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OPTIMAL PORTFOLIO STRATEGY OF MUTUAL FUNDS FROM SCHRODERS INVESTMENT INDONESIA FOR THE PERIOD OF 2013-2015

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Abstract. This thesis aims to generate the strategy to achieve the optimum portfolio of mutual funds from Schroders Investment Indonesia for the period of 2013-2015 refers to Markowitz's portfolio theory. As the data, author uses 5 mutual funds from Schroders Investment Indonesia, Jakarta Composite Index from 2013-2015, and also Bank Indonesia rate from 2013-2015. The author will construct 3 portfolio strategies; there are Maximum Return Portfolio, Minimum Standard Deviation Portfolio, and Maximum Sharpe Ratio Portfolio. The author uses Microsoft Excel Solver add-ins in creating the portfolio and weight of each mutual fund in the portfolio. The portfolio's performance is analyzed compare to the market using Sharpe ratio. Based on the calculation among 3 portfolios, the portfolio that gives the best performance is Maximum Sharpe Ratio Portfolio theory. The portfolio generates 0.029% of average daily return and 0.447% of average daily standard deviation. This research generates the strategy of optimum portfolio mutual funds from Schroders Investment Indonesia based on Markowitz's portfolio theory.

Keywords: Markowitz Portfolio Theory, Mutual Fund, Optimum Portfolio, Schroders Investment Indonesia, Sharpe Ratio

Introduction

In 2015, the global financial crisis happened among all countries in the world. The Jakarta Composite Index in the end of 2015 showed that it closed at 4.593 points, decreased 12.13% from last year (5,227 points). Jakarta Composite Index reflects all stock price movement in Bursa Efek Indonesia. When the Jakarta Composite Index decreased, it means the stock prices in Bursa Efek Indonesia mostly tend to fall. Besides, financial literacy among Indonesian people is still low. A survey in 2014 held by *Otoritas Jasa Keuangan* gives result that there is insufficient literacy among over 75 percent of Indonesians when it comes to financial products and services. So, although stocks seem very profitable, it actually also can be a threat for the investor who does not have enough skills in managing the investment. Financial literacy can be defined as ability to understand money and finances and have skills to apply the knowledge in making effective financial management decisions. Financial literacy is a combination of awareness, knowledge, skill, attitude and behaviour necessary to make sound financial decisions and ultimately achieve individual financial wellbeing (International Network on Financial Education (INFE), 2011). While knowing how to make sound money decision is a core skill in today's world. Currently, there are people who although they are lack of time, knowledge, skills, and experience but they really want to invest in capital market especially in financial instruments. Catching that opportunity, there are institutions that offer these people to handle their investments. These institutions offer the financial instrument investment in form of mutual fund or *reksadana*. Mutual fund is a portfolio contains of bonds, stocks, or mixed and organized by an investment manager. So, mutual fund is an investment alternative in financial instrument.

Investing in mutual funds also offers many advantages rather than buying stocks. The money that is invested in mutual funds will be managed by professional investment manager who is already certified, it means the investor the investors who are still lack of knowledge, skills, and time in managing their investment, the professional investment manager will help them to manage the investments which will also save their time and energy. Mutual fund is accessible, which it can be easily accessed in almost every bank. Besides that, mutual fund is very liquid, so the money that has been invested in mutual funds can be converted into cash easily. With a low initial investment, mutual fund is also affordable for the investors.

So, mutual fund is a suitable alternative for investors who are lack of skills, knowledges, and time in organizing their investment in financial instrument. Many institutions offer mutual fund and one of them is Schroders Investment Management Indonesia. Based on the official website of Schroders Investment Indonesia, Schroders is a leading independent international asset management and wealth management group, with more than 200 years of experience in financial service and with IDR 6541.8 trillion (\$446.5 billion) under management as at 30/09/2015.

