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Investment decision making using market beta and accounting beta

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Abstract
The purpose of this research is to analyse the right investment decision making by considering the level of risk and return. The method used in this research is descriptive method with quantitative approach. The sampling technique in this study was to use porpusive sampling. The samples selected in this study were 19 companies listed on the lq45 index for the period 2021-2023. The results showed that there were 9 stocks with a rate of return that had a positive average value, while the rate of return that had a negative average value was 10 stocks.

Keywords: Market beta, accounting beta, decision making

1. Introduction
Investment is one way to allocate funds in the hope of obtaining future profits. Therefore, investors need to understand how to determine the right investment decision so that later it can provide dividends and returns. Hartono, (2017) [3] Types of financial investments can be divided into two, namely direct investment and indirect investment. Direct investment is done by directly buying financial assets from a company either through intermediaries or in other ways. Meanwhile, indirect investment is made by buying shares from investment companies that have a portfolio of financial assets from other companies.

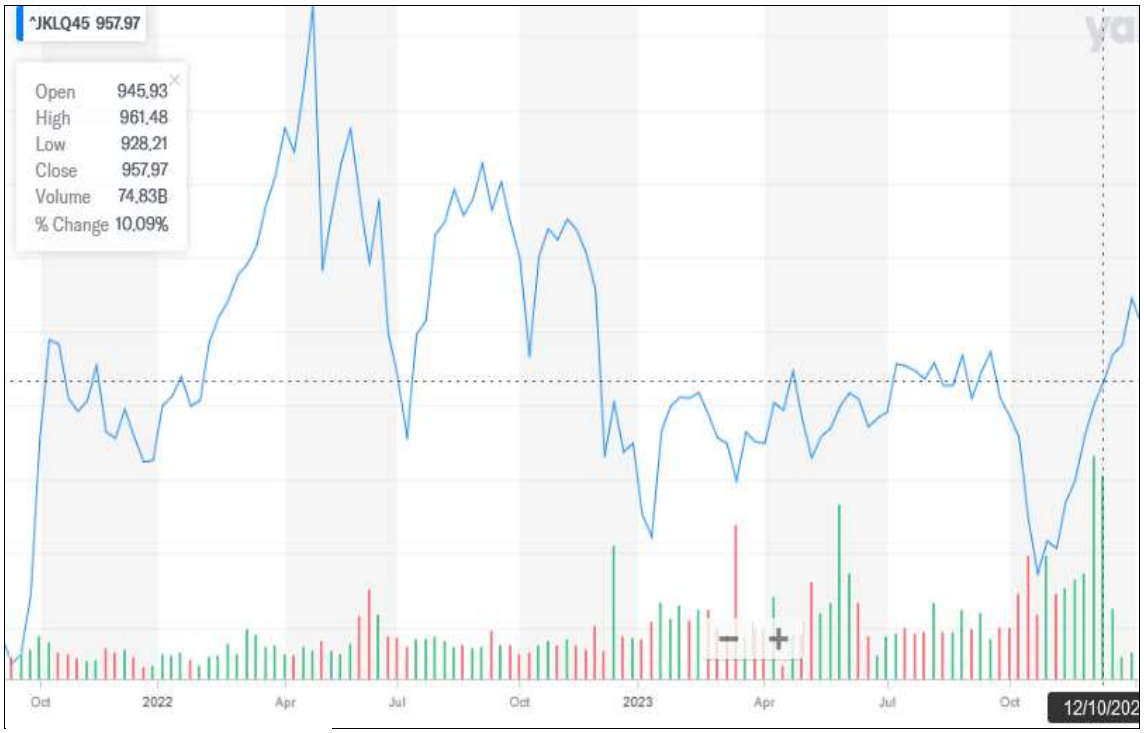
Investment activities always involve a relatively fluctuating level of risk and uncertainty. In the world of capital markets, the risks faced by investors are divided into two types, namely systematic risk and unsystematic risk. These two risks have different characteristics and ways of handling. Systematic risk is the risk that arises due to fluctuations in the market and the global economy so that its influence is very strong, while unsystematic risk is the risk that arises internally and is inherent in government securities that should be minimised through portfolio management.

