

THE INFLUENCE OF IDIOSYNCRATIC VOLATILITY, MARKET RISK, AND SIZE ON STOCK RETURN OF A NON-FINANCIAL COMPANY REGISTERED IN INDONESIA STOCK EXCHANGE IN THE PERIOD OF 2012 - 2016

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Abstract

The objective of this research is to examine the effect of idiosyncratic volatility, market risk, and size, as the independent variable on stock return on non-financial firm (eight sectoral) listed on Indonesia Stock Exchange. This research uses quantitative perspective with linier regression and model in a panel data for all of the research's observation used in this research. The number of observation in this research is 1440, consisting of 288 firms that have been enlisted on Indonesia Stock Exchange during 2012-2016 period. The result shows that idiosyncratic volatility has a negative significant effect on stock return. Market risk and size appear to have no significant effect on stock return.

Keywords: stock return, idiosyncratic volatility, market risk, size.

Abstrak

Tujuan dari penelitian ini adalah menguji pengaruh idiosyncratic volatility, market risk, dan size, sebagai variabel independen terhadap return saham pada perusahaan non-keuangan (delapan sektoral) yang ada di Bursa Efek Indonesia. Penelitian ini menggunakan perspektif kuantitatif dengan regresi linier dan model dalam data panel untuk semua pengamatan penelitian yang digunakan dalam penelitian ini. Jumlah observasi dalam penelitian ini adalah 1440, terdiri dari 288 perusahaan yang telah terdaftar di Bursa Efek Indonesia periode 2012-2016. Hasil penelitian menunjukkan bahwa idiosyncratic volatility berpengaruh negatif signifikan terhadap return saham. Market risk dan Size tidak berpengaruh signifikan terhadap return saham.

Kata Kunci: return saham, idiosyncratic volatility, market risk, size.

JEL: G10,G11

1. Research Background

In CAPM model (*capital asset pricing model*), if an individual or investor is able to form a well-diversified portfolio, the considered risk is systematic risk or risk that is related to external (market). However, if an investor is not able to form the portfolio, then the considered risk is the total risk (both systematic and unsystematic risk). *Unsystematic risk* is an individual

risk that is related to the internal company which can be also called *idiosyncratic risk*. The limitation of investors to form perfect diversification brings the consequences that the *idiosyncratic risk* is more relevant in terms of the return on stocks. Levy (1978) proved that *under-diversification idiosyncratic risk* may affect asset prices. Merton (1987) theoretically indicated that there is a positive relationship between *idiosyncratic risk* and *expected return* when an investor is not capable to diversify his/her portfolios. According to Tinic and West (1986) and Malkiel and Xu (1997), the higher the volatility of *idiosyncratic*, the higher the returns on stocks of a company.

Berggrun et al. (2016) did his research by developing evidence of a relationship between IVOL (*idiosyncratic volatility*) and *one-month ahead return* (rate of return for the next one month) in Latin American Integration Market or *Mercado Integrado Latinoamericano* (MILA). This study tested the strength of IVOL (*idiosyncratic volatility*) as an independent variable in predicting the expected return in the future (*expected return*, R_t^*) which is the dependent variable. Not only measuring IVOL as an independent variable, this study also takes into account CAP (*market capitalization*), BM (*book-to-market*) ratio, MOM (*momentum*), Illiq (*liquid*), market risk (beta), SMB (“*small minus big*”) or size, HML (“*high minus low*”). The result shows that IVOL and size have no significant negative effect, while BM and CAP have significant negative effect to *expected return*. For independent variables MOM, beta, and HML have no significant positive effect on *return*.

Zhang et al. (2016) in his research described R^2 (*price synchronicity*) and *idiosyncratic volatility* as a proxy used to measure variations of the *firm-specific* rate of return and examine their relationship to information efficiency. This study provides an alternative proof where *price synchronicity* and *idiosyncratic volatility* are not exchanged by the usage of unique *short selling* mechanisms in China. This study measures the influence of independent variables such as R^2 (*price synchronicity*), market risk (beta), market volatility, and *idiosyncratic volatility* on return. Apparently, *price synchronicity*, market risk, market volatility, and *idiosyncratic volatility* have a significant positive effect in alpha 1% on return.

