Single Index Model in Optimal Portfolio Formation On Stock Index LQ 45

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ABSTRACT

The purpose of this study is to analyze the formation of an optimal stock portfolio and provide the expected rate of return and minimum portfolio risk. This type of research is descriptive with a quantitative approach. The data used in this study is secondary data, consisting of closing prices, market index (LQ45 index), seven-day repo rate, beta and alpha for the periods June 2019-June 2020 and June 2020-June 2021. The data analysis method uses Microsoft Excel program to calculate LQ45 stock index in optimal portfolio formation. The results of the study show that there are seven stocks that perform well and form an optimal portfolio, which can be sorted by stock performance, namely: MIKA (44%); JPFA (24%); ITMG (12%); INKP (11%); INDF (6%); PGAS (1%), and PTPP (2%). which produces an expected portfolio return of 13.00% and a portfolio risk level of 19.22%. Of the ten sample companies used in the study, there were three issuers that were not optimal, namely:INTP;MNCN;and PTBA, due to the value of ERB C.

INTRODUCTION

The capital market is a meeting place for investors or the supply and demand for long-term funds. The supply and demand process that can occur in financial investments other than banking can be an investor's choice in investing. The stock exchange can link the supply and demand for money that is projected to offer lenders a return with the risk they assume. Borrower funds are also projected to increase economic activity, thereby indirectly increasing the level of community welfare (Dian, 2020).

Investment is one of the strategic factors in economic activity that requires a commitment of funds for one or more assets to be owned and invested over several periods in the future. Investment is also a commitment to sacrifice consumption at the present time with the aim of increasing consumption in the future. In the process of investing, of course, an investor expects the level of profit to be received, of course considering the level of risk that will be accepted, as a basis for investment decisions. In investing, diversification aims to minimize risk when carrying out investment activities, so that the risk from one asset to another is centralized and the effect is not significant on investor returns (Tandelilin, 2017). A collection of several assets in an investment can form a portfolio. The obstacle faced in forming

a portfolio is the possibility of a portfolio formed from a combination of high-risk assets and entering risk-free assets into an unlimited number of combinations formed.

Investors do not know, the process of forming a portfolio, what proportion of funds is said to be optimal for each asset in the portfolio. The formation of an efficient portfolio is carried out as a solution to solve obstacles so that the funds that we invest in the capital market are in the best assets that will later be included in the optimal portfolio. Markowitz with the single index model approach is a model used in the formation of an optimal portfolio. Markowitz simplifies the model based on the observation that the price of a security fluctuates according to the company's performance and the value of the company on the capital market, which can be observed from the market index (Jogiyanto, 2010). Don't put all your eggs in one basket, it implicitly states that investment should not only be made in one capital market instrument, the financial market, but can invest in more than one instrument in other financial markets. Formation of a portfolio there are two main components, namely returns related to company characteristics and returns related to the market. The portfolio to be formed is purely from a collection of several stock assets.

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The single index model is one of the methods in the formation of a portfolio that can be used by investors. The optimal portfolio analysis technique using a single index model is a security analysis technique that is carried out by comparing the excess return to beta (ERB) to the cut off rate (Ci) of each stock. excess return to beta (ERB) is the difference between the expected stock return and the risk-free return and then the difference is divided by systematic risk, while the cut off rate (Ci) is the comparison between the market return variance on the sensitivity of individual stock returns to the stock variance error. Stocks with a higher excess return to beta (ERB) value than the cut off rate (Ci) include portfolio candidates,

A good prospect in forming a portfolio is seen from the high value of excess return to beta (Hartono, 2013), in other words a high ERB value can provide an optimal level of profit so that it can

provide good performance and of course will form an efficient and optimal portfolio. The application of the single index model in the development of an optimal portfolio is based on two factors. First to start, enter portfolio analysis using a simplified single index model. Second, using beta, a single index model can be used to estimate (Anggraini et al., 2020). When investing in the stock exchange, the market capitalization value is quite important. Market capitalization is the market value of an issuer's stock.

