Comparing The Performance of Jegadeesh-Titman and The 52 Week High Price Momentum Strategies to Achieve Optimal Portfolio

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Abstract

The aim of this study is to compare the performance of Jegadeesh-Titman strategy (1993), and the highest price in the last 52 week Momentum strategies to achieve the optimal portfolio. In this study, 120 companies during the period of 5 years (2009 to 2013) have been studied. In this study time keeping of portfolios is 6 months, stocks based on more efficiency, arranged from top to bottom and the top %30 winner stocks, %30 down loser stocks and the remaining %40 call middle stocks, and also portfolios obtained have been kept for 6 months and in the highest price of the last 52 week strategy stock-based current stock price index to its highest price at the last 52 weeks classify portfolio and the resulting portfolio also is keeping also 6 months. The results show that deployment the highest price in the last 52 weeks strategy is appropriate criteria for establishing the optimal portfolio.

Keywords: behavioral finance, Portfolio selection, stock return, Momentum strategy, Winner and loser portfolio

Introduction

Optimum attribution of financial resources is one of the most important actions in investment. It can be surely claimed that final result of all attempts in investment management is appeared in this step. Investors are always searching for limited financial resources to attribute to various selections optimum by considering principles of investment management (Mashayekhi, 2003). Investors have relative confidence for investment and market mechanisms move to efficiency in markets which limited financial resources are attributed properly to investment selections. (Raei and Khosravi, 2007) Selecting proper portfolio of investment was done by considering limited criterions, while each investor considers other ideals besides his main purpose that his accomplishments fulfill him. Stockholders of securities and stock exchange are not exceptional and have anxiety of making portfolio. They are seeking for their expected return by accepting certain level of risk. Science of decision making helps investors to have optimum decision by various models. (Khalili Eraghi, 2006)
1. Problem Statement
Investors usually consider contradicted purposes in selecting optimum portfolio simultaneously such as return, risk, liquidity and so on. Some researchers introduce liquidity as one of the most important criterions for investment in variance-average standard optimization framework of portfolio (Andrew and Constantine, 2003). Speed of equity liquidity is as the most important factor in capital market; as though, study results have shown that there is positive relationship between price gap and stock return as liquidity criterion with stock return which are accepted in securities and stock exchange. (Badavar et al., 2012)

Yet, logical investors seek for selections for investments in acceptable level of risk and maximize return in market. Therefore, the question is "what tools have sufficiency to select proper portfolio?" Proper criterion in selecting investors' portfolio should have vivid and high predictability power and simplicity in calculations and no need to sophisticated mathematical calculation, because one of key principles in investment in securities and stock exchange is speed in investment. Today, there are many methods to evaluate equities and selecting proper combination among them to be put in 2 main technical or analytical, fundamental groups.

One of usable and important strategies among analysts and portfolio managers to select proper portfolio in investment market is momentum strategy. It is tries in this strategy to use past performance, prediction instant prediction, and proper portfolio for investment. Momentum strategy includes movement in market and believes that past procedures and current will continue in future. This strategy is against market efficiency hypothesis. Momentum is reason of this law in market that price procedure tends to stay until to be prevented by an external force. (Hun Tackles, 2003)

2. Necessity for This Study
Unfortunately, one of main problems in capital market of countries having new-event economics is impropriety in financial attribution. Now, capital markets in Iran have such problem. Removing such problem need to identify proper investment using tools with high accuracy to predict necessary variables of decision making. Mostly, non-success of investors in capital market are influenced by their disability in prediction related variables. Therefore, if we predict essential variables for decision making using proper tools or models with high accuracy, financial resources are guided more easily and market will move forward efficiency. If market financial resources are limited to investment selections properly, investors have relative confidence about investment and market mechanisms move toward efficiency. (Raei and Khosravi, 2007)

Literature Review
Jegadeesh-Titman issued an article in 1993 explored return durability in middle-term for the first time. They made 2 portfolios of loser and winner exploring ordinal stock in period of 3 to 12 months and explored return behavior of these 2 portfolios. Study results showed that in period of 3 to 12 months, winner portfolio has better performance than market and loser portfolio has worse performance than market. In other words, against long-term period with no retrieving, stock return tends to keep its last condition in middle-term. After issuing results of exploring
Jegadeesh-Titman results, extensive researchers were done about continuity of return which leads to confirm other works results.

