Research Journal of Finance and Accounting
ISSN 2222-1697 (Paper) ISSN 2222-2847 (Online)
Vol.6, No.22, 2015

Is the 52 Week High Strategy as Pervasive as Momentum? Evidence from Arabic Market Indices

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Abstract
Existing studies find that momentum can be explained by a strategy based on the 52wk high prices of individual stock and is able to predict returns. This paper uses Arabic market indices data to investigate whether there is momentum and 52wk high strategies and to evaluate the performance of these strategies to achieve the optimal portfolio. We find the 52wk high strategy is unprofitable when applied to Arabic market indices, while the momentum strategy is economically profitable than the 52wk high strategy. The 52wk high effect is not as pervasive and reliable as the momentum effect. After modifying the 52wk high strategy with long-term contrarian using a double sorting procedure, the modified 52wk high strategy has positive profits for all holding periods. However, the momentum strategy is still more profitable than this modified 52wk high strategy.
Keywords: Arabic market indices, long-term contrarian, two-factor model.

1. Introduction

In their study of emerging market indices, Malin and Bornholt (2010) investigate the performances of the 52wk high and momentum strategies when applied to 26 MSCI emerging market indices. They find that the 52wk high strategy generates losses and the 52wk high strategy based on the price levels are not helpful to clarify the future returns. Malin and Bornholt (2010) propose new strategy which is volatility with the 52wk high strategy named the modified 52wk high strategy. Although the modified 52wk high strategy provide positive profits, these profits are still statistically and economically insignificant. Finally, they show that momentum effect is more profitable and provide positive returns for all holding periods

By using the Malin and Bornholt's (2010) methodology, this paper investigates whether there are 52wk high and momentum strategy applied to the Arabic market indices, as well as compares the performance of 52wk high and momentum strategies. In addition, the current study suggests new modified 52wk high with long-term contrarian strategy rather than modified 52wk high with volatility suggested by Malin and Bornholt (2010).

This study is guided by a number of motivations. The lack of research amount on the 52wk high strategy. In addition, the need to investigate whether the 52wk high strategy is as reliable as the widely observed momentum strategy motivate this paper to apply the 52wk high strategy in Arabic market indices. This paper shows that there is no 52wk high effect at the level of Arabic market indices. Clearly, the result of the current study shows that the momentum effect provides high profits and it is more reliable than 52wk high effect and these results support the result presented by Malin and Bornholt (2010). The new modified 52wk high with long-term contrarian suggested by this study provides economically profits when applied in Arabic market indices.

The remainder of the paper is organized as follows: next section present the literature reviews. Section 3 describes the data and methodology used in this article. Section 4 provides the empirical findings involving post-holding period analysis and risk-adjustment. Section 5 concludes the study.

2.Literature Review

The return continuation or momentum effect is initially documented by Jegadeesh and Titman (1993). They reveal that buying the U.S. stock returns that have done well over the past 3, 6, 9 or 12 months and shorting losers together produces an average monthly return of roughly 1%. The momentum effect has attracted the attention of many academics and its source remains debatable. The main behavioral models suggest to explain return predictability as a consequence of investor irrationality resulted from psychological biases. Barberis, Shleifer, and Vishny (1998) suggest that underreaction to information resulted from conservatism is the source of momentum. On the other hand, Daniel, Hirshleifer, and Subrahmanyam (1998) explain momentum as the overreaction. The final behavioral model, suggested by Hong and Stein (1999) proposes that slow and gradual distribution of information is the cause of momentum.

George and Hwang (2004) is the first who introduced the 52-week high momentum strategy. They stated that investors rely on the stock's price distance to its 52-week high in making decision to buy or sell stock because of the anchoring bias. Thus, the investors employ this method to evaluate the potential influence of news. The momentum strategy is the strategy which forecasts that the movement of stock returns or stock price in the same trend as the past movement for a specific time period. Therefore, investors hope that the same past trend will

continue in the specific time period to purchase well performed stocks and sell poorly performed stocks.

