

**ANALYSIS OF MOMENTUM STRATEGY FOR GENERATING
ABNORMAL RETURN IN THE INDONESIAN STOCK
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ABSTRACT:

The testing of momentum strategies by previous research on the capital markets of developed and developing countries led to different results. This study aimed to explain the momentum Strategy for generating abnormal returns in the Indonesia Stock Exchange using several factors. The factors are market factor, size, book-to-market ratio, and momentum. This study implemented formation-holding 12-3 months, 12-6 months, 12-9 months and 12-12 months. This study using Capital Asset Pricing Model, Fama French Three Factor Model, and Carhart Four Factor Model to see the effect of these factors on the excess return. The result based observation from January 2009 until December 2019 showed that momentum Strategy is unable to generating abnormal return in the Indonesia Stock Exchange. However, this research shows that the winner's portfolio by using 12-3 Strategy is able to provide a significant abnormal return of 1.02% when tested using the Capital Asset Pricing Model. Furthermore, all four of these factors (market factor, size, book-to-market ratio, and momentum) have influence in generating abnormal return on winner portfolio of the momentum Strategy.

Keywords: *Book-to-market; Momentum; Size*

1. Introduction

Indonesia is one of the favorite destinations for foreign investors to invest in emerging markets, either in the form of portfolio investment or direct investment in the real sector. Compared to other emerging market countries, Indonesia has rapid economic growth and will continue to experience growth, besides that, Indonesia is also the only member of the G-20 in the ASEAN region. As of September 2, 2018, Fitch determined Indonesia to be at the Investment Grade level. This was followed by S&P which upgraded Indonesia's rating to BBB (Triple B with stable outlook) on May 31, 2019 (Ministry of Finance Republic of Indonesia, 2020).

Since 2014, there has been a significant increase in the number of investors in the Indonesian capital market. This is reflected in the growth in the number of Single Investor Identification (SID) recorded by Kustodian Sentral Efek Indonesia / Indonesia Central Securities Depository (KSEI). The increase in capital market investors shows that the public is increasingly enthusiastic about investing in the capital market. In the future, it will impact increasing trading activities and market liquidity, which is expected to bring the capital market in Indonesia more advanced. The Jakarta Composite Index (JCI) continues to increase, the most significant increase since the last ten years occurred in 2010, where the JCI increased by 46.13% and on average during the previous 10 years the JCI recorded an average growth of 10.59%. Still, during the In some cases, the JCI was bearish which is an unavoidable risk, so investors need to diversify their stock assets in order to minimize the risk of price fluctuations as a result of uncertainties that occur in the future. Apart from diversification. The stock selection process is also important for investors in order to obtain an

optimal comparison between risk and return. There are various types of strategies used by investors to prepare investment portfolios, especially stocks, two types of Strategies that investors often consider are the contrarian Strategy and the momentum Strategy. Investors use the contrarian Strategy intending to take advantage of the occurrence of a reversal, namely a condition where there is a reversal of stock returns during a specific period so that investors who use this Strategy will get a reversal return. On the other hand, the momentum Strategy is used by investors to take advantage of conditions where a stock that previously had a positive return is assumed to be positive for a certain period to obtain a continuation return.

DeBondt and Thaler (1985) first examined the contrarian Strategy that occurred in the United States stock exchange, they found that the occurrence of a return reversal in a group of stocks that previously produced positive returns became stocks with negative returns in the next period, this is because investors respond to the emergence of new information excessively. The portfolio is divided into two types in the momentum Strategy, namely a portfolio containing a collection of winner stocks and a portfolio containing a loser stock. The group of stocks that fall into the winner category are stocks with a positive return or outperform compared to the benchmark. In contrast, the group of stocks included in the loser portfolio is a group of stocks that previously produced negative returns or underperformed compared to the benchmark. Since it is assumed that stocks with positive returns and stocks with negative returns will continue, investors will buy stocks that are included in the winner stock category and sell (short) the loser stock category.

