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Implementation of Optimal Portfolio Performance Evaluation

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ABSTRACT : The purpose of this study is to determine how the optimal portfolio of JII shares in 2019 and what is the proportion of each of the optimal portfolios. The sample in this study are companies listed on the IDX and companies whose shares are still listed on the Jakarta Islamic index (JII) in 2019 (not new and not previously issued from JII shares). Based on these criteria a sample of 6 companies was obtained. The results of this study indicate that the portfolio formed by six companies only five companies included in the optimal category, namely ASII, KLBF, SMGR, UNTR, UNVR. While only TLKM is not included in the optimal portfolio. The optimal portfolio has an expected return of -0.005244 or -0.5244% per month, and the risk that must be faced from the results of investing in a portfolio of 0.08996 or 8.99%.

KEYWORDS:-*Optimal portfolio, return and risk*

I.INTRODUCTION

Investment is the number of funds or goods that are expected to provide more results in the future. Investment in the form of securities (securities) in general can be done through the capital market and money market. Before Markowitz introduced his famous Portfolio Theory, the success of investment was often only seen from the return generated, so the return became the main consideration for investors in investing [1][3]. The Indonesian capital market is one of the relatively well-developed capital markets as evidenced by its performance in 2018, there were 57 issuers conducting an initial public offering in the country, which is the highest record since 1992. In addition, the bourse also recorded a good performance with the second-best ranking in the world after India, although it recorded a decline but the decline was not the worst in the world.

Source: https://sikapiuangmu.ojk.go.id/FrontEnd/CMS/Article/10463
Fig.1. Development of the JCI for the Period of 2002-2018

This indicates that the Indonesian capital market is very potential as a place to invest, with the number of issuers that can be used as an investor portfolio choice will further stimulate investors' interest to invest their money in the market [10]. But with so many choices will make it difficult for an investor to choose his portfolio [11]. Evaluation of portfolio performance must be done as an indicator of an investor's success in investing. Several studies that discuss the selection of optimal stock and portfolio have been carried out by previous researchers, such as in research [5], [7], [9], [11].

The results of research conducted by Robiyanto show that only 3 stock price indexes have better performance than risk-free investment instruments and the stock market when viewed from the Sharpe Index, Treynor Ratio, Jensen Alpha, Adjusted Sharpe Index, and Adjusted Jensen Alpha Index [2]. Meanwhile, when viewed from Sortino Ratio, the stock price index of various industry sectors has the best performance.

Fig.2. Development of the Jakarta Islamic Index during 2018

One of the stocks that are currently starting to attract many investors is shares in the Jakarta Islamic Index (JII). Fulfillment of sharia aspects in investing is an absolute requirement that must be met by Muslim investors. Even though shares in the Jakarta Islamic Index have a large market capital, but it still needs an optimal portfolio analysis to choose efficient stocks as an optimal portfolio maker. JII is an index exception that will not be affected by the BI 7-day repo rate policy or conventional banking issuers that can hamper the index's performance.

Research conducted by Hadiyoso, et al [4] is to build optimal portfolios produced from shares registered in the Indonesia Sharia Stock Index (ISSI) and measure its performance to determine its potential as an instrument for the main public to invest in the stock market. The calculation uses a single index model approach, daily stock price data and inflation rates as a proxy of the risk-free level, resulting in an optimal portfolio consisting of forty-three stocks with yields and risks that are preferred over the market (Jakarta Composite Index). The number of shares and the risk value that is smaller than market risk shows that the portfolio is well diversified. The performance test results using the Jensen's Alpha method show that the portfolio is able to outperform the market, JII, and ISSI [4].

Based on the explanation above, the authors are interested in implementing a portfolio performance evaluation calculation for shares incorporated in the Jakarta Islamic Index.