George and Hwang (2004) utilize a stock's price level to demonstrate that 52 week high stock price (52wk high hereafter) mostly explains the momentum effect. The closeness of a stock's price to its 52wk high is calculated by the ratio of current price divided by the 52wk high price of the share. The profits of their 52wk strategy is evaluated by comparing this strategy with U.S. stock momentum strategy based on Jegadeesh and Titman (1993) and with the U.S. industry momentum strategy of Moskowitz and Grinblatt (1999). The results show that price level at U.S. stock and U.S. industry could explain the return continuation effects rather than the past returns, as well as that the 52wk high approach has predictive power either stocks have experienced extreme returns or not in the past (George & Hwang, 2004). They think that the momentum effect can be explained by 52wk high effect. George and Hwang (2004) suggest that their result is attributed to 'adjustment and anchoring bias' whereby traders employ the 52wk high as an anchor when stock values adjustment to the new information arrives.

There are various papers study the momentum strategies. Marshall and Cahan (2005), Burghof and Prothmann (2009) and Mansouri, Ansari, and Dastouri (2013) suggest that using 52-week high Momentum strategy in Australia, UK and stock markets TSE can generate profit in the medium time horizon. Du (2008) finds that the 52week high momentum strategy profit reversed in the long run for 18 international stock market indices. Liu, Liu, and Ma (2011) demonstrates that the 52-week high momentum strategy can generate profit in 18 of the 20 markets but only 10 market provide significant profits.

Wachirapansathit (2013) uses the Black-Litterman model incorporate with the 52-week high momentum strategy to investigate the portfolio optimization in order to update the believes in the returns' distribution. the study shows that, both when the short-selling is allowed and when it is not, statistically outperform Black-Litterman with no returns' distribution in stock exchange Thailand (SET) portfolio over all periods (during market downturn, upturn and last).

Oliya, Gerakani, and Khoee (2015) employ and compare momentum strategies including Jegadeesh-Titman strategy (1993) and momentum strategies in the last 52week of the highest price to obtain the optimal portfolio. Their study uses 120 companies in Tehran securities and stock exchange during the period of (2009 to 2013). The study uses 6 months of time keeping portfolio, stocks based on more efficiency, arranged from top to bottom. They conclude that the proper criterion to select optimum portfolio is momentum strategy of the highest price in last 52 weeks than Jegadeesh-Titman momentum strategy.

This paper investigates Arabic market index returns, with two purposes. The first is to detail the momentum, 52wk high and modified 52wk high strategies in average returns for Arabic market indices. Our main contribution is evidence for modified 52wk high with long-term contrarian strategy. Most previous studies concentrate on either momentum or 52wk high strategies. This study suggests a new modified 52wk high strategy and it provides positive and economically significant returns for all holding periods. Our second purpose is to investigate whether the two-factor model can explain the return derived from strategies in Arabic markets indices. The result shows that the returns of 52wk high and modified 52wk high strategies can be explained by the two-factor model.

3. Data and methodology

This study uses the monthly prices for 10 Morgan Stanley Capital International (MSCI) Arabic markets indices with reinvested gross dividends and the 52wk high price. Similar to the previous research achieved at index level such as Balvers and Wu (2006) and Du (2008), the data is derived from Datastream in US dollars. To facilitate the explanation of findings inter-markets, returns has been measured in U.S. dollar. The time frame of the current study is from February 1988 to September 2013 with the number of observation for and index varying from 308 to 100.

Table 1 provides summary statistics for the 10 MSCI Arabic market indices. The first column gives the name of country. Other columns report the average and standard deviation of monthly returns, the skewness and kurtosis of each country. To understand better the performance of Arabic market indices in different settings, the Arabic countries in Table 1 are sorted from the largest to the smallest average monthly returns. Table 1 reports a large variation in monthly returns ranging from high values of 2.56% for Egypt and 2.18% for Lebanon (over 2% per month), to values of -0.33% Bahrain. Generally, there is a negative skweness in six Arabic markets (Qatar, Kuwait, Jordan, Oman, Sudia Arabia and Bahrian), while 4 countries have positive skweness (Egypt, Lebanon, Morocco and UAE). In terms of the distribution of returns in respect to the kurtosis, there is narrow range of kurtosis values.

The purpose of this study is to investigate whether the 52wk high effect is present at Arabic markets indices, as well as to compare the 52wk high strategies with the corresponding momentum strategies; Section 2.1 describes these two strategies.