Beta is considered as a tool to measure the performance of a stock security in relation to fluctuations that occur in the market where the security is located. Beta can be divided into three types, namely market beta, accounting beta and fundamental beta. The difference from these betas lies in the use of data. Where market beta uses market data, accounting beta uses accounting data in the form of earnings, while for fundamental beta uses fundamental data.

One way that can help investors assess the risk and potential return of an investment is to use the Capital Asset Pricing Model (CAPM) analysis. Jones, (2019) [4] CAPM is very attractive as an equilibrium model because of its simplicity and implications. With so many choices in making investments on the Indonesia Stock Exchange (IDX), it can make investors confused to determine where to make investment decisions. So, stocks that are members of the LQ45 index on the Indonesia Stock Exchange (IDX) are often the choice of investors because they are considered to represent overall market performance.

The graph above proves that the lq45 index shows fluctuating movements, but is still dominated by green where green can be interpreted as a rising stock price. While the red colour indicates that the share price is decreasing.

Research conducted by (Ferrari & Wijaya, 2020) [2] states that the efficient stock category is 31 shares and the company's shares included in the inefficient stock category are 9 shares of the 40 company shares sampled in the study.



Source: www.finance.yahoo.com

Fig 1: Movement Chart of LQ45 Index

The sample in this study used the banking sector listed on the Indonesia Stock Exchange (IDX) with the period August 2016-July 2018. Meanwhile, research by (Febriyanti *et al*., 2020) [1] shows that there are 23 issuers out of 38 that are included in the efficient stock category, and 15 issuers that are included in the inefficient stock category.

Based on the explanation above, there are contradictory research findings regarding investment decision making using the CAPM method calculation. So that researchers are interested in conducting this research. The differences between this research and previous research include that this research focuses on the LQ45 index listed on the Indonesia Stock Exchange with a research period of 2021-2023 and uses market beta and accounting beta.

Problem Formulation: What is the return of each lq45 index? What is the risk of each lq45 index stock using market beta and accounting beta? What is the expected rate of return of each lq45 index stock to determine investment decisions? How is the grouping and valuation of the lq45 index based on the efficient level in 2021-2023?

Research Objectives: To find out the benefits of each lq45 index. To identify the risk of each stock in the lq45 index using market beta and accounting beta. To determine the expected rate of return of each lq45 index stock in determining investment decisions. To identify the grouping and assessment of the lq45 index based on the efficient level in 2021-2023?

2. Materials and Methods

2.1 Literature Review

Sa'adah, L., & Hidayat, T. (2024) [6] on infrastructure and transportation companies showed that calculations using the CAPM model resulted in 1 efficient company and 1 inefficient company. Suganda, T. R. (2012) [7] the results of beta calculation obtained the results that these securities can be grouped into three categories based on the accounting beta value. The first category (Stable group), the second category (Medium stable group), and the third category (Fluctuation group).

2.2 Capital Market

Tandelilin, (2010) [5] the capital market is a meeting between parties who have excess funds and parties who need funds by trading securities. The capital market is an activity related to the public offering and trading of securities, public companies related to the securities issued, as well as institutions and professions related to securities (Capital Market Law No. 8 of 1995).

2.3 Investment

Investment is the activity of investing capital in an asset or business in the hope of gaining profit or growth in value in the future. Investments can be made in various forms such as stocks, bonds, property, or businesses. The main purpose of investment is to gain profit either in the form of increasing asset value or fixed income. Hartono, (2017) [3] Investment is the postponement of current consumption to be put into productive assets over a certain period of time.

2.4 Shares

Tandelilin, (2010) [5] Shares are certificates that show proof of ownership of a company. Shares are securities that show the ownership of a person or entity in a company. Shareholders have rights to a portion of the company's assets and income and can participate in company decisions through voting rights at general meetings of shareholders. Investing in shares provides investors with the opportunity to earn profits through dividends and share value appreciation.

