

The Covid-19 Effect On Lq45 Portfolio Share: An Event Study

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Abstract

The purpose of this study was to analyze differences in optimal portfolios using the treynor index model a year before and after the announcement of Covid-19 entering Indonesia in the same period on the LQ45 index. This research method uses the treynor index and t test. The samples of this study were companies listed in LQ45. The results of this study shows the ratio of returns and risks faced decreases or gets worse (risky) due to Covid-19 for comparison portfolios before and after Covid-19 for one year. So, the existence of this Covid-19 study event in the formation of a stock portfolio has a meaningful change if an annual portfolio is formed and there is a decrease in the performance of the return to risk comparison.

Keywords: Event Study; Portfolio Share; Treynor; Covid-19 JEL Classification: G11, G14

INTRODUCTION

Based on the news quoted from DetikNews, Indonesia for the first time confirmed the COVID-19 case on Monday, March 2, 2020. At that time, President Joko Widodo (Jokowi) announced that two Indonesians had tested positive for the Corona virus, namely a 31-year-old woman and a 64-year-old mother. The difficulty in reducing the rate of the Corona pandemic in Indonesia has an impact on investment in Indonesia. To comprehensively evaluate the impact of COVID-19 on stock prices of LQ45 industries, we adopted an event study approach. We examine the stock prices of industries that react to the pandemic. Covid-19 resulted in significant changes to financial markets (Ali et al., 2020; Apergis & Apergis, 2020). We contribute from the point of view of stock market reactions.

Investment can be defined as an activity of placing funds in one or more assets during a certain period in the hope of obtaining income and/or increasing the value of the investment (Wiksuana, 2017). People who own funds are now increasingly aware that apart from real investments, deposits and savings, there are still attractive investment alternatives that can generate returns, namely investing in stocks. The increasing public awareness is also supported by rapid advances in technology and information, so that it will be easier for people to obtain and distribute funds in the capital market (Sudarsana et al., 2014). The capital market is an alternative place for investment choices that can generate optimal levels of profit for investors, and is a bridging relationship between fund owners (investors) and fund users (issuers).

Investors in their investment activities will try to minimize the various risks faced, both short-term and long-term (Irham & Lavianti, 2011). In the capital market, rational investors will invest their funds by choosing efficient stocks, namely stocks that provide maximum returns at a certain risk or certain returns at minimal risk (Zubir, 2011). One of the strategies for investors to minimize the risk of investing in stocks is to diversify, which is to invest funds in several stocks that will form a portfolio. Investors must diversify to reduce the existing risks by combining various stocks in their investments (forming a portfolio). A rational investor, of course, will choose the optimal portfolio (Jogiyanto, 2014). Every investor invests their funds in a portfolio to get maximum returns with lower risk (Poornima & Remesh, 2016).

Investors can use several ways to form a portfolio, including the Markowitz Model and the Single Index Model (Lestari & Candraningrat, 2014). Portfolio performance using risk-adjusted return measurements (portfolios that have included risk and return into it) can be measured using the Sharpe index, Treynor index, and Jensen index (Tandelilin, 2010). Single Index Model can be used to simplify calculations in the Markowitz model by providing the required input parameters in the Markowitz model (Wiksuana, 2017). The Single Index model uses fewer variables than the Markowitz model which makes it easy for investors to calculate (Mohith et al., 2017). Unlike the Markowitz model, this simple model states that, by comparing the returns of individual securities with a single index such as the 'Market Index', the relationship that exists between each pair of securities can be determined indirectly (Nandan & Srivastava, 2017). Nurlaeli & Artati (2020) stated that there was no significant difference between the tests using the Sharpe, Treynor, and Jensen methods.