Jegadeesh and Titman (1993) were the first researchers of momentum Strategy at the NYSE and AMRX to examine stock data from 1965 to 1989. They found that the momentum Strategy for a period of 3 months to 12 months was able to generate significant positive returns. The same thing was found in Europe by Rouwenhorst (1998) and in Australia by Hurn and Pavlov (2003). They found that the momentum investment Strategy produced positive returns in the European and Australian capital markets. Forner & Marhuenda (2003) also obtained similar research results which found that the momentum Strategy in the short term was able to produce positive abnormal returns in the Spanish capital market. Then Cheng & Wu (2010) obtained similar results when researching the Hong Kong Stock Exchange, where the momentum Strategy was able to generate significant profits in the medium period. Finally, Sehgal and Jain (2011) researched momentum Strategies in the Indian capital market, they found that portfolios with formation-holding Strategies 6-6 and 12-12 were able to generate abnormal returns. Furthermore, Banerjee, et al (2018) found that momentum can be used to predict returns in the Indian capital market.

Several other researchers found different results, such as Chan, et al (1996), Hameed and Kusnadi (2002), Bildik and Gulay (2001) and Henker, et al (2012) who found that the use of momentum investment Strategies was not able to generate profits for investors, This is due to an overreaction, resulting in a return reversal, in which case the more appropriate Strategy is to use a contrarian Strategy. Furthermore, Al-Mwalla (2012) conducted a study to investigate the effect of size and momentum on the Amman Stock Exchange, the results of the study found that there was no significant relationship between the momentum factor and excess return. Furthermore, Berggrun, et al (2020) conducted research related to conventional momentum Strategies in Latin American capital markets, where the results showed that the momentum Strategy had not been able to produce positive and significant performance.

The differences in the results found related to the use of momentum strategies by previous studies make this topic still very open for further research, so this is the background for the author to examine the use of momentum Strategies. This study examines the ability of the momentum Strategy using the CAPM, Fama French 3 Factor Model and the Carhart Four Factor Model as well as the research conducted by Sehgal & Jain (2011) to answer the question of whether the momentum Strategy is able to generate abnormal returns on the Indonesia Stock Exchange.

2. Research Method

The type of data in this study is secondary data as research conducted by Sehgal and Jain (2011). The data used are as follows:

- 1) Monthly Individual Stock Price Index (IHSI) of each issuer listed on the Indonesia Stock Exchange during the study period, namely the period January 2009 – December 2019. From this data, monthly returns are calculated.
- 2) Market capitalization of each issuer listed on the Indonesia Stock Exchange during the study period, namely January 2009 – December 2019.
- 3) The book-to-market ratio of each company listed on the Indonesia Stock Exchange

- 4) Monthly Composite Stock Price Index (JCI) to calculate market return
- 5) This study uses the yield of Government Securities (SBN) with a tenor of 1 year as the risk-free rate

This study uses the following variables:

- 1) Return of Winner Portfolio: The return of the winner portfolio is the portfolio's return consisting of stocks that have the highest average return in the market. As research conducted by O'Brien et al. (2010), the winner portfolio is measured by the proportion of 30% of stocks with the highest average return in the market and is calculated on an equal basis.
- 2) Return of Loser Portfolio: The loser's portfolio return is the portfolio return of a group of stocks that has the lowest average return on the market. Following the research conducted by O'Brien et al. (2010), the loser portfolio is measured by the proportion of 30% of the stocks that have the lowest average return in the market on an equal weighted basis
- 3) Excess Return Market: Market return is the difference between this month's JCI minus the previous month's JCI or the formula $(JCI_t - JCI_{t-1}) / JCI_{t-1}$. Furthermore, the excess return market is obtained by calculating the difference between the market return and the risk-free rate
- 4) Small Minus Big (SMB): Small minus big is obtained by calculating the difference in return between stocks with small market capitalization and stocks with large market capitalization. Shares of issuers with large and small market capitalizations are measured by the respective proportions of 50%: 50% (S = small category & B = big category), the formula used is as follows:

$$SMB = \frac{(SG + SN + SV)}{3} - \frac{(BG + BN + BV)}{3} \quad (1)$$

- 5) High Minus Low (HML) : High minus low is obtained by calculating the difference in returns between companies that have a high book-to-market ratio and a low book-to-market ratio. In this variable, stocks are divided into three groups. The first group is the proportion of 30% of issuers that have a high book-to-market ratio (V), the second group is the proportion of 40% of issuers that have a moderate/neutral book-to-market ratio (N), and the third group is the proportion of 30% of issuers that have a low book-to-market ratio (G) The formula used is as follows.

