson (1979) and Lo & Mackinlay (1990) in Sutrisno and Ekaputra (2016)

state that a market that experiences thin trading is likely to cause individual stock levels to affect portfolio levels. As a result, the standard error will overestimate or underestimate.

In addition, this study is not in line with the work of Acaravci and Karaomer (2016) and Candika (2017) which show that small size companies have a significant positive effect, while large size companies do not have a significant positive effect. However, this research is in accordance with and supported by the results of research conducted by Sudiyatno and Irsad (2011) and Darusman and Prasetiono (2012).

Effect of Investment on ISSI's Stock Portfolio Excess Return

Based on the magnitude of the beta investment coefficient which is proxied by conservative minus aggressive (CMA) = 0.2387784 is positive, influences the excess portfolio return of shares with a t-statistic value of 3.12 and sig-t = 0.003. Thus in accordance with the hypothesis that the authors propose, which accepts Ha5; investment has a significant positive effect on excess return on stock portfolios. This shows that the higher the investment, the higher the stock portfolio excess return.

According to Fama and French (2015), the level of investment of a company is measured based on the growth rate of total assets from the fiscal year. Conservative Minus Aggressive (CMA) is used in the formation of portfolios based on size-investment. Where CMA is the difference every month between the average return on two portfolios with conservative investment and the average return on two portfolios with aggressive investment (Sutrisno and Ekaputra, 2016).

The investment factor is included in the five-factor model to see the rate of return on assets based on the dividend discount model. There is a discount rate effect in the dividend discount model which states that the expected rate of return in the long run, there is a relationship between stock prices and expected dividends (Fama and French, 2015). Dividends are considered as returns obtained when investors apply a passive portfolio strategy, which involves minimal expectations of investment returns (Fabozzi, 2002).
This study found that there was consistency related to previous studies such as Fama and French (2015), Acaravci and Karaomer (2017) and Wijaya, Murhadi and Utami (2017), which stated that investment proxied by CMA tended to have a positive effect on excess return stock portfolio.

Effect of Momentum on ISSI's Stock Portfolio Excess Return

The sixth hypothesis or Ha6 proposed in this study is that momentum has a significant positive effect on stock portfolio excess returns. Based on the estimation results, the beta coefficient of the momentum which is proxied by up minus down (UMD) = 0.1867 with a t-statistic probability value of 0.008 $<\alpha$ (0.05). Thus, the momentum factor has a significant positive effect on excess return on stock portfolios. So this research rejects Ho and accepts Ha6.

Momentum was first introduced in the research of Jagadeesh and Titman (1993). The results of his research found that the purchase of winning shares (winners) in the past period and selling losers' shares (losers) in the past period will obtain an abnormal return. Where this abnormal return is indicated there is due to changes in stock prices that are very drastic. The strategy of buying winner shares in the past period and then selling them in the coming period when the share price rises is called the momentum strategy (Darusman and Prasetiono, 2012).

Investors tend to pay attention to the momentum factor when doubting information or when unclear information occurs. So this behavior can be called overreaction (Campbell, 2004). Fabozzi (2002) in Darusman and Prasetiono (2012) revealed that investors would tend to exploit overreaction to get abnormal returns. This happens when investors are able to

identify extreme events and determine when the effect of overreaction in the market disappears.

This research is in line with the findings of Candika (2017) which revealed that UMD had a significant positive effect on stock portfolios with momentum up. Investors will respond positively to stocks with good performance for one year by making a purchase. In the research of Fama and French (2018) revealed that the asset pricing model by adding the momentum factor produces good performance on the whole test. Fama-French (2012), Kowanda and Pasaribu (2012), and Gleny and Tjong (2014) also produced the same findings and support the results of this study. However, this study contradicts the findings of Hendra, Murhadi and Wijaya (2015) which revealed that momentum had an insignificant negative effect on returns.

CONCLUSION

Based on the results of the analysis of hypothesis testing, several things can be concluded as follows. Risk premium, Book-to-market ratio which is proxied by High Minus Low (HML), Investment that is proxied by Conservative Minus Aggressive (CMA), and momentum which is proxied by Up Minus Down (UMD) has a positive effect on the excess return of the company's stock portfolio registered in the Indonesian Sharia Stock Index (ISSI) during the period January 2013-December 2017. The higher the risk premium (beta), the excess portfolio return obtained by investors will also increase. There is a discount rate effect in the dividend discount model which states that the expected rate of return in the long run, there is a relationship between stock prices and expected dividends (Fama and French, 2015).

