How the 52-week High and Low Affect Investors Behavior

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ABSTRACT

We study the investment behavior of American and Chinese stock market investors when stock prices approach 52-week high. We found irrational investment behaviors in the US market, but not in China. Results show that investors in the US have a clear behavioral bias towards both 52-week high and 52-week low, while Chinese investors have no such bias. When we divide the sample into big and small firms, we found that Chinese investors have behavioral biases for big companies with stock prices close to the 52-week high and small companies with stock prices close to the 52-week low, which suggest differences in behavioral biases between American and Chinese stock investors.

Keywords: 52-week High, Behavioral Bias, Big vs. Small Firms, Chinese Investors.

1. INTRODUCTION

The operation of the stock market is complicated for most non-professional investors, who will have a lot of behavioral biases in the absence of professional knowledge. Some people look at stock prices over the past year to predict future trends.[1] For example, when the current price is close to the past 52-week high, investors are more likely to believe that the price is unlikely to exceed the past 52-week high. And when stocks are near 52-week low, investors are more likely to assume that it is impossible for current price to fall below the previous 52-week low. These all reflect the behavior biases on investors. In this paper, we compare the behaviors of investors when the stock is close to 52-week high/low in the US vs. Chinese stock market.

Previous research on behavior biases and 52-week high can be divided into two stages. The first stage is the study of investor behavior biases, and the second is the study of 52-week high and low. For the first stage, such as Barberis et al. (1998), they found that stock prices could be influenced by investor sentiment, leading investors to overreact or underreact.[2] Among them, there were as many as 18 irrational behaviors caused by investor sentiment. Examples are loss aversion bias and anchoring bias. In the same year, Daniel et al. (1998) put forward the overreaction and overreaction theories of the securities market based on the overconfidence and self-control biases of investors.

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[1] https://alphaarchitect.com/2014/08/14/the-remarkable-truth-about-52-week-high-stocks/
[2] Similarly, Hong et al. (1999) simulated a market model composed of two groups of bounded rational agents to counter the theory of underreaction, momentum trading, and overreaction in asset markets.

Worthy of being mentioned, for the first time, George et al. (2004) combined the behavior bias with the 52-week high. They found that near 52-week high dominated and enhanced the ability of past returns (individual and industrial returns) to predict future returns.[3]

Thus, after George and Hwang, research on behavioral biases began to enter the second stage (the behavior bias near 52-week high). Huddart et al. (2009) provided ample empirical evidence that past extreme prices, such as 52-week high and low, could influence investors' trading decisions and volumes.[4] Liu et al. (2011) proposed that individualism index be a proxy for the level of overconfidence without explanation for the change in 52-week high momentum profits in different international markets. Driessen et al. (2013) studied the effects of 52-week high and low on stock beta and earnings volatility, and the results can be explained by anchoring theory. Bhootra et al. (2013), they came up with a new momentum strategy based on the timing of the stock's 52-week high. And they found that stocks that had recently reached 52-week high were significantly better than those that had reached 52-week high in the distant past. Specifically, the former had a monthly yield of 0.41% (t-statistic = 2.52), while the latter had a monthly yield of 0.83% (t-statistic = 4.19).

However, most of the previous research has focused on the US market, with little discussion of the Chinese market. As the world's second largest economy, China has an increasingly broad influence on the world. Especially in recent years, China's capital market has been increasingly open, and its economic expansion has had a huge cumulative effect. China's domestic stock market is now the fourth-largest in the world, surpassing Europe's as early as 2016. In 2019, MSCI completed three times of A share expansion in China, which made the analysis of the overall effect of Chinese stock market more accurate and the development of the financial market system better. So, our research extends the question of the anchoring effect of the US stock market to the level of China.

There are three benefits to do so. First, studying the Chinese stock market is helpful to understand whether the composition of investors affect the existence and magnitude of the behavioral bias. This is mainly because the proportion of investors in Chinese and US stocks is different. The US market is dominated by institutional investors, while Chinese stock market is dominated by retail investors who are disorderly in their response to market risk, when feeling a sign of abnormaly, they would liquidate their holdings, which are worth possessing for a long time or not. As a result, some stocks do not form bubbles, but also suffer from panic selling off, bringing instability to the market.

