

STOCK PORTFOLIO PERFORMANCE OF PRIMARY, SECONDARY AND TERTIARY SECTOR IN IDX (COMPARATIVE STUDY)

Cokorda Gede Govinda Partha 

Economic and Business Faculty, Udayana University, Bali, Indonesia

cokdeovin@gmail.com

Ida Bagus Panji Sedana

Economic and Business Faculty, Udayana University, Bali, Indonesia

Abstract

Investors expect returns from investments that have been made and have rights in ownership of the company without having to be directly involved in it. This study aims to build an optimal portfolio using a single index model and assess the performance of the stock portfolio of each sector in the Indonesia Stock Exchange using the Treynor index. This study studies and searches for the level of risk along with the return of shares in each sector and also makes the most optimal portfolio in each sector. This study compares the performance of the portfolio of primary sector stocks with the secondary sector, the primary sector with the tertiary sector, and the secondary sector with the tertiary sector in the Indonesia Stock Exchange. The study was conducted in April 2018 with the period of the object under study being the last 1 year, from the beginning of January 2017 to the end of December 2017. The scope of this research is stocks listed on the Indonesia Stock Exchange during the beginning to the end of 2017 grouped by sector and compared to each other. There is a significant difference in the performance of the primary sector stock portfolio with the secondary sector and the secondary sector with the tertiary sector on the IDX, but there is no significant difference in the performance of the primary sector stock portfolio with the tertiary sector on the IDX. This is estimated because returns and risks from the primary sector and tertiary sector tend to be the same. This study can provide empirical evidence regarding the differences in the performance of stock portfolios in each sector on the IDX. The practical implication of this research is to assess the performance of the stock portfolio and advise investors in terms of purchasing the right stocks in each sector on the IDX.

Keywords: Optimal Portfolio, Treynor Index, Stock, IDX

INTRODUCTION

Individuals who are experienced in the world of economics and business today are no stranger to investment activities, namely, delaying consumption of this period to be included in productive assets for a certain period of time (Hartono, 2014). Investment activity is an activity of placing funds on one or more assets for a certain period in the hope of obtaining income / profits or an increase in the value of the initial investment (capital) which aims to maximize returns in the future (Tandelilin, 2010). Investment can be interpreted as an activity of placing funds on one or more assets over a certain period in the hope of earning income and / or increasing the value of investments (Wiksuana, 2017).

Investments can be made in the capital market, for example in the form of stocks, bonds, warrants, options, etc. (Murniti and Artini, 2014). Investors will expect returns from investments that have been made and have rights in company ownership without having to be directly involved in it, on the contrary the company obtains alternative sources of funding without waiting for the availability of funds from the company's operations (Meythi and Mathilda, 2012). Investments in financial assets are starting to be in demand by the community and investors because they are more liquid, which means that it does not require a long time to make a financial investment into cash. This liquid property is obtained because the fluctuations in the value of financial assets are quite sharp because, in a short period of time, the value of these assets can change which makes investors interested in these assets (Tandelilin, 2010). One of the most popular investments by investors (investors) is stocks. Stock is a paper clearly stated nominal value, company name, and followed by rights and obligations explained to each shareholder (Fahmi, 2012)

In the investment world, there is a strong relationship between risk and return, that is, if the risk is high, the return (profit) will also be high, and vice versa if the return is low, the risk will also be low (Fahmi, 2012). Investment in the form of shares is an investment that offers a higher level of profit and risk than other investments (Meythi and Mathilda, 2012). Investors in their investment activities will try to minimize the various risks faced, both short and long term (Irham and Yovi, 2011: 150). In the capital market, rational investors will invest their funds by choosing efficient stocks, that is, stocks that provide maximum return on certain risks or certain returns on minimal risk (Zubir, 2011: 20). Markowitz in Jogiyanto (2013: 285) explained that to minimize risk and still get a substantial return, it can be done by forming a portfolio.

Portfolios are a group of securities that have certain returns and risks, where rational investors will choose portfolios that provide maximum returns with certain risks (Jorion, 2002). Investors in forming optimal portfolios can conduct portfolio analysis, namely, a field of science devoted to reviewing how investors can reduce risk to a minimum in investing (Irham and Yovi,

2011: 2). Optimal portfolios are selected efficient portfolios and can provide maximum benefits to investors. Portfolios are built on the number of investments, investment objectives (such as growth, security and liquidity), time period (long or short term), and risk tolerance level (risk-prone, risk-averse or risk-neutral) (Lal and Rao, 2016) Portfolios can be said to be efficient compared to other portfolios if they provide the highest returns expected at the same risk, or provide the smallest risk with the same expected returns (Halim, 2015: 41).

The best way to analyze the market in order to get good returns is through portfolio construction (Mohith, et al. 2017). Portfolio construction is useful in risk diversification rather than holding one share (Das and Agarwal, 2014). Now a rational investor always chooses an efficient portfolio that matches the highest expected rate of return for a certain level of risk (Giri, 2016). The optimal portfolio gives investors better clarity to invest the right proportion of money in the right stocks and help investors to get maximum results with minimal risk (Mohith, et al. 2017).

Portfolio Management consists of all processes involved in creating and maintaining investment portfolios (Poornima and Remesh, 2016). According to Markowitz, only one possible combination has the maximum rate of return for each level of risk and the combination is called efficient. The theory itself is based on fundamental assumptions that say that investors have a reluctance to risk and act rationally.