In his research, Murhadi (2013) used *idiosyncratic risk* and stock liquidity as independent variables, as well as control variables in the form of company size (*size*). Stock liquidity can then be measured by *bid-ask spreads* (*spread*). The result shows that by using panel data and *pooled least square* (PLS), *idiosyncratic risk* has significant negative effect on *stock return*, stock liquidity has significant positive effect, and company size has significant negative effect. These imply that companies with small *idiosyncratic risk* will be preferable to investors who are not able to diversify.

Berggrun et al. (2016) stated that *idiosyncratic risk* has a negative correlation that is not significant on stock returns because in his research, the investors perceive a decline in stock return when *idiosyncratic volatility* increases. Nevertheless, the coefficients were not statistically significant, either tested by *unconditional* and *conditional* approaches. The significant influential variables are attributes from the company itself or in the form of *market capitalization* and *book-to-market ratio*. Murhadi (2013) in his research found different results, where *idiosyncratic volatility* was significantly negative correlated on stock returns. The logical explanation of this significant negative result is that companies with high individual risk (*idiosyncratic risk*) will cause investors, who are not able to form a portfolio, avoid this company, resulting in the movement of stock prices to be narrower so that the stock return becomes smaller, and vice versa. On the other hand, Zhang et al. (2016) found that *idiosyncratic risk* had a significant positive effect on stock returns. IVOL is a natural proxy of *idiosyncratic risk*. The higher the *idiosyncratic* volatility, the higher the stock returns of a company.

Berggrun et al. (2016) also used market risk variable (beta) and the result is positively not significant on *return*. This result is the same with the independent variable of *idiosyncratic risk* in which after statistical observation, the *market risk* also has no significant effect but a

positive course towards *expected return of stock*. Zhang et al. (2016) discovered that market risk has a significant positive effect on stock returns. The logical explanation is that if the risk borne by the shareholders is higher, then the stock will result in a high return as well. Market risk (beta) is closely related to changes in stock prices. Beta is a systematic risk of a stock. Beta also serves as a measurement of stock return volatility.

The research of Berggrun et al. (2016) regarding the independent variable of size to return obviously had a negative correlation that is not significant, and *idiosyncratic risk* likewise. *Size* is company size. In another study by Murhadi (2013), it was learnt that the company size had a significant negative effect on stock returns. The explanation for this finding is that small companies tend to have a higher risk than larger ones, therefore, with the concept of *high risk high return*, small companies have higher expected returns from investors.

The contribution of this research is to identify the various factors that have been determined and their effect on stock return of non-financial sector companies in Indonesia Stock Exchange (BEI) in the period of 2012-2016. The difference of this research compared to the existing researches is the use of objects in the form of non-financial sector business entities listed on the Indonesia Stock Exchange, while in Indonesia it is relatively seldom used. The use of new independent variables is not confined to *idiosyncratic risk* to measure its effect on stock returns. These variables are *market risk* and *size* (company size).

2. Research Method

This study used all companies located in Indonesia and the selected samples are all non-financial business entities in eight (8) sectors, namely agriculture, mining, basic and chemicals sectors, miscellaneous industries, consumer goods, property, infrastructure, and trade, services sectors and investment, which are registered for 5 consecutive years on the Indonesia Stock Exchanges (IDX) for the period of 2012-2016, and have issued a complete and audited annual report starting from 2012-2015, the annual report for the period of 2012-2015 that ends in December, unaudited financial statements of the third quarter (September 2016), and no corporate action in the period of 2012-2016. . In this research, the dependent variable is stock return while the independent variable is *idiosyncratic risk*, *market risk (beta)*, and *size* (company size). Stock returns can be predicted using the following formula: $R_{i,t} = \ln(P_t/P_{t-1})$. To calculate *idiosyncratic risk*, this research will use the CAPM model with the following formula:

$$R_{i,t} = \alpha_{i,t} + \beta_{i,t} \cdot (R_{m,t} - R_{f,t}) + \varepsilon_{i,t}.$$

$R_{i,t}$ is level of individual stock returns listed on the Indonesia Stock Exchange for the period of 2012-2016, $\beta_{i,t}$ is the beta coefficient or market sensitivity index, $R_{m,t}$ is the market rate yield, $R_{f,t}$ is the risk free yield rate, and $\varepsilon_{i,t}$ is *idiosyncratic risk*. Then *idiosyncratic risk volatility* (IVOL) can be calculated using the formula (Bali and Cakiki 2006):

$$IVOL_{i,t} = \sqrt{\text{var}(\varepsilon_{i,t})}$$

The volatility of *idiosyncratic risk* is derived from the standard deviation of residual *idiosyncratic risk*.