Babris et al. (1998), Daniel et al. (1998), Hung et al. (1999) stated that theoretical models try to explain coexistence of middle-term and long-time momentum in each return of stock (individually) using rational behavioral errors. According to these researchers' points of view, momentum happens when dealers change their ideas slowly when they access to new information.

Markowitz et al. (1999) proved that each stock return (individually) is influenced by momentum of industry returns. They explored effect of momentum in industries return and made portfolios for industries based on weighting to various industries and ranked stocks based on past return of industry. They found that industries having less return are in portfolio making time. They have higher performance in six-month period after constitution.

Liu et al. (2009) explored momentum of the highest price effect for recent 52 weeks on each stock market of various countries. According to this fact that each country has different culture and organizational structure to influence on psychology of investors, behavioral models permit various effects of momentum among various countries. Obtained results are as following:

1. Momentum benefits have the highest price in last 52 weeks in strong international stock markets. 10 markets in 16 markets of sample are witness for momentum strategy of price for 52 last weeks.
2. Momentum of the highest price exists in 52 last weeks and momentum of Jegadeesh-Titman effects (1993) simultaneously but independently exist in each country and a momentum strategy can't determine the other.
3. Factors of market risk and size risk can't explain the highest price of last 52 weeks. Actually, momentum strategy of the highest momentum for last 52 weeks doesn't return based on findings of Jorge and Hung in US in 2004, finally.

Shafiei (2007) explored profitability of momentum investors in securities and stock exchange of Tehran and tested the main hypothesis to compare winner and loser portfolio and also momentum strategy return and market return. In first hypothesis, he explores existence and non-existence of return continuity in middle-term in securities and stock exchange. For this purpose, he explored return continuity in time periods of 3, 6, 9, and 12 months. He found that in all time returns, average of monthly return was winner portfolio. It means that winner portfolio in keeping time continues to its better performance than winner portfolio; therefore, first hypothesis is confirmed. In the second hypothesis, various time periods were explored. He found that using momentum investment policy in 3, 6, 9, and 12 months leads to get more return than market portfolio return. In other words, using momentum investment momentum in Tehran securities and stock exchange is profitable.

Sadeghi & Fadaeinezhad (2006) explored profitability of momentum and reverse strategies in Tehran securities and stock exchange. They made and compare portfolio in five-year return (2001-2005). Findings showed that each strategy is profitable in one time period; as though, in time horizons of 1, 3, and 6 months by momentum strategy and in longer time horizons using reverse strategy we can get extra return. Therefore, their findings rejected efficiency of Tehran securities and stock exchange in weak level.
Eslami Bidgoli et al. (2010) explored profitability of momentum investment strategy in Tehran securities and stock exchange and showed that using proper investment policy in proportion to mentioned time horizon, return is more than market return. Explorations showed that in period of 3 to 12 months, phenomenon of return continuity or momentum exists in behavior of ordinal stock; therefore, we can increase investment return using momentum investment policy. Profitability of this investment policy in Tehran securities and stock exchange showed that momentum investment policy in securities and stock exchange considered as an element of newborn markets is profitable and in all tested momentum investment policies, average of winner monthly portfolio return in keeping is more than average of loser portfolio monthly return.

Ghalibaf Asl et al., (2010) in a study explored profitability of momentum strategies of profitability and price in Tehran securities and exchange and evaluated effects of extra ordinal return factors, standardized unexpected profitability, proportion of price to each stock profit, official value to market of each stock and also firm size on return of strategies in period 2004 to 2008. Test results of hypotheses showed that price momentum strategy in time periods of 3, 6, and 12 and profit momentum strategy in 3 and 6 months are profitable in Tehran securities and stock exchange, but profitability of momentum strategy was not confirmed in 1 year period and other factors such as mentioned independent variables in model are effective on extra return obtained from price momentum.

Methodology of The Research

This study is empirical and proving according to theoretical aspect. In empirical studies, researchers seek to confirm what exists. According to study classification based on purpose, this study is applicable, because past information was used. The present study according to reasoning is applicable, because suggested models can be used to compare momentum strategies. This study is post-eventual, because past information was used. According to deduction, this study is priori, and according to appearance it is causal.

1. Study Hypotheses:

Using momentum hypotheses of the highest price in last 52 weeks is more proper criterion to select optimum portfolio than momentum strategy of Jegadeesh-Titman.

