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OPTIMAL STOCK PORTFOLIO ESTABLISHMENT WITH ACTIVE AND PASSIVE STRATEGY USING PRICE TO BOOK VALUE AND PRICE EARNING TO GROWTH RATIO APPROACH IN IDX30 INDEX 2013-2018 PERIOD

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Optimum Portfolio; PBV; PEG

ABSTRACT
The volatility phenomenon of stock returns shows the return and risk faced by investors in investment activities. One method that can be used by investors to get maximum profit while compressing the risk into the minimum level is by diversifying its investments through portfolios. This study aims to determine the simulation results of optimal stock portfolio establishment with active and passive strategy using Price to Book Value and Price Earning to Growth ratio approach and the results of the Sharpe, Treynor, and Jensen performance evaluations on the established portfolio. This research appertains in quantitative research. The object of the research was the IDX30 Index and 17 of 30 companies which consistently classified into the IDX30 Index for the 2013-2018 period were selected as the research sample. The results showed that High PEG consistently provides better than the average returns and risks, whether in passive strategy, annual's active strategy, or semester's active strategy. Whereas, High PBV in the passive and annual's active strategy showed a high rate of return above the average, while in the semester active strategy, showed the lowest level of risk. Overall the semester's active strategy has the highest accumulated rate of return with a relatively low rate of risk. This result match with the purpose of optimal portfolio establishment. Moreover, the results of the performance evaluation showed that in the semester's active strategy, High PEG gives the best score based on the results of the performance evaluation of Sharpe, Treynor and Jensen index.

INTRODUCTION

The capital market, from the company's point of view, as a party that needs funds or as a seller, provides an alternative source of external funding that is cheaper than bank credit (Husnan, 2018). While the capital market for the buyer, allows the owners of capital to have a variety of alternative investment options that suit their respective risk preferences. The existence of a capital market allows capital owners to diversify investments. Capital market is expected to be an alternative to raising funds other than the banking system (Husnan, 2018).

Financial instruments traded on the capital market are long-term instruments (with a term of more than 1 year) such as stocks, bonds, warrants, rights, mutual funds, and various derivative instruments such as options, futures, and others (Indonesia Stock Exchange, Year).

There are five processes in investment. One of them is 'making investment policy' means deciding how to distribute the funds owned in the best way to the existing main asset groups (Herlianto, 2013). In choosing this main asset group, investors must choose issuers that will be used as investment targets from the many existing issuers. One of the good stock assets can be seen from the IDX30 index. The IDX30 Index consists of 30 leading stocks which are constituents of the LQ45 Index. Thus, the IDX30 index can describe the 30 best companies listed on the Indonesia Stock Exchange.

The decline in the value of IDX30 Index shares was triggered by an increase in the US dollar exchange rate against all world currencies, and Indonesia was recorded as one of the countries with the highest depreciated currency value. The first period in August 2013 saw a decline after the US Central

Bank (The Fed) announced to reduce the amount of Quantitative Easing (QE) or loose money policy by US$ 10 billion (Kontan.co.id, December 24 2013). The second period in September 2018 occurred due to an increase in the United States Central Bank interest rate which caused many foreign investors to divert their funds out of the Indonesian capital market with a net selling value of IDR 22.58 trillion (Waspada.co.id, 30 December 2015). Another cause was the current account deficit due to high imports of fuel and crude oil (Okezone.com, 24 December 2013). In addition, there were three factors that contributed to the decline in the performance of the Indonesian stock market: 1) the economic slowdown in developing countries such as China; 2) speculation on the policy the Fed will take; and 3) a decline in commodity prices (Sindonews.com, 7 December 2015).

Regardless of the 'attack' on the Indonesian capital market, Muliaman as chairman of the board of commissioners of the Financial Services Authority, considers that the movement of Indonesian capital market shares is relatively stable and this condition is quite conducive amidst global and domestic economic shocks given the turmoil in the United States and Europe (Merdeka.com, 30 December 2013).

Even though there was a decline in the value of the IDX30 Stock Index in several periods, in general, the trend has shown an increase. This proves that issuers on the IDX30 index are experiencing growth and are still attractive as investment targets. Even so, the moment of decline in the value of shares on the IDX30 index proves that with growth, there are still risks.

The potential for large returns (returns) can be obtained from investing in stocks, regardless of which stocks it is, side by side with the possibility of large risks that cannot be separated. Risk and return are conditions experienced by companies, institutions and individuals in investment decisions, namely both losses and profits in one accounting period (Fahmi & Hadi, 2009). Risk and return are two things that cannot be separated, both of which can be analogous to actions and reactions or positive and negative. If there is a profit (return) from an asset, then there is also a risk that accompanies it.

The relationship between risk and the expected rate of return (return) is a unidirectional or positive relationship, meaning that if an investor expects a high rate of profit, then he is also willing to take on high risk as well (Mahardika, 2016). But in essence, every investor carries out investment activities in order to get maximum results to increase the value of wealth, but with the smallest possible risk (Zubir, 2011).