Investors in determining investment decisions will usually carry out two stages of analysis, namely the analysis of securities and portfolio management. The securities analysis phase requires investors to analyze and evaluate each of the securities. The stages in securities valuation usually begin by reviewing the state of the economy and industry where the company being analyzed is located. Another analysis is portfolio management or management of a set of assets as a unit (Lestari and Candraningrat, 2014).

Investors will choose a portfolio that can provide satisfaction through risk and return. Every investor invests his funds in the portfolio to get maximum results with lower risk (Poornima and Remesh 2016). Decisions about the selection of securities carried out by investors will have risks from those securities that must be faced. Investing is not just one type of asset, but diversifying into various investments can be one way to minimize risk and maximize returns. Investors can use several ways to form portfolios including the Markowitz Model and the Single Index Model (Lestari and Candraningrat, 2014).

Markowitz (1952) explains that, portfolio risk is influenced by the weighted average of each individual asset risk and the covariance between assets that make up the portfolio. Markowitz's Portfolio Theory is based on the mean and variance approaches, where the mean is a measure of the level of return and variance is a measurement of the level of risk.

Markowitz's Portfolio Theory is also referred to as the mean-Variant Model, which emphasizes efforts to maximize the expectation of return (mean) and minimize uncertainty / risk (variance) to choose and compile an optimal portfolio. According to Hartono (2003), the advantages of the analysis of the Single Index Model are more simplified in calculating and paying attention to market changes, while in Markowitz's Model analysis only focuses on securities or on unsystematic risks and does not pay attention to the correlation between securities and market changes.

The Sharpe Single Index model provides solutions for individual investors and institutional investors in building optimal portfolios (Mohith, et al. 2017). This model can be used to simplify calculations in the Markowitz model by providing input parameters needed in the Markowitz model (Wiksuana, 2017). The Single Index model uses fewer variables than the Markowitz model which makes it easy for investors to calculate (Mohith, et al. 2017). Unlike the Markowitz model, this simple model states that, by comparing returns to individual securities with a single index such as 'Market Index', the relationships that exist between each pair of securities can be determined indirectly (Nandan and Srivastava, 2017). Portfolio performance using the measurement of risk-adjusted returns (portfolios that have included risks and returns into them) can be measured by the Sharpe index, Treynor index, and Jensen index (Tandelilin, 2010). Based on research from Pardosi and Wijayanto (2015), there is no significant difference between returns and risks in the formation of optimal portfolios using the Markowitz method, so this encourages research to use the Treynor method.

The stock market is very volatile and investment in the stock market depends on investor knowledge and reaction to various market factors such as GDP, inflation, exchange rate fluctuations, monetary policy, government policies, etc. (Das and Agarwal, 2014). The optimal portfolio selection approach takes into account the risk factors and returns of each sector compared to the risks and returns associated with the market (Lal and Rao, 2016).

This study aims to build an optimal portfolio using the Treynor Index model and consider the shares of each sector in the Indonesia Stock Exchange. This study studies and searches for the level of risk along with the return of shares in each sector and also makes the most optimal portfolio both overall and in each sector. This research is expected to help investors to build optimal portfolios and diversify risks effectively.

LITERATURE REVIEW

Investment in essence is the placement of a number of funds at this time in the hope of gaining profits in the future. Investments can also be made in the capital market, for example in the form of stocks, bonds, warrants, options, etc. (Murniti and Artini, 2014). Investment activities by

investors to a company have a purpose, namely to look for income or return on investment (return) in the form of dividends or in the form of capital gains (Dewi and Sedana, 2014).

Return is the result obtained from investment. Return can be in the form of a realized return that has occurred or an expected return that has not yet occurred but which is expected to occur in the future. While portfolio risk consists of systematic and non-systematic risks (Sulistiyorini, 2009).

Portfolios can be interpreted as investments in various financial instruments that can be traded on the Stock Exchange and Money Market with the aim of spreading the source of return and possible risks (Sulistiyorini, 2009). The portfolio formation discusses the problem of how to allocate investment so that it can bring the most profits but with the smallest risk (Wijayanto and Oktavian, 2015).

Securities return calculations in a single index model involve two main components, namely (1) the return component associated with the uniqueness of the company denoted by alpha, and (2) the return component associated with the market, represented by beta. Based on the theory of capital markets, several measures of portfolio performance have included the return and risk factors in the calculation are Sharpe, Treynor, and Jensen ratios (Tandelilin, 2010; 493-502).

HYPOTHESES

This study uses secondary data which is the closing price of shares listed on the IDX. The stock data is analyzed using a single index model to obtain an optimal portfolio for each month in each sector. The portfolio is analyzed using the Treynor index so that it gets twelve data for each sector. These sectors include the primary sector, secondary sector and tertiary sector. Based on the values of the Treynor index analysis, then the analysis is performed using the t test by comparing the primary sector with the secondary sector, the primary sector with the tertiary sector, and the secondary sector with the tertiary sector. The results obtained are concluded so that they can know the comparison of portfolio performance across sectors. So the hypothesis of this study is:

H1 : There is a significant difference in performance in the portfolio of primary sector stocks with the secondary sector on the IDX.

H2 : There is a significant difference in the performance of the primary sector stock portfolio with the tertiary sector on the IDX.

