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Evaluate The Performance Of The Stock Portfolio By Oil Palm Companies Using Sharpe, Treynor And Jensen Index

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Abstract
This research is intended to evaluate the performance of palm oil company stock portfolio using the Sharpe, Treynor and Jensen index methods. Stock performance of palm oil companies needs to be evaluated because they have experienced price fluctuations in times of turmoil in world oil prices. The population of this study are all stocks of the palm oil companies listed on the Indonesia Stock Exchange in the period July 2012 to June 2016. While the sample is the stocks that are consistently active in the Indonesian Stock Exchange during the study period. The formation of a stock portfolio is done by the Single Index Model. Stock portfolios formed in the period before the crisis were PT. Astra Agro Lestari Tbk. (AALI) and PT. Tunas Baru Lampung, Tbk. (TBLA). Whereas in the period after the decline in world oil prices all stocks of palm oil companies have a negative ERB value so that the stock portfolio cannot be formed. The results of this study indicate that the performance of stocks of plantation companies in the period before the decline in world oil prices have Sharpe index, Treynor index and Jensen index higher than the period after the decline in world oil prices. Thus it can be concluded that the stock portfolio of palm oil companies in the period before the decline in world oil prices has a better performance than the stock portfolio in the period after the decline in world oil prices. .

Keywords*: stock portfolio, single index model, sharpe index, treynor index, jensen index.*

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I. Preliminary

The world oil price crisis which began in mid year of 2014 had a profound effect on global business development, including on listed companies listed on the IDX. The world crude oil price which reached US $ 110 per barrel in January 2014 decreased dramatically to a very low level below US $ 30 per barrel. In January 2016 the price of West Texas Intermediate (WTI) oil futures fell 42 cents to US $ 29 per barrel and the price of Brent oil was at the level of 28.69 per barrel. This pressure on world oil prices can provide positive and negative sentiments towards a number of stock sectors in the Indonesian capital market, especially issuers that export commodity products such as coal, crude palm oil (CPO) and rubber. The stock of companies in the mining and plantation sectors are under intense pressure due to falling commodity prices (http://www.bisnis.liputan6.com/19januari2016). Stocks of companies engaged in the agricultural sector including the plantation subsector during the crisis period showed a tendency to decrease in the index value significantly, as was the case in other stocks. Agricultural sector stock index at the end of 2015 decreased by 631.77 points or 26.87% compared to the end of 2014. While the mining sector decreased by 557.93 points or by 40.79% in the same period (http: // www.idx.co.id/IDX-Annually-2015).

Fluctuating stock value movements pose a big risk for investors who invest their capital in the stock market. Investors must be strive to reduce risk in their investment activities. One way that can be taken is to invest in various types of stocks by forming a portfolio. Portfolio analysis deals with investors' desire to have a group of securities and obtain the results of each of these securities. Through this analysis an efficient collection of portfolios will be obtained as the basis for optimal portfolio formation (Elton and Gruber, 1995).

Stock price index performance analysis can be used as a reference in investing. The stock price index is a summary of the simultaneous and complex influences of various influential variables, especially regarding a country's economic, social, and political events. Thus the stock price index can be used as a barometer of a country's economic health and as a basis for statistical analysis of current market conditions (Halim, 2015). The rate of return of an investment activity in the capital market as indicated by the performance of the investment instruments it uses. Investors can use measurement tools in accordance with certain methods to calculate the performance of an investment portfolio such as stocks

Portfolio performance measurement methods can be calculated with risk adjusted performance, which contains several variables, namely the Sharpe index, the Treynor index and the Jensen index.

Previous research on the analysis of agricultural sector stock portfolios, including oil palm plantations, has been carried out among others by: (1) Juwendah and Hidayat, F. (2017) who performed an analysis of the performance of sharia shares in the agricultural sector using the Sharpe, Treynor and Jensen models on the Stock Exchange Indonesia 2012 - 2016 period; (2) Sugi Journalist, P., et al (2013) analyze the agribusiness company's stock portfolio on the Indonesia Stock Exchange for the period 2009 - 2012; (3) Artha, D.R. (2014) analyzed the fundamental, technical and macroeconomic factors of agricultural sector stock prices in the February - April 2013 period; (4) Indrawati, K.N. (2014) analyzed fundamental factors and their effects on share prices in agricultural sector companies listed on the Indonesia Stock Exchange (BEI) for the period 2009 - 2013, and (5) Kiky, K. (2015) who analyzed agricultural sector stocks listed on the stock exchange IDX in the period 2005-29911 using the CAPM model.