During the study period, the size of the company which is proxied by Small Minus Big (SMB) and Profitability which is proxied by Robust Minus Weak (RMW) does not affect the ISSI stock portfolio excess returns. This makes the size of the company size does not have an impact on excess return. Based on this, the factors that can affect stock returns other than profitability, namely interest rates, composite stock price indexes, news and rumors and so forth. In addition to this, it is also possible that there is a tendency of investors not to pay attention to profitability factors that are measured using return on equity (ROE) in investment decisions.

REFERENCES

Acaravci, Songul Kakilli dan Y. Karaomer. (2017). Fama-French Five Factor Model: Evidence from Turkey. *International Journal of Economics and Financial* Issues Vol. 7 Issue 6, ISSN: 2146-4138.

Agustian, Widi. *Alhamdulillah, Kapitalisasi Pasar Saham Syariah Naik 42%* dalam situs okezone.com, https://economy.okezone.com/read/2017/10/30/278/1804832/alhamdulillah-kapitalisasi-pasar-saham-syariah-naik-42, diakses Selasa, 1 Mei 2018.

Allen, D. E., dan Powell, S. R. (2011). Aset *Pricing, the Fama—French Factor Model and the Implications of Quantile-Regression Analysis*. Dalam G. N. Gregoriou & R. Pascalau (Ed.), *Financial Econometrics Modeling: Market Microstructure, Factor Models and Financial Risk Measures* (hlm. 176–193). London: Palgrave Macmillan UK.

Baker, H. Kentt dan G. Filbeck. (2013). *Portofolio Theory & Management*. Newyork: Oxford Universuty Pres.

Beigini, Fakhondeh, M. Hosseini, dan Q. Siavash. (2016). The Effect of the Earning Transparency on cost of capital common stock based on The Fama-French and Momentum Factors. *Procedia Economics and Finance*, Vol. 36 ISSN 22125671.

Berk, Jonathan dan P. DeMarzo. (2014). *Corporate Finance Third Edition*. Boston: Pearson Education.

Brigham, Eugene F., dan M. C. Erchardt. (2015). *Financial Maagement Theory & Practice*. Canada: Cengage Learning.

Candika, Yossy Imam. (2017). Pengujian Kekuatan Model Carhart Empat Faktor Terhadap Excess Return Saham di Indonesia. *The Indonesian Journal of Applied Bussiness* Vol. 1 Nomor 1.

Chiah, M., D. Chai, dan A. Zhong. (2015). *A Better Model? An Empirical Investigation of Fama-French Five-Factor Model in Australia*. *Proc*, Monash Business School, Monash University.

Darmadji, Tjiptono dan H. M. Fakhruddin. (2001). *Pasar Modal di Indonesia: Pendekatan Tanya Jawab*, *edisi pertama*. Jakarta: Salemba Empat.

Darusman, Dery dan Prasetiono. (2012). Analisis Pengaruh Firm Size, Book-to-market Ratio, Price Earniing Ratio, dan Momentum Terhadap Return Portofolio Saham. *Diponegoro Journal Of Management* Vol.1 No.1 Tahun 2012, Hal. 212-225.

Fama, Eugine F., dan K. R. French. (1992). The Cross Section of Expected Stock Return. *Journal of Finance* 47,472-465

_____. (1993). Common Risk Factor in The Returns on Stock and Bonds. *Journal of Financial of Economics* 33,3-56.

_____. (2006). Profitability, Investment, and Average Return. *Journal of Financial Economics*, Vol. 82 Issue.3.

_____. (2012). Size, Value, and Momentum in International Stock Returns. *Journal of Financial Economics*, Vol. 105 Issue. 3.

_____. (2015). A Five-Factor Aset Pricing Model. *Journal of Financial Economics*, Vol. 116 Issue. 1.

_____. (2018). Choosing Factors. *Journal of Financial Economics*, Vol. 128, Issue. 2

Fawziah, Siti Apriani. (2016). *Pengaruh Fama-French Three Factor Model Terhadap Return Saham*. Skripsi: Universitas Negeri Yogyakarta.

Ghozali, Imam dan D. Ratmono. (2013). *Analisis Multivariat dan Ekonometrika*.Semarang: Undip.