II.   LITERATURE REVIEW

The **headings** and **subheadings**, starting with "**1. Introduction**", appear in upper and lower case letters and should be **set in bold and aligned flush left**. All headings from the Introduction to Acknowledgements are numbered sequentially using 1, 2, 3, etc. Subheadings are numbered 1.1, 1.2, etc. If a subsection must be further divided, the numbers 1.1.1, 1.1.2, etc.

A.   Optimal Portfolio

According [5] returns are divided into two: (1) realized return is a return that has occurred, (2) expected return is the return expected by investors in the future. Based on the notion of return, that the return of a stock is the result obtained from investment by calculating the difference between the current period's stock price and the previous period by ignoring dividends [5][7][9].

Some steps that can be taken to determine the optimal portfolio according to Nurhayati, et al, 2016 [6] are as follows:

a)   Calculate the realized return of the stock i

$$R_i = \frac{P_t - P_{t-1}}{P_{t-1}} \quad (1)$$

b)   Calculate the expected level of return (expected return) of each individual stock

$$E(R_i) = \frac{\sum R_i}{n} \quad (2)$$

c)   Calculate beta (βi)

$$\beta i = \frac{\sigma im}{\sigma^2 m} \qquad (3)$$

d)   Calculate alpha (α)

$$\alpha = E(Ri) - \beta i.\ E(Rm) \qquad (4)$$

e)   Calculate the Excess Return to Beta (ERB)

$$ERBi = \frac{E\ (Ri) - (RBR)}{\beta i} \qquad (5)$$

f)   Calculates the values of Ai and Bi for each i-securities

$$Ai = \frac{(E(Ri) - RBR).Bi}{\sigma ei^2} \qquad (6)$$

$$Bi = \frac{\beta i^2}{\sigma ei^2} \qquad (7)$$

g)   Calculate the value of Ci

$$Ci = \frac{\sigma M^2 \sum_{j=1}^{i} Aj}{1 + \sigma M^2 \sum_{j=1}^{i} Bj} \qquad (8)$$

By substituting the values of Ai and Bi, the formula Ci becomes:

$$C_i = \frac{\sigma m^2 \sum_{j=1}^{i} \frac{[E(Rj) - (Rbr)].\beta_i}{\sigma ej^2}}{1 + m^2 \sum_{j=1}^{i} \frac{\beta j^2}{\sigma ej^2}} \qquad (9)$$

h)   Determine the cut-off point (C*)

The cut-off point value (C*) is the value of C_i the last time ERB value is still greater than the value of C_i.

i)   Determine the value of stocks - stocks that make up the optimal portfolio.

j)   If the ERB value > C* can be said to be the optimal portfolio. Whereas if the ERB value < C* then it does not include an optimal portfolio [7].

III.   RESEARCH METHODS

This study uses descriptive and verification research methods, the definition of descriptive methods according to Sugiyono quoted from (John Henry Wijaya, 2019) is a method used to describe or analyze a research result but is not used to make broader conclusions [8]

IV.   POPULATIONAND SAMPLE

Population is all things related to researchers for further research. The populations in this study are all financial statements of company annuities registered in the Jakarta Islamic index (JII) in the last ten years. The sampling technique in the study used the Non-Probability Sampling technique. Non-Probability Sampling is a sampling that does not provide the same opportunity or opportunity for each element or member of the population to be selected as a sample. In this research the Non-Probability Sampling technique used is Purposive Sampling. The criterion used by the author is that companies that consistently in JII during December 2018 to May 2019 obtained 6 companies [8].

