

# Performance Evaluation of Momentum Strategy using 52-Week High Data in the Indonesia Stock Exchange Period 2012-2016

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**Abstract**—A majority of the investors in the stock market always think that the right time to buy a stock is when there is a decline in stock price in the market. But in the real market, not all stock which declines will return to the highest level. There are several stocks which still continue to rise, and even break its highest level. The objective of this research is to evaluate the performance of momentum strategy using 52-week high data in the Indonesia Stock Exchange. This research uses monthly data of LQ45 from January 2012 until December 2016. The portfolio which is formed then will be backtested using portfolio attribution. The result shows that momentum strategy using 52-week high is able to generate the return but still below the Jakarta Composite Index. The 52-week high strategy is more effective to generate the abnormal return in small capitalization companies.

**Index Terms**—52-week high, portfolio attribution, sharpe, treynor, jensen

## I. INTRODUCTION

Many investors believe that the right time to buy a stock is when there is a decline. The investor will find where is the bottom of the stock price. On the other hand, they will avoid stock which moves near the last high in the past. The 52-week high and momentum strategy is a form of momentum strategy in which investors structure their portfolio by buying winners and selling losers. When the stock price or index passed the 52-week high in the past, this is usually a positive indicator of the company or index movement.

The momentum investment strategy utilizes the movement of stock or market with an expectation that the movement continues. The investor who uses the momentum strategy will buy a stock at the moment prices are moving up in hopes the momentum of the upward motion will continue in the future. They will sell the stocks when it is felt that the momentum of upward movement has weakened or even has stopped and reversed. Based on the characteristics of this strategy, the investor called the momentum strategy as buy high and sell higher (buy expensive and sell more expensive).

When good news leads to the stock price rising to a level close to the 52-week high, optimistic sentiment appears, thereby enhancing the trend-tracking behavior and in turn improves the momentum effect or the 52-week high effect. This

is because when the stock price approaches the 52-week high, there are two forces causing an increase in the potential future stock return. These two forces are from the information effect of the rising price, and the positive sentiment accompanied by the rising price. This paper concerns the appropriate timing for buying into and selling stocks in order to exploit the 52-week high effect in producing profits.

In stock investment portfolios, various strategies will be used by investors to obtain performance that is comparable or exceeds market performance. There are two strategies that investors can choose in forming a stock portfolio, the passive strategy and active strategy. Portfolio passive strategy usually includes the actions of the investor which tend to be passive in investing in stocks and just base its stock movements on the movement of the market index. That is, investors do not actively seek information; they do not make a sale or buy a stock that can produce an abnormal return. Investors, in this case, will only follow the index market.

On the other hand, active portfolio strategy basically will include active investor action within the selection, buying and selling of shares, searching information, following time and price movements shares as well as various other active actions to produce abnormal return. Certainly, investors should be careful in choosing what strategy is right for him, whether an active portfolio strategy, passive portfolio strategy or merging both of the portfolio strategies simultaneously (Jones, 2002).

Portfolio strategy is active in the formation of the stock portfolio which basically use a fundamental approach in stock analysis. The fundamental approach is the approach to analyze a stock by virtue of the financial performance of listed companies (profits, dividends, sales and other) and industry performance where the company operates. The goal of the active portfolio strategy is achieving portfolio performance shares that exceed the performance of a stock portfolio obtained through passive portfolio strategy.

In this paper, we examine the role of timing of 52-week high price in stock return momentum. Specifically, we examine whether firms that reached their 52-week high price recently relatively outperform firms that achieved the 52-week high price early on during the past 52-week period.

### A. Problem Formulation

Many studies have been conducted to evaluate the performance of stock selection strategies in generating high returns. One of the studies carried out is the momentum strategy by utilizing 52-week high, that is by buying stocks that are approaching their highest level in the last 52 weeks that have provided high returns in the past and selling shares with low returns assuming the shares will produce low returns in the future. This strategy is still very rarely used by investors, considering that most investors buy stocks that are still cheap. So the formulation of the problem in this study is how the stock momentum strategy uses 52-week high in generating returns on the Indonesia Stock Exchange.

## II. LITERATURE REVIEW

In 2004, George and Hwang published their study "The 52-week high and momentum investing" which produced the 52-week high momentum theory and tested it in the American market. They found that by buying stocks close to 52-week high and selling them above the 52-week high will result in a monthly abnormal return of 0.45% [1].

The 52-week high momentum strategy was also tested in the Australian market by Marshall and Cahan (2005). In their study, it was found that a 52-week high momentum strategy resulted in a positive abnormal return of 2.14% [2].