H3 : There is a significant difference in the performance of the secondary sector stock portfolio with the tertiary sector on the IDX

RESEARCH METHODS

This study compares the use of the Treynor index model to form an optimal stock portfolio from the primary, secondary, and tertiary sectors on the Indonesia Stock Exchange. The study was conducted in April 2018 with the period of the object being examined in the last 1 year from the beginning of January 2017 to the end December 2017. The scope of this research is that stocks listed on the Indonesia Stock Exchange during the beginning to the end of 2017 are grouped by sector and compared to each other. This research selecting particular data time series beginning of January 2017 to the end of December 2017 because in 2017 the movement of the mighty Composite Stock Price Index throughout 2017, because for the first time broke the figure of 6,000. In addition, in 2017, stock prices are not affected by strong fundamental issues such as presidential changes. Beginning in 2017, stock prices tend to increase in the first two weeks of January or can be called the January effect, and at the end of December 2017 there was an increase in stock purchases in the last two weeks in December 2017 or it could be called Santa Claus Rally

The population in this study are all shares listed on the Indonesia Stock Exchange in 2017. The total population of companies listed on the IDX is 555 companies as of the end of 2017. This study uses a purposive sampling technique which means choosing stocks that enter the required criteria. The conditions for choosing samples are:

- a) Registered on the Indonesia Stock Exchange from the beginning to the end of 2017 without ever leaving.
- b) Always report the reports on changes in stock prices.
- c) Common stock type.

In this study using quantitative analysis of available stock price data, this study uses the Treynor Index Model and t Test to compare the performance of shares per sector. Optimal portfolio performance analysis is carried out for each of the primary, secondary and tertiary sectors. The technical analysis used in determining the performance of the stock portfolio with the Single Index and measuring performance using the Treynor index in this study are as follows (Hartono, 2010):

- 1) Calculating the level of stock returns and *expected return*

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

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

- 2) Calculate the index of market returns, alpha and beta

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

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

$$\beta_i = \frac{\sigma_{im}}{\sigma_m^2}$$

3) Calculate stock risk (R_i) and market risk (R_m)

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

$$standar\ deviasi\ (\sigma) = \sqrt{Var(R_i)}$$

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

$$standar\ deviasi\ (\sigma) = \sqrt{Var(R_m)}$$

4) Residual or risk variants are not systematic

$$\sigma_i^2 = \beta_i^2 * \sigma_m^2 + \sigma_{ei}^2$$

5) Calculate *excess return to beta*

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

6) Calculate *cut off-point (C*)*

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

$$B_i = \frac{\beta_i^2}{\sigma_{ei}^2}$$

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

7) Calculating the proportion of each share

$$W_i = \frac{Z_i}{\sum_{i=1}^k Z_i}$$

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

8) Calculating the portfolio, portfolio alpha and portfolio beta

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

$$\alpha_p = \sum_{i=1}^n W_i * \alpha_i$$

$$\beta_p = \sum_{i=1}^n W_i * \beta_i$$

9) Calculating portfolio risk

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

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

$$\hat{T}_p = \frac{\bar{R}_p - \bar{R}_F}{\hat{\beta}_p}$$

After obtaining the results of the stock portfolio performance in each of the primary, secondary, and tertiary sectors, then to test the hypothesis using the Independent T-Test Sample Test

RESULTS

Calculation of stock profits from each sector

Table 1. The optimal annual portfolio performance for the primary sector in 2017

No	Company code	Stock Price in 2017 (Closing Price)		Wi	Price Gap	Stock Profit
		Jan	Dec			
1	DKFT	400	394	18.61%	-1.50%	-0.28%
2	INCO	2,370	2,890	4.83%	21.94%	1.06%
3	BYAN	6,300	10,600	10.15%	68.25%	6.93%
4	DOID	520	715	10.89%	37.50%	4.08%
5	MBAP	1,905	2,900	9.05%	52.23%	4.72%
6	SSMS	1,620	1,500	12.66%	-7.41%	-0.94%
7	ITMG	15,000	20,700	12.64%	38.00%	4.80%
8	SMRU	350	482	6.73%	37.71%	2.54%
9	UNSP	80	163	1.17%	103.75%	1.21%
10	MYOH	685	700	9.60%	2.19%	0.21%
11	ADRO	1,695	1,860	3.69%	9.73%	0.36%
Total				100.00%		24.69%

*stock price in 2017 with IDR as the currency

Source: Data processed, 2018

Based on Table 1, there are eleven companies that form an optimal annual portfolio in the primary sector. The value of W_i is the amount purchased from the total portfolio. Price gap is the difference in stock prices from the end of December and January. So based on stock profit, the total primary sector annual profit is 24.69%.

Table 2. The optimal annual portfolio performance for the secondary sector in 2017