Abnormal return is the difference between the actual return and the expected return that occurs before the issuance of official information or occurs because of information leaks after official information is published (Samsul, 2006). In this case, it is the president's announcement of official information on the entry of the COVID-19 pandemic into Indonesia. The difference between the two returns can be a positive difference and a negative difference. The abnormal return is positive if the actual return is greater than the expected return. This situation will cause investors to be interested in making transactions around the announcement period in the hope of getting above normal profits, but if the situation is the other way around, the market will react negatively. The market reacts to information is very important because it can lead to price changes that make abnormal returns change as well as changes in investor perceptions to make investment decisions. Peykani et al., (2020) stated the portfolio construction is one of the most critical problems in financial markets.

Kurniawati (2006) concluded that there are reactions from the market after the announcement of EPS made by companies listed on the IDX. But on the contrary of the study by Suharyanto & Asma (2013), there was no difference in abnormal stock returns before and after the announcement of the loan to value KPR regulation. Chasanah et al., (2020) stated that during the global crisis period at the end of 2011 and 2012 the performance of Islamic stock portfolios outperformed conventional stock portfolios, this strengthens the results of research which says that Islamic stock performance is better during a crisis because investors use hedging mechanisms. Chasanah et al., (2020) stated that the simulation with the proportions obtained from the single index model gave a profit of 0.0771504% every week during the COVID-19 pandemic. So that the formation of an optimal portfolio with a single index model does not provide optimal benefits during the COVID-19 pandemic to investors. This is because the risk-free asset return based on the results of the auction of Bank Indonesia Syariah certificates (SBIS) during the COVID-19 pandemic resulted in an average profit of 0.087445% per week, 0.0771504% which was the profit of the stock portfolio.

Tambunan (2020) stated that based on the analysis of optimal portfolio formation using a single index on the SRI-KEHATI index from 22 samples of research companies for the 2016-2018 period, there were 7 company stocks that could form a portfolio, namely JPFA, TINS, BBCA, UNTR, BDMN, BBRI shares, and BBNI. Anggraeni & Mispiyanti (2020) stated that during the COVID-19 pandemic, investors can still benefit from investing in stocks if every decision made by the investor is supported by careful calculations. Investors must be careful in

choosing which sector to target. Investors need to do fundamental analysis so as not to put the funds wrong, and diversify stocks to reduce the risk of losses that are too large in investing. If the situation returns to normal, all sectors will bounce back with adjustments following the new normal protocol. Stocks in the consumer industry sector, the telecommunications sector such as data, towers and the health sector such as pharmaceuticals and hospitals are stocks that can be investors' choices during the COVID-19 pandemic. Kusunandar & Bintari (2020) find that there is a significant difference in abnormal returns before and after the announcement of changes in trading time on stock exchange transactions.

This means that the announcement of an event causes changes in price and transaction volume on the Indonesia Stock Exchange. Announcement of an event that affects the market significantly or not significantly depending on the magnitude of the effect of the event. The existence of a research gap from various previous studies supports researchers to examine whether the COVID-19 pandemic affects the creation of an optimal portfolio in the long term (one year). The index used in this study is the LQ45 Index because the stocks in the index are the most liquid stocks compared to other stocks listed on the Indonesia Stock Exchange. So the formulation of the problem that is formed is whether there is a significant difference in the formation of the LQ45 stock portfolio in the year before and during the covid-19 pandemic?

Hypothesis Development

The optimal portfolio using the treynor index model a year before and after Covid-19 announcement in the same period in the LQ45 index.

Investment activities by investors to a company have a purpose, namely to seek income or return on investment, either in the form of dividends or in the form of capital gains (Dewi&Sedana 2014; Hussin et al., 2021). Stocks are investment instruments that are chosen by many investors because they are able to provide an attractive level of profit (Murniti & Artini 2014). In stocks, the issuer company will divide the ownership of the company to investors who buy shares, therefore the company can be owned by as many people as investors who buy the company's shares (Subagia & Sedana 2015).

According to Jones (2004) stock returns consist of Yield, namely cash flow or cash flow that is paid periodically to shareholders, usually in the form of dividends and capital gains, or capital loss, namely the difference between the stock price at the time of purchase and the stock price at the time of sale. Wiksuana (2017) says that for stocks, cash receipts are in the

form of cash dividends, while the increase in investment value is reflected through an increase in stock prices. Portfolio return is the return received by investors for a set of securities or assets they own (Jubaedah et al., 2020; Asman et al., 2021).

