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COMPARATIVE ANALYSIS OF MIXED, STOCK, AND FIXED INCOME PORTFOLIOS PERFORMANCE AT THE TIME BULLISH AND BEARISH CONDITIONS IN INDONESIA

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Abstract

This study aims to determine the composition of the assets on the formation of a mixed portfolio, stock, and fixed income using the calculation method applying the Markowitz efficient frontier in bullish and bearish market condition. Furthermore, this study performed a comparative analysis of portfolio performance to determine the best performance between a mixed, stock, and fixed income portfolios when the market is in bullish and bearish condition. The data used in this study include historical data LQ-45 stock price, yield bond index composite, and Certificate of Bank Indonesia during 2010-2014. In this study, verification method with a comparative approach is used where, hypothesis being tested are the performances of the portfolio mix, stock, and fixed income in two states of market which are bullish and bearish is calculated using Sharpe and Jensen index. The results showed that in the bullish state, stock portfolio's performance is greater than the performances of the portfolio mix and fixed income, furthermore the performance of the portfolio mix is greater than the fixed income portfolio's. However, in bearish state, the performance of the portfolio fixed income is greater compared to stocks and mixed portfolios, furthermore mixed portfolio's performance is greater compared to stock portfolio's performance.

Keywords: Portfolio, Markowitz Model, Bullish Market, Bearish Market, Portfolio Performance

INTRODUCTION

The development of capital markets has increased by 12.96% in 2014 seen from the Indonesian stock market capitalization in 2013 is Rp 5,652.70 trillion to Rp 6,385.35 in early November 2014. The increase in 2014 can be said to be significant in 2013 due to capital market development Indonesia only increased by 9.94%. Capital market developments show that the actors on the capital market have realized that trading in securities can provide a return that is good enough for them, and provide a major contribution to the development of the Indonesian economy.

Sometimes confusion arises in selecting the right investments for funding sources of capital market participants because of the uncertainty in domestic capital market& global financial issues and within the country that can provide due to the domestic capital market. Difficulty in choosing between the use of the equity or debt as a source of capital for the company lead to a change in the asset allocation of the portfolio according to market conditions. The whole form of any investment, be it in the form of shares or other assets, contain elements of uncertainty as investors do not know exactly the income to be received from the investment they are doing. In such circumstances, it can be said that investors face the risk on its investments.

Risk can be reduced by diversifying through instilling funds to various types of investments. The main problem is the type of investment which must be selected and the optimal proportion of each investment type. This is necessary because a rational investor would choose the most profitable investments for himself by taking into account the level of risk and return on the investment. So that they would choose an efficient portfolio, ie. the portfolio which provides the highest level of return on the level of certain risk or low risk level at a certain rate of return.

This is the basic concept of the formation of the portfolio proposed by Markowitz in the Modern Portfolio Theory. Modern Portfolio Theory was first proposed by Harry Markowitz in the 1950s. Investors can estimate the income that they expect from their investment (expected return) and how large a deviation of actual results to the results obtained investors had hoped. Markowitz performed establishment of a portfolio diversification by considering negative covariance and correlation coefficients between assets in order to reduce the risk of the portfolio. The main purpose of the calculation results using Modern Portfolio Theory is to establish an optimal portfolio using efficient frontier which is part of the modern portfolio theory. Optimal portfolio is selected portfolio investors from the many options that exist in the portfolio efficiently, which is a portfolio that provides the maximum return with a certain level of risk, or low risk with a certain rate of return.

Trone and Allbrigt opinion that requires the "analysis of the moment" before preparing a portfolio can be interpreted as analyzing market conditions. The Dow Theory in Tandelilin (2010: 261) differentiate two types of market conditions, the market bullish and bearish market. When the market is bullish, almost all stock prices means an increase in the benefit of investors and in reverse, the current bearish market conditions nearly all stock prices decline causing losses for investors. Therefore, to deal with bullish or bearish market can be composed of many different types of portfolios, choose assets with the highest positive return on the respective market conditions. This is because of the possibility of assets that provide high returns at the time of bullish market will be losses when the market is bearish. In such circumstances, the analysis of whether the fund managers need to maintain a portfolio that has been prepared previously or need to develop a new portfolio is needed.

