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Profitability as a Moderating Variable of Systematic Risk in Mining Companies

Syaiful Andy Lasmana[1] and Agus Wahyudin[2]

[1]*Bank Rakyat Indonesia*

[2]*Accounting Department, Faculty of Economics, Universitas Negeri Semarang*

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ABSTRACT

This study aims to examine the effect of liquidity, earning variability, and firm size on systematic risk with profitability as a moderating variable. Some 37 mining companies listed on the Indonesia Stock Exchange in 2014-2016 are selected as the population of this study. Total 26 companies with 78 units of analysis are obtained using the purposive sampling technique. The data analysis technique used is the method of testing the moderation regression model with the IBM SPSS 21 analysis tool. The results show that liquidity and firm size are not related to systematic risk while earning variability has a significant negative effect on systematic risk. The results of the moderation test prove that profitability does not significantly moderate the effect of liquidity on systematic risk, but moderates the effect of earning variability and firm size on systematic risk. This study concludes that systematic risk is affected by earning variability while profitability moderates the effect of earning variability and firm size on systematic risk.

INTRODUCTION

Investment is the sacrifice of a certain amount of funds in a certain period in order to obtain profit in the future. People are increasingly aware of the importance of investment, one of which is capital market. Modern investment management divides investment total risk into two, namely systematic risk and unsystematic risk. The systematic risk or market risk is the risk related to the changes that occur in the market as a whole. The unsystematic risk or also known as corporate risk is a risk that is not related to market changes, only related to certain industries or companies. This risk has different fluctuations between one stock and another so that the sensitivity to market changes of each stock is different.

Systematic risk in this study is proxied by stock beta. According to Hartono (2017), stock beta is a measure of the volatility of stock returns against market returns. The reference to the market average or market index in Indonesia is the JCI (Joint Stock Price Index). A high beta value of a stock indicates that the stock is at a higher risk than the JCI. Shares change according to the beta value times the percentage of change to change in JCI.

In general, when the average share price tends to rise, the market average will also increase. Some stocks actually have negative beta values that move against the JCI average. When the JCI average goes up, the stocks with negative beta values will move down and vice versa. The stock beta value of the company of Adaro Energy Tbk (ADRO) in 2015 was -0.260, but in 2014 and 2016, it was positive at 1.032 and 1.703. In 2014 and 2016, ADRO moved according to the JCI average, but ADRO shares moved in the opposite direction from the JCI average in 2015.

There are differences in the results of the previous studies related to the effect of liquidity, earning variability, and firm size on systematic risk. Januardi & Afrianto (2017), Iqbal & Ali Shah (2012) and Lee & Jang (2007) researched and stated that systematic risk is influenced by liquidity. Different from Boz et al., (2015), Yulius-man (2014) and Adhikari (2015) explained that systematic risk is not affected by liquidity. On the other hand, Ridwan (2015) and Priyanto (2017) proved that systematic risk is influenced by earning variability. However, Kustini & Pratiwi (2011) and Nainggolan & Solikhah (2016) showed that systematic risk is not affected by earning variability.

Moreover, Adhikari (2015) and Lee & Jang (2007) stated that systematic risk is positively influenced by firm size. However, Januardi & Afrianto (2017) proved that systematic risk is negatively affected by firm size. Different from the previous research, Aruna & Warokka (2013) and Handayani (2014) stated that systematic risk is not influenced by firm size. The differences in the results of the study encourage the researchers to examine other factors that may affect the relationship between

* *E-mail: syaifulandy000@gmail.com*
Address: Kapung, Tanggungharjo Grobogan, Jawa Tengah, 58167, Indonesia

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liquidity, earnings variability, and firm size with systematic risk.

This study aims to examine the effect of liquidity, earnings variability, and firm size on systematic risk moderated by profitability in the mining companies listed on the Indonesia Stock Exchange. Based on the inconsistent results, in order to determine the consistency of the effect between the independent variables on the dependent variable, a moderating variable is added. Profitability is chosen as the moderating variable for the novelty of this study with a focus on mining companies. Profitability is chosen because according to Adhikari (2015), high profitability can improve the company's performance in order to reduce the company's financial instability. The ability of profitability in reducing the company's financial instability is expected can reduce the systematic risk accepted by the company.