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[3] Not long after, Marshal et al. (2005) applied the 52-week high-momentum strategy to the Australian stock market and found that it was still highly profitable.

[4] Others have examined the driver of the 52-week high strategy, Burghof et al. (2011), they found that the long stocks are close to their 52-week high, while short stocks are well below their one-year high.

Secondly, although the behavioral bias of 52-week high is exist in the US market, it is not clear whether Chinese investors will be influenced by similar behavioral bias. According to the 2019 China Stock Market Investor Survey, retail investors account for 99.76% of Chinese stock investors. Precisely because there are so many retail investors, it is reasonable to believe that the Chinese stock market is more vulnerable to behavioral biases.[5] But even so, that does not mean Chinese retail investors are more exposed to 52-week high and low. Because of cultural and environmental differences, maybe US investors care about 52-week high and low, while Chinese investors care about other indicators.[6] It is also worth mentioning that anchoring bias is only one of the 18 behavioral biases that have been counted.[7] Thus, whether the behavioral bias of 52-week high is existing in Chinese stock market remains an empirical question.

Thirdly, the stock markets in the US and China are at different stages of development, but because the history of the American stock market is longer, the current development of the Chinese stock market may be like some development stages of the US. In 1950, for example, more than 100 years after the US stock market had developed, retail investors still dominated the investment mix, with institutional investors accounting for only 7 per cent of total US equity. At present, Chinese stock market has only been experiencing for more than 20 years, so it is worth studying to find some common points or other characteristics between the US and Chinese stock markets.

To investigate these issues, we first calculate a decile portfolio equal-weighted returns from the 52-week high and 52-week low in the US and China, respectively. We then find that the US investors anchor both 52-week high and 52-week low. In particular, from 1981 to 2018 and from 1993 to 2018, the 52-week high of long-short portfolio returns are 1.07% (t - statistic = 5.06) and 1.08% (t - statistic = 3.77). And at the same period, the 52-week low of the long-short portfolio returns are respectively 0.61% (t - statistic = 2.37) and 0.77 (t - statistic = 2.14). On the other hand, Chinese investors, seem neither to have anchoring 52-week high nor anchoring 52-week low. The long-short portfolio returns at the 52-week high is 0.65%(t-statistic = 1.60) and low is 0.70%(t-statistic = 1.60). The reason is that long-short portfolio returns from 52-week high and low are not significant.

Next, we take a closer look at whether investors in the US and Chinese stock markets have the same mechanism for a 52-week high and 52-week low. We divide companies into small and big companies by market value and see how investors in both countries

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[5] https://www.sac.net.cn/hyfw/hydt/202003/t20200330_142269.html

[6] Koshoev (2020) used two factors which represented sentiments of investors for a particular stock and trends on the general market, respectively. These two indices are important factors in explaining and predicting stock returns.

[7] Loss Aversion Bias, Outcome Bias, Endowment Bias and so on, more details are in the following link: http://webcache.googleUSercontent.com/search?q=cache:HWZwZmiub1sJ:www.sarvervrooman.wfadv.com/files/68283/18_Key_Behavioral_Sarver-Vrooman_WFA_4cF_hi-res.pdf+&cd=3&hl=zh-CN&ct=clnk&gl=US

react to them. Through our research, we find that the anchoring effect of the US investors only occurs in small companies. This shows that retail investors mainly invest in small companies while institutional investors mainly invest in large companies. But for Chinese investors, the results are more interesting. That's because Chinese investors have an anchoring effect on big companies near a 52-week high. And near 52-week low, Chinese investors have an anchoring effect on small companies.