Gleny dan W. Tjong. (2014). Pengaruh Strategi Value, Size dan Momentum Terhadap Excess Return di Indonesia. *Jurnal Sosial Humaniora* Vol. 7, No.2

Groot, de Wilma, J. Pang dan L. Swinkels. (2012). The Cross Section of Stock Returns In Fontier Emerging Markets. *Journal of Empirical Finance* 19,796-818.

Gujarati, Damodar N. dan D. C. Porter. (2013). *Dasar-Dasar Ekonometrika, Buku 2, Edisi 5*. Yogyakarta: Salemba Empat.

Hadi, Nor. 2013. *Pasar Modal Acuan Teoritis dan Praktis Investasi di Intrumen Keuangan Pasar Modal*. Yogyakarta: Graha Ilmu.

Hardianto, Damar dan Suherman. (2009). Pengujian Fama-French Three Factors Model di Indonesia. *Jurnal Keuangan dan Perbankan*, Vol. 13, No. 2.

Hamdi, Saepul dan Bahruddin, (2014). *Metode Penelitian Kuantitatif Aplikasi dalam Pendidikan.* Yogyakarta: Deepublish.

Hartono, Jogiyanto. (2014). *Teori Portofolio dan Analisis Investasi.* Yogyakarta: BPFE-Yogyakarta.

Hermansyah, Iwan dan E. Ariesanti. 2008. Pengaruh Laba Bersih Terhadap Harga Saham. *Jurnal Akuntansi FE Unsil*. Vol. 3, No. 1.

Husein, Ferhat dan M. K. Mahfud. (2015). Analisis Pengaruh Distress Risk, Firm Size, Book to Market ratio, Return on Assets, Debt to Equity Ratio terhadap Return Saham. *Diponegoro Journal of Management*. Vol. 4, No. 3.

Husnan, Suad dan E. Pudjiastuti. (1998). *Dasar-Dasar Manajemen Keuangan.* Yogyakarta: UPP STIM YKPN.

Husnan, Suad. (2009). *Dasar-Dasar Teori Portofolio & Analaisis Sekuritas*. Yogyakarta: UPP STIM YKPN.

Indriantoro, Nur dan B. Supomo. (2016). *Metodologi Penelitian Bisnis Untuk Akuntansi dan Manajemen.* Yogyakarta: Fakultas Ekonomika dan Bisnis UGM.

Jegadessh, Narasimhan dan S. Titman. 1993, Returns to Buying Winners and Selling Losers: Implications for Stock Market Efficiency. *Journal of Finance,* 65-91.

Kowanda, Dionysia dan R. B. F. Pasaribu. (2012). Strategi Investasi Momentum: Profit Momentum Portofolio Pemenang-Pecundang di Indonesia. *Jurnal Ekonomi & Bisnis*, Vol. 6 No. 2.

Kubota, Keichi dan H. Takehara. (2018). Does the Fama and French Five-Factor Model Work Well in Japan?. *International Review of Finance*, 2017 DOI: 10.1111/irfi.12126 18:1, 2018: pp. 137–146.

Melani, Agustina. (2018). *Melihat Perkembagan Pasar Modal RI Selama 41 Tahun* dalam liputan6.com pada laman https://www.google.co.id/amp/s/m.liputan6.com/3615885/melihat-perkembagan-pasar-modal-ri-selama-41-tahun, diakses pada hari Rabu, 17 Oktober 2018 pukul 23:23.

Nadjib, Mochammad, dkk. (2008). *Investasi Syariah Implementasi Konsep pada Kenyataan Empirik.* Yogyakarta: Kreasi Wacana.

Novy-Mark, Robert. (2013). The Other Side of Value: The Gross Profitability Premium. *Journal of Financial Economics*. Vol 1, No 28.

Nugroho, Muh Rudi, M. A. Qoyum, R. U. A. Hasfi, dan A. Syarif. (2015). *Modul Praktikum Ekonometrika.* Yogyakarta: Fakultas Ekonomi dan Bisnis Islam UIN Sunan Kalijaga.

Pasaribu, Rowland Bismark Fernando. (2010). Pemilihan Model *Asset Pricing. Jurnal Akuntansi dan Manajemen.* Vol. 21, No. 3.