3.1 The 52wk high strategy

Following the George and Hwang's (2004) methodology, each month *t*, indices have been sorted on the magnitude of each index *i's* ratio of its price at the end of month *t*-1 to the highest price accomplished by index *i* in the 1-year prior *t*-1:

$$Ratio = \frac{p_{i,t\text{-}1}}{52wkhigh_{i,t\text{-}1}} \quad (1)$$

This ratio is computed for every index from the raw monthly closing price and the raw monthly 52wk high price. For the ratio sorting, every month the High Price (HP) portfolio includes that 25% of indices with the largest 52wk high ratios, and the Low Price (LP) portfolio contains that 25% of indices with the smallest 52wk high ratios. If the 52wk high impact uses at the Arabic markets index level, then indices with prices close to their 52wk high will outperform those indices that are farther from their 52wk high. Thus, the 52wk high trading strategy longs the High Price portfolio and shorts the Low Price portfolio to generate the High Price minus Low Price (denoted HP-LP) arbitrage portfolio. The current study test this for holding periods of $K = 1, 3, 6, 9$ and 12 months.

Following the Jegadeesh and Titman's (1993) methodology, the 52wk high strategy employees overlapping portfolio with *K* month holding periods. This means that each month t the strategy's High Price (Low Price) portfolio is comprised of $1/K$ of the High Price (Low Price) portfolio chosen in the current month and in the past *K*-1 months. The strategy's portfolios are corrected each month *t* as the positions started in *t-K* are closed. Similar to George and Hwang,(2004), this study allow a 1-month gap between the end of the sorting period and the beginning of the holding period. To facilitate the comparisons between the Arabic market indices with momentum strategy, the standard holding period of $K = 6$ months employed in many momentum studies will represent the base case to be discussed in detail.

3.2 Momentum strategy

The momentum portfolios are structured as follows. At the beginning of every month *t*, the 10 MSCI Arabic markets indices in Table 3 are sorted depending on their past *J*-month returns ($J = 3, 6, 9$, or 12- month). For a given *J*, the short-term loser (SL) portfolio and the short-term winner (SW) includes the 25% of indices that have the lowest and highest past *J* month returns, respectively. The arbitrage portfolio (SW-SL) longs the short-term winner portfolio and shorts the short-term loser portfolio. We hold the Portfolios for *K*-month holding periods, where $K = 1, 3, 6, 9$ and 12 months.

4. Analysis of results

In the next section, the results of the 52wk high and momentum strategies for Arabic market indices are presented. Section 3.2 provides the post-holding returns of 52wk high portfolios, while section 3.3 presents the modified 52wk high portfolios by combining the Long-term contrarian and the 52wk high strategy. Section 3.4 shows the risk-adjustment regressions for both the 52wk high and the modified 52wk high strategies.

4.1 The 52wk high and momentum strategies

Table 2 reports the average monthly holding period returns for the High Price, Low Price and arbitrage portfolios of the 52wk high strategies applied to the MSCI Arabic markets indices. Since the 52wk high strategy is based on this strategy, the 12 months is formation period.

The results in Table 2 refer to insignificant profits for all *K*-month holding periods. For instance, for the 52wk high strategy with 6-month holding period ($K = 6$) case, the difference between the average monthly profits of the HP portfolio and the LP portfolio is -0.23 per month (*t*-stat -0.31), which is statistically insignificant. The findings in Table 2 provide that in all cases the HP-LP strategy produces negative profits that are not significantly different from zero.

In contrast, the findings in Table 3 provide substantial differences from the findings in Table 2. Table 3 provides significant momentum SW-SL profits for $K = 3$-month holding periods, and weakly significant momentum SW-SL profits for $K = 1$-month holding period. Although the momentum profits for $K = 6, 9$ and 12 are not statistically significant, they are still economically significant. For example, for the 6-month holding period ($K = 6$) SW generates an average of 1.01% per month whereas SL provide an average of -0.08% per month over the same period. The difference between the average monthly returns of the SW portfolio and the SL portfolio is 1.09% per month, which is economically significant.

In summary, the 52wk high strategy is not successful and not profitable for Arabic markets indices. For the momentum strategy, although the momentum profits are not statically significant for all *K*–month holding periods, they are still economically significant. The momentum strategy is more profitable than the 52wk high strategy when $K = 6$. As a result, the 52wk high strategy is not spread like the conventional momentum strategy when comparing profitability to Arabic markets indices.