Several studies have been conducted on the formation of stock portfolios. Robi (2008) examines the analysis that forms an optimal portfolio of LQ-45 stocks for the period August 2005 – July 2006, with a single index model approach and the results of the analysis show that the stocks that make up an optimal portfolio are PT Astra Agro Lestari Tbk, PT London Sumatra Tbk, PT Bakrie Sumatra Plantations Tbk, PT Perusahaan Gas Negara Tbk, PT Bakrie & Brothers Tbk, and PT Tambang Batubara Bukit Asam. The expected return and risk in the portfolio formed are 8.99% per month and 5.15% per month. Furthermore, Khajar's research (2011) discusses the formation of an optimal portfolio on the LQ-45 Index stock. These findings indicate that of the 45 stocks included in the sample, only seven stocks were selected as members of the optimal portfolio. The expected return and risk in this portfolio are 5.43% and 4.03%. The findings of Chintya (2017) show that the formation of an optimal portfolio using a single index model produces a return of 3.07 and an expected return of 0.615 while the risk is 0.0177. The formation of the optimal portfolio using the Markowitz model produces a return of 2.456 and an expected return of 0.375 while the risk is 0.0599. The most optimal portfolio calculation is the calculation using a single index model because it has an expected return that is greater than the calculation using the Markowitz model. The findings of Chintya (2017) show that the formation of an optimal portfolio using a single index model produces a return of 3.07 and an expected return of 0.615 while the risk is 0.0177. The formation of the optimal portfolio using the Markowitz model produces a return of 2.456 and an expected return of 0.375 while the risk is 0.0599. The most optimal portfolio calculation is the calculation using a single index model because it has an expected return that is greater than the calculation using the Markowitz model. The findings of Chintya (2017) show that the formation of an optimal portfolio using a single index model produces a return of 3.07 and an expected return of 0.615 while the risk is 0.0177. The formation of the optimal portfolio using the Markowitz model produces a return of 2.456 and an expected return of 0.375 while the risk is 0.0599. The most optimal portfolio calculation is the calculation using a single index model because it has an expected return that is greater than the calculation using the Markowitz model. 375 while the risk is 0.0599. The most optimal portfolio calculation is the calculation using a single index model because it has an expected return that is greater than the calculation using the Markowitz model. 375 while the risk is 0.0599. The most optimal portfolio calculation is the calculation using a single index model because it has an expected return that is greater than the calculation using the Markowitz model.

Previous research conducted by Septyanto and Kertopati (2014) showed that the most efficient portfolio calculation was using the single index model calculation. An efficient portfolio is a portfolio that can provide the largest expected return with a certain risk or provide the smallest risk with a certain

expected return. The calculation of the single index model 111 from this study provides the largest expected return (0.596%) with the smallest risk (0.0264%).

RESEARCH METHOD

Descriptive method with a quantitative approach is research that uses data in the form of numbers as a tool to analyze the results of data processing, the results of which can be narrated and interpreted and can provide information that you want to know. Secondary data used in this study, data from a second party, with data collection techniques using library research, documentation; the company's financial statements LQ45, with details of the data used are closing price data, market index (LQ45), zeven days repo rate, beta and alpha for the monthly period, June 2019 - June 2020 and the monthly period June 2020 - June 2021, which were obtained via the web There are ten official IDX companies, then the data is analyzed using a single index model.

The formation of an optimal portfolio with a single index model approach consists of several stages of data analysis, namely:

Data Analysis Stages

1. Monthly realized return (Ri) and expected return (E(Ri)) can be calculated from each stock based on the following formulation:

$$\boldsymbol{Ri = \frac{P_t - P_{t-1} + D_t}{P_{t-1}}}$$

$$\boldsymbol{E(R_i) = \frac{\sum_{t=1}^{n} Ri_t}{n}}$$

2. Market return (RM), expected rate of return (E(RM)), and market risk (M2) based on the monthly LQ45 Index can be calculated with the following formula:

$$\boldsymbol{R_{Mt} = \frac{LQ-45_t - LQ-45_{t-1}}{LQ-45_{t-1}}}$$

$$\boldsymbol{E(R_m) = \frac{\sum_{t=2}^{n} Rm_t}{n}}$$

Calculation of market risk can be calculated in the Microsoft Excel program with the value of variance (VARP).