No	Company Code	Stock Price in 2017 (Closing Price)		Wi	Price Gap	Stock Profit
		Jan	Dec			
1	KRAH	2,300	2,750	3.43%	19.57%	0.67%
2	IMPC	1,030	1,090	8.43%	5.83%	0.49%
3	PICO	214	228	1.80%	6.54%	0.12%
4	SULI	264	190	1.00%	-28.03%	-0.28%
5	DVLA	1,790	1,960	6.75%	9.50%	0.64%
6	BRPT	1,805	2,260	3.40%	25.21%	0.86%
7	FASW	4,130	5,400	24.26%	30.75%	7.46%
8	SKLT	620	1,100	4.73%	77.42%	3.66%
9	SPMA	191	212	2.40%	10.99%	0.26%
10	MYTX	72	139	0.40%	93.06%	0.37%
11	TBMS	735	900	1.25%	22.45%	0.28%
12	INCI	310	408	7.72%	31.61%	2.44%
13	KDSI	358	550	2.54%	53.63%	1.36%
14	GGRM	61,750	83,800	6.46%	35.71%	2.31%
15	YPAS	730	965	1.32%	32.19%	0.42%
16	STTP	3,190	4,360	7.14%	36.68%	2.62%
17	UNVR	41,200	55,900	12.64%	35.68%	4.51%
18	BOLT	1,005	985	1.67%	-1.99%	-0.03%
19	KBLI	278	426	0.55%	53.24%	0.29%
20	INRU	310	286	0.19%	-7.74%	-0.01%
21	LMSH	520	640	0.54%	23.08%	0.13%
22	SMSM	885	1,255	1.21%	41.81%	0.50%
23	NIKL	4,130	4,950	0.14%	19.85%	0.03%
24	FPNI	127	188	0.01%	48.03%	0.00%
Total				100.00%		29.12%

*stock price in 2017 with IDR as the currency

Source: Data processed, 2018

Based on Table 2, it can be seen that there are 24 companies that form an optimal annual portfolio in the secondary sector. The value of W_i is the amount purchased from the total

portfolio. Price gap is the difference in stock prices from the end of December and January. So based on stock profit, the total secondary sector annual profit is 29.12%.

Table 3. The optimal annual portfolio performance for the tertiary sector in 2017

No	Company Code	Stock Price 2017 (Closing Price)		Wi	Price Gap	Stock Profit
		Jan	Dec			
1	BIRD	2780	3460	0.54%	24.46%	0.13%
2	PNSE	900	1250	0.47%	38.89%	0.18%
3	NOBU	835	960	9.34%	14.97%	1.40%
4	ERAA	610	735	1.31%	20.49%	0.27%
5	ARTO	180	168	0.28%	-6.67%	-0.02%
6	MFIN	875	1460	1.11%	66.86%	0.74%
7	PNIN	650	880	6.61%	35.38%	2.34%
8	SCBD	1700	2700	2.23%	58.82%	1.31%
9	EMDE	144	260	1.67%	80.56%	1.35%
10	GSMF	102	118	2.00%	15.69%	0.31%
11	PDES	125	1330	0.20%	964.00%	1.93%
12	LTLS	388	500	6.85%	28.87%	1.98%
13	DNAR	290	280	0.92%	-3.45%	-0.03%
14	ACES	745	1155	2.91%	55.03%	1.60%
15	ASJT	300	600	0.38%	100.00%	0.38%
16	VINS	84	189	0.26%	125.00%	0.32%
17	PBSA	1300	1750	3.43%	34.62%	1.19%
18	KIJA	290	286	0.05%	-1.38%	0.00%
19	AGRS	93	230	0.28%	147.31%	0.41%
20	ASSA	195	202	0.55%	3.59%	0.02%
21	YULE	73	256	0.40%	250.68%	1.00%
22	UNTR	21850	35400	9.44%	62.01%	5.86%
23	BNGA	980	1350	2.32%	37.76%	0.88%
24	TELE	880	1000	0.92%	13.64%	0.13%
25	BPII	3500	6000	6.82%	71.43%	4.87%
26	ECII	690	605	0.23%	-12.32%	-0.03%
27	MPMX	790	970	1.06%	22.78%	0.24%
28	SSIA	635	515	0.38%	-18.90%	-0.07%
29	RAJA	194	300	0.79%	54.64%	0.43%
30	BBNI	5700	9900	3.27%	73.68%	2.41%
31	ABDA	7000	7250	0.52%	3.57%	0.02%
32	SHID	895	1550	0.95%	73.18%	0.69%

33	BMSR	96	140	0.16%	45.83%	0.07%
34	IBFN	171	186	12.83%	8.77%	1.13%
35	BBCA	15300	21900	4.72%	43.14%	2.03%
36	BAYU	800	1400	2.32%	75.00%	1.74%
37	DNET	1100	2250	0.56%	104.55%	0.59%
38	AKRA	6675	6350	0.50%	-4.87%	-0.02%
39	ATIC	720	890	2.95%	23.61%	0.70%
40	BINA	354	995	0.11%	181.07%	0.20%
41	BCAP	1490	1560	3.06%	4.70%	0.14%
42	BSWD	2050	1735	0.05%	-15.37%	-0.01%
43	MORE	290	880	0.44%	203.45%	0.89%
44	BDMN	4160	6950	0.65%	67.07%	0.43%
45	KREN	430	530	0.23%	23.26%	0.05%
46	SDPC	102	110	0.30%	7.84%	0.02%
47	BSIM	860	880	0.47%	2.33%	0.01%
48	MARI	1000	1300	0.42%	30.00%	0.12%
49	INTA	338	428	0.15%	26.63%	0.04%
50	PWON	560	685	0.49%	22.32%	0.11%
51	TARA	665	780	0.65%	17.29%	0.11%
52	KOPI	650	740	0.31%	13.85%	0.04%
53	BULL	124	141	0.08%	13.71%	0.01%
54	NAGA	151	260	0.02%	72.19%	0.01%
55	BLTZ	8000	10100	0.07%	26.25%	0.02%
Total				100.00%		40.69%

Table 3...