We offer a possibility to explain the Chinese stock market. Chinese investors may be more incline to speculate. Not only do they generally believe that small companies' shares are more volatile, but they also expect to profit from short-term fluctuations in their stocks and make few value investments. As a result, when stock prices are near 52-week high, Chinese investors do not think that big companies can keep rising, so investors tend to sell shares in big companies. Conversely, when stocks are near 52-week low, investors tend to believe that they will bounce back, so bottom-fishing for small companies seems like a more profitable option.

To demonstrate the robustness of our results, we perform the following additional tests. We start with a set of load factors considering both 52-week high and low as well as big and small companies, to show that our results are not driven by previous trends. The second set is the results of our value-weigh of 52-week high and low, proving that our primary results are not driven by very small companies. All the tests are complementary to the main results of the paper.

The main structures of this paper are described as follows: Section II is the algorithm of data and main variables. Section III is the main results. Section IV is robustness test. Section V is the summary and discussion.

2. DATA

First, we get the data for the US market from The Center for Research in Security Prices (CRSP). We focus on the common shares listed on NYSE, AMEX, and Nasdaq. In order to avoid the influence of tiny stocks on results, we only keep stocks with a monthly closing price higher than $1. Second, we get the data for the China market from China Stock Market Accounting Research (CSMAR). We focus on the common shares listed on Shanghai and Shenzhen A shares. In order to avoid the influence of tiny stocks on results, we only keep stocks with a monthly closing price higher than￥1. Third, to ensure that there are enough stocks in each portfolio, we start Chinese sample from 1993. On the other hand, to study the evolvement of the mechanism in the US market, our US sample period is from 1981 to 2018 (1981-2018 vs. 1993-2018).

Finally, to explore whether investors will be affected by the 52-week high and low, we Use two metrics: the distance to 52-week highs and lows. These metrics are obtained

by simple arithmetic. The former is the maximum of the past year's stock price minus its closing price and the latter is the closing price minus its past year's stock price. For example, one stock is trading at $100 for the month and its past 52-week high is $120, obviously the distance to 52-week high is going to be $20. The method Used to calculate the 52-week low is also similar. Besides, we remove the observation that the current monthly price is the same as the past 52-week high and low.

After we have all the distance to 52-week high and low, we need to conduct portfolio sorting on it. Divide the metrics into 10 groups portfolio then rebalance once a month, and then we calculate their average return.

In addition, we discuss how investors might react to big and small companies as stock prices approach to 52-week high and low separately. We measure the size of a company by its market value, with 0 and 1 for small and big companies. The formula for calculating the market value is monthly price average multiplied by Shares Outstanding. Then, we sorted the portfolios of 0,1 respectively——Divide 0 and 1 into 10 groups portfolio then rebalance once a month——And then we calculate their average return.

Table 1 reports descriptive statistics of shares characteristics for our samples. In Panel A, we report and summarize from different samples. The first observation describes the stock monthly returns and the next two observations describe the absolute distance to 52-week highs and lows in each panel. In addition, we divide the data into small firms and big firms by market value. Overall, there is a clear difference between the US and Chinese stock markets. Secondly, the data of US stocks in two time periods are not much different. Thirdly, the standard deviation of large companies as a whole will be larger than that of small companies.

Finally, in order to distinguish our results from being influenced by long-term motivation, we do factor loading in 4.1. We used the Carhart four factors: SMB, HML, MKT and UMD.[8] The data used are also CRSP of the United States and CSMAR of China.

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[8] Carhart (1997) believed that the momentum effect should be added on the basis of Fama and French's three-factor model to study stock returns, so as to more comprehensively evaluate stock performance and obtain excess returns.