$$HML = \frac{(SV + BV)}{2} - \frac{(SG + BG)}{2} \quad (2)$$

- 6) Winner Minus Loser (WML) : Winner minus loser is obtained by calculating the difference in return between companies that have a high average return in the market and a low average return in the market. In this variable, stocks are divided into two groups. The first group is the proportion of 30% of issuers with a high average return in the market (W), the second group is the proportion of 30% of issuers with a low average return in the market (L). WML is calculated using the following formula:

$$WML = \frac{(SW + BW)}{2} - \frac{(SL + BL)}{2} \quad (3)$$

The data analysis techniques used are as follows:

- 1) Calculate the return of each stock using the formula below.

$$R_t = \frac{(P_t - P_{t-1})}{P_{t-1}} \quad (4)$$

Where :

R_t = Stock return in period t ; P_t = Share price in period t ; and $P_{(t-1)}$ = Stock price in period $t-1$

- 2) Form a winner (W) and loser (L) portfolio. Winner's portfolio consists of 30% stocks with high average returns in the market. Meanwhile, the loser's portfolio consists of 30% stocks with the lowest average return in the market and equal weighted.

- 3) Develop a Strategy for the formation-holding period of the portfolio. This process requires two phases, namely the portfolio formation period and the portfolio retention period. The four Strategies used in this study are Strategy 12-3, Strategy 12-6, Strategy 12-9 and Strategy 12-12.
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3. Results and Discussion

The following are descriptive statistics of the excess-return of the four strategies.

Table 1. Excess-Return Statistics Descriptive

Portofolio		Min	Max	Mean	Stdev
Strategy 12-3	Winner (W)	-0,0920	0,1090	0,0136	0,0341
	Loser (L)	-0,0710	0,0870	0,0082	0,0299
	Winner minus Loser (W-L)	-0,0930	0,0630	0,0002	0,0265
Strategy 12-6	Winner (W)	-0,0480	0,0800	0,0123	0,0250
	Loser (L)	-0,0580	0,1510	0,0128	0,0348
	Winner minus Loser (W-L)	-0,1110	0,0480	-0,0056	0,0315
Strategy 12-9	Winner (W)	-0,0350	0,0640	0,0118	0,0216
	Loser (L)	-0,0460	0,3230	0,0156	0,0423
	Winner minus Loser (W-L)	-0,3300	0,0380	-0,0091	0,0420
Strategy 12-12	Winner (W)	-0,0270	0,0630	0,0120	0,0189
	Loser (L)	-0,0420	0,1040	0,0131	0,0292
	Winner minus Loser (W-L)	-0,1130	0,0380	-0,0063	0,0280

Source: Secondary Data, Processed with eViews 9, 2021

It can be seen that of the four strategies, only Strategy 12-3 obtained a higher excess-return than the L-portfolio. Besides that, the W-portfolio of Strategy 12-3 is able to produce the highest excess-return when compared to the W-portfolio of Strategy 12-6, Strategy 12-9 and Strategy 12-12 which is 1.36%, W-portfolio 12-6 Strategy able to generate excess-return of 1.23%, portfolio-W Strategy 12-9 produced excess-return of 1.12% which is the lowest excess-return among the three Strategies, while portfolio-W Strategy 12-12 was able to generate excess-return by 1.20%.

Furthermore, the L-portfolio for the 12-3 Strategy produced the lowest excess-return compared to the other three Strategies, which was 0.08%. In Strategy 12-3, the difference in mean excess-return between portfolio-W and portfolio-L is 0.53%, in Strategy 12-6 the difference in mean excess-return between portfolio-W and portfolio-L returns is -0.05 %, in Strategy 12-9 the difference in mean excess-return of portfolio-W and portfolio-L is -0.38% and for Strategy 12-12 the difference in mean excess-return between portfolio-W and portfolio-L is -0.11 %.

