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The Effect of Beta, Price to Book Value, Company Size, Profitability and Investment on Stock Returns

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Abstract This study aims to obtain empirical evidence regarding the influence of 5 factors in the Fama-French 5 Factor Model, namely beta, *price to book value* , company size, profitability and investment on stock returns. This study analyzed 270 samples of companies listed on the Indonesia Stock Exchange for the 2022 period. The samples were selected using the *probability sampling method* and analyzed using multiple linear regression analysis techniques. The results of the study indicate that beta and investment have a positive effect on stock returns, company size has a negative effect on stock returns, but *price to book value* and profitability have no effect on stock returns. The results of this study are not fully able to confirm the accuracy of the Fama-French 5 Factor Model.

Keywords: Stock return, beta, *value*, company, profitability.

1. INTRODUCTION

Investment is a commitment to a certain amount of funds or other resources that are made at present with the aim of obtaining a certain amount of profit in the future (Tandelilin, 2010:2). Ways to make this investment include mutual funds, gold, bonds, savings, and even investing in the capital market. By purchasing a company's shares, investors will have rights to the company and the right to receive dividends.

Investors invest capital in the form of stocks with the main goal of increasing profits and wealth through stock returns (Pradiana & Yadnya, 2019) . Stock returns are the results or profits obtained by an investor by owning shares of a company. Returns can be in the form of realized returns that have occurred and expected returns *that* have not occurred but are expected to occur in the future (Jogiyanto, 2017). The benefits of investing in the capital market can be reflected in the profits obtained from the returns of the selected stocks. When making investment decisions in stocks, investors tend to choose stocks that offer a high rate of return. However, conceptually, the higher the desired rate of return, the higher the level of risk that must be faced, and vice versa (Pradiana & Yadnya, 2019) .

In general, investors have two analytical approaches to analyze their issuer's shares, namely fundamental analysis and technical analysis. Fundamental analysis is an approach to calculating the intrinsic value of common stock *using* the company's financial data (Kamaruddin Ahmad, 2004:3). On the other hand, technical analysis is related to the company's

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technical factors, focusing on historical price movements and stock trading volume. Based on these two types of analysis, it can be seen that there are actually a large number of factors used as parameters to predict stock returns.

One of the fundamentals in finance is the positive relationship between risk and *return. Risk and return are two of the most frequently used measurement tools for research. A pricing* model is a model for *determining* the level of return on an asset that is required or expected. *The Capital Asset Pricing Model* (CAPM) introduced by Sharpe (1964), Lintner (1965), and Mossin (1966) has made an important contribution to the understanding of the risk - return relationship. The CAPM model is a new revolution in financial economics that can explain and determine what risk is in a capital market and determine how risk is assessed, or what extra return an investor will receive in relation to the level of risk they face. However, empirical studies emphasize that CAPM is largely inadequate in explaining stock returns , although it is commonly used in academic and empirical studies. This is because the return of an asset is only determined by its systematic risk, which is represented by beta . In the development of the CAPM model, researchers conducted tests where the results of the tests revealed that beta was not the only factor that could affect returns. There are other explanatory factors that can explain stock returns and ultimately develop other asset pricing models (Sutrisno *et al.* , 2016) .

One of the continued developments in the calculation of *expected returns* was carried out by Eugene Francis Fama and Kenneth Ronald French in 1992. Fama & French (1992) studied the effect of beta proxied by risk premium (CAPM), size, and *book-to-market equity* on stock returns . This model is called *the Fama-French Three Factor Model* which is a combination of *the Capital Asset Pricing Model* (CAPM) and *Arbitrage Pricing Theory* (APT). Two additional factors, namely company size and *book-to-market* ratio, are thought to be proxies for risk factors that have never been observed at that time.