Return is the result obtained from the investment. Returns can be in the form of realized returns that have occurred or expected returns that have not occurred but are expected to occur in the future. Meanwhile, portfolio risk consists of systematic and unsystematic risk (Sulistyorini, 2009). Investment analysis often faces problems, namely about assessing the risks faced by investors. Financial theory explains that when investment risk increases, the level of profit required by investors is even greater (Sulistyorini, 2009). Forming a portfolio can reduce investment losses or risks, so investors can invest in various types of stocks (Fabozzi, 1999). The decision to invest in the capital market will find conditions full of uncertainty, so that before making an investment decision, an investor must pay attention to the element of risk (Jones, 2004). Brigham & Houston (2010) define a risk as an opportunity where an unfavorable event will occur. Risk is the possibility that the actual income will differ from the expected (Wiksuana, 2017; Rahkmonova et al., 2021s).

In an effort to minimize risk, an investor should diversify by forming a portfolio, where investors do not only invest in one particular company's stock but in several different company stocks. With this diversification, it is hoped that investors will get a greater return compared to investing in only one stock. Risk diversification is very important for investors, because it can minimize the risks that arise without having to reduce the returns received. The diversification strategy is carried out with an optimal portfolio which means that profits are obtained by diversifying into various investments, with a certain number of securities that have a fairly high return (Sulistyorini, 2009). Jogiyanto (2014) states that the expected return can be calculated by three models, namely the Mean Adjusted Model, Market Model, and Market Adjusted Model.

The Single Index Model is a technique for measuring the amount of return and risk of a portfolio with the assumption that the movement of stock returns is only related to market returns (Jogiyanto, 2014). Research conducted by Eko (2008) states that the formation of an optimal portfolio using the Single Index Model will affect the amount of return and risk that arises from the portfolio.

Research conducted by Rahmadin et al., (2014) the formation of an optimal portfolio of stocks that are included in the LQ 45 Index for the period 2011-2013 using the Single Index Model

found that there are stocks of 6 companies that can form an optimal portfolio. Research conducted by Andriani (2019) using the Single Index Model for portfolio formation on stocks of the basic and chemical industry sectors on the IDX found that stocks were selected from 6 companies that could form an optimal portfolio with different proportions. Wahyudi (2002) concluded that portfolio determination using the Single Index Model can provide optimal returns. Susanti (2013) who concluded that the determination of a portfolio using the Single Index Model can provide optimal returns and the resulting risk is smaller than the Random Model.

The Treynor ratio developed by Jack Treynor is a technique for measuring portfolio performance which is often referred to as the reward to volatility ratio (RVOR). The Treynor ratio is obtained by finding the average expected return minus the risk-free rate divided by the portfolio beta. Portfolio creation method using the Treynor index model can form an optimal portfolio with good performance because it compares returns with existing risks.

Study conducted by Zahid (2015) have a result that an optimal portfolio formed consisting of nine JII stocks when using a Treynor Model portfolio method, namely, AALI, ASII, ASRI, INTP, KLBF, LKPR, LSIP, TLKM, and UNVR with a return value of 2, 85% and variance 0.23%. The return received is greater than that provided by the basic market return so that the Treynor Single-Index portfolio return shows good performance because the overall evaluation value produces a positive value. Using the Treynor index model in forming an optimal portfolio will make the portfolio perform well by looking at the returns and risks it has. Study conducted by Rifa'i et al., (2020) resulting that there are differences before and after the 2020 Covid-19 Pandemic in the Composite Stock Price Index. Study conducted by Kusnandar & Bintari (2020) state that there is a statistically significant difference in abnormal returns before and after the announcement of changes in trading time on stock exchange transactions.

H0 : There is no significant difference in the optimal portfolio using the treynor index model a year before and after Covid-19 announcement in the same period in the LQ45 index.