The method of forming stock portfolios is widely used because it is considered quite simple, practical and accurate. the application is the Single Index Model (MIT). in its use the MIT method has been widely tested and analyzed by researchers. Australian researchers McAleer and Veiga (2006) analyzed the S & P500 (USA), FTSE100 (UK), CAC40 (France), SMI (Switzerland) stock indexes. Stock portfolio analysis with a single index model was also carried out by Indian researchers, among others, conducted by Nalini (2014) and Mary and Rathika (2015). In Indonesia, research that used MIT in the formation of a stock portfolio was carried out by Dahlan et al. (2013), Fitriaty, et al. (2014), Adiningrum, et al. (2016) and Nugroho, M., et al (2017). The results of this study indicate that MIT is one of the right methods to be used in the formation of optimal stock portfolios.

The performance of portfolio can be measured using the Sharpe Index and Treynor Index. The Sharpe Index is calculated by dividing excess return by the variability of its portfolio returns, while the Treynor index is calculated by dividing excess return by its portfolio volatility, where volatility indicates a systematic risk (beta) of shares. (Jogiyanto, 2010). Another model that can be used to measure stock portfolio performance is the Jensen Index. This model is based on the Securirty Market Line (SML) concept which is a line that connects market portfolios with risk-free investment opportunities. If there is a deviation, which at the same level of risk, the profit of a portfolio is different from the profit in the SML, then the difference is called the Jensen index. If the actual profit of a portfolio is higher, then the Jensen index will be positive. If the opposite happens, the Jensen index will be negative (Halim, 2015).

Based on the description above, researchers are interested in conducting research on evaluating the performance of palm oil company stock portfolios using the Sharpe, Treynor and Jensen index methods during the period before and after the global oil price crisis.

RESEARCH PURPOSES

Based on the description of the above background, the purpose of this research are as follows:

1. To analyze the level of portfolio return and portfolio risk of oil palm companies before and after the decline in world oil prices.
2. To measure the performance of palm oil company stock portfolios before and after the decline in world oil prices based on Sharpe, Treynor and Jensen indices.

II. Research Methods

The research includes all plans that describe in detail the steps needed in research to achieve the stated goals. This research is intended to evaluate the performance of the palm oil company's stock portfolio in two periods, namely Period I (before the decline in world oil prices) and Period II (after the decline in world oil prices) based on the Single Index method and at the same time compare the performance of the two stock portfolios

The population in this study is all shares of oil palm companies listed on the Indonesia Stock Exchange during Period I in July 2012 - June 2014 and Period II in July 2014 - June 2016. The population of the plantation sub-sector shares is 16 issuers. The sample selection is done by purposive sampling, which is data selection based on certain criteria or judgment sampling (Cooper and Emory, 1995). The sample criteria in this study are company stocks that have consistently carried out transactions on the IDX during the 2012-2016 research period. The data used in this research are secondary data sourced from official reports from the Indonesia Stock Exchange (IDX) and Bank Indonesia (BI). The main information used is a monthly report from the IDX regarding the stocks prices of each palm oil company and the Composite Stock Price Index (CSPI) which is downloaded through the website: www.idx.co.id. Other main information used in this study is data about the risk-free interest rates, namely the interest rates of Bank Indonesia Certificates (SBI) from Bank Indonesia which can be accessed through the website: www.bi.go.id.

Analysis of data are done in stages starting with the establishment of a stock portfolio with Single Index Model through the following steps:

1. Calculates the return realization of each stock.

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

Ri = return of stock to i;
Pt = stock price period t;
P(t-1) = stock price period t-1

The return calculation of stock use monthly stock price data, namely the stock closing price at the end of each month.

