Finance Research Letters 25 (2018) 259–265

Contents lists available at ScienceDirect

Finance Research Letters

journal homepage: www.elsevier.com/locate/frl

# Another look at anchoring and stock return predictability

Ajay Bhootra

*Department of Finance, Mihaylo College of Business and Economics, California State University, P.O. Box 6848, Fullerton, CA 92834, United States*

ABSTRACT

The superior performance of a momentum strategy long in stocks trading near their 52-week high prices and short in stocks trading far from their 52-week high prices is well-documented. In contrast, recent research finds that a similar strategy based on historical high prices exhibits subsequent reversals instead. This paper shows that after excluding low-priced stocks and/or January returns from the sample, the stocks trading near their historical high prices, in fact, exhibit significant outperformance. In particular, in a sample without low-priced stocks, a strategy long in 10% of the stocks with prices nearest to their historical high prices and short in 10% of the stocks with prices furthest from their historical high prices earns an average monthly return of 0.93% in non-January months. The performance of 52-week high momentum strategy also improves significantly upon exclusion of low-priced stocks and/or January returns. These findings have important implications for the anchoring-based behavioral explanations of these return patterns.

## 1. Introduction

Since the seminal study by Jegadeesh and Titman (1993), stock return momentum has been extensively studied in the literature. While conventional momentum strategies rank stocks based on their recent past returns, an alternative momentum strategy based on stocks' 52-week high prices is proposed in George and Hwang (2004). George and Hwang find that the stocks trading near their 52-week high prices significantly outperform the stocks trading far from their 52-week high prices over next 6 to 12 months. This return predictability is attributed to investors' "anchoring and adjustment" bias (Tversky and Kahneman, 1974) that causes them to underreact to positive (negative) information about stocks with prices near (far from) their 52-week high prices.[1]

More recent research also examines return patterns associated with stocks' historical or all-time high prices. Interestingly, this research documents an opposite pattern: the stocks trading near their historical high prices underperform, consistent with investor overreaction.[2] Li and Yu (2012) document such reversals at both the aggregate market level for Dow Jones Industrial Average, and find consistent evidence in the cross-section of individual stocks. Lee and Piqueira (2017) study short-selling behavior around 52-week high and historical high prices, and find that short-selling is positively associated with proximity to the historical high, and negatively associated with proximity to the 52-week high. Thus, they conclude that their evidence is consistent with short-sellers exploiting the mispricing resulting from investors' anchoring bias.

The goal of this paper is to examine the impact of low-priced stocks and January seasonality on return predictability associated with these psychological price anchors. It is common in the momentum literature to exclude low-priced stocks to avoid

*E-mail address:* abhootra@fullerton.edu.

[1] The anchoring effects are well-documented in various contexts such as real estate pricing (Northcraft and Neale, 1987), mergers and acquisitions, and takeover premiums (Baker et al., 2012; Gerritsen, 2015), gold and silver prices (Lucey and O'Connor, 2016), and financial decision-making (Jetter and Walker, 2017).

[2] It has been proposed that underreaction in case of the 52-week high, and overreaction in case of the historical high can be attributed to evidence of investors' underreaction to sporadic news, but overreaction to a prolonged string of good or bad news (see Griffin and Tversky, 1992).

https://doi.org/10.1016/j.frl.2017.11.002
Received 4 July 2017; Received in revised form 9 November 2017; Accepted 10 November 2017
Available online 16 November 2017
1544-6123/ 

microstructure biases. Bhootra (2011) shows that the strong reversal experienced by loser penny stocks over short horizons reduces the momentum strategy returns significantly. Therefore, inclusion of penny stocks in the sample can alter the inferences, especially in case of equally-weighted portfolio returns. The effect of January seasonality is also well-documented. The momentum profits are significantly higher when January returns are excluded due to the large positive returns of loser stocks in January.