With the phenomenon in market movements that occurred in the Indonesian capital market, there is a necessity for changes in the composition of the asset allocation in the portfolio according to market conditions. Therefore, the focus of discussion in this study is the flexibility that the owned portfolio can add weight to its portfolio in the securities market in accordance with the momentum that is going on, whether it is in a state of bullish or bearish.

In addition, the need for performance measurement in selecting the portfolio which will give maximum yield and take into account the level of risk of its investments, so that investors do not invest in gambling in the event of market movements. The performance of a portfolio should be monitored to maintain optimum performance of the portfolio. Changing market conditions will potentially affect the performance of the portfolio, hence making the authors interested in doing research on the formation of a mix portfolio, stock, and fixed income in Indonesia.

Based on the background research that has been described above, it can be seen that research problems which occurred, are changes in the composition of the portfolio when the market is bullish and bearish. Therefore, the research questions can be presented as follows: (1) Is there a performance difference portfolio mix, stock, and fixed income at the time of bullish conditions? (2) Is there any difference in the performance of the portfolio mix, stock, and fixed income at the time of the bearish conditions?

This study aimed to obtain data on stocks, bonds, and Certificate of Bank Indonesia as a material to make optimal portfolio using efficient frontier. Research objectives to be achieved are the following: (1) Determine the composition of the portfolio of assets on the formation of the mix, stock, and fixed income using efficient frontier in a bullish market conditions; (2) Determine the composition of the portfolio of assets on the formation of the mix, stock, and fixed income using efficient frontier in a bearish market conditions; (3) Find out the portfolio performance

which is better between the portfolio mix, stock, and fixed income at the time of bullish and bearish market conditions.

RESEARCH METHOD

Modern portfolio theory is a concept of diversification in investing. The purpose of this portfolio is to select investment assets that have lowered the risk of the portfolio than the average of the risk taken on each asset individually.

The importance of proper diversification is to reduce the risk of a more optimal portfolio. Therefore, we need to take into account the characteristics of each asset such as the rate of return expectations as well as industrial classification of an asset. Diversification that is more efficient than random diversification is developed by Harry Markowitz. Markowitz Diversification is considering the establishment of a portfolio with a negative covariance and correlation coefficients between assets in order to reduce the risk of the portfolio (Tandelilin, 2010: 116). Markowitz Diversification is famous with the "Do not put all your eggs into one basket" advice which translates as "Do not invest all the funds that we have only on one asset, because if the asset fails, then all the funds that have invested will be lost at once". This model does not include only the expected return, but also incorporate the risk level on every expected return.

In portfolio theory, this is known as the concept of efficient portfolio and optimal portfolio. Efficient portfolio is a portfolio that provides maximum returns for investors with a certain risk level or a portfolio which offers the lowest portfolio at a certain rate of return. While the optimal portfolio is the selected portfolio of many investors' portfolios efficiently.

On the formation of the portfolio, we need to look at the market conditions that exist today. Jones in Tandelilin (2010: 261) defines a bull market is a trend upward movement (upward trend) that occurred in the capital market. This condition is characterized by an increasing trend of stock prices which are able to penetrate the market index value above the previous price, or if there is a decrease over the limit price is not the lowest price that occurred previously. While the bear market is the opposite condition where the tendency of downward movement (downward trend) that occurred in the capital market, it can be seen as if the new price failed to penetrate the upper limit of the previous price or if there is a decrease in prices is able to penetrate the lower limit of the previous price.

After portfolios were formed, portfolio performance evaluation is needed to identify whether a portfolio that has formed was able to provide a level of return that is relatively higher than other portfolio return and in accordance with the risk assumed. Therefore, to see the performance of the portfolio, not only we have to see the return rate, but must pay attention to

other factors such as the level of risk of the portfolio (Tandelilin, 2010: 493). Some performance measures based on risk-adjusted performance index is Sharpe, Treynor, and Jensen.

The use of the efficient frontier is considered effective in making the portfolio. This is evidenced in a study conducted Kaplan (1998) says that the mean variance analysis provides a strong framework for asset allocation and gain acceptance of Practitioners asset allocation. This is consistent with the fact that the technology in the manufacturing of efficient frontier is available in the form of PC software that uses solver application. Unfortunately, the software is complicated to use. However, when used with the knowledge about the behavior of capital markets and the accuracy of the selection of asset classes, such powers can be used as a benefit to gain the right in the practice of making asset allocation.