Mostly, people will invest in a type of mutual fund based on their risk profile. For example, if the risk profile is low (risk averse), people will always tend to take low risk mutual fund based on the suggestion. Investor also tends to think that mutual fund return is lower than stocks. In fact, investors can actually combine many types of mutual funds. Mutual funds can be turned into a portfolio to reduce the risk and increase the return, so it is competitive compare to the market.

This research has a purpose to calculate and analyze the performance of Schroders Investment Management Indonesia mutual funds and construct an optimal portfolio based on the goal of Markowitz's modern portfolio theory, since the goal of the portfolio is to maximize the return and also minimize the risk. The portfolio can be a consideration for people who will invest, especially in Schroders Indonesia, if it shows good performance compare to the market.

Mutual Fund

Mutual fund is a media used to collect funds from investors to be invested in portfolio securities by the investment manager (Undang–Undang No. 8 Tahun 1995 Pasal 1 Ayat 27). Mutual fund is managed by people who has license generated by *Otoritas Jasa Keuangan*. It means, mutual fund is a suitable alternative for investors who are lack of skills, knowledges, and time in organizing their investment in financial instrument. The measurement of mutual fund is Net Asset Value (NAV). NAV represents the price per share of the fund. Similarly to how stocks have a stock price, mutual funds have a NAV. Net asset value equals the market value of assets held by a fund minus the liabilities of the fund divided by the shares outstanding (Bodie, Kane, & Marcus, 2014).

There are many types of mutual funds in the market. Below are the types of mutual funds in Indonesia:

a. Money Market Funds

Bodie, Kane, & Marcus (2014) said that these funds invest in money market securities such as commercial paper, repurchase agreement, or certificate of deposit. Money market funds invest in money market securities such as short-term debt with a maturity of less than one year. Money market mutual funds are mutual funds that have the lowest risk but only provide

a limited return. This mutual fund also aims to provide a high level of liquidity to meet cash needs in a short time.

b. Fixed Income Funds

Fixed income funds invest at least 80% of its assets in the form of bonds. This mutual fund has a slightly higher risk and also higher return than money market mutual funds, but the risk is still lower compared to stock fund. Fixed income funds tend to have a stable rate of return. Fixed income fund is usually also called as bond fund.

c. Mixed or Balanced Funds

These balanced funds hold both equities and fixed-income securities in relatively stable proportions (Bodie, Kane, & Marcus, 2014). Mixed funds invest with a varying composition of the portfolio investments in the form of debts, stocks and bonds. Mixed fund is more flexible in running the investment. This type of mutual fund has a moderate level of risk with a return relatively higher compared to fixed income funds.

d. Stock Funds

Stock funds invest at least 80% of its assets in the form of equity or stocks. Since it is dominated by stocks which have tendency to fluctuate, the risk is also higher than three other funds before, yet potentially gives higher return. This type of fund is also called as equity fund.

Risk and Return

Return is defined as the gain or loss percentage from an investment in a particular period. It involves any adjustment in value and interest or dividends or other such cash flow which the investor receives from the investment. The formulas for measuring rates of returns are below:

1. Arithmetic Average Return

It is important to accumulate returns into one overall return when the financial assets experienced both cash inflow and outflow over longer period of time, so it would be easier to compare and understand. The arithmetic average return is earned in average over multiple periods.

$$r=rac{V_f-V_i}{V_i}$$

- *r* = arithmetic average return
- *V_f* = beginning price of asset
- *V_i* = ending price of asset
- 2. Geometric Average Return

Geometric average is average compound return per period over multiple periods. The geometric will be less than the arithmetic average unless all the returns are equal. The geometric average is useful in describing the actual historical investment experience.

$$ar{r}_{ ext{geometric}} = \sqrt[n]{\prod_{i=1}^n (1+r_i)} - 1$$

R_i = return for outcome i

Risk is basically a measure of uncertainty. Hendrawan (2013) states that, "Risk is the possible difference between the actual return and the expected return". Low level of uncertainty (low risk) or safer investment is usually associated with low expected returns, while high level of uncertainty (high risk) is associated with high expected returns. So, risk and return tend to have tradeoff relationship. There are two categories of risk: systematic risk and nonsystematic risk. According to Bodie, Kane, & Marcus (2014), "Market risk is the risk that remains even after extensive diversification, risk that is attributable to marketwide risk sources. In contrast, the risk that can be eliminated by diversification is nonsystematic risk."