We find that with either of these adjustments, excluding the stocks priced below $5 or excluding January returns, the stocks trading near historical high prices significantly outperform the ones trading far below their historical high prices. In our sample, we also find that in the presence of these sub-$5 stocks, the momentum strategy based on 52-week high price does not earn a significant positive all-months raw return, on average.[3] However, when both low-priced stocks and January returns are excluded, a long-short strategy based on decile portfolio sorts earns an average monthly return of 0.93% (*t*-statistic = 5.27) in case of the historical high price, and 1.64% (*t*-statistic = 7.72) in case of the 52-week high price. Because of the reversals experienced by low-priced loser stocks, our evidence from portfolio sorts also reveals nonlinear return patterns which are not captured in commonly employed linear regressions. We document a similar impact of low-priced stocks and January returns in one-anchor (52-week high = historical high) and two-anchor (52-week high < historical high) subsamples, in which the investor misreactions are likely to be more pronounced, as discussed in Li and Yu (2012).

In summary, we find that the presence of low-priced stocks and January returns is detrimental to the performance of both the 52-week high and the historical high based strategies. Their exclusion from the sample reveals a momentum pattern associated with both the strategies and there is no pervasive cross-sectional evidence of overreaction-driven reversal associated with the historical high prices.

The rest of the paper is organized as follows. Section 2 discusses the data and methodology. Section 3 presents the results of our empirical analyses. Section 4 concludes.

## 2. Data and methodology

Our sample comprises of all NYSE, AMEX, and NASDAQ listed common stocks (share codes 10 or 11) with available data included in the Center for Research in Security Prices (CRSP) files over the period from January 1963 to December 2015. The historical high price is the highest closing price ever attained by the stock, and the 52-week high price is the highest closing price of the stock during the past 52 weeks, as reported in CRSP daily files.[4] Following George and Hwang (2004), in computing the historical high and the 52-week high prices and related measures, the prices are adjusted for stock splits and dividends using the CRSP price adjustment factor.

At the end of each month, we compute the historical high ratio and 52-week high ratio for each stock as follows:

$$Historical\ High\ Ratio = \frac{current\ price}{historical\ high\ price} \tag{1}$$

$$52 - Week\ High\ Ratio = \frac{current\ price}{52 - week\ high\ price} \tag{2}$$

The closer the current price is to the historical high or the 52-week high price, the higher is the corresponding ratio. If the formation month end price equals the respective peak price, then the corresponding ratio has the maximum possible value of 1.

The equally-weighted portfolio returns are computed using the overlapping period approach originally proposed in Jegadeesh and Titman (1993). As an example, consider the computation of holding period portfolio returns for the historical high ratio using decile portfolios. In each month *t*, 10% of the firms with the highest ratio are assigned to the ``high" portfolio, and 10% of the firms with the lowest ratio are assigned to the ``low" portfolio. The firms remain in these portfolios over months $t + 1$ to $t + 6$.[5,6] Each month's momentum strategy involves a long position in the equally-weighted ``high" portfolio and a short position in the equally-weighted ``low" portfolio. The monthly portfolio returns represent the equally-weighted average of returns from current month's strategy and strategies implemented during each of the previous five months. Thus, in any given month, approximately one-sixth of the securities in the portfolios are replaced with new ``high" and ``low" stocks. In addition to using 10% cutoffs, we also employ 30% cutoffs to identify winners and losers.

In addition to portfolio level analyses, we also employ a simple Fama–MacBeth (Fama and MacBeth, 1973) cross-sectional regression framework. Instead of the somewhat arbitrary $5 price screen, the regression frameworks allows us to account for short-term reversals in small, low-priced stocks by explicitly controlling for firm size and lagged return.

[3] The absence of momentum is sample-specific. The momentum is insignificant since 2001, owing to several months of momentum strategy crashes (Daniel and Moskowitz, 2016). From 1963 to 2000, we find significant momentum returns in the absence of filters. However, the impact of low-priced stocks and January seasonality is evident during this period as well.

[4] Although our sample begins in 1963, we use the CRSP sample start date in 1926 to determine the highest historical price attained by a stock.

[5] We also examine the impact of skipping a month between the formation and holding periods. After excluding sub-$5 stocks, skipping a month does not have any material impact on the results.

[6] The momentum strategy with 6-month holding period has received the most attention in the literature. Hence, we focus on this strategy. We obtain similar results with a 12-month holding period.