Mining companies are chosen because there are still few studies that use mining companies as samples. The mining sector has a role for Indonesia, starting in terms of state income, regional development, increased economic activity, and provision of employment opportunities. Although the price of oil and coal has decreased in the last five years, the mining sector is still the pillar of the Indonesian economy.

The mining industry is the biggest contributor to Natural Resources Non-Tax State Revenue (PNPB). According to Katadata (2017), the contribution of natural gas, minerals, oil, and coal reached 90 trillion rupiahs or 95% of natural resource revenues in 2016. Oil and minerals and coal (minerba) and natural gas (oil and gas) mining is also one of the major contributors of Gross Domestic Product (GDP) 2016 with a 7.2% portion and gave the largest deposit of Land and Building Tax in 2015 amounted to 27 trillion rupiahs.

Signal Theory and Capital Asset Pricing Model (CAPM) theory are chosen as theories in this study. The allegation of a mismatch of information, where the explanations obtained by each group are different, underlies the signal theory. Company managers provide signals to minimize discrepancies in the information. The publication of financial statements is one way of delivering signals by the company. Financial statements contain corporate non-financial and financial information.

CAPM theory explains how investors react to risk and value risky assets (Milionis, 2011). This theory explains the relationship between the expected return and risk. CAPM explained that beta is a flexible assessor of risk, and there is a positive and linear relationship between the desired rate of return and beta. The more risky a stock is, the higher the desired level of return will be.

Liquidity is a variable used in predicting systematic risk. According to Kasmir (2015), liquidity is a ratio that describes the ability of companies to meet their short-term liabilities. To measure liquidity, one of the proxies used is current ratio. The current ratio is a ratio used to measure the company's ability to pay debts as soon as they become due or short-term. Investors tend to prefer liquid companies. According to Jazuli & Witiastuti (2016), if the current ratio or liquidity is high, the risk received by investors is lower.

The relationship of liquidity to systematic risk is explained by signal theory. Liquidity is a signal that represents the condition of a company. The strategy carried out by the company will be analyzed by investors and used as a basis for decision-making. The decisions taken by investors are maintaining shares or selling shares. Good corporate liquidity is considered as a positive signal since high liquidity will reduce the company's systematic risk. This negative relationship between liquidity and systematic risk is shown in the research conducted by Januardi & Afrianto (2017) and Lee & Jang (2007).

H_1: Liquidity Has a Significant Negative Effect on Systematic Risk

Earning variability is the variability of corporate profit or income at a certain period which varies based on the conditions and situations. Nainggolan & Solikhah (2016) measured earning variability based on the standard deviation of the price earning ratio. The CAPM theory explains the relationship between earning variability and systematic risk. CAPM explains that the more risky a stock is, the higher the desired return will be.

The higher the standard deviation of PER, the more fluctuating the earnings of the company (Kustini & Pratiwi, 2011). The more fluctuating the company's earnings, it will reduce the certainty of return on investment and increase the risk of the stock. Companies with uncertain and fluctuating earnings have a great risk. Thus, the second hypothesis assumes that earning variability has a positive effect on systematic risk. This assumption is supported by the research of Fidiana (2006) and Ridwan (2015). Research conducted by Fidiana (2006) and Ridwan (2015) prove that earning variability affects systematic risk.

H_2: Earning Variability Has a Significant Positive Effect on Systematic Risk

Firm size is the ratio used in classifying small to large companies. Firm size can be observed from the total value of its assets (Saputra & Fachrurrozie, 2015). The relationship between firm size and systematic risk is explained by signal theory. The issuance of financial statements is given by the company to external parties to provide a signal. The financial statements contain the condition of the corporate financials. In the financial statements, investors can see the total assets of the company and the growth of the total assets from the previous period. The total assets can be used in measuring firm size. That way how big the company will be known to investors.

Large companies will be increasingly known by the public so that information will be easier to obtain. Large companies are more able to minimize risk. According to Kim et al (2002), the systematic risk of large companies will be lower because large companies have the ability to reduce the effects of economic changes. The larger the size of the company, the lower the systematic risk. From this thought, it can be assumed that systematic risk is influenced by firm size in a negative direction. Januardi & Afrianto (2017) proved that systematic risk is affected by firm size in a negative direction.