Asset allocation is indicated by how much weight each asset in the portfolio that generates the optimum composition on the efficient frontier. Research conducted by Maher, et al. (2013) investigated the weight of the efficient frontier in the long term (30 years) in five general index asset classes by adding a class one-by-one to a stock-bond border. Results showed that the bond is the most effective diversifier for stocks, real estate help only at a higher risk level, and international stock and commodity diversification benefits of adding a little over a longer time horizon. Overall, these results highlight the difficulty of using modern portfolio theory to measure the allocation of asset classes using the efficient frontier.

Investors can improve the return with the same risk level to the individual assets by diversifying investments. In addition the rate of return equal to the individual assets, the level of risk may be reduced when the investment portfolio is formed. According Manulang (2012) says that the composition of instruments that generate optimal portfolio, Markowitz portfolio performance showed good results. Therefore, in this study we use efficient frontier in making portfolios.

In addition, the importance of investment diversification to investors' risk reduction obtained evidenced from research conducted by Pasaribu (2013) which says that the risk of the portfolio is formed by using a mean variance analysis was lower than the risk of individual stocks.

The object of research chosen by the authors in the preparation of this thesis is the portfolio of mix, stock, and fixed income. The study was conducted by using data obtained from IDX, Indonesia Bond Pricing Agency and Bank Indonesia in the form of stock price data LQ-45, composite bond index, and Bank Indonesia Certificates.

Determination of the sample done by purposive sampling sample selection by considering certain criteria set by the researchers. The criteria considered in this study are: (1) The companies listed in Indonesia Stock Exchange 2010-2014; (2) The Company is

incorporated in the LQ-45 2010-2014; (3) The sample in this study are shares of companies that constantly arise in the group LQ-45 in Indonesia Stock Exchange during 5 periods: from 2010 until 2014; (4) List of LQ-45 Index Shares Period August 2014 - January 2015 which is the 10 stocks that have the largest capitalization.

Based on the above criteria, the number of samples which qualified is as many as 10 companies listed in Table 1.

Table 1. List of Samples Stock Company LQ-45

No	Name of Company
1	Astra International Tbk
2	Bank Central Asia Tbk
3	Bank Rakyat Indonesia (Persero) Tbk
4	Telekomunikasi Indonesia (Persero) Tbk
5	Bank Mandiri (Persero) Tbk
6	Unilever Indonesia Tbk
7	Perusahaan Gas Negara (Persero) Tbk
8	Gudang Garam Tbk
9	Semen Indonesia (Persero) Tbk
10	Bank Negara Indonesia (Persero) Tbk

For a proxy in the manufacture of fixed income portfolio yield bond index composite used, and Certificate of Bank Indonesia during the period 2010-2014. The selected research period is 5 years, from January 2010 until December 2014 because it is the optimal time period for measuring the state of the market in Indonesia.

The method used to form the optimal portfolio is using efficient frontier with the help of Solver in Microsoft Excel and the measurement of the performance of each portfolio using Sharpe Index and Jensen Index.

Steps in the design of data analysis are as follows: (1) Grouping state JCI into bulish and bearish market conditions; (2) The calculation yields of investment instruments; (3) The calculation of the average yield of the instrument; (4) The calculation of standard deviation instrument (5) The calculation of the correlation coefficient of investment instruments; (6) The calculation of covariance investment instruments; (7) The measurement of expected return and risk of the portfolio; (8) The formation of the efficient frontier curve; (9) Finding the optimal portfolio; (10) Measuring the performance of portfolios.

The research uses four hypotheses to test the optimal portfolio performance to determine which is better between the portfolio mix of stocks and fixed income portfolio during the bullish and bearish conditions. Testing one side (one tail) is used as the alternate hypothesis to state that there is a difference and a statement saying that the performance of the portfolio is higher / lower than anything else.

Hypothesis Statistics on Bullish Market Condition

H_{1a}:K_{ps}>K_{pc} : The performance of stock portfolio is greater than portfolio mix during the bullish conditions

H_{1b}:K_{pc}>K_{pf} : The performance of portfolio mix is greater than fixed income portfolio during the bullish conditions

H_{1c}:K_{ps}>K_{pf} : The performance of stock portfolio is greater than fixed income portfolio during the bullish conditions

Hypothesis Statistics on Bearish Market Condition

H_{2a}:K_{pf}>K_{ps} : The performance of fixed income portfolio is greater than portfolio mix during the bearish conditions