4.2 Post-holding returns of 52wk high portfolios

The post-holding period may provide some light on why the 52wk high strategy fails for the Arabic markets indices. Table 4 presents the post-holding period average profits for the 52wk high strategy with *K* = for the first 4 quarters and the first five years after the beginning of the holding period.

Table 4 provide gradual switch of the 52wk high profits for 10 Arabic market indices. The long portfolio HP underperforms the short portfolio LP in the fourth quarter as well as in the first and second years. For the third through fifth years, the long portfolio HP excesses the short portfolio LP. These results suggest using the long-term contrarian strategy with 52wk high strategy may enhance the 52wk high strategy.

4.3 Long-term contrarian and the 52wk high strategy

The main distinguishing features of Arabic markets indices is that 52wk high strategy tend to have positive average returns over long post-holding periods between third through fifth years. Therefore, using modified the 52wk high strategy with long-term contrarian assumes these indices are likely to reverse trend in the long-term future. Thus, the findings in Table 5 have revealed that such an assumption is correct.

The long-term contrarian explanation has been measured by combining the 52wk high strategy employing a double sorting method. Within each of the HP and LP portfolios we also rank indices based on their past returns into long-term loser LL and long-term winner LW. Let HPLL refers to a portfolio contains of the 50% of indices in portfolio HP with the long-term loser return over the past 60-month. The expectation is that HPLL will be a better candidate for buying than portfolio HP because those indices in HP with relatively higher long-term loser profits have been added from HPLL. We further examine whether the short portfolio can be enhanced by removing relatively long-term winner indices. Thus, let LPLW refers to a portfolio contains of the 50% of indices in portfolio LP with the long-term winner returns over the past 60-month. The modified 52wk high long/short strategy is indicated by HPLL-LPLW.

For long-term contrarian, this study removes the first one year directly after *J*-month formation period and the beginning of the *K*-month holding period. this procedure is consistent with prior studies such as those of Fama and French (1996), Grinblatt and Moskowitz (2004), Figelman (2007), and Malin and Bornholt (2013). Fama and French (1996) find that leaving the first 12 months after the end of the formation period enhances the performance of the long-term contrarian strategy and generates stronger results since this procedure helps avoid any long-term reversals being compensated by the short-term continuation of returns. This procedure is also in line with DeBondt and Thaler's (1985) finding that the first year after the end of the formation period in their study did not generate significant contrarian profits.

Table 5 reports the average monthly returns of the modified 52wk high strategy (HPLL-LPLW). The results showed in Table 5 are positive for all holding periods. For example, the modified 52wk high strategy with 6-month holding period (*K* = 6) provides a return of 0.91% per month (*t*-stat 1.20). While this result is not statistically significant, it is still economically significant. This result is considerably better than the corresponding 52wk high strategy HP-LP return of -0.23% per month (*t*-stat -0.31) reported in Table 2.

Looking at the findings in Table 5 as a whole, the largest returns are provided based on 12-month holding period case with an average return of 1.34% per month (*t*-stat 1.80), which is weakly significant In general, comparing the modified 52wk high findings in Table 5 with the 52wk high strategy in Table 2 shows that the modified 52wk high strategy profits are always superior to the 52wk high strategy.

4.4 Risk-adjusted 52wk high profits and the modified 52-wk high strategy

To decide whether the returns of these two strategies could be considered a compensation for bearing risk, the profits of the 52wk high and the modified 52wk high strategies are risk-adjusted employing the two-factor time-series regression model used by Balvers and Wu (2006).

$$R_{pt} - R_{ft} = \alpha_p + \beta_{p,mkt}(R_{mkt,t} - R_{ft}) + v_{p,vmg}\mathrm{VMG_t} + \varepsilon_{\mathrm{pt}} \quad (1)$$

Where $R_{pt} - R_{ft}$ is the dependent variable, which is the monthly excess return on the MSCI World Market portfolio, whether it's the High Price, Low Price or High Price minus Low Price portfolio of a strategy, where R_{pt} refers to the monthly U.S. dollar return of portfolio *p* at time *t* and R_{ft} represents the monthly risk-free rate at time t indicated by the 1-month U.S. T-bill return. $(R_{mkt,t} - R_{ft})$ is the first independent variable, which is the monthly excess market return on the MSCI World market portfolio $R_{mkt,t}$ at time *t*. $\mathrm{VMG_t}$ is the second independent variable, which is the value growth factor referred by the return on the return on the MSCI World Growth Index is subtracted from the MSCI World Value Index. The *t*-statistics provided in parenthesis are adjusted for heteroskedastisity employing the White (1980) test.