2. Calculate the Expected Return of each stock.

$$\mathbf{R_i E()} = \frac{\sum \mathbf{R_i}}{\mathbf{N}}$$

E(Ri) = expected return of stock to i;
N = number of analysis units

3. Calculate market return and expected market return

$$R_m = \frac{IHSG_t - IHSG_{t-1}}{IHSG_{t-1}}$$

The expected market return calculation uses the arithmatic mean method, which is total market return during t years of analysis divided by the number of N units of analysis (monthly).

$$E(R_m) = \frac{\sum R_m}{N}$$

IHSGt = IHSG In periode t;
HSGt-1 = IHSG in periode t-1;
E(Rm) = *expected market return* ;
N = Total Units Analyzed

4. Calculates Alpha (αi) and Beta (βi) of each stock

Calculation of alpha and beta coefficients of each stock is used to calculate the total risk. Beta coefficient shows the return volatility of each stock to the market return. If volatility is measured by covariance, where the covariance of the i stock return with market return is σ_{im} and the market return variant is σ_m^2, then the beta coefficient value is

$$\beta i = \sigma_{im} / (\sigma_m{}^2) \quad \text{or} \quad \beta_i = \frac{\sum_{t=1}^{n}(R_{it} - ER_{it})(R_{mt} - ER_{mt})}{\sum_{t=1}^{n}(R_{mt} - ER_{mt})}$$

Alpha coefficient shows the magnitude of changes in individual stock returns caused by changes in market returns.

$$\alpha_i = E(R_i) - \beta_i . E(R_m)$$

5. Calculating the risk-free asset return (Rf)

The return of risk-free assets generally refers to the interest rate of Bank Indonesia Certificates (SBI) monthly during the analysis period. The value of Rf is calculated from the average SBI rate during the analysis period.

6. Determine stock rating based on ERB

$$ERB = \frac{E(R_i) - R_f}{\beta_i}$$

ERB = excess return to beta;
$E(R_i)$ = expected return of stock to - i;
Rf = risk -free return;
β_i = beta of stock to – i

The rating of stocks is based on the ERB value from the largest to the smallest.

7. Determining the Cut Off Point (C*)

The value of C* is determined based on the cut off rate (Ci) value calculated from the values of Ai and Bi by using the following equation (Gruber, 2003: 185).

$$A_i = \frac{[E(R_i) - R_f].\beta_i}{\sigma_{ei}^2} \quad ; \quad Bi = \frac{\beta_i^2}{\sigma_{ei}^2} \quad ; \quad C_i = \frac{\sigma_m^2 \sum_{j=1}^{i} A_j}{1 + \sigma_m^2 \sum_{j=1}^{i} B_j}$$

Furthermore by substituting the values of Ai and Bi into the Ci equation, the Ci value can be determined using the following equation:

$$C_i = \frac{\sigma_m^2 x \sum_{i=1}^{n} \frac{(R_i - R_f)\, x\, \beta_i}{\sigma_{ei}^2}}{1 + \sigma_m^2 \sum_{i=1}^{n} \frac{\beta_i^2}{\sigma_{ei}^2}}$$

C_i = cut off rate of stock to- i;
σ_m^2 = market return variance;
σ_{ei}^2 = variance random error;
R_i = stock return to-i; β_i = beta of stock to-i

The cut off point value (C*) is the C_i value where the last ERB value is still greater than the C_i value. The portfolio stock candidate is a stock that has an ERB value greater than or equal to the value of ERB at point C*.

8. Determine the optimal proportion.

$$w_i = \frac{z_i}{\sum_{j=1}^{k} z_j} \quad ; \quad z_i = \frac{\beta_i}{\sigma_{ei}^2}(ERB_i - C^*)$$

w_i = proportion for each selected stock- i.
z_i = relative investment for each stock.

9. Calculating Alpha portfolio (αp) and Beta portfolio (βp)

Alpha portfolios are the average of the alpha of each stock forming a portfolio.

$$(\alpha_p) = \sum_{i=1}^{n} w_i.\alpha_i$$

Portfolio beta is the average of the beta of each stock forming a portfolio

$$(\beta_p) = \sum_{i=1}^{n} w_i.\beta_i$$

10. Calculating Expected Return Portfolio and Portfolio Risk

$$E(R_p) = \alpha_p + \beta_p.E(R_m)$$

Portfolio risk is calculated based on the standard deviation or variant of the securities return single in it. Portfolio variants can be calculated using the following formula:

$$\sigma p^2 = \beta p^2.\sigma m^2 + [\Sigma\, w_i.\sigma ei]^2$$

Performance Assessment of stock portfolio are done by calculating the value of Treynor index, Sharpe index and Jensen index as follows :

1. Calculates Treynor Index.

$$T_{pi} = \frac{ER_{pi} - ER_f}{\beta_p}$$

Tpi = Treynor Portfolio Index;
ER_{pi} = Average portfolio return
ER_f = Average risk-free return;
B_{pi} = Beta portfolio (Halim, 2015: 70).