One way that can be used by investors to get maximum profit but with minimal risk is to diversify their investments through a portfolio. By diversifying the portfolio, investors need to form a portfolio through a combination of a number of assets in such a way that investment risk can be reduced to a minimum level without reducing the expected return (Tandelilin, 2010).

Zalmi Zubir said "regardless of how you choose the stocks to be included in the portfolio, portfolio tori explains that portfolio risk is lower than the risk of individual stocks in the portfolio because the variance of stock returns as a measure of investment risk overlaps" (Zubir, 2011). That is, it is certain that by making a portfolio, a number of assets owned by investors will have a fixed return value but the existing level of risk can be suppressed.

Forming a stock portfolio means bringing together various existing stocks into one set of assets. In reality, the selection of assets into a portfolio can be done randomly. This means that an investor may choose several stocks from the same sector, or from various sectors without going through any consideration. However, the resulting portfolio is not necessarily an optimal portfolio, because in determining the selection of a stock portfolio, the biggest problem is when selecting stocks that will be used as portfolio candidates (Yunita, 2018).

When it comes to investing, it means that the preferences of each investor greatly influence the decision making of each stock and portfolio they choose. Therefore, it is necessary to pay attention to the return and risk preferences, because there are some investors who are willing to take greater risks (and therefore hope to obtain greater profits). On the other hand, there are also investors who are not willing to take higher risks, so they will choose to invest in companies that are considered safe (Husnan, 2018).

In forming various alternative portfolios, there are many financial ratio approaches that describe the company's financial performance that can be used. One of them is by using the Price to Book Value (PBV) ratio.

The use of the PBV ratio is also supported by several previous studies. Starting from Marangu and Jangongo (2014), Shittu, et al. (2016), Majid and Benazir (2015), to Inezwari (2013) in his research resulted that Price to Book Value is related to Growth, Return on Total Assets, Return on Equity, Return per Share, and Dividend per Share so that it is used to predict stock prices and their growth.

In addition to the use of PBV ratios in forming various alternative portfolios, another financial ratio approach that can be used to describe a company's financial performance is by using the Price Earning to Growth (PEG) ratio. The PEG ratio is a function of a company's risk, growth potential, and payout ratio (Damodaran, 2012). The PEG ratio is defined as the Price-Earning ratio divided by the expected growth rate in Earning per Share (Damodaran, 2012).

There have been several previous studies using the PEG ratio approach, including Easton (2004), Lajewardi (2014), I'Ons and Ward (2012), and Cohen (2010). The results state that there is a relationship between the PEG ratio and the expected rate of return which is also used as a tool in predicting abnormal returns.

In addition to using the financial ratio approach to determine the assets that will be included in the portfolio set. There are also active or passive portfolio strategies that investors can also apply. Another study that supports the use of active or passive strategies, conducted by Browne (1999), Lao and Fan (2004), Zabiula (2014), as well as Pace, et al. (2016) in his research, which contained both active and passive portfolio strategies, he concluded that the use of an active portfolio strategy proved profitable and provided a better expected rate of return. However, using a passive portfolio strategy can be a more cost-efficient strategy.

After investors form a portfolio that is measured based on the use of financial ratios, and determine the strategy to be used. The portfolio cannot be categorized as an optimal portfolio. The final stage that can be carried out by investors is a very important stage in the stock investment process, at this stage investors need to evaluate the performance of the portfolio that has been formed before. The portfolio then goes through a performance testing process using the Sharpe, Treynor, and Jensen indices until it can be categorized into an optimal portfolio (Halim, 2015).

It can be concluded that stocks that have been measured using financial ratios are then collected into a group to become an efficient portfolio, which is then tested for the Sharpe, Treynor, and Jensen indexes so that they can be categorized into optimal portfolios. The research objectives based on the research questions that have been described in this study are as follows:

1) To find out the simulation results of portfolio formation using the PBV and PEG ratio approach with active and passive strategies on the IDX30 Index for the 2013-2018 period.
2) To find out the results of a comparison of returns and risks in a stock portfolio simulation formed from the PBV and PEG ratio approaches with active and passive strategies on the IDX30 Index for the 2013-2018 period.
3) To find out the results of the performance evaluation simulation of the Sharpe, Treynor, and Jensen methods on portfolios formed using the PBV and PEG ratio approaches with active and passive strategies on the IDX30 Index for the 2013-2018 period.

RESEARCH METHODS

Population and Sample

The population used as the object of this research is all stock issuers belonging to the IDX30 Stock Index which are listed on the Indonesia Stock Exchange (IDX). The number of samples that meet the research criteria are 17 issuers which are presented in the following table:

Table 1. Companies that Meet the Criteria in Forming the Sample

No	Issuer Name	Code	Sector
1	Adaro Energy	ADRO	Mining
2	Astra Internasional	ASII	Automotive
3	Bank Central Asia	BBCA	Finance
4	Bank Negara Indonesia	BBNI	Finance
5	Bank Rakyat Indonesia	BBRI	Finance
6	Bank Mandiri	BMRI	Finance
7	Gudang Garam	GGRM	Cigarette