Beta is a coefficient representing systematic risk or market risk (market sensitivity index). There is a conventional approach to estimate *market risk* (beta) called *Single Index Model*, which is by regression of the level of investment return of a stock on the market index.

$$R_{i,t} = a + b \cdot R_{m,t}$$

Size is the size of the business entities of all sectors listed in the Indonesia Stock Exchange in the period of 2012-2016. Company size can be calculated using the natural logarithm of total assets of each company during that period (Murhadi 2011, Han and Lesmond 2009, Spiegel and Wang 2005).

3. Result and Discussion

Table 1. Regression Test Result

Independent variable	Coefficient	t-Statistic	Hypothesis
C	0.001021	2.396624	
IVOL	-0.003775	-2.378545**	Positive
MARKET RISK	-0.000100	-0.987672	Positive
SIZE	-3.99E-05	-1.336906	Negative
R-squared	0.006995	Mean dependent var	0.000308
Adjusted R-squared	0.004920	S.D. dependent var	0.001854
S.E of regression	0.001850	Sum squared resid	0.004912
F-statistic	3.371833**	Durbin-Watson stat	2.117055

Notes: *: significance at 10%, **: significance at 5%, ***: significance at 1%

Source: Attachment 2

The *idiosyncratic volatility* variable has a coefficient of -0.003775 and a significance level of 0.0175. This means that *idiosyncratic volatility* variable has a significant negative relationship to *stock return* variable. This result is supported by research conducted by Murhadi (2013), but it is contrary to research by Berggrun et al. (2016) who found an insignificant negative relationship between *idiosyncratic volatility* and *stock return*.

The research of Zhang et al. (2016) also found a different result that is the *idiosyncratic volatility* relationship with stock return was positively significant. In addition, the hypothesis in this research also stated a positive relationship between *idiosyncratic volatility* variables with stock return. This means that there has been a type I error. Type I error is a condition when the results of research states that H_0 is rejected, but actually H_0 is correct. The interesting result is that *idiosyncratic volatility* turned out to have a significant negative effect. This means that the higher the risk of individual companies, the lower the stock returns, and on contrary the lower the risk of individual, the higher stock return. Wan (2008) also found this significant negative result occurred in "penny-like-stock" in the US capital market which has high volatility characteristics, small market capitalization, low stock price, and is *underperform*. The negative results in this study were also consistent with research by Ang et al. (2005). The logical explanation of this significant negative result is that a company with total risk (*idiosyncratic risk*) will cause investors who are unable to form a portfolio will avoid this company. This resulted in the company's shares being rarely transacted so that the volume of transactions is small and the company's stock return declines.

Market risk variable has a coefficient of -0.000100 and significance level of 0.3235. That is, *market risk* variables have an insignificant relationship to the *stock returns* variable. This result is supported by a research conducted by Berggrun et al. (2016), however, it is contrary to the research by Zhang et al. (2016) who found that *market risk* has a significant positive effect on *stock return*. In addition, the hypothesis in this study also states a positive relationship between *market risk* variables and *stock return*. This means that there has been a type I error. Type I error is a condition when the results of research states H_0 is rejected, but actually H_0 is correct. The higher market risk (*market risk*) does not affect the stock returns. This was supported by the research of Fama and French, (1996) who got attention from academics by claiming "Beta is Dead!" This study stated that the relationship between the average return and beta was weak in the period of 1941-1990 and was almost no relationship in the period of 1963- 1990. Another influence factor is that investors' preferences in Indonesia