Standard Deviation and Variance

Based on Investopedia.com, standard deviation is a measure of dispersion of a set of data from its mean. The standard deviation of the rate of return is a measure of risk (Bodie, Kane, & Marcus, 2014). Standard deviation is used to know the fluctuation or volatility. The higher standard deviation, the higher fluctuation or volatility of the investment is. It is defined as the square root of variance (Bodie, Kane, & Marcus, 2014).

$$\sigma = \sqrt{\frac{\sum_{i=1}^{n} (x_i - \overline{x})^2}{n-1}}$$

 σ = standard deviation

X_i = return of asset X for outcome i

 \overline{X} = average return of asset X

n = total number of outcomes

Covariance and Correlation

Covariance measures the changes between 2 variables. A negative covariance indicates that the 2 variables move in opposite direction. The formula of covariance is given below:

$$\operatorname{Cov}(\mathbf{x}, \mathbf{y}) = \frac{\Sigma(\mathbf{X} - \overline{\mathbf{X}})(\mathbf{Y} - \overline{\mathbf{Y}})}{n - 1}$$

Cov(x,y) = covariance between asset X and asset Y

= return of asset X

Х

n

 \overline{X} = average return of asset X

Y = return of asset Y

 \overline{Y} = average return of asset Y

= total number of outcome

Correlation is used to normalize the variance so the movement between 2 variables is easier to see. Standard deviation as the denominator is used to normalize it. The formula of correlation is given below:

$$\rho_{XY} = \frac{\operatorname{cov}(X,Y)}{\sigma_X \sigma_Y}$$

 ρ_{xy} = correlation between asset X and asset Y

Cov(X,Y)= covariance of asset X and asset Y σ_x = standard deviation of asset X

 σ_y = standard deviation of asset Y

C. Portfolio Theory

Portfolio is a collection of investment which is a combination of various assets, can include financial assets securities and real assets. Portfolio is a collection of investment instruments which are set up to meet investment targets (Ang, 1997). In the other words, the portfolio is part of a money investment and risk strategy by diversifying investment by selecting multiple assets with a certain risk level desired. According to Sharpe (1971), "Investors should do at least diversification when constructing a portfolio because it can reduce risk. More precisely: because it can reduce non-market risk. When one security does worse than expected, another is likely to do better than expected. And, generally, the more securities in a portfolio, the greater the likelihood that sufficient good fortune will appear to balance off the bad fortune". When stocks are randomly selected and combined in equal proportions into a portfolio, the risk of the portfolio declines as the number of different stocks in it increases (Statman, 1987). Portfolio theory places great emphasis on the search for the optimal combination of investments that provide a level of profit or maximum rates of return at particular level of risk.

D. Markowitz's Modern Portfolio Theory

Markowitz's Modern Portfolio Theory is a theory in Finance which developed by Harry Markowitz. Essentiality of the Markowitz portfolio theory is the problem of optimal portfolio selection. The

Markowitz approach included portfolio formation by considering the expected rate of return and risk of individual stocks measured as standard deviation, and their interrelationship as measured by correlation. The diversification plays a key role in the modern portfolio theory (Levišauskaite, 2010). A portfolio can be considered as efficient portfolio if there is no other portfolio that gives higher expected return with the same or lower risk. Markowitz (1952) expresses that "The portfolio with maximum expected return is not necessarily the one with minimum variance. There is a rate at which the investor can gain expected return by taking on variance, or reduce variance by giving up expected return." Based on this theory, each weight of the assets in a portfolio is important in determining the optimum portfolio with the balance between risk and return.

