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ANALYSIS OF STOCK PORTFOLIO PERFORMANCE USING THE JENSEN METHOD
(Case Study of the LQ45 Index on the Indonesian Stock Exchange for the Period 2019-2022)

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Abstract

Measuring portfolio performance cannot only be seen from the returns, but also must pay attention to the risks that investors will bear. Measuring the performance of a stock portfolio can be facilitated by using a proxy, namely LQ 45 shares, which are liquid stocks with high market capitalization, have high trading frequency, have good growth prospects and financial conditions, are not volatile and have been objectively selected by the IDX and are stocks. which is safe to own because the fundamental performance of these stocks is good, so that from a risk perspective the LQ 45 stock group has the lowest risk compared to other stocks. The research objective was to determine portfolio performance assessment using the Jensen method, a case study of the LQ45 index on the Indonesian stock exchange for the 2019-2022 period. The population in this study is LQ45 index shares on the Indonesian stock exchange for the 2019-2022 period based on a purposive sampling technique. Data collection is documentation and literature study. The data analysis that will be used in this study is by using the Microsoft Excel 2010 application program to form an optimal portfolio using the Single index model and to assess the performance of a stock portfolio using the Jensen index method. the results of portfolio performance analysis of Jensen's Alpha LQ45 index optimal stocks and obtaining an average RVOR value of 0.0207 or 2.07%.

Keywords: ***Single index model, LQ45, Jensen***

1. INTRODUCTION

Investors usually experience difficulties, namely assessing the risks faced in investing. Investment is an activity of investing money or capital and other resources that are carried out at this time and in the future expect to receive profits (Tandelilin, 2017). In investment theory, it is explained that if the profit expected by investors is greater, the investment risk will increase. PT Kustodian Sentral Efek Indonesia (KSEI) describes that the Indonesian capital market has reached 10 million investors, namely based on data on November 3, 2022 on KSEI the growth of Singe Investor Identification reached 10,000,628 has increased

33.53% from 7,489,337 at the end of 2021 and this increase always occurred starting from 2019, namely 2,484,354 (KSEI, 2020).

Table 1. Number of Capital Market Investors

Yeah	Number Of Investors
2019	2.484.354
2020	3.880.753
2021	7.489.337
2022	10.000.628

Source: KSEI (data processed) 2023

The LQ45 stock is one of the stocks that many investors are interested in, which can be seen from the high market capitalization of the LQ45 index. From 2019 to 2022 the LQ45 stock index has a large market capitalization compared to other stock indexes, therefore there are many stock indexes on the Indonesia Stock Exchange but with With the LQ45 stock index, it is easier for investors to choose which investment is the most appropriate, which companies are safe, worth buying or investing in. However, it is not certain that looking at this alone, it is also necessary to analyze the best portfolio or the optimal portfolio.

Table 2. LQ45 Index Market Capitalization for the 2019-2022 period

	IHSG	**LQ45**	JII	ISSI	JII70
2019	7265,02	**4759,64**	2.318,57	3.744,82	2.800,01
2020	6968,94	**4260,98**	2.058,77	3.344,92	2.527,42
2021	8252,41	**4515,32**	2.015,19	3.983,65	2.539,12
2022	9494,42	**5390,36**	2.155,45	4.786,02	2.668,04

Source: www.ojk.go.id (data processed), 2023

Portfolios are very useful for investors and can be one of the things that helps to obtain the expected return and diversify risk. Portfolio formation so that investors get greater returns than risks. The optimal portfolio method used is a single index model. The Single Index Model is an optimal portfolio analysis model that explains how an optimal stock portfolio is composed of several efficient portfolios. The single index model method is a relatively simple method because it can reduce the calculated variables, but has a longer calculation period and more samples, so it can provide more accurate results and overcome the problem of uncertainty in capital market investment (Pratama, 2019). After knowing the optimal portfolio stocks, the next step is to see how the performance of the portfolio is to see whether the performance is good or bad in providing returns and how the risks received are important because investors usually only look at the returns received without thinking about the risks that will occur. Analysis of optimal portfolio performance uses three methods, namely

Sharpe, Treynor and Jensen. Portfolio performance analysis using the Jensen method was introduced by Michael C. Jensen in 1968. A positive Jensen index means that the portfolio provides a return greater than the expected return, which is a good thing because the portfolio has a relatively high return for its systematic risk level.