No	Issuer Name	Code	Sector
8	Indofood Sukses Makmur	INDF	Consumption
9	Indocement Tunggal Prakasa	INTP	Manufacture
10	Kalbe Farma	KLBF	Pharmacy
11	Lippo Karawaci	LPKR	Properties
12	Media Nusantara Citra	MNCN	Media
13	Perusahaan Gas Negara	PGAS	Energy
14	Semen Indonesia	SMGR	Manufacture
15	Telekomunikasi Indonesia	TLKM	Communication
16	United Tractors	UNTR	Mining
17	Unilever Indonesia	UNVR	Consumption

Source: Author Processed Data (2019)

Data Collection Techniques and Sources

The data used in this research is secondary data. Secondary data is data obtained either from a document or the publication of a research report from the service or agency or other supporting data sources (Darmawan, 2013). The data used in this study will be sourced from secondary data in the form of literature studies and financial report data and stock data.

Data analysis technique

1) Collecting data on stock prices of companies that are consistently listed in the ten periods of the IDX30 index on the Indonesia Stock Exchange, namely in the period February 2013-July 2013, August 2013-January 2014, February 2014-July 2014, August 2014-January 2015, February 2015-July 2015, August 2015-January 2016, February 2016-July 2016, August 2016- January 2017, February 2017-July 2017, August 2017- January 2018.
2) Calculating the return of each stock as well as the market return as reflected in the JCI (Composite Stock Price Index). The formula used is as follows (Sukamulja, 2017: 77):

   $Return = \frac{P_t - P_{t-1}}{P_{t-1}}$ ……(3.1)

   Information:

   P_t = stock price in period t

   $P_t - P_{t-1}$ = stock price in period t-1
3) Calculate the expected return E () of each stock and the expected market return as reflected in the JCI (Composite Stock Price Index). The formula used is as follows (Hartono, 2010: 223):R_i

   $R_i = E(R_i) = \frac{\sum R_i}{n}$ ....(3.2)

   Information:

   E(Ri) =*Expected return*a stock

   ∑ Ri = Sum*returns*in a period

   n = Total number of periods
4) Calculating the risk with the Variance () of each stock as well as market risk as reflected in the JCI (Composite Stock Price Index). The formula used is as follows (Tandelilin: 2014: 55):σ_{i^2}

   $\sigma^2{}_j = \frac{\sum_{t=1}^{n}(R_{jt} - \bar{R}_j)^2}{(n-1)}$ ……(3.3)

   Information:

   σ^2 = Variant*returns*

   R_{jt} =*return-return*actually (actual returns)

   $\bar{R}_j$ = Average*returns*

   Where the Standard Deviation is the square root of the Variance. Standard Deviation is formulated as follows:

   $\sigma = \sqrt{\sigma^2}$ ……(3.4)
5) Calculating Beta (β_i) and Alpha (α_i) of each stock. The Beta formula used is as follows$\beta_i \alpha_i$(Gumanti, 2017: 56):

$\beta_i = \frac{Cov\,(R_i,R_m)}{\sigma^2{}_m}$ ……(3.5)

Information:

β_i = Beta of an asset i

R_i = *Return* On Asset i

R_m =*Rate of return* (rate of return) market portfolio

$\sigma^2{}_m$ = Variance*returns* market.

Alpha Formula which is used as follows(Husnan, 2015: 94):

$\alpha_i = E(R_i) - \beta_i \,.\, E(R_m)$……...(3.6)

Information:

α_i =*Alpha*securities

$E(R_i)$ =*Expected return*from stock investment i

β_i =*Beta*si-th security

$E(R_m)$ =*Expected return*market

6) Calculates the unsystematic risk [β_i.E(R_m)] and the variance of the residual error (which is unsystematic risk) unique within the company of each stock. The formula used is as follows ($\beta_i R_m$Zubir, 2011: 99):

$\sigma_{ei^2} = \sigma_{i^2} - \beta_{i^2} \,.\, \sigma_{m^2}$……(3.7)

Information:

σ_{ei^2}= variance of the residual error

σ_{i^2}= Residual variance

β_{i^2} = Stock betas

σ_{m^2}= Market return variance

7) Setting the Risk Free Rate. There are several references that can be used to determine the value of the risk-free ratio (Risk Free Rate). One of them is using the interest rate issued by Bank Indonesia or called the BI Rate. The reference interest rate issued as a new policy that replaces the BI rate starting on August 19 2016, namely the BI 7-Day (Reverse) Repo Rate. The BI 7-day (Reverse) Repo Rate instrument is used as the new policy interest rate because it is considered to be able to quickly influence the money market, banking and the real sector. The BI 7-Day Repo Rate instrument is used as a new reference that has a stronger relationship to money market interest rates, the BI 7-day (Reverse) Repo Rate is transactional in nature or traded on the market, and encourages deepening of financial markets, particularly the use of repo instruments (www.BI.go.id). The BI 7-Day (Reverse) Repo Rate will be calculated as the average annual interest rate, and Bank Indonesia will announce monthly increases and decreases in interest rates.