E. Sharpe Ratio

The Sharpe Ratio (referred to reward-to-volatility ratio) follows Bill Sharpe's work on Capital Asses Pricing Model (CAPM). In this research, this ratio will calculate the portfolio on the basis of both rate of return and diversifications. Thus, the measure is more appropriate for optimum portfolios, because it includes the risk of the portfolio.

Sharpe Ratio =
$$\frac{R_p - R_{rf}}{\sigma_p}$$

 r_p = expected portfolio's return r_{rf} = risk free rate σ_p = portfolio's standard deviation

Methods

This research aims to construct an optimal portfolio based on Markowitz's modern portfolio of Schroders Investment Management Indonesia mutual funds that can compete with the market. Microsoft Excel Solver add-ins will be used in deciding the weight of each mutual fund to construct the optimum portfolio. There are several calculation processes in analyzing the data. The author uses the application of Microsoft Excel to calculate the risk and return of each mutual fund and the optimum portfolio. Analysis tool in Microsoft Excel is used to determine the optimum portfolio based on Markowitz's modern portfolio. Microsoft Excel Solver add-ins generates the weight of each mutual fund of the optimum portfolio is. To analyze the performance of the optimum portfolio compare to the market, author calculates the Sharpe ratio.

Results and Discussions

The author takes the historical daily Net Asset Value (NAV) of mutual funds from 2013-2015 as the data for the calculation in this thesis. The mutual funds' data is taken from the official website of Schroders Investment Indonesia. The author only selects 5 of Schroders Investment Indonesia mutual funds that receive awards from 2015-2016.

Table 4.1 Type of motoarionas			
Mutual Fund	Type of Mutual Fund		
Schroders Dana Likuid	Money Market Fund		
Schroders Dana Kombinasi	Mixed Fund		
Schroders Dana Prestasi	Stock Fund		
Schroders Dana Istimewa	Stock Fund		
Schroders Dana Prestasi Plus	Stock Fund		

Table 4.1 Type of mutual funds

Source: Schroders Investment Indonesia

The IHSG (Indeks Harga Saham Gabungan) or JCI (Jakarta Composite Index) is used as the performance comparison for the Schroders Investment Indonesia mutual funds since JCI reflects all stock price movement in Bursa Efek Indonesia. The data of JCI from 2013-2015 is taken from Yahoo Finance. Besides, the author will also use the Bank Indonesia rate from 2013-2015 as the risk-free rate in calculating the ratio for analyzing the portfolio performance later on.

Risk and Return of Each Mutual Fund & JCI

The author would like to calculate the performance of each mutual fund based on the data obtained. The first step is to calculate the return of the mutual funds. The formula that is used is the arithmetic average return with NAV of the mutual funds as the data. The table below shows the average daily return of each mutual fund and JCl in 3 years:

	2015	2014	2013	Average Return 2013-2015
Schroders Dana Likuid	0.02374%	0.02576 %	0.01678%	0.02209%
Schroders Dana Kombinasi	0.02763%	0.05206 %	0.00607%	0.02859%
Schroders Dana Prestasi	-0.01844%	0.11091 %	0.01600%	0.03615%
Schroders Dana Istimewa	-0.03261%	0.10583 %	0.00622%	0.02648%
Schroders Dana Prestasi Plus	-0.00941%	0.10330 %	-0.00291%	0.03033%
Jakarta Composite Index	-0.04686%	0.09575 %	-0.00705%	0.01395%

Table /. 🤉 Average d	aily return of mutual funds & IC	I .
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Source: The author's own work