*stock price in 2017 with IDR as the currency

Source: Data processed, 2018

Based on Table 3, it can be seen that there are 55 companies that form an optimal annual portfolio in the tertiary sector. The value of W_i is the amount purchased from the total portfolio. Price gap is the difference in stock prices from the end of December and January. So based on stock profit, the total tertiary sector annual profit is 40.69%.

Treynor Index Test

The average profit on optimal stocks in the primary sector is 32.95% or 0.3295. The results of the Beta calculation obtained for the optimal portfolio in the primary sector are 0.8572. Risk-free investment in Indonesia for a year has an average of 4.56% or 0.0456. From these data Treynor index calculations can be carried out as follows:

$$\hat{T}_P = \frac{\bar{R}_P - \bar{R}_F}{\hat{\beta}_P}$$

$$\hat{T}_P = \frac{0,3295 - 0,0456}{0,8572}$$

$$\hat{T}_P = 0,3311$$

The average profit on optimal shares in the secondary sector is 28.13% or 0.2813. The results of the Beta calculation obtained for the optimal portfolio in the secondary sector are 0.7612. Risk-free investment in Indonesia for a year has an average of 4.56% or 0.0456. From these data Treynor index calculations can be carried out as follows:

$$\hat{T}_P = \frac{\bar{R}_P - \bar{R}_F}{\hat{\beta}_P}$$

$$\hat{T}_P = \frac{0,2813 - 0,0456}{0,7612}$$

$$\hat{T}_P = 0,3096$$

The average profit on optimal shares in the secondary sector is 62.32% or 0.6232. The result of the Beta calculation obtained for the optimal portfolio in the secondary sector is 0.6951. Risk-free investment in Indonesia for a year has an average of 4.56% or 0.0456. The data can be calculated using the Treynor index as follows:

$$\hat{T}_P = \frac{\bar{R}_P - \bar{R}_F}{\hat{\beta}_P}$$

$$\hat{T}_P = \frac{0,6232 - 0,0456}{0,6951}$$

$$\hat{T}_P = 0,8310$$

The higher the size of Treynor, the better the portfolio. Treynor index testing is done, it can be seen that the treynor index value for the optimal primary sector portfolio is 33.11%; the secondary sector is 30.96%; while the tertiary sector is 83.10% for annual data. The same method is also used to search for treynor index for each month during 2017. The monthly treynor index data used for testing in this study is as follows.

Table 4. Return, beta, and risk free portfolio every month

Month	Average Return			Portfolio Beta			Monthly Risk Free
	Primary	Secondary	Tertiary	Primary	Secondary	Tertiary	
January	14.62%	15.74%	11.08%	0.60	1.00	0.59	0.40%
February	12.77%	11.96%	19.21%	0.74	0.91	0.82	0.40%
March	52.20%	32.67%	15.25%	1.09	1.80	0.93	0.40%
April	1.46%	13.09%	18.41%	0.81	1.15	0.66	0.40%

May	13.55%	9.67%	8.15%	0.88	0.65	0.54	0.40%
June	6.81%	15.05%	21.13%	0.65	1.11	0.97	0.40%
July	10.67%	7.85%	7.10%	0.97	0.57	0.67	0.40%
August	7.41%	7.39%	8.04%	0.61	0.95	0.47	0.38%
September	4.52%	7.94%	6.99%	0.52	0.76	0.62	0.35%
October	22.05%	9.94%	25.03%	1.00	1.35	0.89	0.35%
November	2.95%	-0.76%	8.54%	0.50	-0.05	0.78	0.35%
December	8.09%	14.66%	12.00%	1.10	1.72	1.38	0.35%
Total	157.08%	145.19%	160.93%	9.45	11.92	9.30	4.56%
Average	13.09%	12.10%	13.41%	0.79	0.99	0.78	0.38%

Table 4....

Based on Table 4, the total average return for each sector is 157.08% for the primary sector, 145.19% for the secondary sector, and 160.93% for the tertiary sector, with the average of each sector being 13.09%, 12.10% and 13.41%. The total portfolio beta for the primary sector is 9.45, for the secondary sector is 11.92 and for the tertiary sector 9.30, with an average of 0.79, 0.99 and 0.78 respectively. The total monthly risk free is 4.56% with an average of 0.38%. Data from table 4 is the data used to find the Index Treynor results in table 5

Table 5. Treynor Index Calculation Results Every Month

Month	Sector		
	Primary	Secondary	Tertiary
January	0,238618	0,152866	0,181941
February	0,168181	0,127595	0,229868
March	0,474645	0,178956	0,159000
April	0,013143	0,110076	0,272657
May	0,150231	0,142508	0,144626
June	0,098258	0,132371	0,214598
July	0,105961	0,129766	0,100450
August	0,114996	0,073878	0,162960
September	0,080242	0,100133	0,107740
October	0,216952	0,070795	0,278154
November	0,052333	0,208769	0,104883
December	0,070413	0,083375	0,084574

The data in Table 5 shows the results of the Treynor index testing for each month during 2017. Each sector has 12 data numbers that represent the Treynor index every month. These data will be processed using the SPSS application with the t test method to compare the monthly Treynor index of the primer sector with the secondary sector, the primary sector with the tertiary sector, and the secondary sector towards the tertiary sector.

t test of primary-secondary sector

Table 6. t test of primary-secondary sector

Group Statistics					
	Sector	N	Mean	Std. Deviation	Std. Error Mean
Treynor	Primary	12	.1487	.12186	.03518
	Secondary	12	.1259	.04179	.01206

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	90% Confidence Interval of the Difference	
									Lower	Upper
Treynor	Equal variances assumed	4.239	.052	.611	22	.547	.02274	.03719	-.04112	.08660
	Equal variances not assumed			.611	13.552	.551	.02274	.03719	-.04291	.08840

Discussion of Result

1) Formulation of the hypothesis

Ho : There is no significant difference in the optimal portfolio using the Treynor index model in the primary sector towards the secondary sector on the IDX.