Testing of Capital Asset Pricing Model (CAPM)

The table below shows the results obtained from the Capital Asset Pricing Model regression.

Table 2: Summary of CAPM Model Regression Results

	$E(R_{pt}) - R_{ft} = \alpha + \beta[E(R_{mt}) - R_{ft}]$		Adj R ²
	α	β	
Strategy 12-3			
Winner (W)	0,010183 (4,70***)	1,085248 (11,58***)	0,5364
Loser (L)	0,005496 (2,67***)	0,881800 (9,87***)	0,4590
Winner minus Loser (W-L)	-0,000530 -0,218	0,218798 (2,08**)	0,036
Strategy 12-6			
Winner (W)	0,008954 (5,47***)	1,122201 (11,24***)	0,5280
Loser (L)	0,009267 (3,91***)	1,188774 (10,16***)	0,3066
Winner minus Loser (W-L)	-0,005485 (-1,83*)	-0,044028 0,8102	0,0005
Strategy 12-9			
Winner (W)	0,008248 (5,89***)	1,200655 (11,73***)	0,5556
Loser (L)	0,011906 (3,16***)	1,253250 (4,55***)	0,1583
Winner minus Loser (W-L)	-0,009015 (-2,21**)	-0,0025127 -0,084	0,0001
Strategy 12-12			
Winner (W)	0,008611 (6,99***)	1,313339 (11,89***)	0,5692
Loser (L)	0,009029 (3,86***)	1,573775 (7,49***)	0,3439
Winner minus Loser (W-L)	-0,005713 (-2,07**)	-0,220705 -0,889172	0,007

*** significant at 1% confidence level ** significant at 5% confidence level * significant at 10% confidence level

Source: Secondary Data, Processed with eViews 9, 2021

The table above shows the results that the W-portfolio in Strategy 12-3, Strategy 12-6, Strategy 12-9 and Strategy 12-12 can generate abnormal returns. This can be seen from the intercept (α) which is positive and the t-count value is significant at the 99% confidence level. Portfolio-W Strategy 12-3 can produce the highest abnormal return compared to the other three strategies, where portfolio-W Strategy 12-3 produces abnormal returns of 1.02%, while portfolio-W Strategy 12-6 produces abnormal returns of 0.89% , portfolio-W Strategy 12-9 produces an abnormal return of 0.82% and Strategy portfolio-W Strategy 12-12 produces an abnormal return of 0.86%. From the overall intercept value (α), only the L-portfolio in Strategy 12-3 has a smaller value than its W-portfolio, this shows that only the W-portfolio of Strategy 12-3 is able to generate better returns compared to its L-portfolio. On the other hand, the W-L portfolio of the four strategies produces a negative value, so it can be said that this portfolio has not been able to generate abnormal returns.

The magnitude of the influence of market factors on each excess-return generated by the portfolio and momentum Strategy can be seen from the β coefficient . In tests using the CAPM model, W-portfolio Strategy 12-3, Strategy 12-L-portfolio, W-portfolio Strategy 12-6, L-portfolio Strategy 12-6, W-portfolio Strategy 12-9, L-portfolio Strategy 12-9, Strategy 12-12 W-portfolio and Strategy 12-12 L-portfolio have significant t-values. This shows that the RM-RF variable (market factor) affects portfolio-W Strategy 12-3, portfolio-L Strategy 12-3, portfolio-W Strategy 12-6, portfolio-L Strategy 12-6, portfolio-W Strategy 12-9, portfolio-L Strategy 12-9, portfolio-W Strategy 12-12 and portfolio-L Strategy 12-12 in generating excess-return.

Market factors have no effect on Strategy momentum. This is reflected in portfolio-W - L Strategy 12-3, portfolio-W - L Strategy 12-6, portfolio-W - L Strategy 12-9 and portfolio-W - L Strategy 12-12, each of

which has a β coefficient shows that the number is negative but not significant as seen from the t-count value obtained. By looking at the adjusted R-squared value, the level of accuracy of the use of the CAPM model can be seen if the adjusted R-squared value is $>50\%$. This is in line with the findings of Sehgal and Jain (2011) who obtained that the Capital Asset Pricing Model is not sufficient to estimate returns, so it is necessary to use the development of CAPM models such as the Fama and French Three Factor Model or the Carhart Four Factor Model to obtain better accuracy.