From the table above, it can be seen that apparently, all average daily returns of the mutual funds are higher than JCI. It is a proof that mutual funds is great investment alternative compared to stocks. There are many negative returns happen in 2015 which from author analysis were caused by the global financial crisis that happened in all countries. As stated by Sukirno (2015), in 2015 the world face a common challenge from the Greek debt crisis, the uncertainty of the Fed's rate normalization schedule, up to currency wars following China's decision to devalue the Yuan. This caused Indonesia Rupiah even plunged to 14,280 against the U.S. dollar in 2015, which was the lowest level since July 1998 during the Asian financial crisis. It was also compounded by the low rate of export and foreign investment had not risen rapidly. After, author calculates the standard deviation shows the spreading of daily return from the average and the volatility of the mutual fund. Below is table of standard deviation from the mutual funds:

	2015	2014	2013	Average Standard Deviation 2013- 2015
Schroders Dana Likuid	0.02800%	0.02511%	0.03331%	0.02923%
Schroders Dana Kombinasi	0.11585%	0.32517%	0.55145%	0.37586%
Schroders Dana Prestasi	1.17223%	1.02239%	1.41045%	1.21213%
Schroders Dana Istimewa	1.17070%	1.02587%	1.47295%	1.23730%
Schroders Dana Prestasi Plus	1.19299%	1.02858%	1.50379%	1.25703%
Jakarta Composite Index	1.09654%	0.83523%	1.37491%	1.12448%

Source: The author's own work

The table shows that the standard deviations increase as the risk type of mutual funds also increase. The lowest standard deviation is hold by Schroders Dana Likuid as fixed income mutual fund, while Schroders Dana Prestasi Plus has highest standard deviation as stock mutual fund.

Constructing the Portfolios

Calculating the variance-covariance matrix is needed to know the relationship between the mutual funds and also will be used in creating the portfolio with the Solver.

Variance-Covariance Matrix					
	Dana Likuid	Dana Kombinasi	Dana Prestasi	Dana Istimewa	Dana Prestasi Plus
Dana Likuid	8.54265E-08	1.86973E-07	1.08102E-07	1.00482E-07	1.175E-07
Dana Kombinasi	1.86973E-07	1.41273E-05	3.18065E-05	3.28437E-05	3.251E-05
Dana Prestasi	1.08102E-07	3.18065E-05	0.000146925	0.000149454	0.0001507
Dana Istimewa	1.00482E-07	3.28437E-05	0.000149454	0.000153091	0.0001532
Dana Prestasi Plus	1.17455E-07	3.2512E-05	0.000150665	0.000153184	0.000158

Table 4.4 Variance-Covariance between mutual funds

Source: The author's own work

In order to calculate the portfolio, author use the Microsoft Excel with the support of Solver add-ins. This is the display of Solver add-ins used:

To: Max 	MinValue Of:	0	
By Changing Variable Cells:			
Subject to the Constraints:			
		^	Add
		[<u>C</u> hange
		[<u>D</u> elete
			<u>R</u> eset All
		~	Load/Save
Make Unconstrained Variab	les Non-Negative		
Select a Solving Method:	GRG Nonlinear	~	Options
Solving Method			
Select the GRG Nonlinear eng engine for linear Solver Proble	ine for Solver Problems that a ms, and select the Evolution	are smooth nonlinear. S ary engine for Solver p	Select the LP Simplex roblems that are

Figure 4.1 Solver add-ins in Microsoft Excel

There are 4 sections of the Solver that can be changed. First is the Set Objective cell. In this solver, the objectives are 'return', 'standard deviation', and 'Sharpe ratio'. Second is whether the objective cell aims to be maximized, minimized, or also determined in a certain value. Fourth is the constraints cell, which is a limit for the calculation. For example, the total weight of the mutual funds for the portfolio is 100%. The standard deviation of the portfolio is equal to or less than X. In this thesis, author will create 3 portfolios, there are Maximum

Return Portfolio, Minimum Standard Deviation Portfolio, and Maximum Sharpe Ratio Portfolio.