H1 : There is a significant difference in the optimal portfolio using the treynor index model a year before and after Covid-19 announcement in the same period in the LQ45 index.

METHOD

This study compares the use of the Treynor index model to form an optimal stock portfolio from LQ45 before and after the covid-19 announcement. The results of the study were to find out whether there was a market reaction before and after the announcement of covid-19. These results can be used as guidelines for making a stock portfolio from making investment decisions during the COVID-19 pandemic and after that when the pandemic is over. The population in this study are stocks listed in LQ45. The requirements for research sampling are: 1). Indexed LQ45 for one year before and during the Covid-19 pandemic. 2). Have a closing price at the end of each month during the study period. 3). Never get out of the LQ45 index. 4). Did not enter during the study period.

The samples that meet the requirements are Adaro Energy (ADRO), PT AKR Corporindo Tbk (AKRA), Aneka Tambang Tbk PT (ANTM), Astra Motor (ASII), Bank Central Asia (BBCA), Bank Negara Indonesia (BBNI), Bank Rakyat Indonesia (BBRI), Bank Tabungan Negara (BBTN), Bank Mandiri (BMRI), PT Bumi Serpong Damai Tbk (BSDE), XL Axiata (EXCL), Gudang Garam (GGRM), PT Hanjaya Mandala Sampoerna Tbk (HMSP), Indofood CBP (ICBP), Vale Indonesia (INCO), Indofood (INDF), Indah Kiat Pulp & Paper (INKP), Indocement Tunggal Prakarsa (INTP), PT Indo Tambangraya Megah Tbk (ITMG), Jasa Marga (JSMR), PT Kalbe Farma Tbk (KLBF), Media Nusantara Citra (MNCN), Perusahaan Gas Negara (PGAS), Bukit Asam (PTBA), Pembangunan Perumahan (PTPP), Semen Indonesia (SMGR), Telkom Indonesia (TLKM), United Tractors (UNTR), Unilever Indonesia (UNVR), and Wijaya Karya (WIKA). The technical analysis used in determining the performance of the stock portfolio with a single index and measuring performance using the Treynor index in this study is as follows (Hartono, 2010).

- 1) Calculate the stock return rate and expected return

$$R_i = \frac{P_t - P_{t-1} + D_t}{P_{t-1}} \dots \dots \dots (1)$$

$$E(R_i) = \alpha_i + \beta_i * E(R_m) \dots \dots \dots (2)$$

- 2) Calculating the market return index, alpha and beta

$$R_m = \frac{IHSG_t - IHSG_{t-1}}{IHSG_{t-1}} \dots \dots \dots (3)$$

$$\alpha_i = E(R_i) - \beta_i * E(R_m) \dots \dots \dots (4)$$

$$\beta_i = \frac{\sigma_{im}}{\sigma_m^2} \dots \dots \dots (5)$$

- 3) Calculating stock risk (R_i) and market risk (R_m)

$$\text{Var}(R_i) = \sum_{j=i}^n ([R_{ij} - E(R_i)]^2 * p_j) \dots \dots \dots (6)$$

$$\text{standard deviation } (\sigma) = \sqrt{\text{Var}(R_i)} \dots\dots\dots (7)$$

$$\text{Var}(R_m) = \sum_j^n ([R_{ij} - E(R_i)]^2 * p_j) \dots\dots\dots (8)$$

$$\text{standard deviation } (\sigma) = \sqrt{\text{Var}(R_m)} \dots\dots\dots (9)$$

4) Residual variants or unsystematic risk

$$\sigma_i^2 = \beta_i^2 * \sigma_m^2 + \sigma_{ei}^2 \dots\dots\dots (10)$$

5) Calculating excess return to beta

$$ERB_i = \frac{E(R_i) - R_{BR}}{\beta_i} \dots\dots\dots (11)$$

6) Calculating cut off-point (C*)

$$A_j = \frac{[E(R_i) - R_{BR}] * \beta_i}{\sigma_{ei}^2} \dots\dots\dots (12)$$

$$B_i = \frac{\beta_i^2}{\sigma_{ei}^2} \dots\dots\dots (13)$$

$$C_i = \frac{\sigma_m^2 \sum_{j=1}^i A_j}{1 + \sigma_m^2 \sum_{j=1}^i B_j} \dots\dots\dots (14)$$