2. Calculate Sharpe Index.

$$Spi = \frac{ER_{pi} - ER_f}{SD_{pi}}$$

Spi = Sharpe Portfolio Index;
ER_{pi} = Average portfolio return;
ER_f = Average risk-free return;
SD_{pi} = Staandar Portfolio Deviation

3. Calculate Jensen Index.

$$J_{pi} = (ER_{pi} - ER_f) - (ER_m - ER_f)\, \beta_{pi}$$

J_{pi} = Jensen Portfolio Index;

ER_{pi} = Average portfolio return;
ER_m = Average market return;
ER_f = Average risk-free

III. Research Result And Discussion

Stock Data of Palm Oil Subsector

The stocks of Palm Oil companies as samples in this research stocks which are continuously listed in the Indonesia Stock Exchange during the period of research between July 2012 and June 2016. The names of Palm Oil companies and their stock codes are as follows: PT. Astra Agro Lestari, Tbk. (AALI), PT. Eagle High Palm Oil, Tbk. (BWPT), PT. Gasco Palm Oil, Tbk.(GZCO), PT. Java Agra Watie, Tbk.(JAVA)PT. PP London Sumatera Indonesia, Tbk.(LSIP), PT. Salim Ivomas Pratama, Tbk. (SIMP), PT. Sampoerna Agro, Tbk. (SGRO), PT. Sinar Mas Agroresources and Technology, Tbk. (SMAR),PT. Tunas Baru Lampung, Tbk. (TBLA), PT. Bakrie Sumatera Palm Oil, Tbk. (UNSP)

Composite Stock Price Index (CSPI)

CSPI index data obtained from the list of composite stock prices officially published by the Indonesia Stock Exchange as contained in IDX Annually Statistic (website: www.idx.co.id). The data of composite stock price index for Period I (before the decline of world oil prices) is taken July 2012 until June 2014, while for Period II (after the decline of world oil prices) is taken July 2014 until June 2016. The data is stock closing price at the end of each month. From the composite stock price list, the market rate (Rm) is calculated on a monthly basis to determine the expected market return rate (ERm). The expected of market return (ERm) formed for Period I is 0.00788 with standard deviation (σ) of 0.03905 and variant (σ2) of 0.00153. While the value of ERm formed for Period II is -0,00000244 with standard deviation (σ) equal to 0,03560 and variance (σ2) equal to 0,00127.

Certificate of Bank Indonesia (SBI)

The data of SBI interest rate is obtained from the official website of Bank Indonesia which can be accessed on the website: www.bi.go.id. The available data is the annual interest rate that must be converted first into the monthly interest rate to be in accordance with the monthly stock analysis unit. The average value of the SBI interest rate is the expected return value for risk free assets (Rf). In the period I the average SBI interest rate was 5.808% per annum or 0.484% per month and in the Period II it was recorded at 6.540% per annum or 0.545% per month.

Indvidual Return and Risk of Stock

The determination of individual stock return rates is based on the change of closing price of each stock at the end of month. Furthermore, the value of monthly stock return is used to calculate the expected return and risk of individual stocks. Based on the calculation of stock return rate, it is found that the stock of the Palm Oil companies in the Period I that have positive expected return value are stock of AALI, BWPT, JAVA, LSIP, SMAR and TBLA, and UNSP. Stocks with positive expected return value is stock candidate to be ported in the portfolio. The value of expected return and risk of the stocks are AALI 1,512% (1,342%), TBLA 0,899% (0,337%), LSIP 0,762% (3,146%), SMAR 0,513% (1,123%), JAWA 0,368% (0,152%) and BWPT 0.264% (2.241%).

In the period II there is only one Palm Oil company with positive value of expected return i.e. SGRO stock with value of expected return and risk of 0.126% (1.058%). While the other stocks of AALI, BWPT, GZCO, JAVA, LSIP, SIMP, SMAR TBLA and UNSP have negative value of expected return. Thus only SGRO stock considered to be candidates in formating an optimal stock portfolio. When compared to Period I it appears that the expected return of the stocks of the Palm Oil cpmpanies in Period II has lower value. This means that in general the value of the stocks of Palm Oil companies in the period before the decline of world oil prices is better than stocks in the period after the decline of world oil prices.