Testing of Fama French Three Factor Model

The table below shows the results obtained from the Fama French Three Factor Model regression

Tabel 3. Summary of Fama French Three Factor Model Regression Results

	$E(R_{pt}) - R_{ft} = \alpha + \beta[E(R_{mt}) - R_{ft}] + sE[SMB] + hE[HML]$				Adj R ²
	α	β	s	h	
Strategy 12-3					
Winner (W)	0,004962 (1,99**)	0,092868 (13,02***)	0,451564 (4,42***)	0,113364 1,481	0,6047
Loser (L)	-0,002038 -0,912	0,915729 (10,97***)	0,381918 (4,16***)	0,381087 (5,54***)	0,5864
Winner minus Loser (W-L)	0,001614 0,565	0,313267 (2,94***)	0,085551 0,467	-0,265178 (-3,02***)	0,1391
Strategy 12-6					
Winner (W)	0,006295 (2,91***)	1,258680 (12,23***)	0,377918 (3,37***)	-0,019886 -0,266	0,5824
Loser (L)	-0,001038 -0,288	1,183793 (6,90***)	0,614999 (3,29***)	0,446641 (3,58***)	0,3983
Winner minus Loser (W-L)	0,001927 0,480	0,103250 0,541	-0,213652 -1,027	-0,462181 (-3,33***)	0,0921
Strategy 12-9					
Winner (W)	0,002877 1,294	1,239458 (12,04***)	0,455409 (3,37***)	0,177313 (2,19**)	0,5979
Loser (L)	-0,003161 -0,525	1,277723 (4,59***)	1,127020 (3,08***)	0,585929 (2,68***)	0,2305
Winner minus Loser (W-L)	0,000300 0,045	-0,005871 -0,02	-0,635460 -1,56	-0,398336 -1,636	0,0274
Strategy 12-12					
Winner (W)	-0,000565 -0,256	1,183830 (10,95***)	0,725679 (4,56***)	0,391571 (4,61***)	0,6477
Loser (L)	0,004764 1,036	1,562235 (6,92***)	0,424833 1,280	0,137352 0,776	0,3550
Winner minus Loser (W-L)	-0,011126 (-2,05**)	-0,339438 -1,273	0,351810 0,897	0,269808 1,289	0,0232

*** significant at 1% confidence level ** significant at 5% confidence level * significant at 10% confidence level

Source: Secondary Data, Processed with eViews 9, 2021

It can be seen that only the W-portfolio of Strategy 12-3 and the W-portfolio of Strategy 12-6 can obtain abnormal returns, while the W-portfolio of Strategy 12-9 and the W-portfolio of Strategy 12-12 has not been able to produce abnormal returns even for the W Strategy 12-12 portfolio, it actually gets an abnormal loss. It is known from the value which is positive and significant. Furthermore, the level of confidence in the Strategy 12-3 W-portfolio is 95%, while the Strategy 12-6 W-portfolio has a 99% confidence level. When compared, the W Strategy 12-6 portfolio produces a higher abnormal return than the W Strategy 12-3 portfolio, where the W Strategy 12-6 portfolio produces an abnormal return of 0.63% and the W Strategy 12-3 portfolio produces abnormal return of 0.50%.

The intercept value (α) of the difference between portfolio-W and portfolio-L for Strategy 12-3, Strategy 12-6 and Strategy 12-9 is positive but not significant. On the other hand, the intercept value (α) of the

difference between portfolio-W and portfolio-L for Strategy 12-12 has a negative value of -1.11%. Based on this, it is known that the momentum Strategy 12-3, momentum Strategy 12-6, momentum Strategy 12-9 and momentum Strategy 12-12 using the Fama and French Three Factor Model has not been able to produce abnormal returns.