RESULTS AND DISCUSSION

Comparison of Portfolio Return and Risk for Each Strategy

The expected return and risk calculation results for each portfolio and the JCI that have been formed are accumulated and averaged over the six-year research period (2013-2018), then ranked to see the return and risk levels of each portfolio.

Table 2. Portfolio Returns Ranking on the Use of Passive Strategies

Ranking	Portfolio	Accumulation	Annual Average
1	Medium PEG	46.69%	7.78%
2	High PBV	43.20%	7.20%
3	Low PBV	42.65%	7.11%
4	High PEGs	36.39%	6.06%
5	Low PEG	-4.35%	-0.73%
6	Medium PBV	-8.41%	-1.40%
7	JCI	7.31%	1.22%
Average Returns		26.03%	4.34%

Source: Author Processed Data (2019)

Information:
return portfolio is higher than the average return
return market (CSPI)

Based on Table 2, the average return on the passive strategy is 26.03%, where there are four portfolios with returns above the average and market returns. Sequentially the portfolios with the highest returns are Medium PEG, High PBV, Low PBV, and High PEG portfolios. The other two portfolios, Low PEG and Medium PBV, have returns below the market average.

Table 3. Portfolio Risk Ranking on the Use of Passive Strategies

Ranking	Portfolio	Accumulation	Annual Average
1	High PEGs	20.14%	3.36%
2	Low PEG	24.51%	4.09%
3	Medium PEG	24.95%	4.16%
4	High PBV	36.35%	6.06%
5	Medium PBV	45.74%	7.62%
6	Low PBV	54.93%	9.15%
7	JCI	14.01%	2.33%
Average Risk		34.44%	5.74%

Source: Author Processed Data (2019)

Information:
return portfolio is higher than the average return
return market (CSPI)

Based on Table 3, the average risk in the passive strategy is 34.44%, where there are three portfolios with risk levels below the average and market risk. Sequentially, the portfolios with the lowest risk level are High PEG, Low PEG, and Medium PEG portfolios. The other three portfolios, High PBV, Medium PBV, and Low PBV have above average risk levels. However, in general, the overall portfolio still provides a level of risk above market risk.

Based on Table 2 and Table 3, a portfolio with a Medium PEG ratio can be said to be the best portfolio based on the rate of return provided. Because it can provide the highest rate of return compared to other portfolios, the risk is still classified as one of the low risks because the level of risk provided is still lower than the average, although it is still greater than market risk, which is 1.83% greater compared to market risk and 1.58% less than the average. This decision making is of course more suitable for investors who are classified as risk-takers or investors who tend to be more return oriented so they are willing to take higher risks.

It is different with investors who are classified as risk-averse or investors who tend to play it safe and are more risk oriented so they are willing to accept lower returns. The best portfolio based on the level of risk is the portfolio with the High PEG ratio because it can provide the lowest risk compared to other portfolios. Even so, it does not mean that the return given is the lowest return, the rate of return given is still classified as one of the high returns because it still provides a return of 4.84% better than market returns and also 1.72% better than average.

Table 4. Portfolio Return Ranking on Annual Use of Active Strategy

Ranking	Portfolio	Accumulation	Annual Average
1	High PBV	93.90%	15.65%
2	High PEGs	91.42%	15.24%
3	Medium PEG	75.31%	12.55%
4	Medium PBV	72.90%	12.15%
5	Low PBV	71.93%	11.99%
6	Low PEG	71.11%	11.85%
7	JCI	43.18%	7.20%
Average Returns		79.43%	13.24%

Source: Author Processed Data (2019)

Information:
return portfolio is higher than the average return
return market (CSPI)

Based on Table 4, the average return on the annual active strategy is 79.43%, where there are two portfolios with returns above the average and market returns. Sequentially from the portfolio with the highest return, namely the High PBV portfolio and High PEG. The other four portfolios, Medium PEG, Medium PBV, Low PEG and High PBV, have below average returns. But overall, the rate of return provided by each portfolio is still above the market rate of return.

Table 5. Portfolio Risk Ranking on Annual Active Strategy Usage

Ranking	Portfolio	Accumulation	Annual Average
1	High PBV	19.30%	3.22%
2	High PEGs	21.55%	3.59%
3	Low PEG	24.20%	4.03%
4	Medium PEG	24.86%	4.14%
5	Low PBV	25.98%	4.33%
6	Medium PBV	27.04%	4.51%
7	JCI	14.10%	2.35%
Average Risk		21.66%	3.61%

Source: Author Processed Data (2019)

Information:
return portfolio is higher than the average return
return market (CSPI)

Based on Table 5, the average risk in the annual active strategy is 21.66%, where there are two portfolios with below average risk levels. Sequentially from the portfolio with the highest risk, namely the High PBV portfolio and High PEG. The other four portfolios, Medium PEG, Medium PBV, Low PEG and High PBV have risk levels above market risk and the average. However, in general, the overall portfolio still provides a level of risk above market risk.