By looking at the background of the problem in determining investment risk and return, investors often experience difficulties in evaluating the performance of their portfolios, so researchers are interested in conducting research on "Analysis of Stock Portfolio Performance Using the Jensen Method Case Study of the LQ45 Index on the Indonesia Stock Exchange for the 2019-2022 Period".

2. RESEARCH METHOD

Data analysis used the Microsoft Office Excel 2010 application program to form an optimal portfolio using the single index model and to assess stock portfolio performance using the Jensen index method. Data collection techniques are documentation and literature study. Data sources are secondary data by collecting data by downloading data on stock prices for the Liquid 45 index (LQ45) and the Composite Stock Price Index (IHSG) for the period 2019-2022 on the Indonesia Stock Exchange obtained through www.yahoofinance.com, Indonesian Interest Rate data; BI Rate data obtained from www.bi.go.id. Data analysis was carried out using the Microsoft Excel 2010 application. The research sample was taken using a purposive sampling technique. The sampling criteria in this study are stocks that consistently enter LQ45 during the 2019 – 2022 period, namely 30 shares.

Table 3. Consistent LQ45 Issuers During the 2019-2022 Period

NO	Kode	Nama Saham
1	**ADRO**	Adaro Energy Tbk.
2	**ANTM**	Aneka Tambang Tbk.
3	**ASII**	Astra International Tbk.
4	**BBCA**	Bank Central Asia Tbk.
5	**BBNI**	Bank Negara Indonesia (Persero) Tbk.
6	**BBRI**	Bank Rakyat Indonesia (Persero) Tbk.
7	**BBTN**	Bank Tabungan Negara (Persero) Tbk.
8	**BMRI**	Bank Mandiri (Persero)
9	**BRPT**	Barito Pacific Tbk
10	**CPIN**	Charoen Pokphand Indonesia Tbk.
11	**ERAA**	Erajaya Swasembada Tbk.
12	**EXCL**	XL Axiata Tbk.
13	**HMSP**	H.M. Sampoerna Tbk.

14	**INCO**	Vale Indonesia Tbk.
15	**INDF**	Indofood Sukses Makmur Tbk.
16	**INDY**	Indika Energy Tbk.
17	**INKP**	Indah Kiat Pulp & Paper Tbk.
18	**INTP**	Indocement Tunggal Prakarsa Tbk.
19	**ITMG**	Indo Tambangraya Megah Tbk.
20	**JPFA**	Japfa Comfeed Indonesia Tbk.
21	**MEDC**	Medco Energi Internasional Tbk
22	**MNCN**	Media Nusantara Citra Tbk.
23	**PGAS**	Perusahaan Gas Negara Tbk
24	**PTBA**	Bukit Asam Tbk.
25	**SMGR**	Semen Indonesia (Persero) Tbk.
26	**TKIM**	Pabrik Kertas Tjiwi Kimia Tbk.
27	**TLKM**	Telekomunikasi Indonesia (Persero) Tbk.
28	**UNTR**	United Tractors Tbk.
29	**UNVR**	Unilever Indonesia Tbk.
30	**WIKA**	Wijaya Karya (Persero) Tbk.

Source: IDX data processed (2023)

3. RESULTS AND DISCUSSION

Optimal Portfolio Stock Investment Analysis with Single Index Model

Formation of an optimal portfolio using the single index model. The first step is to calculate stock returns which are calculated using individual stock closing price data. Monthly market returns are calculated using monthly JCI data, and the BI Rate is obtained from www.bi.go.id. Then calculate expected stock and market returns, stock beta and alpha, stock and market risk, stock residual variance, Ai, Bi, and Ci values, ERB, limiting point or cut-off rate (C*), and proportion of funds in index stocks LQ45 period February 2019 – December 2022.