3 Market return variance. market risk is the difference between the expected market return and market return.

$$\boldsymbol{Qm^2 = \sum_{t=1}^{n} \frac{[R_m - E(R_m)]^2}{n \quad 1}}$$

4. Beta and alpha each stock. Beta is a coefficient in measuring the correlation of market returns to changes that occur in stock returns.

$$\boldsymbol{\beta_i = \frac{ai_M}{aM^2}}$$

5. The variance of the residual error is a variable that shows the magnitude of the unique unsystematic risk based on the characteristics that occur within the company.

$$\boldsymbol{\sigma_{ei^2}} = \frac{\mathbf{1}}{\boldsymbol{t}} \sum_{\boldsymbol{t=1}}^{\boldsymbol{t}} \boldsymbol{Ri_t - (a_i + \beta_i Rm_t)]^2}$$

6. *Excess Return to Beta* (ERB) of each share. Excess Return to Beta is calculated by measuring the excess return relative to one unit of risk that cannot be diversified as measured by beta.

$$\boldsymbol{ERB_i} = \frac{\boldsymbol{E(R_i) - RB_R}}{\boldsymbol{\beta i}}$$

7. Cut-off Rate (Ci)The cut off rate (Ci) can be calculated by multiplying the market variance by the value of Ai, then dividing by the sum of the constants by the product of the market variance by the value of Bi. The highest Ci value is the cut-off point C value.

$$\boldsymbol{A_i} = \frac{\boldsymbol{[E(R_i) - RB_R].\beta_i}}{\boldsymbol{\sigma_{ei}}^{\boldsymbol{2}}}$$

$$\boldsymbol{B_i} = \frac{\boldsymbol{\beta i^2}}{\boldsymbol{\sigma_{ei}}^{\boldsymbol{2}}}$$

The values of Ai and Bi, have been obtained, then the value of Ci is calculated by the formulation:

$$\boldsymbol{Ci} = \frac{\boldsymbol{a_{M^2}} \sum_{\boldsymbol{j=1}}^{\boldsymbol{i}} \boldsymbol{A_j}}{\boldsymbol{1 + a_{M^2}} \sum_{\boldsymbol{j=1}}^{\boldsymbol{i}} \boldsymbol{B_j}}$$

8. Optimal portfolio candidate. With the criterion if the stock ERB is C *, then the company's stock is said to be optimal
9. The proportion for each stock in the portfolio by calculating the size of the proportion of funds is carried out after the portfolio is formed.

$$\boldsymbol{Wi} = \frac{\boldsymbol{Z_i}}{\sum_{\boldsymbol{j=1}}^{\boldsymbol{k}} \boldsymbol{Z_j}}$$

$$\boldsymbol{Z_i\ sebesar:\ Z_i} = \frac{\boldsymbol{\beta_i}}{\boldsymbol{\sigma_{ei}}^{\boldsymbol{2}}} \boldsymbol{(ERB_i - C^*)}$$

10. *Expected return*E(Rp) and variance are used to measure portfolio risk. The expected return of the portfolio is the weighted average value of the individual returns of each stock that makes up the portfolio.

$$\boldsymbol{E(R_p) = \alpha_p + \beta_p . E(R_M)}$$

Calculation of the value of Alpha and beta portfolio, using the formulation:

$$\boldsymbol{a_p} = \sum_{\boldsymbol{i=1}}^{\boldsymbol{n}} \boldsymbol{W_i . \beta_i}$$

$$\boldsymbol{\sigma_{p^2} = \beta_{p^2} . \sigma_{m^2} + (} \sum_{\boldsymbol{i=1}}^{\boldsymbol{n}} \boldsymbol{W_{i^2} . \sigma_{ei}}^{\boldsymbol{2}})$$