Based on Tables 4 and 5, a portfolio with a high PBV ratio can be said to be the best portfolio because it provides the highest return with the lowest level of risk. This is in accordance with the purpose of forming a portfolio, which is to get the highest return with the lowest possible risk. A portfolio with a high PBV ratio is suitable for both an investor who is a risk-taker and a risk-averse because this portfolio can provide what is considered by both.

Table 6. Portfolio Resturn Ranking on the Use of Active Semester Strategies

Ranking	Portfolio	Accumulation	Semester Average
1	Low PEG	107.89%	8.99%
2	High PEGs	107.15%	8.93%
3	Medium PEG	89.88%	7.49%
4	High PBV	87.43%	7.29%
5	Medium PBV	84.80%	7.07%
6	Low PBV	65.05%	5.42%
7	JCI	61.41%	5.12%
Average Returns		90.37%	7.53%

Source: Author Processed Data (2019)

Information:
return portfolio is higher than the average return
return market (CSPI)

Based on Table 6, the average return on the semiannual active strategy is 90.37%, where there are two portfolios with returns above the average and market returns. Sequentially the portfolios with the highest returns are Low PEG portfolios and High PEG portfolios. The other four portfolios, Medium

PEG, High PBV, Medium PBV and Low PBV, have below average returns. But overall, the rate of return provided by each portfolio is still above the market rate of return.

Table 7. Portfolio Risk Ranking on the Use of Semester Active Strategy

Ranking	Portfolio	Accumulation	Semester Average
1	High PBV	21.06%	1.75%
2	Low PEG	22.16%	1.85%
3	High PEGs	22.82%	1.90%
4	Medium PEG	25.02%	2.08%
5	Medium PBV	27.08%	2.26%
6	Low PBV	28.63%	2.39%
7	JCI	14.13%	1.18%
Average Risk		24.46%	2.04%

Source: Author Processed Data (2019)

Information:
return portfolio is higher than the average return
return market (CSPI)

Based on Table 7, the average risk in the semiannual active strategy is 22.04%, where there is only one portfolio with a risk level below the average, namely the High PBV portfolio. The other five portfolios namely Low PEG, High PEG, Medium PEG, Medium PBV, Low PBV have a risk level above market risk and the average. However, in general, the overall portfolio still provides a level of risk above market risk.

Based on Tables 6 and 7, a portfolio with a low PEG ratio can be said to be the best portfolio if this decision is made from the point of view of investors who are classified as risk-takers or investors who tend to be more oriented towards returns so they are willing to bear higher risks. Based on the rate of return provided, the portfolio with the Low PEG ratio provides the highest rate of return compared to other portfolios, the risk is still classified as one of the low risks compared to other portfolios, only 0.1% difference compared to the portfolio with the lowest risk level. and only 0.01% of the average risk.

If the point of view of the investor who makes the decision is an investor who is classified as a risk-averse or an investor who tends to play it safe and is more risk oriented so that he is willing to accept a lower return. The best portfolio based on the level of risk is the portfolio with a high PBV ratio because it can provide the lowest risk compared to other portfolios. The return given is not the lowest return, the rate of return given is still classified as one of the relatively high returns, even though the value is lower than the average, and even then only 0.24% lower, but when compared to market returns, the value is still better with a return rate of 2.17% higher.

Table 8. Level ComparisonReturn on Each Strategy

Ranking	Strategy	Average Accumulated Return
1	Active Semester	90.37%
2	Active Yearly	79.43%
3	Passive	26.03%

Source: Author Processed Data (2019)

Table 9. Comparison of Risk Levels for Each Strategy

Ranking	Strategy	Average Risk Accumulation
1	Active Yearly	23.82%
2	Active Semester	24.46%
3	Passive	34.44%

Source: Author Processed Data (2019)

Judging from each strategy, the semiannual active strategy can be said to be better than the other strategies. The reason is because the rate of return given is much higher than other strategies, even though the level of risk is not the smallest risk, it is bigger than the annual active strategy. However,

after doing comparative calculations between the half-year active strategy and the annual active strategy, the half-year active strategy is still better. The analogy is if an investor chooses to use an annual active strategy, then the investor will get a smaller 0.64% risk level but the return rate he gets will also be 10.94% smaller. Conversely, if an investor chooses a semi-annual active strategy, he will get a 10.94% greater return even though 0.64% is more risky. Looking at these numbers,

Portfolio and Market Performance Evaluation Comparison

The results of the Sharpe, Treynor and Jensen Index calculations for each portfolio and the JCI that have been formed are accumulated and averaged over the six-year research period (2013-2018), then ranked to see which portfolio has the better performance.

Table 10. Index Ranking on Portfolio with Passive Strategy

Ranking	Portfolio	Evaluation result
1	Medium PEG	0.712%
2	High PBV	0.577%
3	Low PBV	0.496%
4	High PEGs	0.281%
5	Low PEG	-0.923%
6	Medium PBV	-0.985%
7	JCI	-1.338%
Average		0.026%

Source: Author Processed Data (2019)

Information:
- The index value is higher than the average index value
- Index value or market performance (IHSG)

Based on Table 10, the average value of the Sharpe Index in the passive strategy is 0.026%, where there are four portfolios with index values above the average and market performance. Sequentially the portfolios with the highest index values are Medium PEG, High PBV, Low PBV, and High PEG portfolios. Two other portfolios, Low PEG and Medium PBV, have index values below the market average. But in general, the entire portfolio produces an index value above market performance so that it can be interpreted that the entire portfolio has better performance than market performance.