In this model, the significant RM-RF variables (market factors) are W Strategy 12-3 portfolio, L Strategy 12-3 portfolio, Momentum Strategy 12-3 portfolio, W Strategy 12-6 portfolio, L Strategy portfolio 12-6, Strategy W-portfolio 12-9, Strategy 12-L-portfolio, Strategy 12-12 W-portfolio and Strategy 12-12-portfolio. These results show that market factors influence portfolio-W Strategy 12-3, portfolio-L Strategy 12-3, portfolio-Momentum Strategy 12-3, portfolio-W Strategy 12-6, portfolio-L Strategy 12-6, portfolio-W Strategy 12-9, L-portfolio Strategy 12-9, W Strategy 12-12 and L-portfolio Strategy 12-12 in generating excess-return. Portfolio-W-L Strategy 12-6 obtained insignificant results, so it can be seen that market factors have no effect on excess-return portfolio-W-L Strategy 12-6. On the other hand, the WL-portfolio in Strategy 12-9 and Strategy 12-12 has a negative coefficient value causing the t-count value also to be negative, so this means that market factors have no effect on the excess-return generated by the WL Strategy portfolio. 12-9 and Strategy 12-12.

It can be seen that the coefficient s is negative in the W-L Strategy 12-6 and Strategy 12-9 portfolios indicating a negative effect on the excess-return obtained, this means that stocks with large market capitalization can generate higher returns compared to other stocks. With a small market capitalization, while a positive coefficient means the opposite is that stocks with small market capitalizations are able to generate higher returns than stocks with large market capitalizations. In addition, the coefficient value obtained is not significant, so the market capitalization factor does not affect the excess-return obtained by the W-L Strategy 12-6 and 12-9 portfolios. In portfolio-WL Strategy 12-3, portfolio-L Strategy 12-12 and portfolio-WL Strategy 12-12 show a smaller t-count value than the t-table, this means that the market capitalization factor has no effect on excess- return from portfolio-WL Strategy 12-3, portfolio-L Strategy 12-12 and portfolio-WL Strategy 12-12.

The regression results show that Strategy 12-3's L-portfolio, 12-6's Strategy L-portfolio, 12-9's L-portfolio and 12-12's W-portfolio have significant values the 99% confidence level. The Strategy 12-9 W-Portfolio also has a significant t-value at the 95% confidence level. This shows that the book-to-market ratio factor has a positive effect on excess-return of the L Strategy 12-3 portfolio, the L Strategy 12-6 portfolio, the W Strategy 12-9 portfolio, the L Strategy 12-9 portfolio and the L-portfolio Strategy 12-9. W 12-12.

The value of the coefficient h in the Strategy 12-3 W-portfolio, Strategy 12-12 portfolio-L and Strategy 12-12 WL-portfolio has an insignificant t value, this means that the book-to-market factor has no effect on excess- return on portfolio-W Strategy 12-3, portfolio-L Strategy 12-12 and portfolio-WL Strategy 12-12. On the other hand, the negative h coefficient is indicated by the W-L Strategy 12-3 portfolio, the W-L Strategy 12-6 portfolio, the W-L Strategy 12-6 portfolio and the W-L Strategy 12-9 portfolio. It can be said that the book-to-factor -the market has no effect on the excess-returns obtained by the WL Strategy 12-3 portfolio, the WL Strategy 12-6 portfolio, the WL Strategy 12-6 portfolio and the WL Strategy 12-9 portfolio.

Testing of Carhart Four Factor Model

To determine the level of accuracy of the Fama and French Three Factor model, it can be seen from the adjusted R-square value obtained from the results of testing the four strategies, for example in the W Strategy 12-3 portfolio can be explained by the independent variables of 60.47%.