The formation of the optimal portfolio of the single index model is based on a number that can determine whether a stock can be included in the optimal portfolio, namely the Excess Return to Beta ratio (ERB). The optimal portfolio will contain stocks that have a high ERB ratio. Stocks with low ERB ratios will not be included in the optimal portfolio. Determining the limit of what ERB value is said to be high is by using the cut-off point (C*). If the ERB value is greater than or equal to the C* value, then the stock is included in the optimal candidate portfolio.

Table 4. Calculation of the Single Index Model

Kode	ERB	E(Ri)	β	A	σei2	Σi
ADRO	0,023044	0,0289	1,0996	0,0268	0,0132	0,1246
ANTM	0,010439	0,0294	2,4725	0,0245	0,0203	0,1785
ASII	-0,0053	-0,0037	1,3740	-0,0064	0,0058	0,0967
BBCA	0,008176	0,0105	0,8443	0,0088	0,0019	0,0567
BBNI	0,002143	0,0079	2,0293	0,0039	0,0061	0,1179
BBRI	0,003841	0,0088	1,3464	0,0061	0,0033	0,0822
BBTN	-0,00213	-0,0016	2,4232	-0,0063	0,0162	0,1652
BMRI	0,004747	0,0103	1,4180	0,0075	0,0040	0,0884
BRPT	0,013045	0,0238	1,5455	0,0207	0,0361	0,2016
CPIN	-0,01108	-0,0021	0,5116	-0,0031	0,0071	0,0872
ERAA	0,004087	0,0114	1,9202	0,0077	0,0248	0,1781
EXCL	0,001479	0,0054	1,2013	0,0030	0,0088	0,1076
HMSP	-0,03507	-0,0282	0,9079	-0,0300	0,0056	0,0844
INCO	0,010631	0,0217	1,7032	0,0183	0,0113	0,1296
INDF	-0,01753	-0,0009	0,2553	-0,0014	0,0042	0,0661
INDY	0,007619	0,0200	2,1472	0,0157	0,0278	0,1911
INKP	-0,00137	0,0014	1,6183	-0,0018	0,0156	0,1432
INTP	-0,01421	-0,0098	0,9446	-0,0117	0,0071	0,0939
ITMG	0,011418	0,0225	1,6534	0,0192	0,0192	0,1562
JPFA	-0,01198	-0,0098	1,1152	-0,0120	0,0128	0,1230
MEDC	0,005324	0,0153	2,2042	0,0110	0,0142	0,1529
MNCN	0,001443	0,0058	1,5595	0,0028	0,0134	0,1340
PGAS	-0,00043	0,0025	2,5169	-0,0024	0,0087	0,1439
PTBA	-0,00199	0,0019	0,8397	0,0003	0,0096	0,1047
SMGR	-0,00908	-0,0079	1,2627	-0,0104	0,0091	0,1102
TKIM	-0,00908	-0,0079	1,2627	-0,0104	0,0091	0,1102
TLKM	-0,00251	0,0014	0,8910	-0,0004	0,0031	0,0679
UNTR	0,001893	0,0051	0,7799	0,0035	0,0091	0,1012
UNVR	-0,17886	-0,0135	0,0955	-0,0137	0,0051	0,0712
WIKA	-0,00453	-0,0066	2,2598	-0,0111	0,0106	0,1425

Source: results of data analysis using Microsoft excel

From the results of data analysis on the expected return value of individual stocks in the LQ-45 index during the 2019-2022 period, there are 20 stocks that generate positive expected returns and 11 other stocks generate negative returns. The highest expected return

value is found in Adaro Energy Tbk's company shares. (ADRO) which is equal to 0.0289 or 2.89%, which means that investing in ADRO shares will give you the hope of a return on investment, namely 2.89% of 100% of the funds invested. But there are also some stocks that provide negative returns, company shares that provide the lowest returns, namely H.M. Sampoerna Tbk. (HMSP) namely -0.0282 or -2.82%, which means that investing in HMSP shares will provide a loss of -2.82% of 100% of the funds invested. For stocks that have a positive expected return, the greatest return is on ADRO shares, which is 0.0289 or 2.89% and the smallest is on Indah Kiat Pulp & Paper Tbk shares. INKP is 0.0014 or 0.14%.