Table 11. Treynor Index Ranking in Portfolios with Passive Strategies

Ranking	Portfolio	Evaluation result
1	Medium PEG	0.01009%
2	High PBV	0.00953%
3	Low PBV	0.00749%
4	High PEGs	0.00545%
5	Low PEG	-0.01578%
6	Medium PBV	-0.01804%
7	JCI	-0.01302%
Average		-0.00021%

Source: Author Processed Data (2019)

Information:
- The index value is higher than the average index value
- Index value or market performance (IHSG)

Based on Table 11, the average Treynor index value in the passive strategy is -0.00021%, where there are four portfolios with index values above the average and market performance. Sequentially the portfolios with the highest index values are Medium PEG, High PBV, Low PBV, and High PEG portfolios. Two other portfolios, Low PEG and Medium PBV, have index values below the market average.

Table 12. Jensen Index Ranking on Portfolio with Passive Strategy

Ranking	Portfolio	Evaluation result
1	Medium PEG	0.03084%
2	Low PBV	0.02940%
3	High PBV	0.02630%
4	High PEGs	0.02214%
5	Low PEG	-0.00365%
6	Medium PBV	-0.00657%
7	JCI	0%
Average		0.01641%

Source: Author Processed Data (2019)

Information:
The index value is higher than the average index value
Index value or market performance (IHSG)

Based on Table 12, the average Jensen index value in the passive strategy is 0.01641%, where there are four portfolios with index values above the average and market performance. Sequentially the portfolios with the highest index values are Medium PEG, Low PBV, High PBV, and High PEG portfolios. Two other portfolios, Low PEG and Medium PBV, have index values below the market average.

Based on Tables 10, 11 and 12, a portfolio with a Medium PEG ratio can be said to be the best portfolio based on the results of the Sharpe, Treynor, and Jensen index performance evaluation. The three indices consistently produce the same results, namely providing an assessment that a portfolio with a Medium PEG ratio has the best performance rating.

Table 12. Sharpe Index Ranking of Portfolios with Annual Active Strategy

Ranking	Portfolio	Evaluation result
1	High PBV	14.02%
2	High PEGs	12.33%
3	Medium PEG	10.95%
4	Low PBV	8.44%
5	Medium PBV	8.31%
6	Low PEG	8.30%
7	JCI	15.52%
Average		10.39%

Source: Author Processed Data (2019)

Information:
The index value is higher than the average index value
Index value or market performance (IHSG)

Based on Table 12, the average value of the Sharpe Index in the annual active strategy is 10.39%, where there are three portfolios with index values above the average. Sequentially, the portfolios with the highest index values are High PBV, High PEG and Medium PEG portfolios. Three other portfolios, Low PBV, Medium PBV and Low PEG, have index values below the market average. But in general, the entire portfolio produces an index value below market performance so that it can be interpreted that market performance has better performance than the entire portfolio.

Table 13. Treynor Index Ranking of Portfolios with Annual Active Strategy

Ranking	Portfolio	Evaluation result
1	High PBV	0.238%
2	High PEGs	0.219%
3	Medium PEG	0.170%
4	Medium PBV	0.132%
5	Low PBV	0.129%
6	Low PEG	0.120%

7	JCI	0.071%
	Average	0.168%

Source: Author Processed Data (2019)

Information:
The index value is higher than the average index value
Index value or market performance (IHSG)

Based on Table 13, the average value of the Treynor Index on the annual active strategy is 0.168%, where there are three portfolios with index values above the average and market performance. Sequentially, the portfolios with the highest index values are High PBV, High PEG and Medium PEG portfolios. Three other portfolios, Medium PBV, Low PBV and Low PEG have index values below the average. But in general, the entire portfolio produces an index value above market performance so that it can be interpreted that the entire portfolio has better performance than market performance.

Table 14. Jensen Index Ranking in Portfolios with Annual Active Strategy

Ranking	Portfolio	Evaluation result
1	High PBV	0.196%
2	High PEGs	0.181%
3	Medium PEG	0.124%
4	Medium PBV	0.088%
5	Low PBV	0.080%
6	Low PEG	0.066%
7	JCI	0%
	Average	0.123%

Source: Author Processed Data (2019)

Information:
The index value is higher than the average index value
Index value or market performance (IHSG)

Based on Table 14, the average Jensen index value in the annual active strategy is 0.0123%, where there are three portfolios with index values above the average and market performance. Sequentially, the portfolios with the highest index values are High PBV, High PEG and Medium PEG portfolios. Three other portfolios, Medium PBV, Low PBV and Low PEG have index values below the average. But in general, the entire portfolio produces an index value above market performance so that it can be interpreted that the entire portfolio has better performance than market performance

Based on Tables 12, 13 and 14, the portfolio with a high PBV ratio can be said to be the best portfolio based on the results of the performance evaluation of the Sharpe, Treynor and Jensen indices. The three indices consistently produce the same results, namely providing an assessment that the portfolio with a high PBV ratio has the best performance rating.