H_3: Firm Size Has a Significant Negative Effect on Systematic Risk

Liquidity is a signal that reflects the condition of a company. According to signal theory, the company will convey the information it has as a positive signal to the market. Investors tend to prefer companies with good liquidity. High liquidity will give lower risk. Profitability plays a role in the effect of liquidity on systematic risk. High profitability can increase the company's ability to reduce the company's financial instability (Adhikari, 2015).

Companies that can meet their liquidity are defined as having sufficient funds to pay off their short-term debts. High liquidity will reduce the company's systematic risk. Profitability will moderate the negative effect of liquidity on systematic risk because profitability can reduce the company's financial instability. With the ability of profitability to reducing the company's financial instability, the company's systematic risk will decrease. Based on this explanation, it can be understood that companies with high liquidity will reduce their systematic risk moderated by profitability.

H_4: Profitability Moderates the Effect of Liquidity on Systematic Risk

Earning variability is the variability of the corporate profit or revenue of income at a certain period, which varies based on the conditions and situations. The more fluctuating the company's earnings, the smaller the certainty of investment returns and increases the risk of the stock. Earning variability has a positive effect on the systematic risk because companies with uncertain and fluctuating income have a big risk.

Profitability plays a role in the effect of earning variability on systematic risk. The CAPM explains that beta is a relevant risk assessor, and there is a positive and linear relationship between the desired rate of return and beta. According to Fidina (2016), companies that dare to take risks will get high profitability. Profitability will moderate the positive effect of earnings variability on the systematic risk because companies with high profitability are willing to take risks. The greater the risk of the stock, the greater the desired profit. Based on this explanation, it can be assumed that the company's high earning variability will increase its systematic risk moderated by profitability.

H_5: Profitability Moderates the Effect of Earning Variability on Systematic Risk

Firm size is the ratio used in classifying small or big company. According to Kim et al (2002), the systematic risk of large companies is lower because large companies have the ability to minimize the effects of economic changes. Firm size and the systematic risk have a negative relationship, if the firm size is large, the systematic risk is low. The larger the size of a company indirectly has an impact on its operational activities so that the profits that the company generates are getting bigger.

Profitability plays a role in the effect of firm size on systematic risk. The relationship of firm size to systematic risk is explained by signal theory. The company will give a signal to external parties by issuing financial statements. The financial statements contain information about the size of the company. According to Adhikari (2015), the higher the profitability, the more capable the company is to reduce the company's financial instability.

The negative effect of firm size on systematic risk is moderated by profitability. Large companies are more able to anticipate systematic risk and with high profitability, the company's systematic risk will be low. Profitability will reduce the company's financial instability, so the risk will be low. Based on the explanation, it can be understood that large companies will reduce their systematic risk moderated by profitability.

H_6: Profitability Moderates the Effect of Firm Size on Systematic Risk

The research model based on the theoretical framework can be seen in figure 1.

RESEARCH METHODS

Using secondary quantitative research data, this study selected the population of mining companies listed on the Indonesia Stock Exchange (IDX) in 2014-2016. The year 2014-2016 was chosen because the mining sector has experienced a decline in the price of shares in the last few years. In 2014-2015, the mining sector companies always have a movement with a negative value. In 2016, the mining sector created a positive movement performance. In 2014, the mining companies had a negative performance even the lowest among other sectors at -4.22% and in 2015 at -40.75%. In 2016, the mining companies had a positive performance of 1.31% but still showed the lowest value compared to other sectors. The existence of fluctuations in economic changes and improved performance in the mining sector in 2014-2016 made the researchers choose the research year 2014-2016. A total of 26 companies with 78 analysis units were obtained using the purposive sampling technique. Table 1 presents the sampling criteria.