Based on table 4, it can be seen that the Strategy 12-3, Strategy 12-6, Strategy 12-9 and Strategy 12-12 portfolios have a positive value, but only the Strategy 12-6 W-portfolio has a t-count value greater than the t-table with a 95% confidence level. In addition, the value of in the W-portfolio of Strategy 12-6 is the highest compared to the W-portfolio of the other three strategies, which is 0.33%, so it can be said that the W-portfolio of Strategy 12-6 is able to obtain abnormal returns. The t-count values in the four L-portfolio Strategies are all smaller than the t-table values, this means that the L-portfolios in Strategy 12-3, Strategy 12-6, Strategy 12-9 and Strategy 12-12 have no abnormal returns. The W-L portfolio which is a reflection of the formation-holding period momentum Strategy 12-3, 12-6, 12-9 and 12-12 all produces negative values, where three of them are statistically significant. Based on this, it can be stated that the W-L portfolio of Strategy 12-3, Strategy 12-6, Strategy 12-9 and Strategy 12-12 has not been able to obtain abnormal returns.

Table 4. Summary of Carhart Four Factor Model Regression Results

	$E(R_{pt}) - R_{ft} = \alpha + \beta[E(R_{mt}) - R_{ft}] + sE[SMB] + hE[HML] + wE[WML]$					Adj R ²
	α	β	s	h	w	
Strategy 12-3						
Winner (W)	0,000912 0,466	1,038368 (14,12***)	0,332141 (4,19***)	0,248757 (4,11***)	0,539851 (9,04***)	0,7706
Loser (L)	0,000919 0,640	1,040270 (14,11***)	0,469118 (5,90***)	0,282226 (4,66***)	-0,394187 (-6,58***)	0,7010
Winner minus Loser (W-L)	-0,005417 (-9,10***)	0,017139 0,766	-0,121790 (-5,05***)	-0,03011 -1,637	0,937282 (51,59***)	0,9649
Strategy 12-6						
Winner (W)	0,003332 (0,0497**)	1,137872 (14,31***)	0,266197 (3,09***)	0,129828 (2,19**)	0,487365 (9,01***)	0,7598
Loser (L)	0,002649 0,820	1,334103 (8,73***)	0,754003 (4,54**)	0,260367 (2,28**)	-0,606381 (-5,83***)	0,5404
Winner minus Loser (W-L)	-0,004749 (-1,89*)	-0,016890 -1,418	-0,465332 (-3,60***)	-0,124915 -1,405	1,097910 (13,56***)	0,6601
Strategy 12-9						
Winner (W)	0,002325 1,553	1,212534 (17,50***)	0,3007741 (3,27***)	0,171903 (3,17***)	0,518937 (11,48***)	0,8198
Loser (L)	-0,002185 -0,413	1,325275 (5,41***)	1,400189 (4,31***)	0,595485 (3,10***)	-0,916525 (-5,73***)	0,4114
Winner minus Loser (W-L)	-0,001229 -0,248	-0,080346 -0,351	-1,063289 (-3,50***)	-0,413301 (-2,31**)	1,435435 (9,61***)	0,4781
Strategy 12-12						
Winner (W)	0,000291 0,194	1,246275 (16,93***)	0,482844 (4,38***)	0,296707 (5,09***)	0,442267 (11,13***)	0,8393
Loser (L)	0,003412 0,889	1,463566 (7,76***)	0,808531 (2,87***)	0,287245 (1,92*)	-0,698813 (-6,87***)	0,5563
Winner minus Loser (W-L)	-0,008897 (-2,59**)	-0,176839 -1,050	-0,280496 -1,113	0,022796 0,171	1,151593 (12,67***)	0,6160

*** significant at 1% confidence level ** significant at 5% confidence level * significant at 10% confidence level

Source: Secondary Data, Processed with eViews 9, 2021

The market factors in the W Strategy portfolio 12-3, 12-6, 12-9 and 12-12 have a significant t-count value with a 99% confidence level. This means that market factors affect the excess-return generated by the W Strategy 12-3, 12-6, 12-9 and 12-12 portfolios. In Strategy 12-3, 12-6, 12-9 and 12-12 portfolios it can be seen that the t-count value of market factors has a significant value, so it is known that market factors have an influence on Strategy 12-3's L-portfolio, 12-6, 12-9 and 12-12 in producing excess-returns. On the other hand, market factors in the 12-3, 12-6, 12-9 and 12-12 momentum strategies show a smaller t-count value than the t-table. This means that market factors have no effect on the 12-3, 12-6, 12-9 and 12-12 momentum strategies in generating excess-returns.