In 1993, Jegadeesh and Titman published their article entitled "Returns to buying winners and selling losers: Implications for stock market efficiency". They found that buying a stake in the past and selling a loser's stock in the past would produce a positive abnormal gain [3].

Du found that the 52-week high momentum gains reversed, in the long run, using 18 market indices from Morgan Stanley Capital International (MSCI) index data [4]. Alsubaie and Najand (2008) found a short-run price reversal instead of price continuation after stocks hit a 52-week high on the Saudi stock market [5].

Burghof and Prothmann suggest that the 52-week strategy is favorable in the UK market and correlates with information uncertainty [6]. Ming, Qianqiu and Tongshu (2010) examine the strategy of the 52-week high momentum of individual stocks in the top 20 stock markets worldwide. Of the 20 stock markets, the 52-week high momentum strategy generates profits in 18 markets and gains significantly in 10 markets, including in Europe and Hongkong. The average profit generated ranged from 0.60% to 0.94% compared to the American market studied by George & Hwang (2004) [1].

Two major sets of research concerns to be addressed in this paper are as follows. Firstly, it is necessary to consider how the level of the stock index affects the 52-week high of individual stock through investor sentiments. Potential good news resulting from a well-performing stock index generates promising prospects for an individual stock. This, in turn, motivates investors to trace the past trends of individual stocks, as investors expect rising prices in the future from a bullish market. It is thus suggested that a higher stock index level should lead to the improved performance of the individual

stock. In contrast, a bearish market or a low stock index level may reduce investor confidence in holding onto stocks. This paper will identify how the stock index level affects the connection between the 52-week high and stock returns.

Secondly, apart from using the 52-week high as a reference point, this paper attempts to discover whether other possible forms of important information exist, which can also be adopted as a reference point by investors. Where the 52-week high is used as a reference point, it is proposed that similar manifestations of past high price points measured at different periods should also be used as reference points, such as the weekly (5-day), monthly (20-day) or seasonal highs (60-day). Those benchmarks may also be used as a comparison to the current price. However, very few studies have attempted to understand the relationship between stock returns and such benchmarks.

## III. RESEARCH METHODOLOGY

### A. Research Flow

#### B. 52-Week High

The highest 52-week stock data was obtained by screening shares in which the closing of the end of the month met the criteria greater or equal to the highest 52 weeks. After that, a portfolio will be used using the highest order, namely stocks approaching the highest level within 52 weeks. The stock price of 52-week high is the stock price that is closest to the highest stock price achieved by the stock in the last 52 weeks.

Portfolio Performance Attribution will find out the top 20 stocks that give return contributions and the 20 lowest shares that contribute to return (Yingjin Gan, 2015). The portfolio that was formed based on the highest 52-week strategy will be backtested using the backtest application on the Bloomberg terminal to see the results of return, Sharpe, Jensen and Treynor ratios.

#### C. Sharpe Model

In the Sharpe model, using the expected rate of return and the standard deviation, portfolio performance in the future can be predicted. The Sharpe Ratio formula is as follows:

$$R/Vs = \frac{\bar{R}_p - \bar{R}_f}{\partial_p} \quad (1)$$

Notes:

- $R/Vs$  = Reward to variability
- $\bar{R}_p$  = Average return portfolio
- $\bar{R}_f$  = Risk Free Rate
- $\partial_p$  = Standard Deviation as a risk benchmark

#### D. Treynor Model

Treynor measures portfolio performance using the previous average return as the expected rate of return, and beta as a measure of risk calculation. The Treynor Model Formula is as follows:

$$R/Vt = \frac{\bar{R}_p - \bar{R}_f}{\beta_p} \quad (2)$$

Notes:

- $R/V_s$  = Reward to variability
- $\bar{R}_p$  = Average return portfolio
- $R_f$  = Risk Free Rate
- $\beta_p$  = Portfolio Beta as a risk benchmark

**E. The Jensen Model**

In the Jensen index, the difference between actual and expected returns is on the capital market line. The Jensen Model formula is as follows

$$\hat{J}_p = \bar{R}_p - [\bar{R}_f \frac{R_m - R_f}{\beta_p}] \tag{3}$$

Notes:

- $\hat{J}_p$  = Jensen Index
- $\bar{R}_p$  = Average return portfolio
- $\bar{R}_f$  = Risk Free Rate
- $\beta_p$  = Portfolio Beta as a risk benchmark

**F. Performance Attribute**

Performance attribution is one of the alternatives to measure comparison portfolio performance with the benchmarks. The main objective of performance attribution is to explain the relative performance of a portfolio compared to benchmarks that are determined in terms of investment strategies and changes in market conditions. By assessing the contribution of each factor to performance, attribution models can provide valuable information for investment managers. One way to measure performance attribution is by using the Bloomberg terminal. Performance attribution has a complete structure to accommodate the needs of investment managers from portfolio selection.