Source (Hartono, 2013)

RESULTS AND DISCUSSION

Calculation of Return and Expected Stock Return

Stock return is the rate of return obtained through several investments in stocks. Stock returns are calculated by subtracting the current period's stock price from the previous period's stock price divided by the previous period, where the individual stock price is based on changes in the closing price of shares per month. Expected return is the return expected by investors to be generated by the investment they make. Expected return is calculated based on the sum of stock returns. From the results of calculations using the Microsoft Excel program, the returns and expected returns for each stock during the period June 2019 – June 2020 and the period June 2020 – June 2021.

Table 1. Return and Expected Return
Period June 2019 – June 2020 and Period June 2020 – June 2021

Issuer Code	Ri	E(Ri)	Issuer Code	Ri	E(Ri)
INDF	-0.001	0.002	INDF	0.005	0.008
INKP	-0.008	-0.004	INKP	0.036	0.039
INTP	-0.045	-0.041	INTP	-0.011	-0.008
ITMG	-0.061	-0.057	ITMG	0.053	0.056
JPFA	-0.013	-0.009	JPFA	0.058	0.062
MICA	0.018	0.022	MICA	0.011	0.014
MNCN	-0.008	-0.004	MNCN	0.011	0.014
PGAS	-0.031	-0.028	PGAS	0.024	0.027
PTBA	-0.032	-0.028	PTBA	0.003	0.006
PTPP	-0.038	-0.034	PTPP	0.033	0.036

Source: Data processed from research results, 2022

Calculation of Market Return and Expected Return

Expected return market can be obtained by dividing the market return in period t by the period of observation. The calculation of market return and expected market return uses LQ45 index stock data. The calculation results based on the period June 2019 – June 2020, the market return on the LQ45 index is -0.017 and the expected market return on the LQ-45 index is -0.021. Meanwhile, for the period June 2020 – June 2021, the market return on the LQ45 index was obtained at 0.13 and the expected market return on the LQ-45 index was obtained at 0.10.

Calculation of Market Return Variant

*Return variant*market is the difference between the expected market return and market return. The calculation results obtained in the period June 2019 - June 2020 show the market return variance obtained at 0.005, and the period June 2020 - June 2021 at 0.003.

Calculation of Beta and Alpha of Stocks

Beta is a coefficient used to measure the correlation of market returns to changes that occur in stock returns. Alpha is a variable that is not influenced by market returns. The following is the result of calculating the Beta and Alpha values.

Table 2. Calculation results of, and values
Period June 2019 – June 2020 and Period June 2020 – 2021

Issuer Code	□	□	Issuer Code	□	□
INDF	0.381	0.009	INDF	0.305	0.004
INKP	1,912	0.029	INKP	1.044	0.025
INTP	0.687	-0.029	INTP	1,283	-0.025
ITMG	0.946	-0.041	ITMG	1.581	0.035
JPFA	1.378	0.015	JPFA	0.987	0.048
MICA	0.468	0.030	MICA	0.110	0.013
MNCN	1,689	0.025	MNCN	1,680	-0.008
PGAS	2.207	0.011	PGAS	2,679	-0.009
PTBA	0.188	-0.025	PTBA	1.153	-0.009
PTPP	2,735	0.013	PTPP	2,996	-0.004

Source: Data processed from research results, 2022

Calculation of the Variance of Residual Error and Excess Return to Beta (ERB)

The variance of the residual error is a variable that shows the magnitude of the unique unsystematic risk, and the characteristics occur within the company. The risk-free asset return uses the saved days repo rate for the period June 2019 – June 2020 and June 2020 – June 2021. The results of the calculation of the residual error variance value, and Excess return to Beta (ERB).