7) Calculating proportion every stocks

$$W_i = \frac{Z_i}{\sum_{i=1}^k Z_i} \dots\dots\dots (15)$$

$$Z_i = \frac{\beta_i}{\sigma_{ei}^2} (ERB_i - C^*) \dots\dots\dots (16)$$

8) Calculating portfolio, portfolio alpha and portfolio beta

$$E(R_p) = \alpha_p + \beta_p * E(R_m) \dots\dots\dots (17)$$

$$\alpha_p = \sum_{i=1}^n W_i * \alpha_i \dots\dots\dots (18)$$

$$\beta_p = \sum_{i=1}^n W_i * \beta_i \dots\dots\dots (19)$$

9) Calculating portfolio risk

$$\sigma_p^2 = \beta_p^2 * \sigma_m^2 + \sum_{i=1}^n W_i^2 * \sigma_{ei}^2 \dots\dots\dots (20)$$

10) Calculating the performance of the stock portfolio using the Treynor index

$$\hat{T}_P = \frac{\bar{R}_P - \bar{R}_F}{\hat{\beta}_P} \dots\dots\dots (21)$$

After getting the results of the LQ45 stock portfolio performance on one year before and during Covid-19 pandemic, then to test the hypothesis using the Independent Sample T-Test by doing the test steps are as follows: 1). Compile the hypothesis formulation as follows: H0: There is no significant difference in the optimal portfolio using the treynor index model a year before and after Covid-19 announcement in the same period in the LQ45 index. H1 : There is a significant difference in the optimal portfolio using the treynor index model a year

before and after Covid-19 announcement in the same period in the LQ45 index. 2). t-test. The t-test difference test was used to determine whether two unrelated samples had different mean values. The t-test difference test is done by comparing the difference between the two mean values with the standard error of the difference in the mean of the two samples. Standard error difference in mean values normally distributed. The basis for the decision making that will be used in this study is significance. $\alpha = 10\%$ or 0.10 is chosen to provide leeway for long-term research in accordance with the foundation of social science research using an alpha of five to ten percent. If the significance value > 0.10 , then H_0 is accepted. If the significance value < 0.10 , then H_0 is rejected

RESULT AND DISCUSSION

Table 1. One Year Before and During Covid-19 Pandemic Treynor Index Calculation Results

Month	Average Return	Total Beta Portofolio	Risk Free	IndeksTreynor
Mar-19	6,89%	120,92%	0,50%	5,28%
Apr-19	7,16%	115,09%	0,50%	5,79%
Mei-19	8,01%	66,74%	0,50%	11,25%
Jun-19	7,81%	130,73%	0,50%	5,60%
Jul-19	9,49%	112,67%	0,48%	8,00%
Agu-19	10,16%	117,07%	0,46%	8,29%
Sep-19	7,20%	195,20%	0,44%	3,46%
Okt-19	4,98%	128,65%	0,42%	3,54%
Nov-19	8,44%	69,13%	0,42%	11,60%
Des-19	11,09%	141,99%	0,42%	7,52%
Jan-20	2,75%	73,83%	0,42%	3,16%
Feb-20	5,18%	86,80%	0,40%	5,51%

Mar-20	4,02%	11,22%	0,38%	32,45%
Apr-20	15,99%	61,30%	0,38%	25,48%
Mei-20	13,83%	121,10%	0,38%	11,11%
Jun-20	14,90%	85,73%	0,35%	16,96%
Jul-20	12,55%	73,99%	0,33%	16,51%
Agu-20	69,52%	68,40%	0,33%	101,16%
Sep-20	4,61%	79,82%	0,33%	5,36%
Okt-20	14,32%	153,50%	0,33%	9,11%
Nov-20	19,03%	129,44%	0,31%	14,46%
Des-20	16,60%	130,77%	0,31%	12,45%
Jan-21	12,57%	142,69%	0,31%	8,59%
Feb-21	13,08%	143,52%	0,29%	8,91%