Based on the table above, the highest beta value was obtained, namely the Perusahaan Gas Negara Tbk (PGAS) stock, which was 2.5169 or 251.69%, meaning that if there was an increase in market returns of one percent, then PGAS stock returns would also increase by 251.69%. There are several company shares that produce beta values > 1, namely 21 shares, namely ADRO, ANTM, ASII, BBNI, BBRI, BMRI, BRPT, ERAA, EXCL, INCO, INDY, INKP, ITMG, JPFA, MEDC, MNCN, PGAS, SMGR, TKIM, & WIKA while the other 9 shares have a beta value of < 1. Some of the shares that have a positive ERB value are 16 shares while the other 14 shares have a negative ERB value. Therefore, securities stocks that have a positive ERB value are included in the optimal portfolio candidate, while stocks that have a negative ERB value are not included in the optimal portfolio. The highest ERB value is ADRO shares of 0.0230 while the lowest ERB value is MNCN shares of 0.0014.

Calculate the value of the cut off point and cut off rate

Tabel 5. *Cut off rate*

Kode	Nama Saham	Ci
ADRO	Adaro Energy Tbk.	0,0034
ANTM	Aneka Tambang Tbk.	0,0048
BBCA	Bank Central Asia Tbk.	0,0032
BBNI	Bank Negara Indonesia (Persero) Tbk.	0,0017
BBRI	Bank Rakyat Indonesia (Persero) Tbk.	0,0022
BMRI	Bank Mandiri (Persero)	0,0027
BRPT	Barito Pacific Tbk	0,0015
ERAA	Erajaya Swasembada Tbk.	0,0010
EXCL	XL Axiata Tbk.	0,0004
INCO	Vale Indonesia Tbk.	0,0040
INDY	Indika Energy Tbk.	0,0021
ITMG	Indo Tambangraya Megah Tbk.	0,0026
MEDC	Medco Energi Internasional Tbk	0,0027
MNCN	Media Nusantara Citra Tbk.	0,0004
UNTR	United Tractors Tbk.	0,0002

Source: results of data analysis using Microsoft excel

Based on the table, the highest cut off rate is the ANTM security stock, which is 0.0048, with the cut off point to be compared to the ERB, namely C* 0.0048. after obtaining the C* value above, which is 0.0048, then do a comparison with the ERB which has a positive value. The table above shows that stocks with ERB values > C* are ADRO, ANTM, BBCA, BRPT, INCO, INDY, ITMG, & MEDC shares. The 8 stocks are optimal stocks for the LQ45 index during the period February 2019- December 2022. Company shares with a value lower than C* are not included in the optimal portfolio stocks, these stocks include BBNI, BBRI, BMRI, ERAA, EXCL, MNCN & UNTR .

Calculates the proportion of individual stock funds

After analyzing company stocks that are eligible to be included in the optimal portfolio, the next step is to determine the proportion of funds for each company in the optimal portfolio with the aim of investors being able to optimize investment activities.

Table 6. Proportion of Individual Share Funds

Stock Code	Stock Name	Zi	Fund Proportion Xi (%)	
ADRO	Adaro Energy Tbk.	1,5139	0,2615	26%
ANTM	Aneka Tambang Tbk.	0,6823	0,1179	12%
BBCA	Bank Central Asia Tbk.	1,5114	0,2611	26%
BRPT	Barito Pacific Tbk	0,3511	0,0606	6%
INCO	Vale Indonesia Tbk.	0,8740	0,1510	15%
INDY	Indika Energy Tbk.	0,2148	0,0371	4%
ITMG	Indo Tambangraya Megah Tbk.	0,5664	0,0978	10%
MEDC	Medco Energi Internasional Tbk	0,0757	0,0131	1%
		5,789548	1	100%