Furthermore, Fama & French (2015) introduced *the Fama-French Five Factor Model* by adding the previous three factors with two additional factors that explain the return premium, namely profitability and investment. These two additional factors are based on the dividend discount model and empirical findings from previous studies that reveal that profitability and investment factors affect the level of asset returns. This study was conducted in the United States during the period July 1963 - December 2013. The results of this study state that in explaining variations in *average stock* returns, the five-factor model is better than the three-

factor model. In addition, the *book-to-market factor* becomes *redundant* in explaining *average* stock returns after the addition of profitability and investment factors.

In addition to Fama-French, there are several studies that test the accuracy between the 3 Factor Fama-French Model and the 5 Factor Fama-French Model. Wijaya *et al.,* (2017) conducted an analysis *of the Fama French five factor model* (5FF) and *three factor model* (3FF) in explaining stock portfolio returns, using (Rm-Rf), SMB, HML, RMW, and CMA as independent variables which are proxies for *market risk, size, book-to-market equity (B/M), profitability* , and *investment factors* . This study took a sample of stock portfolios included in the Kompas 100 index for the 2010-2015 period. The results are that *market risk* and *profitability* have a significant positive effect on returns, *size* and *investment* have a significant negative effect on returns, while the B/M factor does not have a significant effect on returns. This study also found that the performance of the 5FF model is better in explaining *cross-sectional returns* than 3FF.

Putra *et al.* , (2019) also conducted a comparison between the 3-factor and 5-factor *asset pricing models* from Fama-French. This study took a sample of 20 companies in the LQ45 category during the 2012-2016 period. The results are *market return* , *small minus big* (SMB), *high minus low* (HML), *robust minus weak* (RMW), and *conservative minus aggressive* (CMA) have a joint effect on *excess* stock returns. This study also found that five factors are better at explaining *excess* returns than three factors.

Dolatabadi & Yousofan (2018) also conducted a comparative analysis of the performance of the 3-factor and 5-factor Fama-French models with samples used being 40 companies listed on the Tehran Stock Exchange in 2009 to 2014. The results of this study indicate that the 5-factor Fama and French models, namely *size, value, profitability* and *investment pattern,* explain the excess stock returns better than the 3-factor model, because based on the results, in the 3-factor model, *value* is the only significant factor, while in the 5-factor model there are two significant factors, namely *value* and *investment* .

According to Paliienko *et al.,* (2020), the Fama and French method is specific because it uses three stages of grouping: 1) dividing company stocks into large and small according to market capitalization; 2) dividing stocks into large and small portfolios using five factors; and, 3) sorting stocks into individual quantiles in six portfolios according to the size factor and the intersection with each of the five factors. Paliienko *et al.,* (2020) then explained that meanwhile, there is an opportunity to form a portfolio of companies that are very similar in the

following characteristics: operating profitability, change in total assets, and book value to market ratio.

Based on these characteristics, researchers made changes in their approach when using the Fama & French 5 Factor (FF5F) which can be seen in Table 1 below.

Table 1. Changes in Approach When Using the FF5F Model

Object	FF5F model-based approach	Modified approach
Market factor or market risk premium factor (Beta)	*Market Risk*	Beta
Book-to-market equity	*High Minus Low* (HML)	*Price to book value* (PBV)
Firm Size (company size)	*Small Minus Big* (SMB)	Company Size
Operating profitability	*Robust Minus Weak* (RMW)	*Operating Profit Margin* (OPM)
Total assets growth for the fiscal year	*Conservative Minus Aggressive* (CMA)	*Total Asset Growth* (TAG)

Source: Research Data, 2024

Based on research conducted by Fama-French, the use of *market factor* (beta) is based on the greater *the excess* return of the market, the greater *the excess* return of the portfolio. *The book to market equity factor* is used to measure the value of stocks. The company size factor is based on small-cap stocks potentially outperforming large-cap stocks.