There are two basic approaches to performance attribution: a sector-based approach pioneered by Brinson Fachler (1985), Brinson Hood and Beebower (1986), and the factor-based approach proposed by Grinold and Kahn (1999).

1) *The Brinson Attribution:* The Brinson Attribution looks at two things: Active Asset Allocation and Active Stock Selection. The portfolio is weighted the same as the sector and also measures it. The Brinson Attribution formula is as follows (Yingjin Gan, 2015):

$$\sum_s w_s^P R_s^P - \sum_s w_s^B R_s^B = \sum_s (w_s^P - w_s^B) R_s^B + \sum_s w_s^P (R_s^P - R_s^B) \tag{4}$$

Notes:

- $w_s^P$  or  $w_s^B$  = Sector Weights
- $R_s^P$  or  $R_s^B$  = Sector Return of portfolio/benchmark

2) *The Brinson Attribution:* The generic model begins with the basic factor of the model framework where the total portfolio return is obtained from the number of K from the return component with the residual value.

The General Model Framework formula is as follows (Yingjin Gan, 2015):

$$r_{nt} = \sum_{k=1}^K \beta_{nkt} * F_{kt} + \epsilon_{nt} \tag{5}$$

Notes:

**TABLE I**  
**RETURN SUMMARY**

hline Portfolio	Summary
Benchmark	EQBT-52 week 1q 45
Start Date(Earliest Available)	JAKARTA COMPOSITE INDEX (JCI)
End Date	1/31/2012
Currency	12/30/2016
Price	IDR
Return Unit Percentage	PRIMARY
Method Total Return	
Portfolio Return	23.15
Benchmark Return	48.08
Active Return	-24.94

- $r_{nt}$  = Stock Return
- $\beta_{nkt}$  = Exposure Factor
- $F_{kt}$  = Return Factor
- $\epsilon_{nt}$  = Residual Return

**IV. RESULTS**

**A. The 52-Week High Strategy**

By using the data of stocks included in the LQ45 index, backtest is carried out with the criteria of stocks whose monthly closing price is greater or equal to the highest price of 52 weeks, from January 2012 to December 2016. After that, the backtest results are included in the portfolio attribution to get the cumulative return.

From Fig. 1, it can be seen that the 52-week high strategy produces a cumulative return above 0, meaning that the portfolio formed from this strategy is able to generate returns over a period of 5 years of research. At the beginning of the year 2012, 2013 and 2015, this strategy had produced negative returns that can be seen in the graphics.

During the 5-year period of research, if a sample of stocks above 52 weeks is taken, the return will be 23.15%. But this result is still less than the JCI return with the same research period. JCI managed to generate a return of 48.08%. There is almost a difference of 24.9% between investing using a 52-week high strategy with the JCI benchmark.

To get the composition of the portfolio that was formed, the Portfolio Attribution at the Bloomberg terminal was used to obtain top 10 holdings and bottom 10 holdings. Shares which have the closing price greater or equal to the highest price of 52 weeks are included in the criteria for top 10 holdings. While stocks which have the closing price far from the highest 52-week level are included in the bottom 10 holdings criteria.

**C. Return & Risk Portfolio Attribution**

Based on the backtest simulation conducted and portfolio attribution formation on stocks that broke the 52-week high compared to the JCI, a return of 23.15% was obtained, while the average return generated is 6.43%. The minimum return is -6.47% and the maximum return generated is 6.77%