**Table 1**
Portfolio returns based on historical high and 52-week high: No filters.

| | Panel A: Historical high ratio | | Panel B: 52-Week high ratio | |
|---|---|---|---|---|
| | Three portfolios | Ten portfolios | Three portfolios | Ten portfolios |
| Low | 1.47 | 2.06 | 1.04 | 1.27 |
| Middle | 0.99 | 1.10 | 1.22 | 1.19 |
| High | 1.29 | 1.40 | 1.39 | 1.42 |
| High–Low | −0.18 | −0.66 | 0.35 | 0.15 |
| | ***−0.83*** | ***−2.06*** | ***1.57*** | ***0.44*** |
| CAPM Alpha | 0.01 | −0.40 | 0.60 | 0.50 |
| | ***0.05*** | ***−1.28*** | ***2.87*** | ***1.55*** |
| FF Alpha | 0.23 | −0.08 | 0.72 | 0.67 |
| | ***1.23*** | ***−0.28*** | ***3.76*** | ***2.21*** |

In each month *t*, common stocks listed on NYSE, AMEX, and Nasdaq are sorted into portfolios based on their ratio of current price to historical high price (Panel A) and current price to 52-week high price (Panel B). The low and high ratio portfolios are obtained using 30% (10%) cutoffs in case of ``Three'' (``Ten'') portfolios, while the middle portfolio is comprised of all the firms other than those in the extreme ratio portfolios. The strategy involves buying an equally-weighted portfolio of firms in the high ratio portfolio and selling an equally-weighted portfolio of firms in the low ratio portfolio. The firms remain in the portfolio from month $t + 1$ to $t + 6$. The returns reported in the table represent the equally-weighted averages of returns from the current month's strategy and strategies implemented in each of the previous five months. The CAPM (Fama–French, ``FF'') alphas are obtained from the time-series regression of monthly high minus low portfolio returns on the contemporaneous market (market, SMB, and HML) factors. The returns are in percent per month. The *t*-statistics are reported in bold italics. The sample period is January 1963–December 2015.

## 3. Results

### 3.1. Evidence from portfolio sorts

We begin our analysis by examining the returns to portfolios formed on historical high and 52-week high ratios, in the absence of any filters. Table 1 reports the average monthly returns over the 6-month holding period, with winners (high ratio) and losers (low ratio) identified using both 30% and 10% cutoffs. The middle portfolio is comprised of all sample firms other than those in the high or low ratio portfolios. For the historical high ratio portfolios, we find negative, and in case of 10% cutoffs, statistically significant average return to the high minus low ratio portfolio.[7] This evidence from raw returns, especially in the case of more extreme 10% cutoffs, is consistent with the extant evidence of reversals in case of historical high ratio portfolios. However, note that both CAPM and Fama–French (Fama and French, 1996) three-factor alphas are statistically insignificant. Further, the return pattern is nonlinear with the middle portfolio earning a lower return than the low or high portfolios.

Turning to the 52-week high ratio portfolios, we find that the high minus low portfolio earns a positive, albeit statistically insignificant, raw return. Thus, momentum is nonexistent in this sample. The Fama–French alphas, in this case, are significant, and the CAPM alpha is significant in case of portfolios formed with 30% cutoffs. Note that the nonlinear return pattern is evident in this case too when more extreme 10% cutoffs are employed.[8]

In the next set of tests, we examine the impact of excluding sub-$5 stocks and January seasonality on the performance of these strategies. As shown in Panel A of Table 2, when sub-$5 stocks are excluded at the end of portfolio formation period, we find that the high historical high ratio portfolio outperforms the low historical high ratio portfolio by a statistically significant 0.36% (0.42%) per month with 30% (10%) cutoffs. The CAPM and Fama–French alphas are even higher, and also significant. The results for the 52-week high ratio portfolios are even stronger. In this case, the high minus low portfolios earn 0.73% (1.18%) in case of 30% (10%) cutoffs, with the alphas being higher in magnitude again.

In comparing the results from Tables 1 and 2, it is evident that the dramatic difference in performance of these strategies is driven by the low-priced loser stocks. The high ratio portfolios have almost identical average returns, with or without the inclusion of sub-$5 stocks. The low ratio portfolios, on the other hand, exhibit a large decline in average returns once the low-priced stocks are excluded. This evidence suggests that instead of experiencing continuation in performance, these low-priced loser stocks exhibit reversal over the holding period. Further, when included in the sample, these low-priced stocks constitute a significant proportion of the loser portfolio. In our sample, these penny stocks make up about 39% (56%) of the lowest 52-week ratio portfolio obtained with 30% (10%) cutoff. The corresponding proportion is about 44% (62%) for the lowest historical high ratio portfolio obtained with 30% (10%) cutoff. The significant fraction of penny stocks in "low" portfolios, coupled with the reversal in their returns, contributes to a significant decline in returns to the high minus low equally-weighted portfolios. This reversal also leads to nonlinear return pattern across ratio portfolios, which disappears in Table 2 upon exclusion of low-priced stocks.