H_{2b}:$K_{pf} > K_{pc}$: The performance of fixed income portfolio is greater than portfolio mix during the bearish conditions

H_{2c}:$K_{pc} > K_{ps}$: Performance portfolio mix is greater than stock portfolio during the bullish conditions

Testing is done by looking at the significant t by using SPSS 22.0 software with some confidence level of 95% with degrees of freedom (df) together with the $(n_1 + n_2 - 2)$

RESULTS AND DISCUSSION

Markowitz data processing method performed as the analysis to explain the steps in preparing a portfolio's performance and conduct hypothesis test analysis that has been prepared using the efficient frontier for each portfolio mix, stock, and fixed income bullish and bearish conditions. With yields that have been determined, the solver function will generate value variance, standard deviation, the composition of each instrument, and the value of the variant. Each point is a combination of standard deviation and expected return. The following table shows the composition of the instrument which is a combination of optimal portfolios in the portfolio mix, stock, and fixed income at the time of bullish and bearish conditions.

Table 2. Optimal Portfolio Composition Instruments

		BULLISH			BEARISH		
		CAMPURAN	SAHAM	FIXED INCOME	CAMPURAN	SAHAM	FIXED INCOME
	KODE PORTOFOLIO	23	17	1	29	30	30
BOBOT	ASII	19.82%	20.55%		0.00%	0.00%	
	BBCA	0.00%	0.00%		0.00%	0.00%	
	BBRI	0.00%	0.00%		0.00%	0.00%	
	TLKM	17.19%	17.77%		0.00%	0.00%	
	BMRI	4.80%	5.03%		0.00%	0.00%	
	UNVR	12.24%	12.34%		27.39%	100.00%	
	PGAS	15.33%	15.56%		0.00%	0.00%	
	GGRM	2.82%	2.72%		0.00%	0.00%	
	SMGR	12.27%	12.53%		0.00%	0.00%	
	BBNI	13.01%	13.49%		0.00%	0.00%	
	ICBX-EY	0.00%		100%	57.09%		100%
	SBI (9 BLN)	2.52%		0%	15.52%		0%
MEAN RETURN		4.292%	4.408%	-0.656%	1.304%	1.206%	1.609%
STDEV		3.022%	3.112%	4.538%	4.652%	8.413%	7.075%
SLOPE		1.27608	1.27667	-0.24059	0.18676	0.09154	0.16579

Once the portfolio has been established, the performance of the portfolio should be evaluated. Results from this study obtained portfolio performance of mix, stock, and fixed income bullish and bearish conditions using an index Sharpe and Jensen.

Before performing hypothesis testing, it is necessary to test for normality using the Kolmogorov-Smirnov test. By using the Kolmogorov-Smirnov test, only the fixed income portfolio performance data is calculated by the index Jensen who has a normal distribution indicated by the Kolmogorov-Smirnov test of significance greater than 0.05.Based on test data normality test results carried out differences with the non-parametric statistical approach using Man Whitney Test.

Differences in performance on stocks portfolio compared to mix portfolio during the bullish state (Hypothesis 1a)

Sharpe index resulting value of Z = -0.444 smaller than the Z table = 1.645 or in the reception area H_0. This shows that the null hypothesis (H_0) can not be rejected so that it can be concluded that the performance of stock portfolio is less than or equal to mix portfolio during the bullish conditions when calculated with the Sharpe index.

At Jensen index value of Z = 3.194 greater than Ztabel = 1.645 or in the area reject H_0. This shows that the null hypothesis (H_0) is rejected, which means the performance of stocks portfolio greater than mix portfolio at the time of bullish condition index when calculated by Jensen.

Differences in performance on mix portfolio compared to fixed income portfolio during the bullish state (Hypothesis 1b)

Sharpe index and Jensen resulting value of Z = 5.241 and 5.448are greater than Z table = 1.645 or in the rejection of H_0. This shows that the null hypothesis (H_0) is rejected which means the performance of mix portfolio is greater than fixed income portfolio during the bullish conditions calculated by the Sharpe index and Jensen index.

Differences in performance on stocks portfolio compared to fixed income portfolio during the bullish state (Hypothesis 1c)

Sharpe index and Jensen resulting value of Z = 6.653 and 6.653 greater Z table = 1.645 or in the area reject H0. This shows that the null hypothesis (H0) is rejected, which means that the performance of stocks portfolio is greater than fixed income portfolio during the bullish conditions when calculated with the Sharpe index and Jensen index.