H1 : There is a significant difference in the optimal portfolio using the Treynor index model in the primary sector towards the secondary sector on the IDX.

2) Significance Level

a= 10% or 0,10

3) Testing Criteria

If the value is significance > 0,10 then Ho is accepted

If the value is significance < 0,10 then Ho is rejected

4) Calculation of Statistics

Based on statistical calculation results obtained t value of 0.611 with 0.052 signfikansi level.

5) Conclusion

Based on the results of statistical calculations obtained t count value of 0.611 with a significance level of 0.052, then Ho is rejected, so there is a significant difference in the optimal portfolio using the Treynor index model in the primary sector towards the secondary sector on the IDX.

t test of primary-tertiary sector

Table 7. t Test of primary-tertiary sector

Group Statistics					
	Sector	N	Mean	Std. Deviation	Std. Error Mean
Treynor	Primary	12	.1487	.12186	.03518
	Tertiary	12	.1701	.06675	.01927

Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	90% Confidence Interval of the Difference	
								Lower	Upper
Treynor	1.277	.271	-.535	22	.598	-.02146	.04011	-.09033	.04742
Equal variances assumed									
Equal variances not assumed			-.535	17.056	.600	-.02146	.04011	-.09122	.04831

Discussion of Result

1) Formulation of the hypothesis

Ho : There is no significant difference in the optimal portfolio using the Treynor index model in the primary sector towards the tertiary sector on the IDX.

H2 : There is a significant difference in the optimal portfolio using the Treynor index model in the primary sector towards the tertiary sector on the IDX.

2) Significance Level

a= 10% or 0,10

3) Testing Criteria

If the value is significance > 0,10 then Ho is accepted

If the value is significance < 0,10 then Ho is rejected

4) Calculation of Statistics

Based on the results of statistical calculations obtained t count value of -0.535 with a significance level of 0.271.

5) Conclusion

Based on the results of statistical calculations obtained t count value of -0.535 with a significance level of 0.271, then Ho is accepted, so there is no significant difference in the optimal portfolio using the Treynor index model in the primary sector towards the tertiary sector on the IDX.

t test of secondary-tertiary sector

Table 8. t test of secondary-tertiary sector

Group Statistics					
	Sector	N	Mean	Std. Deviation	Std. Error Mean
Treynor	Secondary	12	.1259	.04179	.01206
	Tertiary	12	.1701	.06675	.01927

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	90% Confidence Interval of the Difference	
									Lower	Upper
Treynor	Equal variances assumed	3.278	.084	-1.944	22	.065	-.04420	.02273	-.08324	-.00516
	Equal variances not assumed			-1.944	18.474	.067	-.04420	.02273	-.08357	-.00483

Discussion of Result

1) Formulation of the hypothesis

Ho : There is no significant difference in the optimal portfolio using the Treynor index model in the secondary sector of the tertiary sector on the IDX.

H3 : There is a significant difference in the optimal portfolio using the Treynor index model in the secondary sector of the tertiary sector on the IDX.

2) Significance Level

$\alpha = 10\%$ or 0,10

3) Testing Criteria

If the value is significance $> 0,10$ then Ho is accepted

If the value is significance $< 0,10$ then Ho is rejected

4) Calculation of Statistics

Based on the results of statistical calculations obtained t count value of -1.944 with a significance level of 0.084.

5) Conclusion

Based on the results of statistical calculations obtained t count value of -1.944 with a significance level of 0.084, then Ho is rejected, so there is a significant difference in the optimal portfolio using the Treynor index model in the secondary sector of the tertiary sector on the IDX.

DISCUSSION OF RESULTS

Differences in the performance of the primary sector stock portfolio with the secondary sector on the IDX

Based on the first hypothesis there is a significant difference in the optimal portfolio using the Treynor index model in the primary sector and the secondary sector on the IDX supported because the value of t count is 0.611 and the significance value is 0.052 so the first hypothesis can be accepted. That is, there is a significant difference in the optimal portfolio using the Treynor index model in the primary sector with the secondary sector on the IDX.

The primary sector or also can be called the main sector is the raw material producing industry or natural resource management industry which consists of the agricultural sector and the mining sector. The secondary sector which can also be called a manufacturing industry is a sector that manages raw materials (from the primary sector) to finished goods. The sectors found in the secondary sector are basic industrial and chemical sectors, various industrial sectors, and consumer goods industry sectors. So that by using the performance measure of the Treynor index, it can be said that there are significant differences between the primary and secondary sector stocks on the IDX in 2017.

Differences in the performance of the primary sector stock portfolio with the tertiary sector on the IDX

Based on the second hypothesis, there is a significant difference in the optimal portfolio using the Treynor index model in the primary sector towards the tertiary sector on the IDX supported because the value of t count is -0.535 and the significance value is 0.271 so the second hypothesis is rejected. That is, there is no significant difference in the optimal portfolio using the Treynor index model in the primary sector towards the tertiary sector on the IDX. This is because expected returns and risks from the primary sector and tertiary sector tend to be the same.