The exclusion of January returns from the holding period also reveals momentum based on both the ratios. As shown in Panel A of Table 3, the high historical high ratio portfolio outperforms the low ratio portfolio by a statistically significant 0.60% (0.53%) with 30% (10%) cutoffs in non-January months. Similarly, the 52-week high ratio winner portfolio outperforms the loser portfolio by

[7] The reference to statistical significance in the paper is at the conventional 5% level, unless otherwise stated.
[8] This U-shaped return pattern across momentum portfolios is also evident in Hong et al. (2000).

**Table 2**
Portfolio returns based on historical high and 52-week high: excluding stocks priced below $5.

| | Panel A: Historical high ratio | | Panel B: 52-Week high ratio | |
|---|---|---|---|---|
| | Three portfolios | Ten portfolios | Three portfolios | Ten portfolios |
| Low | 0.96 | 1.00 | 0.65 | 0.23 |
| Middle | 1.03 | 1.07 | 1.23 | 1.17 |
| High | 1.33 | 1.42 | 1.38 | 1.41 |
| High–Low | 0.36 | 0.42 | 0.73 | 1.18 |
| | ***2.61*** | ***2.14*** | ***4.75*** | ***5.19*** |
| CAPM Alpha | 0.54 | 0.68 | 0.96 | 1.51 |
| | ***4.28*** | ***3.89*** | ***7.21*** | ***7.68*** |
| FF Alpha | 0.72 | 0.90 | 1.03 | 1.59 |
| | ***6.38*** | ***5.70*** | ***8.29*** | ***8.53*** |

In each month $t$, common stocks listed on NYSE, AMEX, and Nasdaq are sorted into portfolios based on their ratio of current price to historical high price (Panel A) and current price to 52-week high price (Panel B). Stocks priced less than $5 at the end of month $t$ are excluded from the sample. The low and high ratio portfolios are obtained using 30% (10%) cutoffs in case of ``Three'' (``Ten'') portfolios, while the middle portfolio is comprised of all the firms other than those in the extreme ratio portfolios. The strategy involves buying an equally-weighted portfolio of firms in the high ratio portfolio and selling an equally-weighted portfolio of firms in the low ratio portfolio. The firms remain in the portfolio from month $t + 1$ to $t + 6$. The returns reported in the table represent the equally-weighted averages of returns from the current month's strategy and strategies implemented in each of the previous five months. The CAPM (Fama–French, ``FF'') alphas are obtained from the time-series regression of monthly high minus low portfolio returns on the contemporaneous market (market, SMB, and HML) factors. The returns are in percent per month. The $t$-statistics are reported in bold italics. The sample period is January 1963–December 2015.

**Table 3**
Portfolio returns based on historical high and 52-week high: Excluding January returns.

| | Panel A: Historical high ratio | | Panel B: 52-Week high ratio | |
|---|---|---|---|---|
| | Three portfolios | Ten portfolios | Three portfolios | Ten portfolios |
| Low | 0.60 | 0.82 | 0.20 | 0.05 |
| Middle | 0.67 | 0.74 | 0.91 | 0.83 |
| High | 1.20 | 1.36 | 1.28 | 1.34 |
| High–Low | 0.60 | 0.53 | 1.08 | 1.28 |
| | ***3.40*** | ***2.09*** | ***5.73*** | ***4.61*** |
| CAPM Alpha | 0.75 | 0.73 | 1.29 | 1.57 |
| | ***4.52*** | ***3.04*** | ***7.55*** | ***6.14*** |
| FF Alpha | 0.82 | 0.83 | 1.29 | 1.58 |
| | ***5.39*** | ***3.72*** | ***8.04*** | ***6.47*** |