The coefficients $\beta_{p,mkt}$ and $v_{p,vmg}$ are the regression loadings corresponding to the two factors used in the model. The intercept α_p (alpha) indicates the risk-adjusted abnormal profits of the portfolios over the assessment period. If alpha is statistically significant, this is proof of abnormal returns. The current study adjust

the regression *t*-values for heteroskedasticity applying the White (1980).

Table 6 presents the estimated regression coefficients of the two-factor model and the corresponding White-corrected t-values for the long, short and arbitrage portfolios for the 52wk high strategy, the modified 52wk high strategy with 6-month holding periods ($K = 6$) in Panel A and B, respectively. Columns 2 of Table 6 presents the monthly alphas of the two-factor model, while the last column reports the adjusted R^2.

The alpha of the 52wk high strategy HP-LP portfolio in Panel A is negative (-0.003 per month) and insignificant (*t*-stat -0.4) for the two-factor model. It is expecting that risk adjustment of the arbitrage portfolio's findings fails to show significant alpha given that the corresponding unadjusted HP-LP profit result in Table 2 is insignificantly negative. In contrast, the corresponding alpha in Panel B is positive but it is not significant. The modified 52week high with long-term return contrarian HPLL-LPLW alpha is not statistically significant 0.013 per month (*t*-stat 1.18). Interestingly, the 52wk high strategy and the modified 52wk high strategy for both the long and short side have significant alphas at the 5% level.

In summary, the two strategies either the 52wk high or the modified 52wk high strategies in Panel A and B of Table 6 demonstrate that two-factor model can explain the return derived from strategies in Arabic markets indices. it is expecting that the 52wk high risk-adjusted results are weak because the 52wk high raw profits are considerably smaller than the corresponding the modified 52 high raw profits. The insignificant 52wk high strategy's alpha is consistent with Malin and Bornholt (2010) finding the two-factor model can explain the 52wk high returns of emerging markets indices.

5. Discussion and conclusion

While previous studies investigate 52wk high effect either at the level of individual stocks or international market index returns, this paper investigates the topic at the specific emerging markets, which are Arabic market indices. The finding from this study is that there is no evidence of Arabic market indices-level 52wk high effects. This finding support the finding produced by Malin and Bornholt (2011; 2010).

The current study compares the 52-week high strategy with the momentum strategy. The results of this paper show that the momentum strategy has consistently superior profits than the 52wk high strategy. The momentum strategy produces economic evidence in Arabic market indices returns, where the momentum effect at the $K = 6$ has positive return of 1.09% per month. The momentum profits generated from the Arabic market indices is consistently larger than the momentum profits provided by emerging market indices produced by Malin and Bornholt (2011; 2010).

While Malin and Bornholt (2010) present the modified 52wk high strategy combined with volatility effect, this study proposes different modified 52wk high strategy which is combined with long-term contrarian effect. This new modified 52wk high strategy adopted in this study improves the corresponding 52wk high strategy performance where the all holding periods become positive and economically significant. For example, $K = 6$ the modified 52wk high strategy proposed in this study has positive profit of 0.91% per month. Clearly, the new modified 52wk high profits used in this paper is consistently larger than the modified 52wk high profits used in the Malin and Bornholt's (2010) paper. For adjusted-risk, either 52wk high strategy or modified 52wk high strategy can be explained by the two-factor model.

In general, our study confirms that the 52 week high price strategy is not pervasive as the largely practical momentum strategy. In addition, the new modified 52week high price with long-term contrarian strategy is useful and it can be used to predict future returns in Arabic market indices.

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Table 1 Summary statistics of Arabic stock index returns.