Beta, Alpha and Variance of Residual Error

The alpha (αi) and beta (βi) coefficient of each stock are used to calculate the total risk. The beta coefficient shows the return volatility of each stock on the market return. Whereas the alpha coefficient shows the magnitude of individual stock return changes caused by the condition of the issuer company itself, without affected by changes of market returns. The calculation of alpha and beta coefficient, and variance of residual error of Palm Oil stocks in the period I and period II shows that almost all stocks have beta coefficient value > 1, except stock of JAVA in the period I. It means almost all stocks are aggressive stocks, which means an increase in market return of X% will lead to an increase in stock returns over X%. In Period I, stocks with the highest beta coefficient value occur in LSIP stock, followed by BWPT and AALI stocks with a beta coefficient

of 4.542; 3,833 and 2,967. While in the period II there are three stocks that have the largest beta coefficient i.e. stocks of BWPT, GZCO and LSIP with beta coeffisien of 6,790; 4,153 and 3,826. The average beta coefficient value in the period II is higher than the stocks in the period I, which means the stock is more aggressive, but it also means higher risk because it is more volatile to market changes.

The alpha coefficients of all stocks studied in both period I and period II have negative values. This means the systemic conditions of all stocks are almost equal in both periods. The value of alpha coefficient shows the stock return components associated with the issuer's own stock conditions and is not affected by market changes.

The variance of residual error represents a non-systemic risk that exists only in the issuer company itself and is not influenced by market changes. This risk can be eliminated by diversifying stocks. In Period I, the largest variance of residual error occurs in LSIP shares of 0.0519 and the smallest in TBLA shares of 0.0065. While in Period II, the largest variance of residual error occurred in BWPT stock of 0.0646 and the smallest in JAVA stock of 0.0065. In the analysis of optimal stock portfolio formation, the variance of residual error is used to calculate the Ci value as the basis for determining the cut off point (C*).

Establishment of Optimal Portfolio

The establishment of an optimal portfolio is based on the calculation of Excess Return to Beta (ERB) value of each stock, Ci value and cut off point (C*). ERB describes the excess stock return on the risk-free asset return (SBI interest) per unit of risk (β). The higher the value of ERB, the higher the chance of becoming a candidate for optimal stock portfolio. The result of ERB calculation show that in the period I there are 4 stocks have positive ERB value, i.e. stock of AALI, LSIP, SMAR, TBLA and 6 stocks have negative ERB value, i.e. stock of BWPT, GZCO, JAVA, SIMP, SGRO, UNSP. While in period II all stocks have negative ERB value which means there is no stock considered to be candidate in forming stock portfolio. In the period I the highest ERB value was achieved by AALI stock of 0.00484 and the lowest ERB obtained by SMAR stock amounted to 0.00011.

The comparation of ERB value rating of each stock and the calculation of the Ci value is used to establish the cut off point (C*) which will be the limitation of stock entered in the portfolio. The cut off point value (C*) is the last Ci value where the ERB is still higher than the Ci value. In the period I C* value is 0.00147. Stocks used for optimal portfolio are stocks that have ERB value greater than or equal to the value of ERB at point C*. Furthermore, stocks with positive ERB value are compared with the value of ERB at point C*. The result in the period I there are two stocks that can be used in optimal portfolio, namely stock of AALI (PT Astra Agro Lestari, Tbk) and TBLA (PT Tunas Baru Lampung, Tbk). While in the period II can not be formed optimal portfolio because none of stocks have a positive ERB value.

Analysis of Stock Portfolio Proportion

After the stocks for portfolio candidates are determined, then the proportion of funds for each stock must be calculated in order to obtain optimal portfolio return and portfolio risk. The amount of proportion is determined according to the weighted scale of each stock based on the value of beta, variance of residual error, ERB value and cut off point. The proportion of optimal portfolio stocks in period I is presented in table below.

No.	Period I	Proportion	Period II	Proportion
1	AALI stock	36,68%	-	-
2	TBLA stock	63,42%	-	-

The table above shows the proportion of each share to obtain from the optimal portfolio. In the period I the proportion of stocks was 36.68% AALI stock (PT Astra Agro Lestari, Tbk) and 63.42% TBLA stock (PT Tunas Baru Lampung, Tbk).