In each month $t$, common stocks listed on NYSE, AMEX, and Nasdaq are sorted into portfolios based on their ratio of current price to historical high price (Panel A) and current price to 52-week high price (Panel B). The low and high ratio portfolios are obtained using 30% (10%) cutoffs in case of ``Three'' (``Ten'') portfolios, while the middle portfolio is comprised of all the firms other than those in the extreme ratio portfolios. The strategy involves buying an equally-weighted portfolio of firms in the high ratio portfolio and selling an equally-weighted portfolio of firms in the low ratio portfolio. The firms remain in the portfolio from month $t + 1$ to $t + 6$. The returns reported in the table represent the equally-weighted averages of returns from the current month's strategy and strategies implemented in each of the previous five months. January returns are excluded from holding period return calculations. The CAPM (Fama–French, ``FF'') alphas are obtained from the time-series regression of monthly high minus low portfolio returns on the contemporaneous market (market, SMB, and HML) factors. The returns are in percent per month. The $t$-statistics are reported in bold italics. The sample period is January 1963–December 2015.

1.08% (1.28%) with 30% (10%) cutoffs. The alphas are higher in magnitude as before and statistically significant. Again, the performance difference compared to Table 1 comes primarily from the low ratio loser portfolios, which have been well-known to exhibit outperformance in January.

Finally, when both sub-$5 stocks and January returns are excluded, we find strongest momentum pattern in case of the historical high ratio. As shown in Table 4, the strategy's monthly return is 0.74% in case of three portfolios and 0.93% in case of ten portfolios. For the 52-week high ratio, the corresponding returns are 1.07% and 1.64% per month, respectively. Remarkably, the firms in the bottom decile of 52-week high ratio earn a negative average return (−0.29%) in this instance.

### *3.2. One-anchor and two-anchor subsamples*

Li and Yu (2012) study the return predictability associated with 52-week high and historical high prices. Building on the evidence in George and Hwang (2004) and Griffin and Tversky (1992), Li and Yu (2012) predict investor underreaction associated with the nearness to 52-week high price (resulting in momentum) and overreaction associated with the nearness to historical high price (resulting in reversal). They primarily focus on the time-series evidence based on the 52-week and historical highs of Dow Jones Industrial Average, and report the cross-sectional evidence based on individual stocks to supplement this evidence.

In their cross-sectional analysis, Li and Yu (2012) examine two subsamples, referred to as the one-anchor and the two-anchor subsamples. The one-anchor subsample comprises of stocks with the 52-week high price equal to the historical high price, while the

**Table 4**
Portfolio returns based on historical high and 52-week high: Excluding stocks priced below $5 and January returns.

| | Panel A: Historical high ratio | | Panel B: 52-Week high ratio | |
|---|---|---|---|---|
| | Three portfolios | Ten portfolios | Three portfolios | Ten portfolios |
| Low | 0.53 | 0.47 | 0.23 | -0.29 |
| Middle | 0.82 | 0.85 | 1.03 | 0.95 |
| High | 1.26 | 1.39 | 1.29 | 1.35 |
| High–Low | 0.74 | 0.93 | 1.07 | 1.64 |
| | ***5.82*** | ***5.27*** | ***7.36*** | ***7.72*** |
| CAPM Alpha | 0.88 | 1.15 | 1.26 | 1.93 |
| | ***7.87*** | ***7.48*** | ***10.34*** | ***10.73*** |
| FF Alpha | 0.96 | 1.23 | 1.26 | 1.91 |
| | ***9.23*** | ***8.61*** | ***10.76*** | ***10.99*** |

In each month *t*, common stocks listed on NYSE, AMEX, and Nasdaq are sorted into portfolios based on their ratio of current price to historical high price (Panel A) and current price to 52-week high price (Panel B). Stocks priced less than $5 at the end of month *t* are excluded from the sample. The low and high ratio portfolios are obtained using 30% (10%) cutoffs in case of ``Three" (``Ten") portfolios, while the middle portfolio is comprised of all the firms other than those in the extreme ratio portfolios. The strategy involves buying an equally-weighted portfolio of firms in the high ratio portfolio and selling an equally-weighted portfolio of firms in the low ratio portfolio. The firms remain in the portfolio from month $t + 1$ to $t + 6$. The returns reported in the table represent the equally-weighted averages of returns from the current month's strategy and strategies implemented in each of the previous five months. January returns are excluded from holding period return calculations. The CAPM (Fama–French, ``FF") alphas are obtained from the time-series regression of monthly high minus low portfolio returns on the contemporaneous market (market, SMB, and HML) factors. The returns are in percent per month. The *t*-statistics are reported in bold italics. The sample period is January 1963–December 2015.