1. Constructing the Maximum Return Portfolio

Using the solver, author set the objective cell with the return of the portfolio which would like to be maximized. The changing variable cell is filled by the weight of each mutual fund, with a sum weight of 100% as the constraint of the portfolio. Other constraint, the portfolio standard deviation should not less than equal the average standard deviation of all mutual funds. Below is the portfolio generated by the Solver:

	Maximum Return Portfolio		
Dana Likuid	0.000%		
Dana Kombinasi	37.850%		
Dana Prestasi	62.150%		
Dana Istimewa	0.000%		
Dana Prestasi Plus	0.000%		
Total weight	100.000%		
Expected return	0.03326%		
Standard deviation	0.83994%		
Sharpe ratio	0.012714395		

Source: The author's own work

The portfolio generates 0.03326% of daily return with the 0.83994% standard deviation. The portfolio contains of 37.850% of Dana Likuid and 62.150% of Dana Prestasi.

2. Constructing the Minimum Standard Deviation Portfolio

The objective of this portfolio is to minimize the standard deviation. The variable that would be changed is the weight of the portfolio with total weight of 100% as the constraint. Besides, the return should be more than equal to average return of the mutual funds. The portfolio generated by the Solver is shown below:

·	Minimum Standard Deviation Portfolio
Dana Likuid	73.949%
Dana Kombinasi	14.246%
Dana Prestasi	0.000%
Dana Istimewa	8.251%
Dana Prestasi Plus	3.554%
Total weight	100.000%
Expected return	0.024%
Standard deviation	0.187%
Sharpe ratio	0.005745779

Table 4.6 Minimum Standard Deviation Portfolio

Source: The author's own work

The portfolio has 0.024% of daily return with 0.187% of standard deviation. By the small standard deviation which shows the small risk, the return also get smaller. This portfolio contains of 73.949% of Dana Likuid, 14.246 of Dana Kombinasi, 8.251% of Dana Istimewa, and 3.554% of Dana Prestasi Plus.

3. Constructing the Maximum Sharpe Ratio Portfolio

This portfolio aims to maximize the Sharpe Ratio which considers the tradeoff balance between return and risk as described by standard deviation, which is also the aim of Markowitz Portfolio Theory. The variable that would be changed is still the weight of each mutual fund. The constraint is the total weight of mutual funds combined must be 100%. Below is the table of Maximum Sharpe Ratio Portfolio generated by the Solver:

Table 4.7 Maximum Sharpe Ratio Portfolio			
	Maximum Sharpe Ratio Portfolio		
Dana Likuid	16.721%		
Dana Kombinasi	64.073%		
Dana Prestasi	19.206%		
Dana Istimewa	0.000%		
Dana Prestasi Plus	0.000%		
Total weight	100.000%		
Expected return	0.029%		
Standard deviation	0.447%		
Sharpe ratio	0.014199806		

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Source: The author's own work

The Maximum Sharpe Ratio Portfolio generates 0.029% of daily return which means it is in middle between the Maximum Return Portfolio's return and Minimum Standard Deviation Portfolio's return. It also happen the same with the standard deviation with number of 0.447%. The portfolio consists of 16.721% of Dana Likuid, 64.073% of Dana Kombinasi, and 19.206% of Dana Prestasi. Calculating the Average Risk Free Rate for the Period of 2013-2015

The calculation in Sharpe ratio requires a risk free rate. To this end the author has used the average of the monthly Bank Indonesia rate for the period of 2013-2015 which is 0.0243810% as shown in

Appendix B.