Attention is then paid to the selection process of criteria for calculating profitability and investment factors. Therefore, in testing this model, the authors use a change in approach in selecting financial indicators. These changes make it possible to link investor targets with traditional financial metrics. Based on the factor object, *operating profitability* is the ability of a company to generate operating profit on net sales. In this study, *operating profitability* is proxied using *Operating Profit Margin* (OPM) which is one of the profitability indicators where OPM is the percentage of income due to a company's sales activities. The last object is investment where the investment value is obtained by looking at the growth of total assets. Based on Ciah *et al.,* (2015), the investment variable in *the Fama-French Five Factor Model* can be proxied by *asset growth* . *Asset growth* is a strong predictor of abnormal returns in the future (Gray & Johnson, 2011). Therefore, investment in this study is proxied by *Total Asset Growth* (TAG) which is the change in total assets owned by the company each year. This

variable is a description of the total amount of assets owned by the company at a certain time compared to the total amount of assets owned in the previous year.

Previous studies have tested the performance of *asset pricing models.* The five Fama-French factors focus on *development markets* , making it interesting to test in *emerging markets* such as Indonesia (Sutrisno & Ekaputra, 2016).

2. RESEARCH METHODOLOGY

This study was conducted at the Indonesia Stock Exchange located in Jakarta for all listed companies accessed via the internet at www.idx.co.id and the official *websites of companies* included in the research sample. This study analyzed 270 samples of companies listed on the Indonesia Stock Exchange for the 2022 period. The samples were selected using the *probability sampling method* and analyzed using multiple linear regression analysis techniques.

According to Sugiyono (2022:58), the object of research is a variable or what is the point of attention of something in any form that is determined by the researcher to be studied so that information is obtained about it, then conclusions are drawn. The object of this study is the accuracy of the use of the 5-factor Fama-French model in predicting stock returns using the company's financial statements and stock summaries of companies listed on the Indonesia Stock Exchange. According to Sugiyono (2022:38), a variable is an attribute or nature or value of a person, object or activity that has certain variations determined by the researcher to be studied and then conclusions are drawn. This study uses dependent variables *and* independent variables . In this study, the *dependent variable* is stock returns. While the independent variables *in* this study are beta, *price to book value* (PBV), company size, profitability, and investment.

3. RESULTS AND DISCUSSION

Description of Data related to Research Variables

The data description describes the results of descriptive statistical tests, multiple linear regression analysis, classical assumption tests, model feasibility tests (F test), determination coefficient tests (*adjusted R2*) and hypothesis tests (t test).

Descriptive Statistics Results

According to Sugiyono (2022:216), descriptive statistics are used to analyze data by describing or depicting the collected data as it is without intending to make conclusions that apply generally or generalizations. The data viewed from descriptive statistical analysis includes the number in the study, maximum, minimum, average (*mean*), and standard deviation values *for* the research variables. The results of the descriptive statistical test in this study can be seen in Table 2 below.

Table 2. Results of Descriptive Statistical Analysis

Variables	N	Minimum	Maximum	Mean	Std. dev
STOCK RETURN	270	-2,996	1,575	-1,275	0.870
BETA	270	-2,957	1,005	-0.403	0.810
PBV	270	-2,995	1,716	-0.052	0.692
SIZE	270	3,135	3,558	3,367	0.063
OPM	270	-2,950	3,748	-1,759	0.755
TAG	270	-2,988	0.691	-1,890	0.735

Source: Processed secondary data, 2024 (attachment 3)

From Table 2 above, it can be seen that the number of samples in this study was 270. The results of the descriptive statistical analysis can be described as follows:

1. Stock Return has a minimum value of -2.996 and a maximum value of 1.575 with an average value of -1.275 and a standard deviation of 0.870. Based on these data, it is identified that the average of all company sectors listed on the IDX for the 2022 period has a low stock return of -1.275. This shows that the level of return obtained by investors is low. The results of these data also show that the standard deviation is greater than the average value, which means that the data used in the variable, namely stock returns, has a large distribution, so that the data deviation in stock returns can be said

to be not good. This shows that the stock return in this study contains some outlier data or data whose values are too extreme.