two-anchor subsample comprises of stocks with the 52-week high price less than the historical high price. Li and Yu (2012) conjecture that investors ignore the historical high, and focus on the more recent 52-week high when the two anchors are equal. In this case, the overreaction associated with historical high is likely to be weaker since the firms are unlikely to have experienced a series of bad news in the past. Consequently, the underreaction associated with the 52-week high is expected to be stronger, and therefore, the 52-week high momentum strategy should produce higher returns.

Further, if overreaction is weakened in case of a single anchor, it follows that overreaction should be stronger in the two-anchor subsample (52-week high < historical high). Consequently, in the two-anchor subsample, we expect stronger reversals in portfolios formed on the basis of historical high ratio.

We test the above predictions in our sample and study the impact of exclusion of low-priced stocks and January returns in these instances of potentially more extreme investor misreactions. The results are reported in Table 5. Consistent with Li and Yu (2012), we find stronger momentum for the 52-week high and stronger reversal for the historical high based strategy in one-anchor and two-anchor subsamples, respectively. The momentum strategy returns are statistically significant even without any filters, while the reversals associated with the historical high ratio are also significant for both three-portfolio and ten-portfolio cases. However, even for these subsamples, we find that in the one-anchor sample, when low-priced stocks and January returns are excluded, the performance of 52-week high strategy improves from 0.94% to 1.22% for the three-portfolio case, and from 1.28% to 1.88% for the ten-portfolio case.

More importantly, in the presence of these filters, the strategy based on historical high ratio also exhibits significant momentum, rather than reversal, in the two-anchor subsample. In this case, the three-portfolio strategy returns are −0.51% without filters, and 0.46% with filters, while the ten-portfolio strategy returns are −1.06% without filters, and 0.66% with filters. Thus, we find consistent evidence that there is no pervasive overreaction associated with historical high prices in the cross-section of stocks, as has been the interpretation in the extant literature.

### *3.3. Fama–MacBeth regressions*

To account for the short-term reversal in returns of small, low-priced stocks, we examine the performance of momentum strategies in a Fama–MacBeth cross-sectional framework with control for lagged return and firm size. We run six monthly cross-sectional regressions corresponding to each month of the holding period. The regression specification takes the following form (for $j = 1$–$6$):

$$R_{i,t} = b_{0jt} + b_{1jt}R_{i,t-1} + b_{2jt}Size_{i,t-1} + b_{3jt}Ratio_{i,t-j} + e_{it} \tag{3}$$

where $R_{i,t}$ is the return of stock *i* in month *t, Size* is the log of market capitalization, and *Ratio* is historical high or 52-week high ratio.[9] We present the results for each of the six months individually to show the pattern that unfolds over the holding period. The regressions are run separately with and without January returns to demonstrate the impact of January seasonality. The results are presented in Table 6. For brevity, only the coefficients on *Ratio* variable are reported. As expected, the coefficients on both lagged return and size are negative and statistically significant at conventional levels in all specifications.

In examining the coefficients of the historical high ratio in Panel A, we note that in this all-months sample, the coefficients are

[9] We also ran the regressions with additional control variables including book-to-market ratio and illiquidity. These additional controls do not alter any of the inferences.