Table 3. Calculation Results of e2 and ERB . Values
Period June 2019 – June 2020 and Period June 2020 – June 2021

Issuer Code	e2	ERB	Issuer Code	e2	ERB
INDF	0.006	-0.004	INDF	0.006	0.017
INKP	0.033	-0.004	INKP	0.024	0.034
INTP	0.006	-0.065	INTP	0.009	-0.009
ITMG	0.019	-0.064	ITMG	0.031	0.034
JPFA	0.018	-0.009	JPFA	0.022	0.059
MICA	0.012	0.038	MICA	0.003	0.101
MNCN	0.027	-0.005	MNCN	0.015	0.007
PGAS	0.031	-0.014	PGAS	0.030	0.009
PTBA	0.006	-0.171	PTBA	0.009	0.003
PTPP	0.041	-0.014	PTPP	0.041	0.011

Source: data processed from research results, 2022

Calculation of Cut off Rate and Cut of Point

*Cut-off rate*Ci is the result of multiplying the market variance with the value of Ai and then divided by the sum of the constants by the product of the market variance of the value of Bi. The highest value is the value of Ci, this is the cut off rate point C. Meanwhile, the cut-off point C is Ci, where the last

ERB value is greater than the value of Ci, C, which is used to determine the limiting point for stocks that are categorized as optimal portfolio candidates. After the data is processed, the Ci value is obtained for the MIKA Issuer with a value of 0.003, in the period June 2019-June 2020 the Ci value for the Issuer JPFA with a value of 0.007 for the period June 2020 - June 2021. Table 5 shows the results of the calculation of the value of the Cut off rate and Cut of Points.

Table 4. Calculation Results of Ci and C* Values
Period June 2019 – June 2020 and Period June 2020 – 2021

Issuer Code	Ai	Bi	ci	C*	Issuer Code	Ai	Bi	ci	C*
INDF	-0.076	20.582	0.000		INDF	0.250	14,379	0.001	
INKP	-0.444	111.371	-0.001		INKP	1.348	39,584	0.004	
INTP	-4,801	73.952	-0.017		INTP	-0.969	112,687	-0.002	
ITMG	-3.108	48.302	-0.012		ITMG	2.125	63,249	0.006	
JPFA	-0.967	106,621	-0.003		**JPFA**	2,321	39,196	0.007	C*
MICA	0.721	18,888	0.003	C*	MICA	0.448	4.415	0.001	
MNCN	-0.502	104,770	-0.002		MNCN	0.775	117,223	0.002	
PGAS	-2.215	155,985	-0.006		PGAS	1.164	131.618	0.003	
PTBA	-0.967	5.666	-0.005		PTBA	0.271	100,686	0.001	
PTPP	-2.524	180,817	-0.006		PTPP	1.384	125.458	0.003	

Source: data processed from research results, 2022

Determination of Optimal Portfolio Candidates

The optimal portfolio is determined by the criteria of ERB C*.

Table 5. LQ-45 Index Candidates for Optimal Portfolio
Period June 2019 – June 2020 and Period June 2020 – 2021

Issuer Code	ERB	C*	Candidate	Issuer Code	ERB	C*	Candidate
INDF	-0.004	0.000		INDF	0.017	0.001	**Candidate**
INKP	-0.004	-0.001		INKP	0.034	0.004	**Candidate**
INTP	-0.065	-0.017		INTP	-0.009	-0.002	
ITMG	-0.064	-0.012		ITMG	0.034	0.006	**Candidate**
JPFA	-0.009	-0.003		JPFA	0.059	0.007	**Candidate**
MICA	0.038	0.003	**Candidate**	MICA	0.101	0.001	**Candidate**
MNCN	-0.005	-0.002		MNCN	0.007	0.002	
PGAS	-0.014	-0.006		PGAS	0.009	0.003	**Candidate**
PTBA	-0.171	-0.005		PTBA	0.003	0.001	
PTPP	-0.014	-0.006		PTPP	0.011	0.003	**Candidate**

Source: data processed from research results, 2022

Table 5 shows the results of the calculation of candidates for the formation of the optimal portfolio, there is one issuer share that meets ERB C requirements, namely MIKA issuers in the period June 2019 - June 2020 and in the period June 2020 - June 2021 there are seven issuer shares that meet ERB C requirements, namely issuers INDF, INKP, ITMG, JPFA, MIKA, PGAS, PTPP so that these shares can be categorized as optimal portfolios.