Table 15. Sharpe Index Ranking on Portfolio with Semester Active Strategy

Ranking	Portfolio	Evaluation result
1	High PEGs	23.4%
2	Low PEG	22.7%
3	High PBV	15.5%
4	Medium PEG	14.3%
5	Medium PBV	9.5%
6	Low PBV	7.5%
7	JCI	32.92%
	Average	15.48%

Source: Author Processed Data (2019)

Information:
The index value is higher than the average index value
Index value or market performance (IHSG)

Based on Table 15, the average Sharpe Index score for the semi-annual active strategy is 15.48%, where there are three portfolios with index values above the average. Sequentially the portfolios with the highest index values are High PEG, Low PEG and High PBV portfolios. Three other portfolios, Medium PEG, Medium PBV and Low PBV, have index values below the market average. But in general, the entire portfolio produces an index value below market performance so that it can be interpreted that market performance has better performance than the entire portfolio.

Table 16. Treynor Index Ranking on Portfolio with Semester Active Strategy

Ranking	Portfolio	Evaluation result
1	High PEGs	0.376%
2	Low PEG	0.350%
3	High PBV	0.255%
4	Medium PEG	0.212%
5	Medium PBV	0.144%
6	Low PBV	0.097%
7	JCI	0.105%
Average		0.240%

Source: Author Processed Data (2019)

Information:
- The index value is higher than the average index value
- Index value or market performance (IHSG)

Based on Table 16, the average value of the Treynor Index on the semiannual active strategy is 0.240%, where there are three portfolios with index values above the average and market performance. Sequentially the portfolios with the highest index values are High PEG, Low PEG and High PBV portfolios. The other three portfolios, PEG Medium and PBV Medium, have index values below the average but are still better than market performance and Low PBV have index values below market or average performance.

Table 17. Jensen Index Ranking on Portfolio with Semester Active Strategy

Ranking	Portfolio	Evaluation result
1	High PBV	0.393%
2	High PEGs	0.369%
3	Low PEG	0.342%
4	Medium PBV	0.321%
5	Low PBV	0.229%
6	Medium PEG	0.183%
7	JCI	0%
Average		0.306%

Source: Author Processed Data (2019)

Information:
- The index value is higher than the average index value
- Index value or market performance (IHSG)

Based on Table 17, the average Jensen index value in the semi-annual active strategy is 0.306%, where there are four portfolios with index values above the average and market performance. Sequentially from the portfolio with the highest index value, namely the portfolio of High PBV, High PEG and Low PEG and Medium PBV. The other two portfolios, Low PBV and Medium PEG, have below average index values. But in general, the entire portfolio produces an index value above market performance so that it can be interpreted that the entire portfolio has better performance than market performance

Based on Tables 15, 16 and 17, the portfolio with a high PEG ratio is said to be the best portfolio based on the results of the performance evaluation of the Sharpe and Treynor Indexes. Meanwhile,

according to the performance evaluation results of the Jensen Index, the portfolio with a high PBV ratio is said to be the best portfolio

The three indices produce different results. In general, it cannot be said that one index is better than another, because these three indices are more complementary than substitutes, but if you have to choose the best one, namely a portfolio with a high PEG ratio, because it is considered a portfolio that has the best performance assessment based on two of the three performance evaluation indices are used.

Table 18. Comparison of Sharpe Index Value for Each Strategy

Ranking	Strategy	Average Index Value
1	Active Semester	15.476%
2	Active Yearly	10.389%
3	Passive	0.026%

Source: Author Processed Data (2019)

Table 19. Comparison of the Treynor Index Value for Each Strategy

Ranking	Strategy	Average Index Value
1	Active Semester	0.23898%
2	Active Yearly	0.16809%
3	Passive	0.00063%

Source: Author Processed Data (2019)

Table 20. Comparison of Jensen Index Values for Each Strategy

Ranking	Strategy	Average Index Value
1	Active Semester	0.30618%
2	Active Yearly	0.12257%
3	Passive	0.01641%

Source: Author Processed Data (2019)

Based on Tables 18, 19 and 20, the semiannual active strategy can be said to be better than other strategies. The reason is because the rate of return given is much higher than other strategies, even though the level of risk is not the smallest risk, it is bigger than the annual active strategy. However, after doing comparative calculations between the half-year active strategy and the annual active strategy, the half-year active strategy is still better. The analogy is if an investor chooses to use an annual active strategy, then the investor will get a smaller 0.64% risk level but the return rate he gets will also be 10.94% smaller. Conversely, if an investor chooses a semi-annual active strategy, he will get a 10.94% greater return even though 0.64% is more risky. Looking at these numbers,

In general, the results of a comparison of portfolio performance evaluations using the Sharpe, Treynor, and Jensen indices show that the majority of portfolios formed have positive index values. This shows that the amount of risk borne by investors has been compensated by the expected rate of return offered, this shows that the portfolio formed has been well diversified.