Country	Mean%	S.D%	Skewness	Kurtosis
Egypt	2.56	9.95	1	4.62
Lebanon	2.18	9.24	1.31	5.54
Morocco	1.89	5.77	0.46	2.55
Qatar	1.84	8.74	-0.13	1.66
Kuwait	1.37	7.06	-0.16	0.76
Jordan	1.33	5.21	-0.1	2.05
Oman	1.19	6.17	-1.31	5.01
UAE	1.09	11	0.19	1.4
Sudia Arabia	0.86	11.46	-0.08	-0.62
Bahrain	-0.33	7.18	-0.61	2.99
AVERAGE	1.4	8.18		

Table 1 details the descriptive statistics for 10 MSCI Arabic market indices utilized in this research. The first column is the name of the country. This is followed by the average monthly returns, the standard deviation of monthly returns over the period February 1988 to September 2013. Skewness and Kurtosis refer to measures of normal distribution.

Table 2 Profitability of the 52-wk high strategy.

Portfolio	**K =1**	**K =3**	**K =6**	**K =9**	**K =12**
HP	1.01%	0.89%	0.95%	1.03%	1.04%
	(1.26)	(1.12)	(1.16)	(1.24)	(1.22)
LP	1.23%	1.13%	1.18%	1.12%	1.14%
	(1.98)	(1.88)	(1.89)	(1.77)	(1.77)
HP-LP	-0.22%	-0.24%	-0.23%	-0.09%	-0.10%
	(-0.27)	(-0.32)	(-0.31)	(-0.12)	(-0.13)

This table reports the average monthly returns in percentages of the high, low and high-low portfolios of the 52wk high strategy. In line with George and Hwang's (2004) methodology, portfolios are constructed as follows: At the beginning of each month *t*, the 10 Arabic market indices are ranked based on the ratio of current price at the end of month t-1 to the largest price achieved by the index i in the previous 12-month prior to t-1 month

$(P_{i,t-1} / 52wkhigh_{i,t-1})$. The high price portfolio (HP) contains the 25% of portfolios with the highest 52wk high ratios, while the low price portfolio (LP) includes the 25% of portfolios with the lowest 52wk high ratios. The 52wk high strategy (HP-LP) portfolios are held for K = 3, 6, 9 or 12 months. The monthly return for each K is derived by applying Jegadeesh and Titman's (1993) overlapping portfolio methodology described by the value of K. The t-statistics are presented in parentheses.

Table 3 Profitability of pure momentum strategy.

Portfolio	K =1	K =3	K =6	K =9	K =12
SW	1.38%	1.42%	1.01%	0.82%	0.58%
	(1.55)	(1.74)	(1.35)	(1.13)	(0.79)
SL	-0.42%	-0.39%	-0.08%	-0.02%	-0.09%
	(-0.49)	(-0.49)	(-0.11)	(-0.02)	(-0.12)
SW-SL	1.81%	1.81%	1.09%	0.84%	0.67%
	(1.85)	(2.21)	(1.56)	(1.43)	(1.16)

This table reports the average monthly returns of the winner, loser and arbitrage portfolios of the momentum strategy. Portfolios are constructed as follows: At the beginning of each month t, the 10 Arabic market indices are ranked based on their past J-month formation period returns for J = 3, 6, 9 and 12 months. The short-term winner equal-weighted portfolio (SW) contains the 25% of portfolios with the highest J-month returns, and the short-term loser portfolio (SL) contains the 25% of portfolios with the lowest J-month returns. These arbitrage momentum portfolios are held for K = 1, 3, 6, 9 or 12 months.

Table 4 Quarterly and yearly Profits for the 52-wk high strategy.

Portfolio	Q = 1	Q = 2	Q = 3	Q = 4	Year 1	Year 2	Year 3	Year 4	Year 5
HP	0.76%	0.09%	0.34%	1.10%	6.75%	9.40%	7.16%	10.45%	15.12%
	(0.56)	(0.06)	(0.23)	(0.7)	(1.06)	(1.57)	(1.27)	(1.28)	(1.42)
LP	2.52%	2.34%	2.13%	2.65%	22.31%	14.09%	-3.89%	-2.22%	-6.99%
	(0.97)	(0.76)	(0.68)	(0.85)	(1.65)	(1.15)	(-0.7)	(-0.45)	(-1.14)
HP-LP	-1.76%	-2.24%	-1.79%	-1.56%	-15.56%	-4.68%	11.05%	12.67%	22.10%
	(-0.91)	(-1.18)	(-0.99)	(-0.74)	(-2.14)	(-0.41)	(1.43)	(1.39)	(1.62)