Proportion of Each Share in Optimal Portfolio

Table 6 shows that the proportion of each stock in the formation of the chosen optimal portfolio is seven issuers sorted by performance, namely: MIKA (44%); JPFA (24%) ; ITMG (12%) ; INKP (11%) ; INDF (6%) ; PTPP (2%) ; and PGAS (1%),

Table 6. Proportion of Optimal Portfolio Funds
Period June 2019 – June 2020 and Period June 2020 – 2021

Issuer Code	Zi	Wi
INDF	0.493	0.057
INKP	1.028	0.118
ITMG	1.067	0.122
JPFA	2.076	0.238
MICA	3.796	0.435
PGAS	0.095	0.011
PTPP	0.172	0.020
TOTAL	**8,728**	**100%**

Source: data processed from research results, 2022

Expected Returnand Risks of Selected Portfolio Combinations

Expected return portfolio aims to determine the rate of return that will be obtained from the collection of assets formed into the portfolio. Meanwhile, portfolio risk can be determined by calculating the variance of the portfolio in advance. In Table 9 the results of the calculation of expected return, variance, and portfolio risk.

Table 7. Expected Return, Variance, and Optimal Portfolio Risk
Period June 2019 – June 202 and Period June 2020 – 2021

. Issuer Code	E(Rp)	variance	Issuer Code	E(Rp)	variance
MICA	-0.03949	0.012	INDF	0.000	0.006
E(Rm)	-0.017	-0.17%	INKP	0.003	0.024
Risk	0.01746	17.46%	ITMG	0.004	0.031
			JPFA	0.011	0.022
			MICA	0.006	0.003
			PGAS	0.000	0.030
			PTPP	0.000	0.041
			E(Rm)	0.013	13.00%
			Risk	0.01922	19.22%

Source: data processed from research results, 2022

Table 7 can explain that the expected return of the portfolio formed in the period June 2019 – June 2020 is -0.017 or -0.17% with a risk of 0.01764 or 17.46%. Meanwhile, in the period June 2020 - June 2021, the expected return portfolio value formed into the portfolio is 0.013 or 13.00% with a risk level of 0.01922 or 19.22%. This shows that the expected return obtained is small, when compared to the level of

risk that must be borne, it increases, this is because the company's stock price has decreased due to the impact of the COVID-19 pandemic.

Portfolio Performance Analysis

Assessment of stock performance in the formation of an optimal portfolio used the method of excess return to beta ratio which is an additional measure of stock returns above the rate of return offered by risk-free assets as a trade-off and risk that cannot be diversified. The excess return to beta ratio is obtained from the difference between the stock return and the risk-free rate of return then divided by beta. While the cut-off point is the slope of the market price of risk, if the excess return of the stock is below that slope, the stock is not worth investing in.

Discussion

Based on the results of the analysis, the formation of the optimal portfolio and the determination of stock ratings based on the excess return to beta (ERB) ratio in the June 2019-June 2020 period, MIKA's shares have the largest excess return to beta (ERB) value of 0.038. Meanwhile, the excess return to beta (ERB) ratio for the period June 2020-June 2021 shows that MIKA's shares have an excess return to beta (ERB) ratio of 0.101. The calculation of the cut off rate and the determination of the cut-off point which will then be a condition for the eligibility of a share to enter the optimal portfolio or not.

The largest cut off point value in the period June 2019-June 2020 was MIKA with a Ci value of 0.003. while the cut off point for the period June 2020-June 2021 is JPFA with a Ci value of 0.007. The selection of stocks that can be used as candidates to form an optimal portfolio can be done with the condition that ERB C*.