2. Beta has a minimum value of -2.957 and a maximum value of 1.005 with an average value of -0.403 and a standard deviation of 0.810. Based on these data, it is identified that the overall average of the company sectors listed on the IDX has a beta of -0.403. This shows that the company has $\beta < 1$, which means that the level of profit of stock i increases less than the overall level of profit of stocks in the market. The results of these data also show that the standard deviation is greater than the average value, which means that the data used in the variable, namely beta, has a large distribution, so that the data deviation in beta can be said to be not good. This shows that beta in this study contains several outlier data or data whose values are too extreme.
3. *Price to Book Value* (PBV) has a minimum value of -2.995 and a maximum value of 1.716 with an average value of -0.052 and a standard deviation of 0.692. Based on these data, it is identified that the average of all company sectors listed on the IDX for the 2022 period has a low PBV of -2.995. This shows that stock prices are cheap, thus affecting the level of return obtained by investors. The results of these data also show that the standard deviation is greater than the average value, which means that the data used in the variable, namely PBV, has a large distribution, so that the data deviation in PBV can be said to be not good. This shows that the PBV in this study contains several outlier data or data whose values are too extreme.
4. Company size has a minimum value of 3.135 and a maximum value of 3.558 with an average value of 3.367 and a standard deviation of 0.063. Based on these data, it is identified that the average overall sector of companies listed on the IDX for the 2022 period has a company size of 3.367. The results of these data also show that the standard deviation is smaller than the average value, which means that the data used in the variable, namely company size, has a small distribution and the data deviation on company size can be said to be good.
5. Profitability proxied by the *Operating Profit Margin* (OPM) variable has a minimum value of -2.950 and a maximum value of 3.748 with an average value of -1.759 and a standard deviation of 0.755. Based on these data, it is identified that the average of all company sectors listed on the IDX for the 2022 period has a low OPM of -1.759. This shows that the company has not carried out its activities effectively and efficiently. The results of these data also show that the standard deviation is greater than the average value, which means that the data used in the variable, namely OPM, has a large

distribution, so that the data deviation in OPM can be said to be not good. This shows that OPM in this study has several outlier data or data whose values are too extreme.

6. Investment proxied by the *Total Asset Growth* (TAG) variable has a minimum value of -2.988 and a maximum value of 0.691 with an average value of -1.890 and a standard deviation of 0.735. Based on these data, it is identified that the average of all company sectors listed on the IDX for the 2022 period has a low TAG of -1.890. This shows that the low growth rate of new needs is relatively smaller so that it can be met from retained earnings. The results of these data also show that the standard deviation is greater than the average value, which means that the data used in the variable, namely TAG, has a large distribution, so that the data deviation in TAG can be said to be not good. This shows that TAG in this study contains several outlier data or data whose values are too extreme.

Classical Assumption Test

will first be tested, whether the model meets the classical assumptions or not, the use of regression analysis models in statistics must be free from classical assumptions. The following is the classical assumption test used by the author in this study:

1) Normality Test

According to Ghozali (2021:196), the normality test is a test that aims to determine whether the data obtained from each variable is normally distributed or not. A good regression model has a normal or near-normal data distribution. Testing is carried out using the *one-sample Kolmogorov-smirnov test* . Population data is said to be normally distributed if the *Asymp.Sign coefficient (2-failed)* is greater than $\alpha = 0.05$. When testing, the data is not normally distributed, it can be seen from the *Asymp. Sig. (2-tailed)* value of 0.000 which is smaller than the significance value of 0.05 so that healing is needed.

According to Ghozali (2021:202), if there are residuals that are not normal, treatment can be carried out so that the residuals are normally distributed, treatment is carried out by data transformation . There are two ways to transform data, namely *semi-log* (changing the form of the dependent variable in the form of a natural logarithm) and *double-log* (changing the form of the dependent and independent variables in the form of a natural logarithm). The healing method used in this study is *double-log data*

transformation . After the healing, the results of the normality test can be seen in Table 3 below.