This table reports the average compound returns for the high price, low price and arbitrage portfolios. Where high is denoted by HP, low is denoted by LP, and arbitrage portfolio is denoted by HP-LP. These portfolios are based on the K = 1 month holding period returns for the next 4 quarters and next five years after the beginning of the holding period. Newey-West standard errors adjusted with suitable lags (two lag for quarterly returns and eleven lags for annual returns) have been used to calculate the t-statistics. In parenthesis, the t-statistics are presented.

Table 5 Profitability of the modified 52-wk high

Portfolio	K =1	K =3	K =6	K =9	K =12
HPLL	-0.55%	-0.17%	0.51%	0.24%	0.21%
	(-1.14)	(-0.32)	(0.87)	(0.39)	(0.3)
LPLW	-0.87%	-0.67%	-0.40%	-0.70%	-1.14%
	(-1.44)	(-0.99)	(-0.5)	(-0.72)	(-1.34)
HPLL-LPLW	0.32%	0.50%	0.91%	0.94%	1.34%
	(0 .53)	(0.77)	(1.2)	(1.02)	(1.8)

This table reports the average monthly holding period returns of the short, long and arbitrage portfolios of the modified 52wk high strategy. The modified 52wk high strategy are derived from the high price (HP) and low price (LP) achieved by the index i in the previous 12-month prior to t-1 month. The formation of the HP and LP portfolios is explained in Table 2. Within the HP and LP portfolios are further classified based on their past 60- month return into long-term loser (LL) and long-term winner (LW). HPLL refers to the portfolio composed of the 25% of indices in the HP portfolio over the past of 12 months with the long-term loser over the past 5 years and LPLW refers to the portfolio composed of the 25% of indices in the LP portfolio over the past 12-month with the long-term winner based on the past 60 months. The arbitrage portfolio HPLL-LPLW is to be held for K = 1, 3, 6, 9 and 12 months. These portfolios are equally weighted. Jegadeesh and Titman's (1993) overlapping portfolio methodology is used to calculate the monthly return for each K. The t-statistics are presented in parenthesis.

Table 6 Risk-adjusted 52wk high and the modified 52wk high profits.

Portfolio	Two-factor model			
	α	b_{wld}	b_{vmg}	Adj R^2
Panel A: The 52wk high strategy				
HP	1.008	0.385	-0.31	1.50%
	(123.9)	(1.88)	(-0.94)	
LP	1.011	0.32	-0.378	2.20%
	(160.39)	(1.74)	(-1.4)	
HP-LP	-0.003	0.065	0.067	-1.50%
	(-0.4)	(0.4)	(0.3)	
Panel B: The modified 52wk high strategy				
HPLL	1.011	110.677	-110.791	-4.10%
	(151.45)	(1.36)	(-1.36)	
LPLW	0.998	-62.431	62.005	4.60%
	(96.08)	(-0.54)	(0.54)	
HPLL-LPLW	0.013	173.111	-172.799	8.80%
	(1.184)	(1.345)	(-1.341)	

This table reports the two-factor model results for the 52week high strategy with 6-month holding periods. HP indicates to the portfolio of the 25% of indices that have the highest 52wk high ratios and LP indicates to the portfolio of the 25% of indices that have the lowest 52wk high ratios. HPLL indicates to the portfolio of the 50% of indices in the highest 52wk ratios with the long-term losers of return and LPLW indicates to the portfolio of the 50% of indices in the lowest 52wk ratios with the long-term winners of return. The two-factor regression is as follows: $R_{pt} - R_{ft} = \alpha_p + \beta_{p,mkt}(R_{mkt,t} - R_{ft}) + v_{p,vmg}\mathrm{VMG_t} + \varepsilon_{\mathrm{pt}}$, where $R_{pt} - R_{ft}$ is the excess return on the MSCI World Market portfolio and $\mathrm{VMG_t}$ is the value growth factor referred by the return on the return on the MSCI World Growth Index is subtracted from the MSCI World Value Index. The *t*-statistics provided in parenthesis are adjusted for heteroskedastisity employing the White (2000) test.