Table 1: Summary Statistics

Panel A: Shares Characteristics of the US (1981-2018)

	Full Samples					Small Firms					Big Firms				
	1%	99%	Mean	Median	Std	1%	99%	Mean	Median	Std	1%	99%	Mean	Median	Std
Monthly Return	-0.349	0.529	0.011	0.000	0.165	-0.391	0.620	0.006	-0.001	0.191	-0.319	0.418	0.012	0.006	0.135
The Distance to 52-week high	0.070	62.500	7.438	3.250	15.508	0.063	51.781	5.723	2.437	10.998	0.125	79.000	9.915	4.700	20.339
The Distance to 52-week low	0.080	83.500	12.581	5.813	21.719	0.000	63.500	10.006	4.250	15.071	0.000	101.813	15.226	7.063	27.271

Panel B: Shares Characteristics of the US (1993-2018)

	Full Samples					Small Firms					Big Firms				
	1%	99%	Mean	Median	Std	1%	99%	Mean	Median	Std	1%	99%	Mean	Median	Std
Monthly Return	-0.362	0.556	0.011	0.000	0.171	-0.409	0.625	0.003	-0.005	0.193	-0.338	0.446	0.012	0.006	0.143
The Distance to 52-week high	0.080	65.938	7.916	3.422	16.798	0.065	54.925	6.217	2.670	11.951	0.110	85.063	10.476	4.830	22.058
The Distance to 52-week low	0.070	80.063	11.988	5.790	21.860	0.000	67.875	10.615	4.531	16.436	0.000	94.438	13.696	6.930	27.084

Panel C: Shares Characteristics of China (1993-2018)

	Full Samples					Small Firms					Big Firms				
	1%	99%	Mean	Median	Std	1%	99%	Mean	Median	Std	1%	99%	Mean	Median	Std
Monthly Return	-0.319	0.423	0.006	-0.003	0.159	-0.319	0.414	0.008	-0.001	0.150	-0.296	0.444	0.016	0.003	0.161
The Distance to 52-week high	0.120	49.300	7.054	3.880	11.646	0.120	42.160	6.480	3.640	25.228	0.110	54.340	7.612	3.960	17.982
The Distance to 52-week low	0.000	27.950	3.605	1.760	6.286	0.030	22.050	3.074	1.700	4.597	0.030	32.920	4.425	2.120	7.673

3. RESULTS

3.1 52-week High and the Cross-section of Equal-weighted Returns

To examine the relation between 52-week-high and the cross-section of stock returns, we first conduct single portfolio sorting based on the distance to 52-week-high. We match the return for month t and month t−1. We compute equal-weighted monthly returns for each of the decile portfolios. The mean equal-weighted returns, together with the U.S(1981-2018 vs. 1993-2018) and China (1993-2018) are reported in Table 2.

We get the distance to 52-week-high from an arithmetic: The maximum of the current stock price minus its closing price. After we have all the distance to 52-week-high, we divide the distance to 52-week high into 10 groups portfolio then rebalance once a month, and then we calculate average return. The average difference in return between the bottom and the top decile portfolios are reported in the last column. Newey-West adjusted t-statistics are reported in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1%, respectively. All returns are in percentage.[9]

In Table 2, our long-short portfolio equal-weight results demonstrate that US investors behave irrationally when share prices approach 52-week highs, while Chinese investors do not. Specifically, the US and China mean return for the bottom decile portfolio are 1.89% (t-statistic = 6.75), 1.85% (t-statistic = 5.72) and 1.69% (t-statistic = 2.25). In the top decile portfolio, they are 0.82% (t-statistic = 2.70), 0.77% (t-statistic = 1.99), 1.04% (t-statistic = 1.62). Thus, our long-short strategy which longs stocks in the bottom decile portfolio and shorts stocks in the top decile portfolio earns an equal-weighted return of 1.07% (t-statistic = 5.06), 1.08% (t-statistic = 3.77) and 0.65% (t-statistic = 1.60) per month, respectively. Judging from the results, only the results of US stocks are significant.

Therefore, we think that this kind of behavior bias only occurs in the US stock market. The reason for this may be that the US investors believe that when the stock price is close to its 52-week high, it will be difficult for the stock price to rise further, so investors choose to sell their holdings. Chinese investors are unaffected by the 52-week high. We will explore the reason and the performance of the differences between Chinese and the US equity investors in Table 3.

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[9] Table 4, appendix table 1 and 3 below also use this method.