Table 3. Normality Test Results

		Unstandardized Residual	
N			270
Normal Parameters[a,b]	Mean		0,000
	Std. Deviation		0,834
Most Extreme Differences	Absolute		0,038
	Positive		0,031
	Negative		-0,038
Test Statistic			0,038
Asymp. Sig. (2-tailed)			0,200[c,d]

Sumber : Data sekunder diolah, 2024 (lampiran 4).

Based on Table 3 above, the *Asymp. Sig. (2-tailed) value* is 0.200, which is greater than the significance value of 0.05 . This shows that the residual model is normally distributed.

2) Multicollinearity Test

According to Ghozali (2021:157), the multicollinearity test is to find out or analyze whether the regression model contains a correlation between its independent variables. A good model has a model in which there is no correlation between the independent variables. The multicollinearity test is seen from the tolerance value and Variance Inflation Factor (VIF). If the VIF value <10 and the *tolerance value* > 0.10, it means that there is no multicollinearity in the data. The results of the multicollinearity test can be seen in table 4 below.

Table 4. Multicollinearity Test Results

		Collinearity Statistics	
Model		Tolerance	VIF
1	(Constant)		
	BETA	0.89 6	1.11 6
	PBV	0.9 64	1.0 37
	SIZE	0.8 41	1.1 89
	OPM	0.9 55	1.0 47
	TAGS	0.9 98	1.0 02
a.	Dependent Variable: STOCK RETURN		

Source: Processed secondary data, 2024 (attachment 5)

Based on Table 4 above, it shows that beta, PBV, company size, OPM and TAG show that all independent variables have a Tolerance value ≥ 0.10 and a VIF value ≤ 10. Thus, it can be concluded that all independent variables in this study are free from multicollinearity.

3) Heteroscedasticity Test

According to Ghozali (2021:178), the heteroscedasticity test aims to test whether a regression model has unequal variance from the residuals of one observation to another. If the variance from the residuals of one observation to another remains constant, it is called homoscedasticity and if it is different, it is called heteroscedasticity. A good model is a model that does not experience heteroscedasticity. To test for the presence or absence of heteroscedasticity, the Glejser test is used, which is to regress the absolute value of the residuals against the independent variable. Heteroscedasticity does not occur if the significance value is > 0.05 . The results of the heteroscedasticity test can be seen in Table 5 below.

Table 5. Heteroscedasticity Test Results

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Eror	Beta	t	Sig.
1	(Constant)	3,808	1,805		2,110	0,036
	BETA	-0,016	0,040	-0,026	-0,411	0,681
	PBV	-0,061	0,045	-0,083	-1,346	0,179
	SIZE	-0,946	0,540	-0,119	-1,786	0,075
	OPM	0,021	0,042	0,031	0 , 502	0, 616
	TAGS	- 0 ,0 35	0 ,042	- 0 ,0 51	-0.843	0, 400

Source: Processed secondary data, 2024 (attachment 6)

Based on Table 5 above, it shows that all independent variables have a significance value of more than 0.05 . Thus, it can be concluded that the regression model is free from heteroscedasticity.

Hypothesis Testing Results

Based on the multiple linear regression equation, it can be explained as follows:

1. The constant value (α) of 5.968 means that if beta, PBV, company size, OPM, and TAG are equal to zero or constant, then the value of the stock return variable is 5.968.
2. The beta regression coefficient is 0.208 with a significance of 0.002, which means that beta has a positive effect on stock returns.
3. The regression coefficient of *price to book value* (PBV) is 0.086 with a significance of 0.257, which means that *price to book value* has a positive effect on stock returns.
4. The regression coefficient of company size is -2.088 with a significance of 0.019, which means that company size has a negative effect on stock returns.
5. The regression coefficient of *operating profit margin* (OPM) is -0.093 with a significance of 0.185, which means that *operating profit margin* has a negative effect on stock returns.
6. The regression coefficient of *total asset growth* (TAG) is 0.152 with a significance of 0.031, which means that *total asset growth* has a positive effect on stock returns.