2. Terms Operational Definitions:

Used variables in this study include:

Stock return: monthly return of firm is based on initial and end price in that year by considering capital (if occurs) and also calculated dividends. Stock return is calculated by the following formula:

\[ R_{it} = \frac{D_{it} + P_{it}(1 + X_{it} + C_{it}) - (P_{it-1} + M_{it} \times X_{it})}{P_{it-1} + M_{it} \times X_{it}} \]

\( R_{it} \) = stock return i in period t

\( P_{it} \) = price of stock i at the end of period t
Price of stock \( i \) at the beginning of period \( t \)

Dividend of stock \( i \) at the end of period \( t \)

Percentage of increase from demands and cash brought for stock \( i \) in period \( t \)

Percentage of capital increase from deposited of stock \( i \) in period \( t \)

Nominal paid cost by investor for capital increase from cash brought and demands for stock \( i \)

The proportion of present price to the highest price in last 52 weeks:

In this exploration as portfolio making period is monthly, price of each stock at the end of month is divided in the last 52 weeks.

3. Winner and Loser Portfolio:

After calculating return in criterion of Jegadeesh-Titman and calculating proportion of current price of stock to the highest stock price in last 52 weeks at the end keeping period (6 months) order results from low to high and 30% of high portfolio is winner and 30% of low portfolio is loser.

4. Statistical Society and Statistical Sample:

Statistical society includes all participated firms in Tehran securities and stock exchange. Data of this study includes all monthly observations of present stock in Tehran securities and stock exchange from the first of Farvardin (1st month of spring) 2008 to the end of Esfand (last month of winter) 2013 that is totally 6 years. (It should be noted that time zone for this study is five-year, but to obtain the highest price in last 52 weeks, stock price information was used in 2009).

In order to study sample, filtering has been used. Firms with following characteristics make study sample:

- To be accepted in Tehran securities and stock exchange from the beginning of 2008.
- Don't have tax interval more than 3 months.
- Haven't been omitted from Tehran securities and stock exchange.
- Their financial years finishes to Esfand (the last month of winter) and haven't changed their financial year in explored period for calculated variables to have time parallel for various firms.

Details in Making Portfolios

That:

\[
R_{it} = \alpha_0 + \alpha_1 R_{jt-1} + \alpha_2 R_{52t-1} + \alpha_3 R'_{jt-w} + \alpha_4 R'_{jt+l} + \alpha_5 R'_{52w} + \alpha_6 R'_{52l} + \alpha_7 \text{SIZE}_{it-1} + \varepsilon_{it}
\]

\( R_{it} \) = stock return in keeping time in 6-month period

\( \text{SIZE}_{it-1} \) = firm size while making portfolio (firm market value)
R_{jt-1} = stock return in making period (selection) of portfolio based on Jegadeesh-Titman (6-month return of stock from past)

R_{52 t-1} = proportion of current price of stock to the highest price in last 52 weeks at beginning of making portfolio period.

R’_{jt w} = virtual variable, if stock in Jegadeesh-Titman is part of winner portfolio, it is 1; otherwise, it is 0

R’_{jt l} = virtual variable, if stock in Jegadeesh-Titman is a part of loser portfolio, it is 1; otherwise, it is 0

R’_{52 w} = virtual variable, if stock in last 52 weeks is part of winner portfolio, it is 1; otherwise, it is 0

How to calculate dependent variable (Rit), controlling variable (SIZE_{it-1}), and independent variables (R_{jt-1} & R_{52 t-1}) such as first and second hypotheses. It means to test independent third hypothesis, first and second hypotheses (R_{jt-1} & R_{52 t-1}), we consider as third independent variables and finally we enter virtual variables in model to obtain better result:

To make portfolio in Jegadeesh-Titman (1991) first, we reduce selected sample based on return (last 6 months) from high to low. We call 30% high stock as winner portfolio, 30% of low as loser portfolio, and 40% of middle for middle-term. Accordingly, similar to Jegadeesh-Titman method, 54 winner, loser, and middle portfolios were obtained by the highest price criterion in last 52 weeks.

5. Hypotheses Analysis

Using momentum strategy of the highest price in last 52 weeks is a more proper criterion to select optimum portfolio than Jegadeesh-Titman momentum strategy.

H0: using momentum strategy of the highest price in last 52 weeks is not more proper criterion to select optimum portfolio than Jegadeesh-Titman momentum strategy.