Based on research from Ardelia and Dewi (2016) the conditions in the mining sector stocks in the last five years (2011-2015) tended to experience a significant decline, while the trading sector stocks tended to increase quite consistently. This study shows negative results because the trade sector tends to increase and the mining sector tends to decrease so that this is in accordance with the t count which is negative between the primary sectors and the tertiary sector. The treynor index uses returns compared to systematic risk reflected in beta values. Systematic risk or market risk in the primary sector and tertiary sector is very similar so it tends not to have significant differences. Beta values every month in the primary sector portfolio and tertiary sector have similar values. Beta in the primary sector portfolio is 0.7879 and in the

tertiary sector is 0.7751. Based on the beta value of the primary sector portfolio and the tertiary sector, which tend not to have significant differences, so it can be considered to have a level of market risk that tends to be the same. The average return generated from the portfolio in the primary sector and tertiary sector also does not have a significant difference in value. The average return on the primary sector portfolio is 0.1309 or 13.09% per month, while for the average tertiary sector portfolio return is 0.1341 or 13.41%. Based on the average return value of the primary sector portfolio and the tertiary sector which tends not to have a real difference, it can be considered to have a level of return that tends to be the same.

The primary sector or also can be called the main sector is the raw material producing industry or natural resource management industry which consists of the agricultural sector and the mining sector. The tertiary sector, also known as the service sector, consists of the property sector, real estate and building construction; infrastructure, utilities & transportation sector; financial sector; and the trade, service and investment sectors so that from the calculation value using the Treynor index performance measure, it can be said that there is no significant difference between the primary and tertiary sector stocks on the IDX in 2017.

Difference in the performance of the secondary sector stock portfolio with the tertiary sector on the IDX

Based on the third hypothesis, there is a significant difference in the optimal portfolio using the treynor index model in the secondary sector and the tertiary sector on the IDX supported because the value of t count is -1.944 and the significance value is 0.084 so that the third hypothesis is acceptable. That is, there is a significant difference in the optimal portfolio using the secondary sector treynor index model for the tertiary sector on the IDX.

The secondary sector which can also be called a manufacturing industry is a sector that manages raw materials (from the primary sector) to finished goods. The sectors found in the secondary sector are basic industrial and chemical sectors, various industrial sectors, and consumer goods industry sectors. The tertiary sector, also known as the service sector, consists of the property sector, real estate and building construction; infrastructure, utilities & transportation sector; financial sector; and trade, services and investment sectors. So that by using the performance measure of the Treynor index it can be said that there is a significant difference between the secondary and tertiary sector stocks on the IDX in 2017.

CONCLUSIONS

Based on the results of the research and discussion, the conclusions that can be given are:

- 1) There is a significant difference in the optimal portfolio using the Treynor index model in the primary sector with the secondary sector on the IDX. The total return in the primary sector is 157.08% or the average of each month is 13.09%. The average risk of the primary sector portfolio to market risk is 0.788 which is smaller than 1, meaning that in the long run the volatility of stock returns will be in line with the market index, but with smaller volatility which means the risk is also small.
- 2) There is no significant difference in the optimal portfolio using the Treynor index model in the primary sector towards the tertiary sector on the IDX. The total return on the tertiary sector is 160.93% or the average of each month is 13.41%. The average risk of tertiary sector portfolios to market risk is 0.775 which is smaller than 1, meaning that in the long run the volatility of stock returns will be in line with the market index, but with smaller volatility which means the risk is also small. The portfolio return of the tertiary sector is the highest compared to the primary and secondary sectors, and also has the lowest risk level compared to the primary and secondary sectors.
- 3) There is a significant difference in the optimal portfolio using the Treynor index model in the secondary sector with the tertiary sector on the IDX. The total return in the secondary sector is 145.19% or the average of each month is 12.10%. The portfolio return of the secondary sector is the lowest compared to the primary and tertiary sectors. The average risk of tertiary sector portfolios to market risk is 0.993 which is smaller than 1, meaning that in the long run the volatility of stock returns will be in line with the market index, but with smaller volatility which means the risk is also small and near to medium. The secondary sector has the lowest return and the highest risk level compared to the primary and secondary sectors.

SUGGESTIONS

Based on the discussion of the results of the study and the conclusions taken, then some suggestions can be proposed as follows:

- 1) For Investors

Investors are expected to be able to estimate in advance the categories of stocks to be chosen for investment. This is very important because it will affect the allocation of funds for each company in each category and every sector that exists. Allocation of funds in accordance with the right calculation will allow these investors to get optimal profits in each category of stocks that exist, both primary, secondary and tertiary shares. It is recommended to make a portfolio in

the tertiary sector because it has the highest rate of return and also has the lowest risk level (beta) compared to the primary and secondary sectors.

2) For Further Researchers

Researchers are then advised to use different variations, using different research time variations as well as sector selection to be used with various available models such as CAPM, and other single index models such as the Markowitz index and the Jensen index. The existence of large differences in the tertiary sector can also be studied in subsequent studies to look for the causes of these differences and also examine the consistency of the large distances compared to the other two sectors. Subsequent research can use existing stock exchanges in other countries and can merge between sectors, such as comparative studies of combining primary and secondary sectors compared to the tertiary sector.