F Test

According to Ghozali (2021:148), the F test aims to show whether all independent variables used in the research model have a joint influence on the dependent variable. If the significance is ≤ 0.05 , it can be said that there is a model fit with the data. The results of the F test show that all independent variables beta, PBV, company size, OPM, and TAG have a joint or simultaneous influence on stock returns. This test can be seen in the F *test value* of 4.658 and a significance of less than 0.05, namely 0.000. So the regression model in this study is suitable for further testing.

Results of the Determination Coefficient Test (*Adjusted* ^{R2})

The coefficient of determination (R2) is a measure of how far the model's ability to explain the variation of the dependent variable. The coefficient of determination value is between 0 and 1. A small R2 value means that the ability of the independent variables to explain the variation of the dependent variable is very limited. A value close to 1 means that the independent variables provide almost all the information needed to predict the dependent variable (Ghozali, 2021:147). The results of the determination coefficient test (*adjusted R2*) show that the results of the determination coefficient test are 0.064, which means that the

dependent variable that can be explained by the independent variable is 6.4 % . While the remaining 93.6 % is explained by other variables outside the research model.

Hypothesis Test Results (t-Test)

According to Ghozali (2021:148), the t-test is used to determine the effect of each independent variable partially on the dependent variable. The partial testing method for the independent variables used in this study is if the significance value of t ≤ 0.05, then the independent variable has an effect on the dependent variable and if the significance value of t> 0.05, then the independent variable does not have an effect on the dependent variable. The test results can be seen in the table below.

Table 6. Hypothesis Test Results

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Eror	Beta	T	Sig.
1	(Constant)	5,968	3,015		1,979	0,049
	BETA	0,208	0,067	0,194	3,114	0,002
	PBV	0,086	0,076	0,068	1,137	0,257
	SIZE	-2,088	0,885	-0,152	-2,360	0,019
	OPM	-0,093	0,070	-0.080	-1,330	0.185
	TAGS	0.152	0.070	0.128	2,170	0.031
a. Dependent Variable: STOCK RETURN						
Model					F 4,658	Sig 0.000 [b]
1	Regression					
Model					Adjusted R Square	
1					0.064	

Source: Processed secondary data, 2024 (appendices 8,9,10)

Based on the results of the hypothesis test shown in table 6, it can be explained as follows:

1. The Effect of Beta on Stock Returns

   Table 6 shows that the beta variable on stock returns has a regression coefficient value of positive 0.208 with a significance level of 0.002 which is smaller than 0.05 . These results indicate that beta has a positive effect on stock returns. Thus supporting $_{H1}$.

2. The Effect of PBV on Stock Returns

   Table 6 shows that the *price to book value variable* on stock returns has a positive regression coefficient value of 0.086 with a significance level of 0.257 which is greater than 0.05 . These results indicate that *price to book value* has no effect on stock returns. So it does not support H_2 .

3. The Effect of Company Size on Stock Returns

Table 6 shows that the company size variable on stock returns has a regression coefficient value of negative 2.088 with a significance level of 0.019 which is smaller than 0.05. These results indicate that company size has a negative and significant effect on stock returns. Thus supporting $_{H3}$.

4. The Effect of Profitability on Stock Returns

   Table 6 shows that profitability proxied by *operating profit margin* on stock returns has a regression coefficient value of negative 0.093 with a significance level of 0.185 which is greater than 0.05. These results indicate that *operating profit margin* has no effect on stock returns. So it does not support $_{H4}$.

5. The Impact of Investment on Stock Returns

   Table 6 shows that investment proxied by *total asset growth* on stock returns has a regression coefficient value of positive 0.152 with a significance level of 0.031 which is smaller than 0.05. These results indicate that *total asset growth* has a positive effect on stock returns. Thus supporting $_{H5}$.