2.5 Return
Return is the result obtained from an investment. Returns can be in the form of realised returns that have occurred or expected returns that have not occurred but are expected to occur in the future (Hartono, 2017) [3].

2.6 Risk
According to Tandelilin (2010: 10) [5] risk is the possibility of differences between the actual return received and the return expectation. The risk premium is the investment return reduced by the risk-free return (Rf).

2.7 Beta
Hartono, (2017) [3] states that beta is a measurement of the volatility of a security's return or portfolio return on market returns. Beta of a security can be calculated with estimation techniques that use historical data. Historical beta can be calculated using historical data in the form of:

Market beta
Market beta is a statistical measure that indicates the level of sensitivity or volatility of the return of a stock or investment portfolio to movements in the overall market return. Market beta indicates how much risk a stock or portfolio has relative to market risk.

Accounting beta: Accounting beta is a measure used to evaluate a company's systematic risk based on the variability of its financial performance, usually through fluctuations in the company's earnings or revenues. Unlike market beta which measures risk through fluctuations in stock price relative to the market, accounting beta focuses on a company's internal financial indicators such as net income, sales, or operating cash flow.

Fundamental beta: Fundamental beta is a measure of systematic risk based on a company's fundamental variables such as capital structure, profitability, firm size, and growth. Fundamental beta uses a company's financial and operational data to measure the sensitivity of a company's performance to overall market risk.

2.8 Research Methods
The research method in this study is to use quantitative descriptive research methods with the object of research on the LQ45 Index companies listed on the Indonesia Stock Exchange (IDX) which can be accessed through the IDX official website, namely www.idx.co.id.

2.9 Population & Sample
The population in this study uses all LQ45 Index companies listed on the Indonesia Stock Exchange (IDX) starting from 2021-2023. The sampling technique in this study used purposive sampling technique purposive sampling is a sampling technique with certain considerations. The considerations used in this study are as follows:

1. LQ45 Index companies listed on the Indonesia Stock Exchange in the 2021-2023 period.
2. Companies that did not experience delisting during the study year period, namely 2021-2023.
3. Companies that have closing stock price data. The analysis technique in this study uses the CAPM method and Microsoft excel as a data processing tool, with the following steps:

1. Individual stock profit rate (Ri)

$$R_i = \frac{P_{it} - P_{it-1}}{P_{it-1}}$$

2. Market rate of return (Rm)

$$R_m = \frac{IHSG_t - IHSG_{t-1}}{IHSG_{t-1}}$$

3. Market beta

$$\beta_i = \frac{\sigma iM}{\sigma 2}$$

Accounting beta

$$\mathrm{h}_i = \frac{\sigma \text{ laba } iM}{\sigma 2 \text{ laba m}}$$

$$\mathrm{h}_i = \frac{\sum_{t=1}^{n}(E_{it} - E_{it}^{-})(E_{Mt} - E_{it}^{-})}{\sum_{t=1}^{n}(E_{Mt} - E_{Mt}^{-})2}$$

4. Risk-free rate of return (Rf)

$$R_f = \frac{\sum_{i=1}^{n} SBI}{n}$$

5. Expected rate of return [E(Ri)]

$$E(R_i) = R_f + \beta_i(R_m - R_f)$$

3. Results and Discussions
Results of individual stock return
Based on the table above, the rate of return on individual shares (Ri) in the 2021-2023 period, the highest average individual stock return is obtained by BMRI shares, which is 0.24761 or 24.76%, while the lowest average individual stock return is obtained by UNVR shares of -0.18207 or -18.21%.

3.1 Systematic risk of each individual stock
Market Beta
Based on the table above, it can be seen that the highest beta is owned by shares of BBTN of 1.17, meaning that the stock has a high risk because it has a beta (ß) value> 1. The stock that has the smallest beta (ß) is the stock of the ICBP company, which is -0.05, meaning that the stock has a low risk because it has a beta (ß) value < 1.