**Table 5**
Portfolio returns for one-anchor and two-anchor subsamples.

| Panel A: One-anchor sample (52-Week high = Historical high) | | | | |
|---|---|---|---|---|
| | Panel A.1: No filters | | Panel A.2: Excluding stocks priced below $5 and January returns | |
| | Three portfolios | Ten portfolios | Three portfolios | Ten portfolios |
| Low | 0.48 | 0.18 | 0.18 | -0.43 |
| Middle | 1.17 | 1.09 | 1.10 | 1.01 |
| High | 1.42 | 1.46 | 1.40 | 1.45 |
| High–Low | 0.94 | 1.28 | 1.22 | 1.88 |
| | ***4.82*** | ***4.52*** | ***7.98*** | ***8.64*** |
| CAPM Alpha | 1.17 | 1.61 | 1.42 | 2.17 |
| | ***6.53*** | ***6.13*** | ***10.84*** | ***11.74*** |
| FF Alpha | 1.20 | 1.68 | 1.36 | 2.11 |
| | ***7.12*** | ***6.69*** | ***10.94*** | ***11.87*** |
| Panel B: Two-anchor sample (52-Week high < Historical high) | | | | |
| | Panel B.1: Historical high strategy: No filters | | Panel B.2: Historical high strategy: Excluding stocks priced below $5 and January returns | |
| | Three portfolios | Ten portfolios | Three portfolios | Ten portfolios |
| Low | 1.67 | 2.27 | 0.63 | 0.53 |
| Middle | 1.12 | 1.19 | 0.82 | 0.84 |
| High | 1.16 | 1.21 | 1.08 | 1.19 |
| High–Low | −0.51 | −1.06 | 0.46 | 0.66 |
| | ***−2.13*** | ***−3.05*** | ***3.40*** | ***3.59*** |
| CAPM Alpha | −0.27 | −0.74 | 0.65 | 0.92 |
| | ***−1.20*** | ***−2.23*** | ***6.02*** | ***6.12*** |
| FF Alpha | −0.11 | −0.49 | 0.67 | 0.93 |
| | ***−0.56*** | ***−1.68*** | ***7.41*** | ***7.15*** |

In each month *t*, common stocks listed on NYSE, AMEX, and Nasdaq are sorted into portfolios based on their ratio of current price to historical high price and current price to 52-week high price. The low and high ratio portfolios are obtained using 30% (10%) cutoffs in case of ``Three'' (``Ten'') portfolios, while the middle portfolio is comprised of all the firms other than those in the extreme ratio portfolios. Panel A shows the results for the one-anchor subsample (52-week high = historical high), and Panel B shows the results for the two-anchor subsample (52-week high < historical high) with portfolios based on the historical high ratio. The strategy involves buying an equally-weighted portfolio of firms in the high ratio portfolio and selling an equally-weighted portfolio of firms in the low ratio portfolio. The firms remain in the portfolio from month $t + 1$ to $t + 6$. The returns reported in the table represent the equally-weighted averages of returns from the current month's strategy and strategies implemented in each of the previous five months. Panel A.1 and B.1 show the result with no filters, while Panels A.2 and B.2 shows the results after excluding stocks priced below $5 at the end of month *t* and January returns from holding period return calculations. The CAPM (Fama–French, ``FF'') alphas are obtained from the time-series regression of monthly high minus low portfolio returns on the contemporaneous market (market, SMB, and HML) factors. The returns are in percent per month. The *t*-statistics are reported in bold italics. The sample period is January 1963–December 2015.

**Table 6**
Fama–MacBeth cross-sectional regressions.

| Panel A: Coefficient on historical high ratio | | | | | | |
|---|---|---|---|---|---|---|
| | Holding period month | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 |
| All months | 0.50 | 0.29 | 0.29 | 0.14 | 0.03 | −0.04 |
| | ***1.68*** | ***0.98*** | ***1.00*** | ***0.48*** | ***0.11*** | ***−0.15*** |
| January excluded | 1.34 | 1.16 | 1.15 | 0.97 | 0.82 | 0.72 |
| | ***4.99*** | ***4.32*** | ***4.42*** | ***3.82*** | ***3.34*** | ***2.99*** |
| Panel B: Coefficient on 52-Week high ratio | | | | | | |
| | Holding period month | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 |
| All months | 2.09 | 1.93 | 2.21 | 1.93 | 1.78 | 1.61 |
| | ***4.53*** | ***4.38*** | ***5.12*** | ***4.55*** | ***4.31*** | ***4.00*** |
| January excluded | 3.38 | 3.18 | 3.48 | 3.18 | 2.97 | 2.76 |
| | ***7.92*** | ***7.90*** | ***8.93*** | ***8.35*** | ***8.01*** | ***7.64*** |