Discussion

The Effect of Beta on Stock Returns

The results of the t-test show that the beta variable has a positive regression coefficient value of 0.208 with a significance level of 0.002 which is smaller than 0.05, thus indicating that beta has a positive and significant effect on stock returns.

The results of this study reveal that beta has a positive effect on stock returns, indicating that if a company has a higher beta value, the stock returns it produces will also be higher. This is adjusted to the concept put forward by Jogiyanto (2014) who explains that risk has a positive effect on returns. The higher the risk value, the higher the desired return. The practical implications of this study are that ADHI, BBHI, DMMX, DOID, IMAS, INDY, PGAS, SMBR, and TINS are the nine companies with the highest beta values from the entire sample observed. This is possible because these stocks have more aggressive movements than other stocks where

according to the assessment of beta (Husnan, 2009) namely if β> 1, it means that the level of profit of stock i increases more than the level of profit of all stocks in the market. Investors will respond to this by being more interested in investing in aggressive stocks, so that stock prices will increase causing a positive effect between beta and stock returns.

These results are in accordance with the CAPM model developed by Sharpe (1964), Lintner (1965), and Mossin (1966) which explains the relationship between risk and return. In CAPM, there is only one risk factor, namely market risk, which affects returns. The results of this study support previous research conducted by Eugene Fama and Kanneth French (2015) in a journal entitled " *A Five-Factor Asset Pricing Model* " with research results that beta has a significant positive effect on stock returns. The results of this study are in line with the results of research by Dharma & Lestari (2022), Dewanto & Sumiati (2022) and Heriyandy (2017) which state that beta has a positive effect on stock returns.

The Influence of *Price to Book Value* (PBV) on Stock Returns

The results of the t-test show that the *price to book value variable* has a positive regression coefficient value of 0.086 with a significance level of 0.257 which is greater than 0.05, thus indicating that *price to book value* has no effect on stock returns.

Price to book value is a ratio that compares the stock price to the book level per share. The higher the PBV ratio, the higher the level of market confidence in the company's prospects, thus becoming an attraction for investors to buy shares. The assessment of the company by investors will greatly influence investment decisions because investors will invest in companies that have good performance. Conversely, a low PBV means that the stock price is cheap, thus affecting the level of return obtained by investors. The decreasing stock price will decrease the return obtained by investors. On the other hand, the form of efficiency of the Indonesian capital market is still weak (Hartono, 2008) which causes past values to not be able to be used to predict current prices.

The results of this study reveal that *price to book value* has no effect on stock returns, indicating that this variable does not affect investor decisions in making investment decisions and there are still other indicators used by investors in making decisions. The results of this study do not support previous research conducted by Eugene Fama and Kanneth French (2015) in a journal entitled " *A Five-Factor Asset Pricing Model* " with research results that *book to market* has a significant positive effect on stock returns. The results of this study are in line

with the results of research by Willmar *et al.,* (2024), Murhadi *et al.* , (2017) and Komara *et al.,* (2019) which state that *price to book value* has no effect on stock returns.

The Effect of Company Size on Stock Returns

The results of the t-test show that the company size variable has a regression coefficient value of negative 2.088 with a significance level of 0.019 which is smaller than 0.05, thus indicating that company size has a negative and significant effect on stock returns.

Company size is a measure of the size of a company (Hidayat *et al.,* 2019). The size of the company will affect the ability to bear risks that may arise due to various situations faced by the company related to its operations (Ismail, 2004:52). Company size in this study is seen from the total asset value. Stock returns are significantly influenced by company size, the larger the company, the higher the stock returns (Wahyudi, 2022). However, the results of this study reveal that company size has a significant negative effect on stock returns, which shows that small-cap stocks tend to provide high returns compared to large-cap stocks, known as the " *size effect* ".