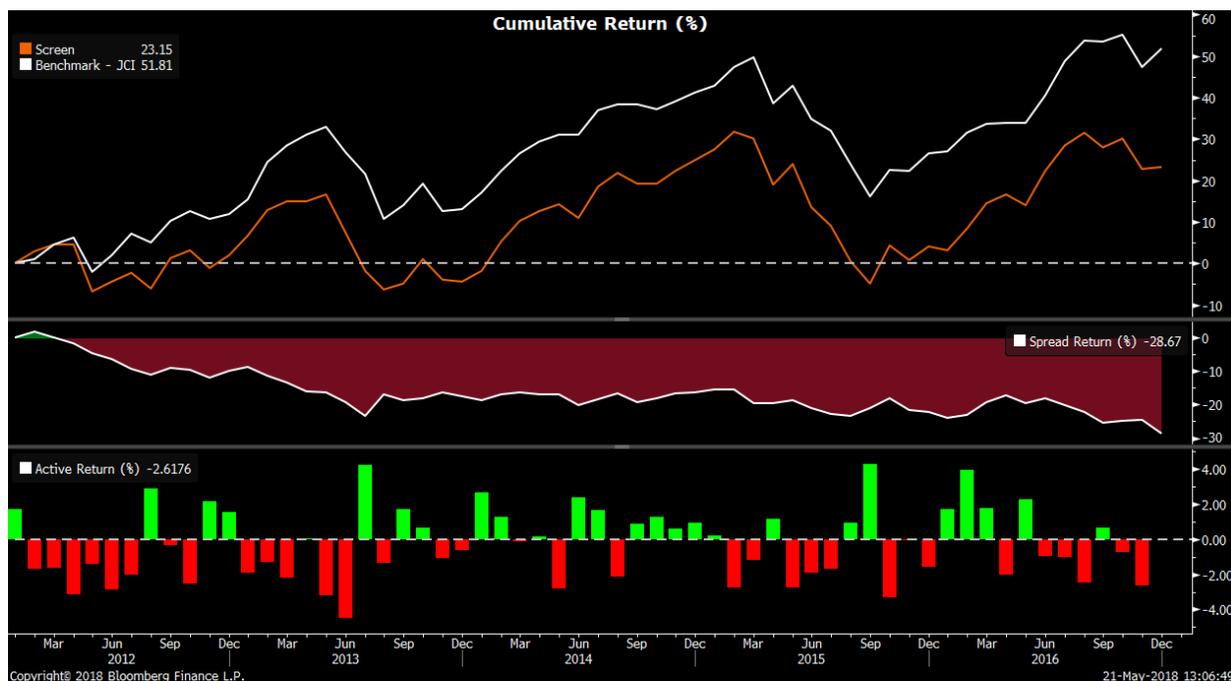


Fig. 1. Cumulative Return 52-week high vs IHS

TABLE II  
TOP 10 HOLDINGS

Top 10 Holdings	Value
UNITED TRACTORS TBK PT	4.06
BUKIT ASAM TBK PT	3.84
BANK TABUNGAN NEGARA PERSERO	3.80
BANK NEGARA INDONESIA PERSERO	3.38
BANK CENTRAL ASIA TBK PT	3.31
SRI REJEKI ISMAN TBK PT	3.28
BANK RAKYAT INDONESIA PERSERO	3.11
VALE INDONESIA TBK	3.04
BANK MANDIRI PERSERO TBK PT	2.86
UNILEVER INDONESIA TBK PT	2.81

#### D. Risk-Return Statistics

The Sharpe ratio resulting from the formation of the 52-week high portfolio is -0.01%, meaning that every 1% risk received by investors, the portfolio produces an excess return of -0.01%. The higher the Sharpe ratio, the better the portfolio is. Whereas Jensen Alpha obtained a value of -3.13%. Jensen calculates the difference in return if annualized from the portfolio compared to risk-free assets. The higher the Jensen value, the better.

#### V. DISCUSSION

The purpose of this study is to evaluate whether the momentum strategy using the highest 52-week stock data is able to generate returns on the Indonesia Stock Exchange, as has been done in some previous studies in other countries.

The data is taken from the Bloomberg terminal from every share entered in the LQ45 index at the end of each month from January 2012 to December 2016. The total number of

shares in LQ45 are 45 shares. Some stocks whose status is suspended or inactive are excluded from the research list.

By using the stock data included in the LQ45 index, backtest was performed with the criteria of stocks whose closing price is greater or equal to the 52-week highs, during the period January 2012 to December 2016. After that, the backtest is included in the portfolio attribution to obtain the cumulative return. From the figure below it can be seen that the 52-week high strategy produces cumulative return above 0, meaning that the portfolio formed from this strategy is able to generate return during the period of 5 years of research. At the beginning of the year 2012, 2013 and 2015 this strategy could generate a negative return.

#### VI. CONCLUSION

Research in this study is to evaluate the performance of momentum strategy using 52-week high data in the Indonesia Stock Exchange. This research uses monthly data of LQ45 from January 2012 until December 2016. The portfolio which is created was backtested using portfolio attribution. The result shows that momentum strategy using 52-week high is effective to generate return in the Indonesia Stock Exchange.

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