Table 2: Decile Portfolio Equal-weighted Returns

| | Absolute Distance to 52-week-high, Equal-weighted | | | | | | | | | | |
	Low	2	3	4	5	6	7	8	9	High	Low-High
The US mean return (1981-2018)	1.89***	1.47***	1.38***	1.27***	1.16***	1.07***	1.02***	0.89***	0.78***	0.82***	1.07***
	(6.75)	(4.87)	(4.82)	(4.64)	(4.41)	(3.97)	(3.70)	(3.25)	(2.78)	(2.70)	(5.06)
The US mean return (1993-2018)	1.85***	1.61***	1.48***	1.28***	1.15***	0.94***	0.96***	0.81**	0.76**	0.77**	1.08***
	(5.72)	(4.38)	(4.40)	(3.97)	(3.71)	(2.93)	(2.87)	(2.45)	(2.20)	(1.99)	(3.77)
China mean return (1993-2018)	1.69**	1.85**	1.72**	1.67**	1.74**	1.56**	1.28*	1.35**	1.02	1.04	0.65
	(2.25)	(2.33)	(2.19)	(2.15)	(2.39)	(2.25)	(1.90)	(2.01)	(1.59)	(1.62)	(1.60)

Table 3: Long-Short Portfolio Returns for Big Firms and Small Firms

| | Absolute Distance to 52-week-high, Equal-weighted, Small Firms and Big Firms | | | | | |
| | Small Firm | | | Big Firm | | |
	Low	High	Low-High	Low	High	Low-High
The US mean return (1981-2018)	2.47***	0.96***	1.51***	1.29***	0.99***	0.30
	(8.00)	(3.39)	(7.14)	(5.38)	(2.90)	(1.24)
The US mean return (1993-2018)	2.36***	1.00***	1.36***	1.27***	0.88*	0.39
	(6.60)	(2.98)	(4.73)	(4.40)	(1.95)	(1.16)
China mean return (1993-2018)	1.43**	1.66*	-0.23	1.12	0.31	0.81**
	(2.43)	(1.72)	(-0.42)	(1.40)	(0.49)	(2.05)

We divide the distance to 52-week-high into 10 groups portfolio then rebalance once a month, and then we calculate average return. We measure the size of a company by its market value, with 0 and 1 for small and big companies. The formula for calculating the market value is monthly price average multiplied by shares outstanding. Then, we sorted the portfolios of 0,1 respectively——Divide 0 and 1 into 10 groups portfolio then rebalance once a month——And then we calculate the average return. Newey-West adjusted t-statistics are reported in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1%, respectively. All returns are in percentage.[10]

We divide the companies according to their market capitalization. A company whose market capitalization is greater than the median is a large company, and a company that is less than the median is called a small company. In table 3, we report the mean return from small firms and big firms for the bottom and the top decile portfolios. Returns from the bottom and the top decile portfolios are only positively correlated with small firms of market value in the US stock market. The long-short portfolio returns are 1.51% (t-statistic = 7.14) and 1.36% (t-statistic = 4.73).

On the contrary, Chinese are only positively correlated with big firms. Its long-short portfolio returns are 0.81% (t-statistic = 2.05). These results are likely to be driven by the composition of investors in the US and Chinese markets. In the US, most of the transactions of big companies are done by institutional investors, who are less affected by behavioral bias. Thus, the proportion of retail investors will be relatively concentrated on investing in small companies. Further, this explains why small companies with US stocks have results instead of big companies. But in contrast, in China, it is the result of big companies that exhibit behavioral bias. We mentioned earlier that in the Chinese stock market, the proportion of retail investors is as high as 99.76%. In addition, retail investors are not allowed to sell short. When the stock price is close to the 52-week high, retail investors will think that the stock price is difficult to rise, so they choose not to hold stocks of large companies. For small companies, retail investors prefer to buy when the stock price is close to the 52-week low, hoping that the stock price will rebound. We further support this in Tables 4 and 5.