In each month *t*, 6 ($j = 1,\ldots,6$) cross-sectional regressions of the following form are estimated for common stocks listed on NYSE, AMEX, and Nasdaq: $R_{i,t} = b_{0jt} + b_{1jt}R_{i,t-1} + b_{2jt}Size_{i,t-1} + b_{3jt}Ratio_{i,t-j} + e_{it}$
$R_{i,t}$ and $Size_{i,t}$ are the return and log market capitalization of stock *i* in month *t*, respectively. $Ratio_{i,t\text{-}j}$ is the ratio of current price to historical high price (Panel A), or current price to 52-week high price (Panel B) at the end of month $t-j$. The table reports the coefficients on $Ratio_{i,t-j}$, for samples with and without January return as the dependent variable. The returns are in percent per month. The *t*-statistics are reported in bold italics. The sample period is January 1963 to December 2015.

positive in all months except month 6, but only the month 1 coefficient is significant at the 10% level. Nonetheless, it is clear that there is no reversal associated with the historical high ratio. When January returns are excluded, the coefficients in each of the 6 months are positive and statistically significant. We observe a declining pattern in the magnitude of coefficients as we move from month 1 to 6. In case of the 52-week high ratio in Panel B, we see that each of the six coefficients are positive and significant in the all-months sample as well as in non-January sample, albeit the results are much stronger for non-January months, as expected. Overall, the regression evidence confirms the evidence from portfolio sorts on the role of small, low-priced firms and January seasonality in the performance of strategies based on historical and 52-week high ratios.

## 4. Conclusion

The stock return predictability associated with psychological price anchors such as the 52-week high and the historical high prices has received significant research attention in recent years. Two contrasting return patterns have been identified: momentum resulting from investor underreaction in case of the 52-week high price, and reversals resulting from investor overreaction in case of the historical high price. We find that in fact, there is a common underlying momentum associated with both these price anchors in the cross-section of stocks. The difference from previous results is attributable to the low-priced stocks and January seasonality. After accounting for their impact, the stocks trading near peak prices outperform the stocks trading far below peak prices, in case of both the 52-week high price and the historical high price.

## References

Baker, M., Pan, X., Wurgler, J., 2012. The effect of reference point prices on mergers and acquisitions. J. Financial Econ. 106, 49–71.
Bhootra, A., 2011. Are momentum profits driven by the cross-sectional dispersion in expected stock returns. J. Financial Markets 14, 494–513.
Daniel, K., Moskowitz, T.J., 2016. Momentum crashes. J. Financial Econ. 122, 221–247.
Fama, E.F., French, K.R., 1996. Multifactor explanations of asset pricing anomalies. J. Finance 51, 55–84.
Fama, E.F., MacBeth, J., 1973. Risk, return, and equilibrium: empirical tests. J. Political Econ. 81, 607–636.
George, T., Hwang, C., 2004. The 52-week high and momentum investing. J. Finance 59, 2145–2176.
Gerritsen, D.F., 2015. Security analysts' target prices and takeover premiums. Finance Res. Lett. 13, 205–213.
Griffin, D., Tversky, A., 1992. The weighing of evidence and the determinants of confidence. Cogn. Psychol. 24, 411–435.
Hong, H., Lim, T., Stein, J.C., 2000. Bad news travels slowly: size, analyst coverage, and the profitability of momentum strategies. J. Finance 55, 265–295.
Jegadeesh, N., Titman, S., 1993. Returns to buying winners and selling losers: implications for stock market efficiency. J. Finance 48, 65–91.
Jetter, M., Walker, J.K., 2017. Anchoring in financial decision-making: evidence from Jeopardy!. J. Econ. Behav. Organ. 141, 164–176.
Lee, E., Piqueira, N., 2017. Short selling around the 52-week and historical highs. J. Financial Markets 33, 75–101.
Li, J., Yu, J., 2012. Investor attention, psychological anchors, and stock return predictability. J. Financial Econ. 104, 401–419.
Lucey, M.E., O'Connor, F.A., 2016. Mind the gap: psychological barriers in gold and silver prices. Finance Res. Lett. 17, 135–140.
Northcraft, G.B., Neale, M.A., 1987. Experts, amateurs, and real estate: an anchoring-and-adjustment perspective on property pricing decisions. Organiz. Behav. Hum. Decis. Process. 39, 84–97.
Tversky, A., Kahneman, D., 1974. Judgement under uncertainty: heuristics and biases. Science 185, 1124–1131.