Analysis of Return and Risk Portfolio

The coefficient of alpha portfolio and beta portfolio, as well as portfolio return and portfolio returns of period I and period II are presented in the table below.

No.	Parameter	Period I		Period II
1	Alpha Portfolio (α_p)	-0,00474		-
2	Beta Portfolio (β_p)	2,02766		-
3	Return Portfolio (ER_p)	0,01123	>	-
4	Risk Portfolio (σ_p^2)	0,02038		-

The table above shows that the return rate of stock portfolio expectation in the period I is 0,01123 or 1,123% with risk level 0,02038 or 2,038%. While the return rate of stock portfolio expectations in the period II can not be calculated because no optimal stock portfolio is formed.

Comparison of Optimal Portfolio Performance

Optimal portfolio performance analysis was performed using Sharpe index, Treynor index and Jensen index presented in the following table.

No.	Indicator	Period I		Period II
1	Sharpe Index	0,04478	>	-
2	Treynor Index	0,00315	>	-
3	Jensen Index	0,00024	>	-

Sharpe's Index

Sharpe index is used to measure the performance of the stock price index return compared to the total risk / standard deviation. Based on the above table, in period I the Sharpe Index value of 0.04478 is positive, meaning that the return in the period is above the return of SBI / SBIS compared to its standard deviation. Whereas in the second period the Sharpe index could not be assessed because a stock portfolio was not formed.

Treynor's Index

Treynor Index is used to measure the performance of the stock price index return level compared with its systematic risk. Systematic risk is risk that cannot be diversified. Based on the table above in period I, the Treynor index value of 0.00315 is positive, meaning that the level of stock portfolio returns is above the SBI / SBIS return compared to its portfolio beta. Whereas in period II the Treynor index cannot be valued because a stock portfolio is not formed.

Jensen's Index

Jensen Index is used to measure the performance of stock prices by calculating the expected return on investment based on returns that can be obtained in the market. In period I, the Jensen index value of 0,00024 is positive, meaning that the rate of return is higher than the market index. Whereas in period II the Jensen index cannot be valued because a stock portfolio is not formed.

Based on the index values shown in the above table, it can be concluded that the overall performance of the period I stock portfolio is better than the performance of the period II stock portfolio. This can be seen from the comparison of the value of its performance index, where in Period I shares Sharpe index, Treynor index and Jensen index have positive values where each value is 0.04478; 0.00315 and 0.00024. Whereas shares in Period II cannot be assessed on the performance of their stock portfolios because there are no eligible stocks used to form a portfolio. Seeing the results of the analysis of the performance of stock portfolios in period I which are all positive can be interpreted that the actual shares of oil palm companies in the period before the world oil price showed good and prospective performance. But this situation changed drastically in period II, where after the decline in world oil prices the performance of palm oil company stocks grew negatively.

This is due in that period the price of crude palm oil (CPO) commodities decreased very significantly, so that the income of palm oil companies also dropped significantly. The impact of the decline in the performance of these companies was immediately apparent in the share prices of oil palm plantation companies on the IDX which had experienced a continual decline so that the expected return of these shares became negative.

IV. Conclusions

Based on the objectives and research results, it can be concluded as follows :

1. Single Index Model proven effective to select stocks to form optimal stock portfolio. Portfolio of stocks formed in the period before the decline of world oil prices is the stock of PT. Astra Agro Lestari, Tbk (AALI) and PT. Tunas Baru Lampung, Tbk (TBLA) with the proportion for each stock of 36.68% and 63.42%. While in the period after the decline of world oil prices, all stocks experienced negative growth so that the optimal stock portfolio can not be formed.
2. The return rate of the portfolio stocks of the Palm Oil companies in the period before the decline of world oil price was 1,123% with the risk level 2,038%. That portfolio return is much better than in the period after the decline of world oil prices because in the period after the decline of world oil prices all stocks of Palm Oil companies have a negative return value.

3. Based on the Sharpe, Treynor and Jensen indices of the stock portfolio, it appears that the performance of the palm oil company's stock portfolio in the period before the decline in world oil prices is also better than the stock performance in the period after the decline in world oil prices.

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