Based on Table 1, it is known that the highest average return in August 2020 is 69.52%. The highest total portfolio beta was in September 2019, which means the highest profit was in September 2019. Based on the Treynor index in the table, the largest value was obtained in August 2020 at 101.16%, which means that the best portfolio performance was in August 2020 where the risk value was low. and the best return.

Table 2.T-test result

Paired Samples Test					
Paired Differences					Sig. (2-tailed)
Mean	Std. Deviation	Std. Error Mean	90% Confidence Interval of the Difference	t	df

		Lower	Upper
Before Covid-19 - After the Pair announcement of Covid-19 entering Indonesia	- ,256779512,074125860 - ,152954500	- ,286076007,0198329932,063	- 11 ,063

Based on the results of statistical calculations, the t value is -2.063 with a significance level of $0.063 > 0.10$, then H_0 is rejected and H_1 is accepted, so there is a significant difference in the optimal portfolio using the treynor index model a year before and during Covid-19 in the LQ45 index. The value of t count has a negative value which means that there is a decrease. Covid-19 makes a difference, namely lowering the treynor index by -2.063, which means that the ratio of returns and risks faced decreases or gets worse (risky) due to Covid-19 for comparison portfolios before and after Covid-19 for one year. The decline in the Treynor index had a very significant effect (level of significance = $0.063 > 0.10$), which means that there was a high decrease in symptoms that made a difference for the portfolio one year before and one year after Covid-19. So, the existence of this Covid-19 study event in the formation of stock portfolios has significant changes if an annual portfolio is formed and there is a decrease in the performance of the return to risk comparison.

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theoretical momentum, which state the momentum portfolio is one of the active portfolio strategies that investors and investment managers can use to improve the performance of their stock portfolios. This strategy is carried out by buying stocks that previously had good performance and selling stocks that previously had poor performance (Polakitan, 2015). Tambunan (2020) stated that during the COVID-19 pandemic, investors can still benefit from investing in stocks if every decision made by the investor is supported by careful calculations. Investors must be careful in choosing which sector to target. Investors need to do fundamental analysis so as not to put the funds wrong, and diversify stocks to reduce the risk of losses that are too large in investing. If the situation returns to normal, all sectors will bounce back with adjustments following the new normal protocol. Stocks in the consumer industry sector, the telecommunications sector such as data, towers and the health sector such as pharmaceuticals and hospitals are stocks that can be investors' choices during the COVID-19 pandemic.

CONCLUSION AND RECOMMENDATION

Based on the results of this discussion, the conclusion of this study is that there is a significant difference in the optimal portfolio using the Treynor index model between a year before and during Covid-19 on the LQ45 index. The value of t count has a negative value which means that there is a decrease. Covid-19 makes a difference, namely lowering the treynor index by -2.063, which means that the ratio of returns and risks faced decreases or gets worse (risky) due to Covid-19 for comparison portfolios before and after Covid-19 for one year. The decline in the Treynor index had a very significant effect (significance level = $0.063 > 0.10$), which means that there was a high decrease in symptoms that made a difference for the portfolio one year before and one year after Covid-19. Allocating funds according to the right calculations will allow these investors to get optimal returns on each existing share, even in the midst of the Covid-19 pandemic. Suggestions that can be given for further research are to examine how long the impact of Covid-19 has on the formation of stock portfolios using either the treynor or sharp or jensen indexes. The portfolio used does not have to be LQ45, can use all stocks (saturated sample) or other indexes such as IDX30, KOMPAS100, BISNIS-27, PEFINDO25, SRI-KEHATI, JII, ISSI, INFOBANK15, SMInfra18, MNC36, and others.

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