Liquidity, earnings variability, and firm size are the independent variables and systematic risk is the dependent variable, while profitability in this study is the moderating variable. Table 2 shows the operational defi-

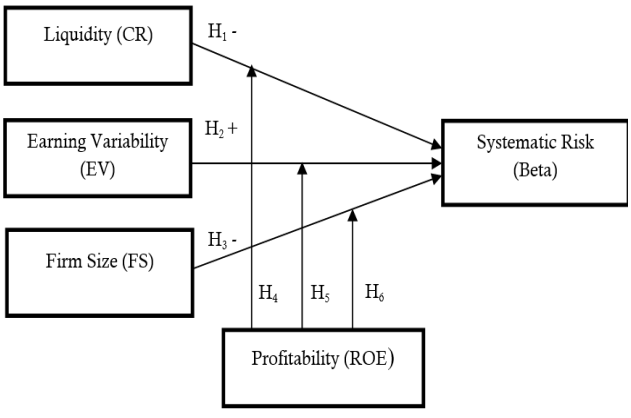

Figure 1. Research Model

Table 1. The Determination of Research Sample

No.	Sample Criteria	Beyond Criteria	Total
1.	Mining companies listed on the IDX 2014-2016	-	37
2.	Mining companies listed on the IDX actively traded from 2014-2016	(9)	28
3.	Mining companies listed on the IDX which did not perform stock reverse or stock split during 2014-2016	(2)	26
4.	Observation Period (2014-2016)		3
	Total Analysis Units		78

Source: Secondary data processed (2018)

nition of research variables.

The data collection technique chosen is the documentation method. The data used were a summary of financial statements from the IDX official website, as well as stock price data from yahoo finance. The data analysis tool used was IBM SPSS 21. This study used parametric statistics with the moderation regression model test to examine the research hypotheses. The data tests included normality test, autocorrelation test, heteroscedasticity test, multicollinearity test, and moderating regression of absolute difference value test. It used the level of significance of = 5% or 0.05. Equation 1:

$$BETA= \alpha + \beta_1 CR + \beta_2 EVAR + \beta_3 FS + \beta_4 |CR\text{-}ROE| + \beta_5 |EVAR\text{-}ROE| + \beta_6 |FS\text{-}ROE| + \varepsilon \quad (1)$$

RESULTS AND DISCUSSION

The descriptive statistics of the research variables are shown in table 3. The maximum value of the systematic risk of mining companies in 2014-2016 is 4.491, while the minimum value is -1.805 and the mean is 0.631. The maximum value of systematic risk is 4.491 in Tin companies (Persero) Tbk (TINS). TINS had a beta value of 4,491 in 2014. This figure is positive which means the stock grows in line with the IHSG returns, if the JCI moves 2%, the company's return will increase by 2% times 4.49 which is 8.98%.

The data are normally distributed because of the value of asymp sig. (2-tailed) of the result of the normality test of 0.200 is more than 0.05. The heteroscedasticity test shows that the significance value is above 0.05, so it is concluded that there is no heteroscedasticity. The result of the multicollinearity test has a VIF value for each independent variable < 10, which shows that among the independent variables there are no symptoms of multicollinearity. The autocorrelation test shows the Durbin-Watson value of 2.076. The value of Durbin-Watson is between dU and 4-dU or 1.7028 < 2.076 <2.2972, so that it can be concluded that there is no autocorrelation problem. As many as 0.092 or 9%, the coefficient of determination adjusted R^2 indicates that the level of variation of the systematic risk variable can be explained by liquidity, earning variability, firm size, and the moderating variable profitability is 9% and the remaining 91% is explained by other factors. Table 4 presents the results of moderated regression analysis, while the statistical equation is presented in equation 2.

$$BETA = 0.594 + 0.333\ ZscoreCR - 0.738\ ZscoreEVAR + 0.085\ ZscoreFS - 0.057|ZscoreCR - ZscoreROE| + 0.630|ZscoreEVAR\text{-}ZscoreROE| - 0.486|ZscoreFS\text{-}ZscoreROE| \quad (2)$$

The Effect of Liquidity on Systematic Risk

Systematic risk is not affected by liquidity. Januardi & Afrianto (2017) and Lee & Jang (2007) did not sup-