Accounting Beta
The table above shows that the highest accounting beta is owned by INDF, which is 0.01425 < 1. If beta < 1, it indicates that if the company's profit increases by 1%, the company's profit will also increase by 0.01425. because the relationship is positive where the beta result shows positive.

Table 1: Results of individual stock return

No	Company	Ri	%
1	ASII	-0.0209	-2.09%
2	BBCA	0.11631	11.63%
3	BBNI	0.20842	20.84%
4	BBRI	0.14843	14.84%
5	BBTN	-0.06419	-6.42%
6	BMRI	0.24761	24.76%
7	CPIN	-0.08305	-8.31%
8	EXCL	-0.07639	-7.64%
9	ICBP	0.03851	3.85%
10	INDF	-0.0181	-1.81%
11	INTP	-0.13213	-13.21%
12	KLBF	0.05189	5.19%
13	PTBA	-0.00853	-0.85%
14	SMGR	-0.17788	-17.79%
15	TBIG	0.16606	16.61%
16	TLKM	0.06736	6.74%
17	TOWR	0.01655	1.66%
18	UNTR	-0.0408	-4.08%
19	UNVR	-0.18207	-18.21%

Table 2: Market Beta

No	Company	β
1	ASII	0.55
2	BBCA	0.37
3	BBNI	0.92
4	BBRI	0.63
5	BBTN	1.17
6	BMRI	0.59
7	CPIN	0.34
8	EXCL	0.38
9	ICBP	-0.05
10	INDF	0.11
11	INTP	0.57
12	KLBF	0.19
13	PTBA	0.12
14	SMGR	0.72
15	TBIG	0.44
16	TLKM	0.24
17	TOWR	0.48
18	UNTR	0.36
19	UNVR	0.10

Table 3: Accounting Beta

No	Company	β
1	ASII	-0.00933
2	BBCA	-0.00087
3	BBNI	-0.10165
4	BBRI	-0.03091
5	BBTN	-0.01667
6	BMRI	-0.01657
7	CPIN	-0.00656
8	EXCL	-0.08855
9	ICBP	-0.04657
10	INDF	0.01425
11	INTP	0.00345
12	KLBF	-0.01979
13	PTBA	-0.14108
14	SMGR	0.00218
15	TBIG	-0.02621
16	TLKM	0.00761
17	TOWR	-0.0146
18	UNTR	-0.05423
19	UNVR	0.00289

No	Company	Rf	βi	Rm	Rf +Ri	Rm-Rf	Eri	%
1	ASII	0.0500	0.55	0.0677	0.6000	0.0177	0.0106	1.06%
2	BBCA	0.0500	0.37	0.0677	0.4200	0.0177	0.0074	0.74%
3	BBNI	0.0500	0.92	0.0677	0.9700	0.0177	0.0172	1.72%
4	BBRI	0.0500	0.63	0.0677	0.6800	0.0177	0.0120	1.20%
5	BBTN	0.0500	1.17	0.0677	1.2200	0.0177	0.0216	2.16%
6	BMRI	0.0500	0.59	0.0677	0.6400	0.0177	0.0113	1.13%
7	CPIN	0.0500	0.34	0.0677	0.3900	0.0177	0.0069	0.69%
8	EXCL	0.0500	0.38	0.0677	0.4300	0.0177	0.0076	0.76%
9	ICBP	0.0500	-0.05	0.0677	0.0000	0.0177	0.0000	0.00%
10	INDF	0.0500	0.11	0.0677	0.1600	0.0177	0.0028	0.28%
11	INTP	0.0500	0.57	0.0677	0.6200	0.0177	0.0110	1.10%
12	KLBF	0.0500	0.19	0.0677	0.2400	0.0177	0.0043	0.43%
13	PTBA	0.0500	0.12	0.0677	0.1700	0.0177	0.0030	0.30%
14	SMGR	0.0500	0.72	0.0677	0.7700	0.0177	0.0136	1.36%
15	TBIG	0.0500	0.44	0.0677	0.4900	0.0177	0.0087	0.87%
16	TLKM	0.0500	0.24	0.0677	0.2900	0.0177	0.0051	0.51%
17	TOWR	0.0500	0.48	0.0677	0.5300	0.0177	0.0094	0.94%
18	UNTR	0.0500	0.36	0.0677	0.4100	0.0177	0.0073	0.73%
19	UNVR	0.0500	0.10	0.0677	0.1500	0.0177	0.0027	0.27%

Based on the table above, the expected stock return of the LQ45 index sector companies states that the stock with the highest expected return is obtained by the BBTN company, which is 0.0216 or 2.16%, while the lowest expected return is obtained by the ICBP company, which is 0.0000 or 0.00%.