Source: results of data analysis using Microsoft excel

The results of calculating the proportion of funds in the formation of the optimal portfolio using the single index model method on the LQ45 index during the period February 2019 – December 2022 show that the highest proportion of funds from all companies in the optimal portfolio, namely 26%, is the shares of Adaro Energy Tbk. (ADRO) while the proportion of funds is at least 1% of 100% investment capital, namely shares of Medco Energi Internasional Tbk (MEDC).

Stock Performance Analysis Using Jensen's Alpha Method

The optimal portfolio of LQ45 index shares for the period February 2019- December 2022 which has been formed using the Single Index Model will be measured for its performance using the investment decision performance analysis method. Measurement of the Jensen index has the goal of calculating the level of return on investment that is above the market by looking at beta and returns above market value or called the alpha value. The equation for the value of the Jensen index according to is as follows:

$$\alpha p = (R_P - R_f) - (R_m - R_f)\,\beta_p$$

Information :

T_P = Portfolio Jensen Index

R_p = the average portfolio return during the observation period

R_F = the average risk-free rate of return during the observation period

R_m = return market

βp = portfolio beta

Table 7 Results of Jensen's Alpha Performance Analysis

	Excess Return	β_p	***J Alpha***
ADRO	0,0253	1,0996	0,0271
ANTM	0,0258	2,4725	0,0298
BBCA	0,0069	0,8443	0,0083
BRPT	0,0202	1,5455	0,0227
INCO	0,0181	1,7032	0,0209
INDY	0,0164	2,1472	0,0198
ITMG	0,0189	1,6534	0,0216
MEDC	0,0117	2,2042	0,0153
Excess Return Market	0,0020	**Average**	**0,0207**

Source: results of data analysis using Microsoft excel

Based on the table of portfolio performance analysis results from the optimal LQ45 Jensen's Alpha index stock and obtaining an average RVOR value of 0.0207 or 2.07%. Jensen's highest performance value is ANTM with a value of 0.0298 compared to other optimal portfolio stocks and the lowest performance is BBCA stock with a value of 0.0083, the performance of the stock portfolio is positive due to high returns for systematic risk which means portfolio performance is better than market index. The optimal performance of

the stock portfolio using the Jensen 8 stock method produces positive results, so the performance of the LQ45 stock portfolio for the period produces good portfolio performance, but it is different from previous studies which produced a negative Jensen performance analysis value (Yusup et al, 2023) regarding portfolio performance using the index Jensen said in the service industry during a pandemic that the results of portfolio performance research on 9 service industry issuers during a pandemic were said to be optimal. the value of the Jensen ratio in the service industry during the 2021 pandemic there were 3 issuers that had negative Jensen ratio values, namely CARE, HEAL, and BMTR. And 6 issuers have positive Jensen ratio values, namely SAME, SRTG, MLPL, PANR, PTSP, and JIHD.

4. CONCLUSION

The performance of the LQ45 stock index for the 2019-2022 period in stocks that have the greatest expected positive return is ADRO stock, which is 0.0289 or 2.89% and the smallest is Indah Kiat Pulp & Paper Tbk. INKP is 0.0014 or 0.14%. shares that have an ERB value > C*, namely ADRO, ANTM, BBCA, BRPT, INCO, INDY, ITMG, & MEDC shares. The 8 stocks are the optimal stocks for the LQ45 index during the period February 2019-December 2022. The proportion of funds in the optimal portfolio formation using the single index model method on the LQ45 index during the period February 2019 – December 2022 that the proportion of funds is the highest from all companies in the optimal portfolio, namely 26 % is the company's shares of Adaro Energy Tbk. (ADRO). the results of portfolio performance analysis of Jensen's Alpha LQ45 index optimal stocks and obtaining an average RVOR value of 0.0207 or 2.07%.

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