Differences in performance on fixed income portfolio compared to stocks portfolio during the bearish state (Hypothesis 2a)

At Sharpe index generated value Z = -3.947 smaller than the Z table = 1.645, or in the reception area H0. This shows that the null hypothesis (H0) can not be rejected, which means the performance of fixed income portfolio is less than or equal to stocks portfolio during the bullish condition index calculated by Sharpe.

While the Jensen index generated value Z = 6.653 greater than Z table = 1.645, or are in the area reject H0. This shows that the null hypothesis (H0) is rejected, which means the performance of a portfolio of fixed income is greater than stocks portfolio during the bullish conditions when calculated with the Jensen index.

Differences in performance on fixed income portfolio compared to mix portfolio during the bearish state (Hypothesis 2b)

At Sharpe index generated value Z = -6.306 less than the Z table = 1.645, or in the reception area H0. This shows that the null hypothesis (H0) can not be rejected which means the performance of fixed income portfolio is less than or equal to mix portfolio at the time of the bearish condition index when calculated with Sharpe.

While the Jensen index resulting value of Z = 4.517 is greater than Z table = 1.645, or in the area reject H0. This shows that the null hypothesis (H0) is rejected which means the performance of fixed income portfolio is greater than mix portfolio at the time of the bearish conditions.

Differences in performance on mix portfolio compared to stocks portfolio during the bearish state (Hypothesis 2c)

At Jensen index generated value Z = 1.538 less than the Z table = 1.645, or in the reception area H0. This shows that the null hypothesis (H0) can not be rejected which means that the performance of mix portfolio is less than or equal to stocks portfolio at the time of the bearish condition index when calculated with Jensen.

While the Sharpe index resulting value of Z = 4.236 is greater than Z table = 1.645, or in the area reject H0. This shows that the null hypothesis (H0) is rejected which means that the performance of mix portfolio is greater than stocks portfolio at the time of the bearish conditions.

CONCLUSIONS

The use of the efficient frontier is considered effective in making portfolio. This is evidenced in the research conducted by Kaplan (1998) who said that the mean variance analysis provides a strong framework for asset allocation and gain the acceptance of the practitioner's asset allocation. This is consistent with the fact that the technology in the manufacture of efficient frontier is available in the form of PC software that uses solver application. Unfortunately, the use of this software is tricky to use. However, when used with the knowledge about the behavior of the capital markets and the accuracy of the selection of asset classes, such powers can be used as a benefit to gain the right in the practice of making asset allocation.

Investors can improve the return with the same risk level to the individual assets by diversifying investments. In addition to the rate of return equal to the individual assets, the level of risk may be reduced when the investment portfolio is formed. According to Manulang (2012), the composition of instruments that generate optimal portfolio, Markowitz portfolio performance shows good results. Therefore, at this research, researchers use efficient frontier portfolios in the manufacture.

In addition, the importance of investment diversification for risk reduction obtained investor evidenced by research conducted by Pasaribu (2013) who said that the risk of the portfolio is formed by using a mean variance analysis that was lower than the risk of individual stocks.

From the research conducted, it was found that the bullish state, a portfolio mix that has the best performance using the Sharpe Index is a portfolio of 23 with a value of 1.2761 while the Jensen Index is a portfolio of 30 to the value of the index amounted to 3.3518%. On the stock portfolio that has the best performance using the Sharpe Index is a portfolio of 17 with a score of 1.2767, while using Jensen Index is a portfolio of 30 with a value of 3.3518%. In the fixed income portfolio which has the best performance using the Sharpe Index is a portfolio of one

with a score of -0.2406, while using the Jensen Index is a portfolio of 30 with a value of -0.0913%. It can be concluded that the portfolio has a better performance due to the stock portfolio during the bullish state of a purchase transaction so high that the stock prices rise that will affect the performance of a portfolio of stocks (Tandelilin, 2010).

While in the bearish situation, a portfolio mix that has the best performance using the Sharpe index is a portfolio of 29 with an index value of 0.1868, while using Jensen index is portfolio 30 with an index value of 2.7183%. In the portfolio of stocks that have the best performance by using Sharpe and Jensen index is a portfolio of 30 with an index value of 0.0915 and 3.2680%. In the fixed income portfolio which has the best performance using the Sharpe Index is a portfolio of 30 with a score of 0.1658, while the index is a portfolio Jensen 30 with an index value of 2.7183%. This is according to research conducted by Wibowo (2005) who indicated that if the analysis turns bearish outlook, the asset allocation in stocks may need to be reduced and more focused on a more conservative asset classes such as fixed income securities and money market instruments.