Table 2. Operational Definition of the Variables

No.	Variables	Variable Definition	Measurement
1	Systematic Risk (BETA)	Systematic risk is a risk related to changes that occur in the market as a whole (Hartono, 2017).	The regression technique by using stock returns as the dependent variable and IHSG returns as the independent variable. With regression equation: $R_i = \alpha_i + \beta_i . R_M + e_i$ (Hartono, 2017)
2	Liquidity (CR)	Liquidity is the ability of companies to meet their short-term liabilities (Kasmir, 2015).	Current Ratio = Current Asset/Current Liabilities (Kasmir, 2015:110)
3	Earning Variability (EVAR)	Earning variability is the acceptance of income at certain periods that fluctuate according to certain conditions and situations (Kustini & Pratiwi, 2011).	Earning Variability = Standard Deviation of Price Earning Ratio *(PER)* (Nainggolan & Solikhah, 2016)
4	Firm Size (FS)	Scale for classifying small or big company (Saputra & Fachrurrozie, 2015).	Size = Ln Total Aset (Saputra & Fachrurrozie, 2015)
5	Profitability (ROE)	Profitability is the company's income generated from income after being deducted from all costs incurred in a certain period (Al-Jafari & Al Samman, 2015).	ROE = Net Profit/Equity (Kasmir, 2015)

Source: Authors' summary (2018)

Table 3. Descriptive Statistical Analysis Results

	BETA	ROE	CR	EVAR	FS
Mean	0.631	0.042	2.063	193.049	15.586
Max	4.491	0.293	7.536	5506.759	18.289
Min	-1.805	-0.277	0.003	0.240	11.968
Std. Dev.	1.232	0.123	1.368	770.233	1.449

Source: Output SPSS,2018

port the result of this study. Liquidity that is too high can be indicated by the presence of excess current assets or other cash compared to what is needed. This excess cash causes a lot of idle cash. According to Sutriani (2014), the existence of idle cash indicates that the company has not maximized cash properly. Cash that is not used properly will cause the company's profit to be not optimal. If the company has not been able to optimize profits, the company's stock price will decrease and the systematic risk will increase.

If liquidity is too high, then the company is suspected of not being able to utilize its short-term financing facilities or current assets efficiently. In addition, the current ratio as a proxy for liquidity has a lack, which is, the current ratio is a fixed measure that measures the resources available at a certain time to meet the short-term debt. With this assumption, the liquidity ratio is not used by investors in making decisions.

Signal theory is not able to explain the effect of liquidity on systematic risk. Liquidity is not considered as a signal that can influence or reflect the company's systematic risk. It is in line with the research results of Boz et al., (2015), Yuliusman (2014), and Adhikari (2015) which state that systematic risk is not affected by liquidity.

The Effect of Earning Variability on Systematic Risk

Systematic risk is negatively affected by earning variability. Research conducted by Ridwan (2015) and Fidiana (2006) are contrary to this study, which prove that systematic risk is positively affected by earning variability. The CAPM theory is not able to explain the effect of earning variability on systematic risk. The CAPM theory states that the greater the risk of a stock, the greater the desired profit. Companies with uncertain and fluctuating income actually have a low risk to investors.

When the company's earnings variability is high, the stock's systematic risk is actually lower. Allegedly, this happens because investors in mining companies only make short-term investments or stock trading. Investors take advantage of stock prices that quickly rise or fall. They will buy the stock at a low price and immediately sell it when the stock price rises. Therefore, the risk obtained by investors will be low, because investors will not own shares in the company for too long. The investors assume that if they own the stock for too long, they are worried that the stock price will not increase but will continue to decline. From the above explanation, it can be concluded that when earning variability is high, the systematic risk is low.

The Effect of Firm Size on Systematic Risk

Systematic risk is not significantly affected by firm size. This study does not support the research of Januardi & Afrianto (2017) which proves that systematic risk is negatively affected by firm size. Signal theory is not able to explain the effect of firm size on systematic risk. Large companies do not guarantee that the company's systematic risk is low. Not only large companies can earn high profits, but high profits can also be obtained by small companies. This happens allegedly because investors do not consider the size of the company but prefer companies that can generate profits.

Stable stock prices tend to be owned by large companies. On the other hand, small companies tend to have stock prices that are easily influenced by market sentiment and easy to rise or fall. This tendency makes investors not pay attention to the firm size in assessing corporate risk. Aruna & Warokka (2013) and Handayani (2014) support this study which state that systematic risk is not affected by firm size.