Looking at the entire portfolio, the results of a comparison of portfolio performance evaluation using the Sharpe, Treynor, and Jensen indexes show that apart from the Sharpe Index for annual and semi-annual active strategies, the average index value is higher than that of the market. That is, in the majority, the portfolio formed has a better performance than the market.

Judging from each strategy, there is consistency from each strategy used. On the Sharpe Index, the strategy with the best performance comes from the semiannual active strategy, followed by the annual active strategy, and finally the passive strategy. The Treynor and Jensen indexes also show similar results, that the semi-annual active strategy always has the best performance and the passive strategy always has no better performance than the active strategy, both semi-annual and annual. So in this study concluded that the semiannual active strategy is the best strategy. Related to the results of this study, the semi-annual active strategy is recommended for use by investors, where investors can always change their portfolio composition every six months to get the best return.

In addition, based on a comparison of returns and risks, the overall portfolio with a high PEG and high PBV ratio has a good performance. The High PEG Portfolio consistently produces expected returns with better risk levels than the average for the three strategies. That is, a high PEG portfolio is able to

generate a return that is greater than the average, also has a smaller risk than the average. In the PBV ratio, the best portfolio is shown by the High PBV portfolio, but the level of consistency is not as good as using the PEG ratio, in the semiannual passive and active strategy, the High PBV portfolio shows the rate of return above the average, while in the active semester strategy, the High PBV portfolio shows the low risk level.

In general, both High PEG portfolios and High PBV portfolios do not always produce the highest return on each strategy, nor do the resulting risk levels always have the lowest risk levels. However, the two portfolios are two portfolios that consistently produce a high level of return and a low level of risk. Selection of a portfolio with a high PEG ratio or high PBV can of course be adjusted to the characteristics of each investor himself, whether he is classified as a risk-taker (investors who tend to be more oriented toward returns so they are willing to take on higher risks) or classified as risk-averse (investors who tend to play it safe and are more risk oriented so they are willing to accept lower returns).

Looking at the results of the study, the rate of return generated by High PEG is classified as a fairly high return, using the best strategy, namely the Semester Active strategy. So if investors are going to invest in stocks based on this research, then a better portfolio is chosen, namely the High PEG portfolio, the High PEG portfolio based on the second semester of 2018 data used as the initial investment period in using the Active Semester strategy with the composition of Unilever Indonesia (UNVR), Kalbe Farma (KLBF), Indofood Sukses Makmur (INDF), Semen Indonesia (SMGR), Bank Negara Indonesia (BBNI), and Astra International (ASII). Investors need to re-calculate using data from the company's financial statements for the next period, while continuing to choose companies that are included in the High PEG portfolio. Using the 5-year Active Semester strategy means that investors need to do 9 additional calculations, namely with the company's financial reports on the IDX30 Index for 2019 semesters one and two, 2020 semesters one and two, 2021 semesters one and two, 2022 semesters one and two, and 2023 semesters One. By investing in the IDX30 Index, investors are investing in the best companies because the IDX30 actually describes the 30 best companies selling their shares on the Indonesian capital market. 2021 semesters one and two, 2022 semesters one and two, and 2023 semesters one. By investing in the IDX30 Index, investors are investing in the best companies because the IDX30 actually describes the 30 best companies selling their shares on the Indonesian capital market. 2021 semesters one and two, 2022 semesters one and two, and 2023 semesters one. By investing in the IDX30 Index, investors are investing in the best companies because the IDX30 actually describes the 30 best companies selling their shares on the Indonesian capital market.

CONCLUSION

Based on the analysis that has been done, several conclusions can be drawn to answer the research questions, there are; (1) the formation of a portfolio using a high Price Earning to Growth (PEG) ratio and a high Price to Book Value (PBV) shows consistent results, in which the formed portfolio is capable of producing an expected rate of return with a certain level of risk. In using the strategy, the Semester Active strategy is the best strategy because it can provide the best combination of returns and risks compared to the other two strategies. This shows that investors can utilize historical data in the form of financial accounting reports in determining their portfolio composition, (2) a high Price Earning to Growth (PEG) portfolio shows consistent results, in which the formed portfolio is able to produce expected returns with a risk level that exceeds the average of the three strategies. While using the Price to Book Value (PBV) ratio, the best portfolio is shown by a High PBV portfolio, but the level of consistency is not as good as using the PEG ratio, in passive and active annual strategies, a High PBV portfolio shows a rate of return above the average, while in semiannual active strategy, High PBV portfolio indicates a low level of risk, and (3) in general, a portfolio with a high Price to Book Value (PBV) ratio and a high Price Earning to Growth (PEG) consistently always produces the best performance value above the average through both the Sharpe, Treynor and Jensen indices in the use of passive, active strategies. annually, to active semiannually. From the point of view of the use of strategy, the results of the research show that there is a level of consistency in the results of portfolio performance evaluation, where from the overall index, the ranking of the best index performance in a row is an active semiannual strategy, active annually, and lastly is a passive strategy.

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