In bullish conditions, it was found that the results of the stock portfolio performance is significantly greater than mix portfolio in bullish condition index calculated by Jensen. Later, it was discovered that the results of the performance of mix portfolio is significantly greater than fixed income portfolio calculated based on the Sharpe index and Jensen index. So the performance of stocks portfolio is found to have greater performance significantly compared to fixed income which is calculated based on the Sharpe index and Jensen. The results are consistent with the hypothesis in this study and in accordance with the results of research related to the condition of bullish and bearish ie. research conducted Bange (2000) states that when bullish, investor will increase its equity assets while at bearish, investors will reduce its equity assets. Therefore, when bullish, stock portfolio performance will be greater than the performance of mix portfolio and fixed income.

On bearish conditions, it was found that the results of the performance fixed income portfolio is significantly greater than the performance of stocks portfolio when calculated with the Jensen index. In addition, the performance of fixed income portfolio also showed greater performance compared to mix portfolio calculated by the Jensen index. However, the performance of mix portfolio improved and significantly is greater than the stocks portfolio using Sharpe index.

This is due to the measurement of the three methods is sensitive to a negative value so less appropriate as a measurement of performance on the current bearish state so it can be used as one of the weaknesses in this study.

If adjusted to the high risk high return theory, the stock portfolio has a greater risk in the amount of 3,869% compared to mix portfolio that is equal to 2,027%, so the loss is larger than mix portfolio. However, at the time of the performance calculation using an index that takes into account Sharpe and Jensen between return and risk, resulting stocks portfolio performance is better to be seen from the Sharpe index which has a negative value smaller than mix portfolio, although the risk of greater investor received the views of value standard deviation and beta greater in stocks. In fact, if we compare it with the same level of return on both portfolios, investors should choose a smaller risk that is mix portfolio. It also occurs in Jensen index, found the results difficult to interpret, namely on bearish conditions, stock portfolios have better performance with a value of 0791% compared to the portfolio mix, but it's expected to loss if stocks portfolio on capital market line turns out greater than the actual loss. While in mix portfolio, the expected loss is smaller than the actual loss, but produces a negative performance that is equal to -0343%.

Ponko (2007) stated that in the circumstances bearish when the portfolio experienced loss as indicated by the excess return that is lower than the risk free rate, resulting in a higher risk would produce a good performance with value higher ratio as indicated by a negative value of the smallest, resulting the inability to create consistency in comparing the performance of the portfolio (miscalculate). Therefore, the investors or academics need to be cautious in the interpretation of the calculation of the performance during bearish conditions.

RECOMMENDATIONS

Based on conclusions of the research, some suggestions are given as follows:

1. From the calculation, investors can place their funds in a portfolio that contains stocks during bullish state and place their funds in fixed income portfolios that contain a combination of the current bearish. This is because it has been proven to deliver better performance among other portfolios.
2. Investors need to perform the calculation of the performance of its portfolio as an evaluation whether the portfolio owned still provide benefits or not giving the expected profit. When the perceived performance of the portfolio does not give the desired results, the investors need to form a portfolio according to changing market conditions (bullish and bearish) that will generate returns expected by investors. In forming the portfolio, the need to perform the analysis of market conditions is going on in advance, so that investors can make decisions in forming a new portfolio or simply change the composition of each instrument in the existing portfolio to any market changes.

3. For the next study on the same topic, it is suggested that adding more variety of instruments such as options and futures, so the research results are more accurate and can provide a variety of options for investors in formulating the portfolio. In addition, researchers can conduct research with Single Index Model or Constant Correlation Model method and make comparisons which method is better in the preparation of the portfolio.

SCOPE FOR FURTHER RESEARCH

For further studies, academics need to analyze whether the bullish and bearish movement is determined by the behavior of investors who are included in behavioral finance to minimize the potential loss or risk being borne by investors in the formation of the portfolio. In addition, the calculation of the performance at the time of the circumstances need to be considered bearish because the interpretation would be difficult when the performance is worth the negative if the risk increases. This explains why many variations of the ratio of portfolio performance calculation introduced.

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