H1: using momentum strategy of the highest price in last 52 weeks is a more proper criterion to select optimum portfolio than Jegadeesh-Titman momentum strategy.

\[ R_{it} = \alpha_0 + \alpha_1 R_{jt-1} + \alpha_2 R_{52 t-1} + \alpha_3 R’_{jt w} + \alpha_4 R’_{jt l} + \alpha_5 R’_{52 w} + \alpha_6 R’_{52 l} + \alpha_7 SIZE_{it-1} + \epsilon_{it} \]

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Coefficient</th>
<th>Standard deviation</th>
<th>T statistics</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>( C )</td>
<td>65.67639</td>
<td>10.11117</td>
<td>6.495427</td>
<td>0.0000</td>
</tr>
<tr>
<td>( R_{jt-1} )</td>
<td>0.063265</td>
<td>0.020231</td>
<td>3.127064</td>
<td>0.0018</td>
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<tr>
<td>( R_{52 t-1} )</td>
<td>0.486198</td>
<td>0.059102</td>
<td>8.226444</td>
<td>0.0000</td>
</tr>
<tr>
<td>( R’_{jt w} )</td>
<td>-3.694335</td>
<td>1.590160</td>
<td>-3.32324</td>
<td>0.0202</td>
</tr>
<tr>
<td>( R’_{jt l} )</td>
<td>-1.175784</td>
<td>1.651848</td>
<td>-2.71179</td>
<td>0.0466</td>
</tr>
<tr>
<td>( R’_{52 w} )</td>
<td>0.420660</td>
<td>1.620348</td>
<td>2.95961</td>
<td>0.0352</td>
</tr>
</tbody>
</table>

Table 2: Hypothesis Test
Analyzing The Data of The Research

According to results obtained from regression model, it is seen that amount of P-value related to F (prob (F-statistics)) indicates significance of total regression is 0.000 and shows model is significant in confidence level of 95%. Determination mediated coefficient is 0.626853 that is relatively 63% of dependent variable changes determinable by model dependent variables. In addition, Durbin-Watson coefficient is 1.897999 that is between 1.5 and 2.5 showing non-correlation among variables.

As it is seen from above table, for example, variable coefficient of stock in making period (selection) of portfolio based on Jegadeesh-Titman method (return of 6-month of stock) (R\textsubscript{jt-1}) is 0.063265 and significance number (Prob) is 0.0018. Variable coefficient than current price of stock to the highest price in last 52 weeks at the beginning of making portfolio (R\textsubscript{52t-1}) is 0.486198 and significance number (Prob) is 0.000. Virtual variable coefficient if stock in Jegadeesh-Titman method is as a part of winner portfolio, (R'\textsubscript{jtw}) is -3.694335 and significance number (Prob) is 0.0202. Virtual variable coefficient if stock in Jegadeesh-Titman method is as a part of portfolio, (R'\textsubscript{jtl}) is -1.175784 and significance number (Prob) is 0.0466. Virtual variable coefficient if stock in last 52 weeks is as a part of winner portfolio, (R'\textsubscript{52w}) is 0.420660 and significance number (Prob) is 0.0352. Virtual variable coefficient if stock in last 52 weeks is as part of loser, (R'\textsubscript{52l}) is -8.141327 and significance number (Prob) is 0.000.

Variable coefficient (SIZE\textsubscript{it-1}) is -1.105631 and significance number is 0.0025. According to t-statistics and p-value of these variables, results show significance of these variables in error level of 5%. Therefore, H\textsubscript{0} is rejected and its opposite hypothesis is confirmed. These findings show that using momentum strategy of the highest price in last 52 weeks (because winner stock return in this method has more continuity, it could make more significant relationship), is more proper criterion to select optimum portfolio than Jegadeesh-Titman momentum strategy.

Conclusion and Suggestions

Results obtained from hypotheses tests show that using momentum strategy of the highest in last 52 weeks is better strategy to select portfolio than Jegadeesh-titman strategy.

Suggestions obtained from study results include:

- According to efficiency of momentum strategy in making portfolio in period of 6-month in study, it is suggested to investment managers to seek for optimization their portfolio, so it is suggested to use 2 tested strategies in this study instead of other time-consuming and full-of-errors method.


Suggestion for Future Researchers

- Implementation Jegadeesh-Titman method in shorter or longer periods and its comparison to results are obtained from method of the highest price in last 52 weeks
- Study Hypotheses tests for other time periods and also in other industrial groups in Tehran securities and stock exchange individually in order to consider change of estimation period on results.

References