Small companies are more affected by fundamental changes because of their relatively higher growth. This is because the profits earned by small companies tend to be lower, making it easier to increase profits in the following year. Conversely, large companies with large profits tend to experience relatively lower growth because profits in the previous period tend to be high. In 2020 and 2021, the Covid-19 pandemic was a challenge for the financial performance of companies due to the decline in people's purchasing power. On the other hand, economic activities were also disrupted, such as the process of producing goods to marketing goods and services. Therefore, after the impact of the pandemic, small companies often adapt more quickly and take advantage of the growth opportunities that arise, resulting in higher revenue growth.

The results of this study support previous research conducted by Eugene Fama and Kanneth French (2015) in a journal entitled " *A Five-Factor Asset Pricing Model* " and are in line with the research results of Heriyandy (2017) and Wijaya *et al.,* (2017) which stated that company size has a negative and significant effect on stock returns.

The Effect of Profitability on Stock Returns

The results of the t-test show that profitability proxied by OPM has a regression coefficient value of negative 0.093 with a significance level of 0.185 which is greater than 0.05, thus indicating that profitability has no effect on stock returns.

Profitability is the company's ability to generate profit, where in this study profitability is proxied by *operating profit margin* which is a ratio used to measure the level of management performance in generating business profit. The higher the OPM ratio, the better it will be for a company's operations, while if OPM decreases and gross profit margin remains the same or does not change, it can be analyzed that the cause of the decline in profit is the increase in operating costs. In this study, profitability has no effect on stock returns. In addition to internal factors, this can be influenced by several external factors such as macroeconomic factors, industry conditions and the competitive behavior of other companies that are beyond the company's control.

The results of this study do not support previous research conducted by Eugene Fama and Kanneth French (2015) in a journal entitled " *A Five-Factor Asset Pricing Model* " with research results that profitability has a significant positive effect on *excess* stock returns, which shows that when the profitability of a company is high, it will increase the company's return. However, the results of this study are in line with the results of research by Pratiwi & Noveria (2023) and Sitanggang & Rizkianto (2024) which state that profitability has no effect on stock returns.

The Impact of Investment on Stock Returns

The results of the t-test show that the investment variable proxied by *total asset growth* has a positive regression coefficient value of 0.152 with a significance level of 0.031 which is smaller than 0.05, thus indicating that investment has a positive and significant effect on stock returns.

Return describes the results obtained by investors from investments that have been made during a certain period of time (Jogiyanto 2014:242). Investment shows the level of company investment with the investment value obtained by looking at the growth of total assets (Dewanto & Sumianti, 2020) where in this study investment is proxied by *Total Asset Growth* (TAG) which is the total of asset growth per year. Rapid asset growth indicates that the company is expanding (Paliienko *et al.* , 2020). Investment proxied by TAG has a positive

effect on stock returns. This positive direction indicates that increasing asset growth has an impact on increasing stock returns. A high level of asset growth indicates that the company is able to develop so that in this case it can attract investors to buy shares of the company because a high growth rate will increase the stock price which has an impact on the stock returns received by investors.

The results of this study support previous research conducted by Eugene Fama and Kanneth French (2015) in a journal entitled " *A Five-Factor Asset Pricing Model* " with research results that investment has a significant positive effect on stock returns. The results of this study are in line with the results of research by Firmansyah *et al.* (2020) and Cahaya & Yulandari (2021) which state that investment has a positive effect on stock returns.

4. CONCLUSION

Based on the test results on the company sectors listed on the IDX for the 2022 period, it can be concluded that beta has a positive effect on stock returns, *price to book value* does not affect stock returns, company size has a negative effect on stock returns, profitability does not affect stock returns, and investment affects stock returns.

This study provides theoretical and practical implications. Theoretically, the results of this study confirm that of the five model factors proposed by Fama & French, only beta, company size and investment have an effect on stock returns for the 2022 period in all sectors of companies listed on the IDX. Practically, the results of this study provide information and knowledge related to the factors that influence stock returns that can be used as a reference for further research. In addition, the results of this study can be a consideration for investors in every decision they make in making investments so that they can obtain high returns.

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