V.   DISCUSSION

After tabulating data with 6 companies consisting of Astra International, Kalbe Farma, Semen Indonesia, Telekomunikasi Indonesia, United Tractors, and Unilever Indonesia, the following results were obtained:

A.   **Ranking based on Excess Return to Beta (ERB) results**

Excess returns to beta results are as follows:

Table- I. Excess returns to beta tabulation

	ASII	KLBF	SMGR	TLKM	UNTR	UNVR	IHSG
E(Rj)	-0.00616619	-0.00696	0.022084	-0.01212	-0.01756	-0.01591	-0.00169
σⁱ	0.05184835	0.063191	0.150492	0.063038	0.08852	0.05283	0.03115

β^i	0.81212181	1.107061	3.053718	-0.54336	0.52522	0.54807
α^i	-0.00479454	-0.00509	0.027242	-0.01304	-0.01668	-0.01498
$\alpha\epsilon_i^2$	0.00204831	0.002804	0.0136	0.003687	0.007567	0.0025
ERBi	0.06377324	0.057029	0.049263	-0.11591	0.168423	0.09629

It was found that UNTR had the largest ERB with the acquisition of 0.168423 and the lowest was by TLKM of -0.11591. The next step is to calculate the Ai and Bi values to get the Ci value and determine the cut-off point (C*) with the following results:

Table- II. The cut-off point tab (C *)

	ASII	**KLBF**	**SMGR**	**TLKM**	**UNTR**	**UNVR**
A_j	-2.46728280	-2.76859	4.946073	1.79418	-1.22285	-3.4998
$\sum A_j$	-2.46728280	-5.23588	-0.2898	1.504376	0.281527	-3.21828
B_j	321.993595	437.088	685.684	80.06958	36.45329	120.1651
$\sum B_j$	321.993595	759.082	1444.77	1524.835	1561.289	1681.454
Ci	-0.00182408	-0.00293	-0.00012	0.000589	0.000109	-0.00119

By knowing which stocks have ERB value greater than C* and shares that have ERB value smaller than C* will be selected to be the optimal portfolio forming stock.

B. C_i value and cut-off point (C*)

The biggest C_i value or cut-off point is TLKM amounted to 0,000589 and the smallest C_i value is KLBF namely -0.00293

C.   Optimal Portfolio Forming Shares

The optimal portfolio can be determined by comparing the cut-off point (C*) and ERB of each stock. If ERB shares> cut-off point (C*), then the shares will be included in the optimal portfolio. As in the following table:

Table- III. Determination of Optimal Stocks

Issuer	**Optimal**	**Not Optimal**
ASII	√	
KLBF	√	
SMGR	√	
TLKM		√
UNTR	√	
UNVR	√	

The stocks that are included in the optimal portfolio are ASII, KLBF, SMGR, UNTR, UNVR. While only TLKM is not included in the optimal portfolio, because the ERB value <Cia value or cut-off point (C *).

D.   Proportional Compositions that Form an Optimal Portfolio

After knowing the companies that can provide benefits for investors, the next step is to determine the amount of investment in each of the company's shares, which is known as the investment proportion, as follows:

Table- IV. Composition of Optimal Portfolio Proportions

Issuer	Proportion
ASII	0.410598002
KLBF	0.372131044
SMGR	0.09913374
TLKM	-0.100729294
UNTR	0.032284279
UNVR	0.186582229

E.   Return and Portfolio Risk

The next step is to calculate the return and portfolio risk formed by the investor with the following results:

Table- V. Risk Summary and Portfolio Return

Total Risk (σp)	0.019776926
E(IDR)	-0.005244944

Seen in table V above, the optimal portfolio is formed by using 6 companies consisting of ASII, KLBF, SMGR, UNTR, UNVR, and TLKM have an expected return of -0.005244 or -0.5244% per month, and the risk that must be faced from the results of investing in a portfolio of 0.08996 or 8.99%.

VI.   CONCLUSIONAND RECOMMENDATIONS

Portfolios that are formed based on 6 companies that are always consistent are in JII during the research period, namely for the past 10 years and data processing shows that the company's performance basically shows positive results, but when put together in the portfolio produces a negative rate of return which means that the portfolio does not provide the level of profit as expected by investors. Based on the results of the discussion it appears that the level of risk is greater than the level of return expected by investors. Investors should do the formation of a portfolio by choosing a combination outside the six companies that are sampled, so that the expected level of profits expected by investors is reached or in other words the rate of return is greater than the level of risk.

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