Pitriyanti, Kadek Mira, dkk. (2015). Perbandingan Capital Aset Pricing Model (CAPM) dan Three Factors Model Fama and French (TFMFF) dalam Mengestimasi Return Saham. *E-Jurnal Matematika*. Vol. 4. Nomor 4.

Priyatno, Duwi. (2009). *Lima Jam Belajar Olah Data dengan SPSS 17*. Yogyakarta: ANDI Yogyakarta

Qoyum, Abdul. (2017). *Lembaga Keuangan Islam di Indonesia*. Yogyakarta: Elmatera Publishing.

Rakhmawati, Ully dan M. P. Priyadi. (2015). Analisis Three Factor Fama and French Model dan Capital Asset Pricing Model. *Jurnal Ilmu dan Riset Akuntansi*. Vol. 4 No. 8.

Ross, Stephen A., Westerfield, Randolph W., Bradford D. Jordan, Joseph Lim, Ruth Tan. (2015). *Fundamentals of Corporate Finance*. McGraw-Hill Education (Asia).

Samsul, Mohamad. (2006). *Pasar Modal dan Manajemen Portofolio*. Jakarta:Penerbit Erlangga.

Santoso, Adi. (2015). Analisis Price to Book Value Ratio Melalui Net Profit Margin, Return on Asset, dan Return on Equity. *Jurnal Akuntansi dan Bisnis*. Vol.15, No. 2

Sudiyatno, Bambang., & M. Irsad. (2011). Menguji Model Tiga Faktor Fama dan French dalam Mempengaruhi Return Saham Studi Pada Saham LQ45 di Bursa Efek Indonesia. *Jurnal Bisnis dan Ekonomi*. Vol. 18, No.2.

Suharyadi dan Purwanto S.K. (2016). *Statistika Untuk Ekonomi dan Keuangan Modern*. Edisi ketiga. Jakarta: Salemba Empat.

Sukirno, Sadono. (2004). *Makro Ekonomi Teori Pengantar*. PT. Raja Grafindo Persada: Jakarta

Supriyadi, Eko dan W. D. Putri,. (2017). *Investor Saham Syariah Meningkat Signifikan* dalam harian Republika.co.id, http://republika.co.id/berita/ekonomi/keuangan/17/09/10/ow23eg-investor-saham-syariah-meningkat-signifikan, diakses Selasa, 1 Mei 2018.

Sutrisno, Bambang dan I. A. Ekaputra. (2016). Uji Empiris Model Aset Pricing Lima Faktor Fama-French di Indonesia. *Jurnal Keuangan dan Perbankan*, Vol.20, Nomor 3.

Syafrida, I., I. Aminah, dan B. Waluyo. (2015). Perbandingan Kinerja Instrumen Investasi Berbasis Syariah Dengan Konvensional Pada Pasar Modal di Indonesia. *Al-Iqtishad: Journal of Islamic Economics*, 6(2).

Tandelilin, Eduardus. (2010). *Portofolio dan Investasi, Teori dan Aplikasi*. Yogyakarta: Penerbit Kanisius.

Yang, Quan, et al. (2017). Analysis of US Sector of Servisces with a New Fama-French 5-Factor Model. *Applied Mathematics*, 8, 1307-1319.

Yasinta, Hikmatul Fisa. (2018). *Analisis Fama And French Three Factors Model Terhadap Return Reksa Dana Saham Syariah Indonesia*. Skripsi: Fakultas Ekonomi dan Bisnis Islam UIN Sunan Kalijaga.

Yufang, Shao. *The Comparation of Fama-French Five Factor Model in Chinese A-share Stock Market and in Real Estate Sector.* Thesis: Master of Science in Finance of Aalto University School of Business.

Wijaya, Sheila Citra., W. R. Murhadi dan M. Utami. (2017). *Analisis Fama French Five Factor Model Dan Three Factor Model Dalam Menjelaskan Return Portofolio Saham*. Conference Paper: Roundtable for Indonesia Entrepreneurship Educators (RIEE)-5, Medan.

Winarno, W. Wahyu. (2011). *Analisis Ekonometrika dan Statistika dengan Eviews, Edisi 4*. Yogyakarta: UPP STIM YKPN.

Zubir, Zalmi. (2013). *Manajemen Portofolio Penerapannya Dalam Investasi Saham.* Jakarta: Salemba Empat.

Zulfikar. (2016). *Pengantar Pasar Modal dengan Pendekatan Statistika.* Yogyakarta: Deepublish Publisher.