REFERENCES

- Arderlia, I., and Dewi, F., R. 2016. Analisis Kinerja Portofolio Optimal Saham Sektor Pertambangan dan Saham Sektor Perdagangan. *Jurnal Manajemen dan Organisasi*, Vol. VII, No. 3, pp:242-253
- Das, Saugat, and Ankit Agarwal. 2014. Construction of Optimal Portfolio Of Banking Stocks"-A Diversification Strategy. *International Journal of Financial Management (IJFM)*, Vol. 4., No.3, pp: 1-6.
- Dewi, Ni Wayan Trisna, and Ida Bagus Panji Sedana Sedana. 2014. Pengaruh Struktur Modal, Likuiditas, Dan Pertumbuhan Terhadap Kebijakan Dividen Di BEI. *E-Jurnal Manajemen Universitas Udayana* Vol. 3, No. 6, pp: 1739-1752.
- Fahmi, Irham. 2013. *Pengantar Pasar Modal*. Bandung: Alfabeta.
- Francis, M., J., and Rathika, G. 2015. The Single Index Model and The Construction Of Optimal Portfolio With Cnxpharma Scrip. *International Journal Of Management (Ijm)*, Vol. 6., No. 1, pp: 87-96.
- Giri, Laxmi Kanta. 2016. Optimum Portfolio Construction Using Markowitz Model. *Splint International Journal of Professionals*, pp: 83-87.
- Halim, Abdul. 2015. *Analisis Investasi dan Aplikasinya: Dalam Aset Keuangan dan Aset Riil*. Jakarta: Salemba Empat.
- Hartono, Jogiyanto. 2013. *Teori Portofolio dan Analisis Investasi*. Yogyakarta, : BPFE Yogyakarta.
- . 2010. *Teori Portofolio dan Analisis Investasi*. 7th. Yogyakarta: BPFE-Yogyakarta.
- . 2014. *Teori Portofolio dan Analisis Investasi*. Yogyakarta: BPFE.
- IDX. n.d. Available online at <http://www.idx.co.id/>.
- Irham, Fahmi, and Lavianti Yovi. 2011. *Teori Portofolio dan Analisis Investasi (Teori dan Soal Jawab)*. Bandung: Alfabeta.
- Lal, Kavitha, and S.R. Subba Rao. 2016. Selecting an Optimal Portfolio for Investment in Stocks in India: A Sectoral Approach. *Pacific Business Review International* Vol. 8., No. 9, pp: 109-115.
- Lestari, Desak Putu Rahayu, and Ica Rika Candraningrat. 2014. Studi Komparatif Portofolio Optimal Menggunakan Proksi LQ 45 Dan IHSG Melalui Pendekatan Model Indeks Tunggal. *E-Jurnal Manajemen Universitas Udayana*, pp: 578-594.
- Markowitz, Harry M. 1952. Portfolio Selection. *Journal of Finance*, pp: 77-91.
- Mary, J. Francis, and G. Rathika. 2015. The Single Index Model And The Construction Of Optimal Portfolio With Cnxpharma Scrip. *International Journal of Management (IJM)* Vol. 6., No. 1, pp: 87-96.
- Mohith, Pavithra, Bharadwaj, and Ananth. 2017. Application Of Single Sharpe Index On The Optimum Portfolio Construction In Indian Capital Market. *International Journal of Physical and Social Science*, Vol. 7., No 7, pp: 60-72.

Murniti, Ni Made, and Luh Gede Sri Artini. 2014. Penentuan Portofolio Optimal pada Saham LQ 45 di PT Bursa Efek Indonesia. E-Jurnal Manajemen Universitas Udayana, Vol. 3, No. 9 pp: 2698-2715.

Nandan, Tanuj, and Nivedita Srivastava. 2017. Construction of Optimal Portfolio Using Sharpe's Single Index Model: An Empirical Study on Nifty 50 Stocks. Journal of Management Research and Analysis Vol. 4, No. 2 pp: 74-83.

Pardosi, B., dan Wijayanto, A. 2015. Analisis Perbedaan Return dan Risiko Saham Portofolio Optimal Dengan Bukan Portofolio Optimal. Management Analysis Journal. Vol. 4., No. 1, pp:1-10

Poornima, S, and Aruna P. Remesh. 2016. Construction of Optimal Portfolio using Sharpe's Single Index Model: A Study with Reference to Automobiles and Pharmaceutical Sector. International Journal of Advance Research in Computer Science and Management Studies, pp: 159-163.

Sulistiyorini, Agustin. 2009. Analisis Kinerja Portofolio Saham Dengan Metode Sharpe, Treynor Dan Jensen. Tesis Universitas Diponegoro, pp: 1-68.

Tandelilin, Eduardus. 2010. Portofolio dan Investasi. Yogyakarta: Kanisius.

Wijayanto, Andhi, and Berlian Nanda Oktavian. 2015. Aplikasi Single Index Model Dalam Pembentukan Portofolio Optimal Saham Lq45 Dan Jakarta Islamic Index." Management Analysis Journal Vol. 4, No. 1, pp: 189-202.

Wikuana, I Gusti Bagus. 2017. Manajemen Portofolio Saham I. Denpasar: ESBE Buku.

Zubir, Zalmi. 2011. Manajemen Portofolio: Penerapannya dalam Investasi Saham. Jakarta: Salemba Empat