Stock Grouping

Table 4: Stock Grouping

No	Company	Ri	%	E(Ri)	%
1	BBCA	0.11631	11.63%	0.0074	0.74%
2	BBNI	0.20842	20.84%	0.0172	1.72%
3	BBRI	0.14843	14.84%	0.012	1.20%
4	BMRI	0.24761	24.76%	0,012	1.20%
5	ICBP	0.03851	3.85%	0.0000	0.00%
6	KLBF	0.05189	5.19%	0.0043	0.43%
7	TBIG	0.16606	16.61%	0.0087	0.87%
8	TLKM	0.06736	6.74%	0.0051	0.51%
9	TOWR	0.01655	1.66%	0.0094	0.94%

Based on the results of the table above, there are 9 efficient stocks from 19 research samples in the LQ45 index sector. The highest share obtained by BBNI shares is 0.0172, meaning that BBNI shares are able to provide actual profits worth 1.72% of the return expected by investors. The criterion in determining investment decisions is to choose efficient stocks. Stocks that have individual returns that are greater than the expected rate of return can be declared efficient, so they are worth buying.

No	Company	Ri	%	E(Ri)	%
1	ASII	-0.0209	-2.09%	0.0106	1.06%
2	BBTN	-0.0642	-6.42%	0.0216	2.16%
3	CPIN	-0.0831	-8.31%	0.0069	0.69%
4	EXCL	-0.0764	-7.64%	0.0076	0.76%
5	INDF	-0.0181	-1.81%	0.0028	0.28%
6	INTP	-0.1321	-13.21%	0.011	1.10%
7	PTBA	-0.0085	-0.85%	0.003	0.30%
8	SMGR	-0.1779	-17.79%	0.0136	1.36%
9	UNTR	-0.0408	-4.08%	0.0073	0.73%
10	UNVR	-0.1821	-18.21%	0.0027	0.27%

Based on the results of the table above, there are 10 inefficient stocks out of 19 research samples in the LQ45 index sector. The highest inefficient stock is obtained by UNVR shares, which is -0.1821, meaning that UNVR shares are unable to provide real benefits from the returns expected by investors. Decisions made by investors on inefficient stocks are not worth buying or not worth investing in these stocks.

4. Conclusion

1. The results showed that there were 9 stocks with a rate of return that had a positive average value, while the rate of return that had a negative average value was 10 stocks.
2. The risk calculated using market beta shows that there are 17 stocks that have $\beta < 1$, 1 stock with $\beta > 1$, and 1 stock that has $\beta < 0$. The highest beta is owned by

shares of BBTN of 1.17. Meanwhile, the highest accounting beta is owned by INDF, which is 0.01425 < 1.

3. There are 28 stocks with positive expected returns. In the LQ45 index sector companies, the stock with the highest expected rate of return is obtained by the MEDC company, which is 0.0225 or 2.25%, while the lowest expected rate of return is obtained by the ICBP company, which is 0.0000 or 0.00%.
4. The results showed that there were 9 stocks with a rate of return that had a positive average value, while the rate of return that had a negative average value was 10 stocks.

5. Suggestion

Based on the above conclusions, researchers provide suggestions that may be used by investors and further researchers, including the following:

1. This research is expected to be used as a reference and additional information for investors and further researchers.
2. Investors can invest in stocks that have positive individual stock returns and are included in the efficient stock class.
3. For future researchers, it is hoped that they can use a sample of different companies with a longer period of time and different calculation methods, so that they can find out the differences that occur.

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