Analyzing The Performance of Portfolios Compare With JCI

Sharpe Ratio

The Sharpe ratio measures the ratio of investment's return to its standard deviation. Portfolio which has higher Sharpe ratio means the portfolio has better performance

		Standard	
2013 to 2015	Return	Deviation	Sharpe Ratio
Max Return Portfolio	0.033%	0.840%	0.012714395
Min Standard Deviation			
Portfolio	0.024%	0.187%	0.005745779
Max Sharpe Ratio Portfolio	0.029%	0.447%	0.014199806
JCI	0.014%	1.124%	-0.007704076

Table 4.8 The Portfolios and JCI Based on Sharpe Ratio in Tabular Form

Source: The author's own work



Figure 4.2 Sharpe Ratio Chart

JCI has the lowest Sharpe ratio at -0.007704076. The Maximum Sharpe Ratio Portfolio generates the highest Sharpe ratio of 0.014199806. Then, it is followed by the Maximum Return Portfolio with a Sharpe ratio of 0.012714395 and last is the Minimum Standard Deviation Portfolio with 0.005745779 of Sharpe ratio. This means that the Maximum Sharpe Ratio Portfolio gives the best ratio of return and standard deviation which fulfills the objective of Markowitz's Portfolio Theory.

Conclusions

Based on the risk and return calculation on 5 mutual funds from Schroders Investment Indonesia and also Jakarta Composite Index, the 3 years average daily return of Schroders Investment Indonesia's mutual funds are higher than the daily return of the market. It can be a proof that mutual fund is one great choice in investing. Balance fund and fixed income fund have lower standard deviation compare to the market. In most of time the investor only invest in specific mutual fund based on their risk profile, but in fact they can make a portfolio of all mutual fund types. The portfolio also can lower the risk and maximize return. Markowitz's modern portfolio theory is used to achieve the optimum portfolio. The author constructed 3 portfolios, there are the Maximum Return Portfolio, the Minimum Standard Deviation Portfolio, and the Maximum Sharpe Ratio Portfolio.

The Maximum Return Portfolio consists of 37.850% of Dana Likuid and 62.150% of Dana Prestasi. This portfolio gives highest average daily return by 0.03326% and 0.83994% of average daily standard deviation. While, the Minimum Standard Deviation Portfolio provides lowest average daily standard deviation, which consists of 73.949% of Dana Likuid, 14.246 of Dana Kombinasi, 8.251% of Dana Istimewa, and 3.554% of Dana Prestasi Plus. This portfolio offers 0.024% average daily return and 0.187% standard deviation.

The last one is Maximum Sharpe Ratio Portfolio. This portfolio generates maximum Sharpe ratio that can be achieved by 5 mutual funds. This portfolio consists of 16.721% of Dana Likuid, 64.073% of Dana Kombinasi, and 19.206% of Dana Prestasi. The Maximum Sharpe Ratio Portfolio offers 0.029% average daily return and 0.447% average daily standard deviation.

Since Markowitz's Modern Portfolio Theory aims to achieve the optimum return at any given level of risk, so the most optimum portfolio from Schroders Investment Indonesia's mutual fund is the Maximum Sharpe Ratio Portfolio. The Maximum Sharpe Ratio Portfolio also achieves higher Sharpe ratio compared to Jakarta Composite Index.

For the investors especially who are still lack of knowledge and skills in capital market and lack of time in managing the investment, mutual fund is a great alternative for investing in financial instrument. It is proven that mutual fund is profitable and also a secure investment. The author

would like to recommend Schroders Investment Indonesia as a channel to invest because of its great credibility. It is also recommended to diversify the investment by making mutual fund portfolio. Based on the calculation that author has done, the investor could create the mutual fund portfolio especially Maximum Sharpe Ratio Portfolio which offers 0.029% average daily return and 0.447% average daily standard deviation. This reduces the nonsystematic risk and optimizes the return, thereby fulfilling the Markowitz's Portfolio Theory. The Maximum Sharpe Ratio Portfolio also achieves higher Sharpe ratio compared to Jakarta Composite Index. The Maximum Sharpe Ratio Portfolio Portfolio consists of 16.721% of Dana Likuid, 64.073% of Dana Kombinasi, and 19.206% of Dana Prestasi.

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