Profitability Moderates the Effect of Liquidity on Systematic Risk

The presence of profitability as a moderating variable does not affect liquidity to systematic risk. Liquidity that is too high can be indicated by the presence of excess current assets or other cash compared to what is needed. This excess cash causes a lot of idle cash. If liquidity is too high, it is suspected that the company is not using its short-term financing facilities or current assets efficiently. Cash that is not utilized properly will lead to non-optimal profits generated by the company. If the company is not optimal in generating profits, it will affect the company's profitability. For investors, the

Table 4. Multiple Linear Regression Analysis Results

	Hypothesis	Coefficient Regression	Sig.	Explanation
H_1	Liquidity has a negative effect on systematic risk	0.333	0.088	Rejected
H_2	Earning variability has a positive effect on systematic risk	-0.738	0.025	Rejected
H_3	Firm size has a negative effect on systematic risk	0.085	0.575	Rejected
H_4	Profitability moderates significantly liquidity on systematic risk	-0.057	0.810	Rejected
H_5	Profitability moderates significantly earning variability on systematic risk	0.630	0.027	Accepted
H_6	Profitability moderates significantly firm size on systematic risk	-0.486	0.025	Accepted

Source: Secondary data processed (2018)

availability of profits is considered as a future hope for the company. The company's profit growth can affect investment decisions.

This study is not in line with the theoretical framework and the development of the hypothesis. Companies that dare to take risks can achieve high profitability (Fidiana, 2006). Investors are more interested in companies with good profitability and liquidity. The description above explains that systematic risk does not depend on liquidity and is moderated by profitability. Profitability cannot be a determinant of decreasing or increasing systematic risk affected by liquidity.

Profitability Moderates the Effect of Earning Variability on Systematic Risk

Profitability strengthens the effect of earning variability on systematic risk. In line with the CAPM theory which explains that beta is a relevant risk assessor and has a positive and linear relationship between the desired rate of return and beta. The more desired profits, the higher the risks that must be faced. According to Fidiana (2006), companies that dare to take risks can achieve high profitability.

The reason why profitability moderates the effect of earning variability on systematic risk is due to the high profitability owned by the company is the company that dares to take big risks in order to earn big profits as well. Investors will choose companies with high earning variability and supported by high profitability as well in order to get maximum profit even though they have to bear big risks.

Profitability Moderates the Effect of Firm Size on Systematic Risk

Profitability moderates the effect of firm size on systematic risk. According to Biase & D'Apolito (2012), big companies will have big risks. However, large company size does not necessarily increase their systematic risk. This is due to in the effect of firm size on systematic risk there is another variable that influences which is profitability as a moderating variable.

High profitability can maximize the company's ability to reduce the company's financial instability (Adhikari, 2015). The reason that profitability moderates the effect of firm size on systematic risk is because profitability can reduce the company's financial instability so that it can reduce systematic risk. Large companies with high levels of profitability have less systematic risk. With a large company size and high profitability, the company's systematic risk will be low.

CONCLUSIONS

This study concludes that when the company's earnings variability is high, the stock's systematic risk is actually lower. Profitability strengthens the effect of earning variability on systematic risk. In addition, profitability weakens the effect of firm size on systematic risk. This study calculates systematic risk by using the regression method between market returns and stock returns. Future research is expected to be able to use the Arbitrage Pricing Theory (APT) model. APT is considered more flexible because making the model can use various economic macro factors in calculating the risk of an asset.

REFERENCES

Adhikari, N. (2015). Determinants of Systemic Risk for Companies. 15(5).

Al-Jafari, M. K., & Al Samman, H. (2015). Determinants of Profitability: Evidence from Industrial Companies Listed on Muscat Securities Market. Review of European Studies, 7(11), 303–311. https://doi.org/10.5539/res.v7n11p303

Aruna, D. C., & Warokka, A. (2013). Systematic Risk and Accounting Determinants: A New Perspective from An Emerging Market. J. for Global Business Advancement, 6(1), 24. https://doi.org/10.1504/JGBA.2013.053476

Biase, P. di, & D'Apolito, E. (2012). The Determinants of Systematic Risk in the Italian Banking System: A Cross-Sectional Time Series Analysis. International Journal of Economics and Finance, 4(11), 152–164. https://doi.org/10.5539/ijef.v4n11p152

Boz, G., Menéndez-Plans, C., & Orgaz-Guerrero, N. (2015). The Systematic-Risk Determinants of the European Accommodation and Food Services Industry in the Period 2003-2011. Cornell Hospitality Quarterly, 56(1), 41–57. https://doi.org/10.1177/1938965514559047

Fidiana. (2006). Nilai-Nilai Fundamental dan Pengaruhnya terhadap Beta Saham Syariah pada JII. Ekuitas, 13(55), 40–59.