The momentum factor shows that the W-portfolio of Strategy 12-3, Strategy 12-6, Strategy 12 9, Strategy 12-12 has a significant value at the 99% confidence level. This shows that the momentum factor affects the excess-return of the W Strategy 12-3, 12-6, 12-9 and 12-12 portfolios. The same thing is also shown by the momentum Strategy 12-3, momentum Strategy 12-6, momentum Strategy 12-9 and momentum Strategy 12-12. The momentum factor in the L portfolio from Strategy 12-3, Strategy 12-6, Strategy 12-9 and Strategy 12-12 shows a negative coefficient. This means that the momentum factor affects the L-portfolio Strategy 12-3, 12-6, 12-9 and 12-12.

Discussions

After obtaining the results of the analysis using the three asset pricing models, it can be seen that the capital asset pricing model, the Fama French Three Factor Model and the Carhart Four Factor model have not been able to show the probability of the momentum Strategy. It is known from the value generated by the winner minus loser portfolio (W-L) Strategy 12-3, 12-6, 12-9 and 12-12 is not significant and even most of the winner minus loser portfolio has a negative value.

This result is different from the findings of Sehgal and Jain (2011), who obtained research results that Strategy 12-12 was able to produce abnormal returns. On the other hand, the inability of Strategy 12-3, 12-

6, 12-9 and 12-12 to generate abnormal returns is in accordance with the research conducted by Hameed and Kusnadi (2002) which found that the momentum Strategy with holding periods of 3 to 12 has not been able to generate significant profits on Asian stock exchanges. Furthermore, this result is also in line with the results of research in Latin America by Berggrun, et al (2020) which found that conventional momentum strategies have not been able to produce positive and significant performance in the capital market.

The results showed that the winner (W) Strategy 12-3 portfolio was able to produce a significant abnormal return of 1.02% when tested using the CAPM, but this abnormal return level decreased when using a holding period of 6, 9 and 12 months. On the other hand, the abnormal return generated by the loser portfolio (L) is increasing until it is able to exceed the level of abnormal return generated by the winner portfolio (W) along with the addition of the holding period, with the highest abnormal return in Strategy 12-9 which is 1.19% when tested using the CAPM. This indicates that there is a reversal in the holding period of more than three months. Several things that can be the cause of this are because short sell transactions are still rare, and there is an overreaction on the Indonesia Stock Exchange.

4. Conclusion and Implications

This study uses the Capital Asset Pricing Model (CAPM), the Fama French Three Factor Model, and the Carhart Four Factor Model to see the influence of the factors using the formation-holding Strategy 12-3 months, 12-6 months, 12-9 months, and 12-12 months. The results obtained based on data from 2009 to 2019 show that the momentum Strategy has not been able to produce abnormal returns on the Indonesia Stock Exchange, but this study shows that the winner portfolio with Strategy 12-3 is able to provide a significant abnormal return of 1.02%, the Strategy 12-6 produces an abnormal return of 0.89%, Strategy 12-9 is 0.82% and Strategy 12-12 is able to produce an abnormal return of 0.86% when tested using the CAPM. In the Fama French Three Factor test, the Strategy 12-3 winner portfolio was able to produce an abnormal return of 0.49% and the Strategy 12-6 winner portfolio produced an abnormal return of 0.63%. Meanwhile, in the test using the Chart Four Factor, only the winner Strategy 12-6 portfolio was able to produce an abnormal return, which was 0.33%. Furthermore, these four factors have an influence in generating abnormal returns on the winner portfolio. Based on the results above, the winner's portfolio can be used as a consideration for formulating a stock portfolio in the hope of obtaining abnormal returns, considering that short selling transactions on the Indonesia Stock Exchange are still rarely carried out. This research is limited to 4 types of strategies, namely Strategy 12-3, 12-6, 12-9 and 12-12 and also uses a sample of stocks on the IDX which are listed consecutively during the study period, so that only 282 stocks are obtained. For further research a more varied Strategy period can be used, for example, monthly and using a stock sample by including stocks that have been listed for at least one year, so that the use of momentum Strategy can be done better.

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