The results of the ERB calculation for optimal portfolio stock performance can be seen that all stock candidates that make up the optimal portfolio have a positive rate of return. However, a positive rate of return means that all stock candidates have stock returns below the risk-free rate of return, this is due to the economic conditions during the COVID-19 pandemic which greatly impacted the company's performance, causing the company's operational activities to be less than optimal which resulted in a decline in stock prices, including companies. - company LQ45. Based on the performance using the excess return to beta ratio method, the shares that are eligible to be purchased and sorted based on their performance are seven issuer shares, namely: MIKA (44%) ; JPFA (24%) ; ITMG (12%) ; INKP (11%) ;INDF (6%) ; PTPP (2%) ; PGAS (1%). The seven issuer stocks will form an optimal portfolio that produces an expected portfolio return of 13% with a portfolio risk level of 19.22%. Of the ten companies sampled in the study, there are three companies that do not form an optimal portfolio and have suboptimal performance, namely: INTP, MNCN, PTBA, because the value of ERB C.

The formation of a portfolio can reduce the risk borne by investors because portfolio risk is smaller than the risk of individual stocks, this is in line with previous research (Yanti, 2020), (Anggraini et al., 2020). However, the findings of this study occur on the contrary, the portfolio return that is formed is

small with the level of portfolio risk increasing, because of the COVID-19 pandemic. Investors in allocating their funds to various types of shares need to look at the company's performance so that they can reduce the risk that must be borne. If investors allocate their funds to various types of shares, if they experience a loss, one share can be covered by the gains of another stock that does not suffer a loss. Before allocating funds to various types of stocks,

In the period June 2020 – June 2021, the expected market return analyzed is the LQ-45 Index of 0.013 and the expected return risk free from the BI 7-day repo rate of 0.003. This is due to the policy of reducing BI interest rates at the beginning of 2020. Where the decline in BI interest rates occurred due to the slumping economic conditions during the COVID-19 pandemic. The expected return portfolio formed from the seven optimal stock issuers using the capital asset pricing model is 0.01039. When compared with the expected return of the single index model which produces an expected return of a portfolio of 0.01922, this is because the CAPM includes a risk-free factor into its calculation model.

Comparing the SIM and CAPM models, based on the results of the portfolio performance of the Single index model and the Capital asset pricing model, there are differences in the preferred stocks that are included in the portfolio formation of each issuer. Based on the analysis results show that SIM provides a higher expected return than CAPM. So that the single index model approach is always used by investors in analyzing the formation of an optimal portfolio stock.

Evaluation and analysis that can be concluded from the seven stocks that make up the optimal portfolio have decreased development and improvement in company performance (due to the covid19 pandemic) during the period June 2019 - June 2020 and the period June 2020 - June 2021, despite experiencing a decline in performance but the stocks The company is still worth buying, and provides a sufficient rate of return, with relatively high risks borne by investors and potential investors due to the impact of the Covid 19 pandemic.

CONCLUSION

Based on the results of the calculations and discussions carried out, it can be concluded that the stocks that meet the candidates to be accepted into the optimal portfolio in the LQ 45 Index stocks for the period June 2019-June 2021 with the proportions are: MIKA. Meanwhile, for the period June 2020 - June 2021, the proportion and sequence of their respective performances are MIKA (44%); JPFA ; (24%) ; ITMG (12%) ; INKP (11%) INDF (6%) ; PTPP (2%) and PGAS (1%) . The formed portfolio produces an expected portfolio return of 13.00% and a portfolio risk level of 19.22%. Of the ten companies sampled in the study, there are three companies that do not form an optimal portfolio and have suboptimal performance, namely: INTP, MNCN, PTBA, because the value of ERB C.

The company's performance during the period June 2019 - 2020 and the period June 2020 - June, so it is recommended as stocks that are still eligible to be purchased and provide a sufficient rate of return,

with relatively high risks borne by investors and potential investors due to the impact of the Covid19 pandemic.

Portfolio performance using the Single index model and the Capital asset pricing model, there are differences in the selected stocks that are included in each period. Based on the analysis results show that the single index model provides a higher expected return than the capital asset pricing model.

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