Handayani, D. W. (2014). Pengaruh Financial Leverage , Likuiditas , Pertumbuhan Asset , dan Ukuran Perusahaan terhadap Beta Saham Pada Perusahaan Manufaktur Yang Terdaftar di Bursa Efek Indonesia. Jurnal Dinamika Ekonomi & Bisnis, 1(2), 169–182.

Hartono, J. (2017). Teori Portofolio dan Analisis Investasi. Yogyakarta: BPFE.

Iqbal, M. J., & Ali Shah, S. Z. (2012). Determinants of Systematic Risk. The Journal of Commerce, 4(1), 47–56. https://doi.org/10.2307/2329688

Januardi, N. V, & Afrianto, E. D. (2017). Pengaruh Likuiditas , Leverage , Efisiensi Operasi, Perusahaan Terhadap Risiko Sistematis Dan Non-Sistematis. Diponegoro Journal of Management, 6, 1–14.

Jazuli, A. M., & Witiastuti, R. S. (2016). Determinan Beta Saham Perusahaan Real Estate dan Property di BEI. Management Analysis Journal, 5(1), 63–69.

Kasmir. (2015). Analisis Laporan Keuangan. Jakarta: PT Grafindo Persada.

Kim, H., Gu, Z., & Mattila, A. S. (2002). Hotel Real Estate Investment Trusts' Risk Features and Beta Determinants. Journal of Hospitality and Tourism Research, 26(2), 138–154. https://doi.org/10.1177/1096348002026002004

Kustini, S., & Pratiwi, S. (2011). Pengaruh Dividend Payout Ratio, Return on Asset Dan Earning Variability Terhadap Beta Saham Syariah. Jurnal Dinamika Akuntanis, 3(2), 139–148. Retrieved from http://journal.unnes.ac.id/nju/index.php/jda/article/download/1953/2071

Lee, J. S., & Jang, S. C. (Shawn). (2007). The systematic-risk determinants of the US airline industry. Tourism Management, 28(2), 434–442. https://doi.org/10.1016/j.tourman.2006.03.012

Milionis, A. (2011). A conditional CAPM: implications for systematic risk estimation. The Journal of Risk Finance, 12(4), 306–314. https://doi.org/10.1108/15265941111158488

Nainggolan, N., & Solikhah, B. (2016). Pengaruh Asset Growth, Leverage, dan Earning Variability terhadap Risiko Sistematik. Accounting Analysis Journal, 5(2), 86–94.

Ridwan, N. dan hasanah N. (2015). Pengaruh Inflasi, Likuiditas, Variabilitas Laba terhadap Beta Saham pada Perusahaan Manufaktur yang Terdaftar di Bursa Efek Indonesia Periode 2010 - 2013. 10(1), 88–107.

Saputra, H. G., & Fachrurrozie. (2015). Determinan Nilai Perusahaan Sektor Property, Real Estate, dan Building Construction di BEI. Accounting Analysis Journal, 4(2), 1–9.

Sutriani, A. (2014). Pengaruh Profitabilitas, Leverage, dan Likuiditas terhadap Return Saham dengan Nilai Tukar sebagai Variabel Moderasi pada Saham LQ-45. Journal of Business and Banking, 4(1), 67. https://doi.org/10.14414/jbb.v4i1.294

Yuliusman. (2014). Pengaruh Tingkat Suku Bunga dan Rasio Likuiditas terhadap Beta Saham (Survei terhadap Industri Otomotif dan Komponennya yang terdaftar di Bursa Efek). Jurnal Cakrawala Akuntansi, 6(2), 174–193.