tend to be *risk averse* or do not like the high risk, so they pay less attention to beta as market risk. The results of this study support the research of Sugiarto (2011), as well as Novak and Petr (2010). Beta calculations are based on historical data which resulted in information that was less relevant, in term of providing information for future decision making. Beta is less able to meet the needs of investors who want to invest in long-term investment. This was due to the movement of stock prices in the long run that always resulted in changing in stock prices which are usually quite high. However, when investors are merely traders who intend to trade for a short period, beta is a good measurement of risk. In addition, beta, as an important component to estimate return of a stock, is not stationary from time to time, so it needs to be adjusted to market conditions (Jones, 1998). Therefore, it is necessary to calculate beta separately when the market is *bullish* and *bearish* (Bhardwaj and Brooks 1993, Graham and Saporoschenko 1999, Clinebell et al. 1993, Howton and Peterson 1998, Tandelilin 2001). These studies show that systematic risk changes over time. According to Vennet and Crombez (1997) if the systematic risk of a stock changes, then the required return on the stock also needs to be adjusted. Beta stocks with *single index model* approach are not significant to stock return (Fama and French 1992, Howton and Peterson 1998, Tandelilin, 2001). The above study was also supported by Clinebell et al. (1993) who suggested that market betas tend to be unstable under different market conditions. Fama and French (1992), Howton and Peterson (1998), Tandelilin (2001), and Clinebell et al. (1993) recommend to not use this definition when testing the influence of stock beta on stock returns.

The variable size has a coefficient of -3.99E-05 and a significance level of 0.1815. This means the size has an insignificant relationship to the stock returns variable. This result is supported by a study of Berggrun et al. (2016), however, it is contrary to research conducted by Murhadi (2013) who found that size has a significant negative effect on stock returns. In addition, the hypothesis in this study also states a negative relationship between size and stock return variables. This means there has been a type I error. Type I error is a condition when the results of research states H_0 is rejected, but actually H_0 is true. Helmi (2008) proves that the company size has no effect on stock returns. The amount of assets owned by the company is not considered by investors when making investments, but they consider the company's ability for return on investments. The results of research conducted by Jundan (2012), Asri and Suwarta (2014) with the results of company size does not affect the stock returns. These results indicate that the magnitude of a company's assets is less effective in influencing the performance of the company, or even does not affect the performance of the company. Company performance affects the stock returns of the company. Companies that have large corporate assets do not guarantee that the company's performance will make a profit that is even greater. The greater the asset of a company, the maintenance cost of the asset will also be greater, especially in companies that tend to have large fixed assets. The other logical explanation of the insignificant test results indicates that company size during the publication of financial statements is not informative enough and is no longer the concern of investors in deciding the investment and estimating returns in this observation period. Investors assume that large companies cannot always provide a large rate of return and vice versa, small firms that do not rule out can provide a high rate of return for investors. These results are relevant to a research conducted by Muhammad (2010), which stated that company size (firm size) has no effect on stock returns.

4. Conclusion

4.1. Summary

After conducting data processing and hypothesis testing with software Eviews 8, hypothesis 1 which states allegedly *idiosyncratic risk* positively affects the stock returns of a company is not proven. Researchers found *idiosyncratic risk* results have a negative effect on stock returns. The second hypothesis allegedly *market risk* positive effect on stock returns of a

company is not proven. Researchers found that market risk results have no effect on stock returns. The third hypothesis is *size* (company size) have a negative effect on stock returns of a company is not proven. Researchers found the size does not affect the stock returns. Based on the results of hypothesis testing by doing t test, *idiosyncratic volatility* variable has a significant negative effect on stock returns. *Market risk* variable has insignificant negative effect to stock returns. *Size* variable has insignificant negative effect on stock returns. The values of R^2 dan *adjusted-R²* are 0.006995 and 0.004920. Thus, it can be concluded that the dependent variable (*stock returns*) can be explained by independent variables (*idiosyncratic volatility, market risk, and size*) while the rest is explained by other variables which are not included in this study.

4.2. Recommendation

This research can be used as a reference and consideration for investors to consider factors related to *stock returns* such as *idiosyncratic volatility, market risk, and size* before making a decision to invest in a stock listed on the Indonesia Stock Exchange. The recommendation for any investors who are not able to form a well portfolio well is that they should not buy a company stock with high *idiosyncratic volatility*. Other factors are not really taken into consideration in investment.

For companies that have listed their company in Indonesia Stock Exchange, this research can be used as a consideration in making decisions in the company. In addition, the company is expected to provide data that actually reflects the company's condition so that investors can maximize utilizing that data for their investment purpose.

For researchers, this research can be used as a recommendation for further research. This study has limitations, namely the number of observations that are less due to inhibited requirements of the sample, and there are many other variables that their effect on stock returns can be studied. Therefore, we hope that the next researcher can do more research with more samples to get more accurate results and increase the number of variables studied, either previously researched, or even add variables that have not been previously studied in research with the same topic.

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