3.2 52-week Low and the Cross-section of Equal-weighted Returns

In table 4, the operations and mechanisms are similar to table 2. Our long-short portfolio equal-weighted results demonstrate that US investors behave irrationally when share prices approach 52-week low, while Chinese investors do not. Specifically, the US and China mean return for the bottom decile portfolio are 1.89% (t-statistic = 5.58), 1.95% (t-statistic = 4.48) and 1.65% (t-statistic = 2.04). In the top decile portfolio, they

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[10] Table 5, appendix table 2 and 4 below also use this method.

are 1.28% (t-statistic = 5.52), 1.18% (t-statistic = 4.45), 0.95% (t-statistic = 1.36). Thus, our long-short strategy which long stocks in the bottom decile portfolio and short stocks in the top decile portfolio earns an equal-weighted return of 0.61% (t-statistic = 2.37), 0.77% (t-statistic = 2.14) and 0.70% (t-statistic = 1.60) per month, respectively. Judging from the results, only the results of the US stocks are significant.

So far, we think that this kind of behavior bias only occurs in the US stock market. The reason for this may be that the US investors believe that when the stock price is close to its 52-week low, it will be difficult for the stock price to fall further, so investors choose to keep their holdings. But Chinese investors are unaffected by the 52-week lows. This shows that investors in the US and Chinese stock markets are affected by behavioral biases differently. We will explore the reason and the performance of the differences between Chinese and US equity investors in Table 5.

In table 5, we report the mean return from small firms and big firms for the bottom and the top decile portfolios. Returns from the bottom and the top decile portfolios are only positively correlated with small firms of market value in the US stock market. The long-short portfolio returns are 1.51% (t-statistic = 7.14) and 1.36% (t-statistic = 4.73). Meanwhile, Chinese markets are positively correlated with small firms. Its long-short portfolio returns are 0.81% (t-statistic = 2.05). These results are driven by the composition of investors in the US and Chinese markets. In the United States, most of the transactions of big companies are done by institutional investors, who are less affected by behavioral deviations. For small companies, the proportion of retail investors is higher. Therefore, we think that in the US, this result will only occur in small companies. On the other hand, the difference between the Chinese and the US stock market is that the majority of retail investors in the Chinese market. They believe that when the stock price is close to the 52-week low, small companies have more opportunities and can get a spread.

Table 4: Decile Portfolio Equal-weighted Returns

| | Absolute Distance to 52-week-low, Equal-weighted | | | | | | | | | | |
	Low	2	3	4	5	6	7	8	9	High	Low-High
The US mean return (1981-2018)	1.89***	0.96***	1.12***	1.21***	1.13***	1.04***	0.98***	0.98***	1.12***	1.28***	0.61**
	(5.58)	(2.89)	(3.43)	(4.07)	(4.17)	(3.88)	(3.83)	(3.82)	(4.57)	(5.52)	(2.37)
The US mean return (1993-2018)	1.95***	0.92**	1.17***	1.29***	1.17***	1.00***	0.92***	0.94***	1.04***	1.18***	0.77**
	(4.48)	(2.20)	(2.91)	(3.55)	(3.55)	(3.12)	(3.06)	(3.15)	(3.74)	(4.45)	(2.14)
China mean return (1993-2018)	1.65**	1.85**	1.92***	1.67**	1.73**	1.41**	1.10	1.17*	0.89	0.95	0.70
	(2.04)	(2.55)	(2.60)	(2.36)	(2.42)	(1.98)	(1.58)	(1.69)	(1.33)	(1.36)	(1.60)

Table 5: Long-Short Portfolio Returns for Big Firms and Small Firms

| | Absolute Distance to 52-week-low, Equal-weighted, Small Firms and Big Firms | | | | | |
| | Small Firm | | | Big Firm | | |
	Low	High	Low-High	Low	High	Low-High
The US mean return (1981-2018)	2.29***	1.35***	0.94***	1.23***	1.19***	0.04
	(6.19)	(5.46)	(3.07)	(4.27)	(4.76)	(0.18)
The US mean return (1993-2018)	2.51***	1.23***	1.28***	1.22***	1.07***	0.15
	(5.27)	(4.51)	(3.02)	(3.36)	(3.50)	(0.49)
China mean return (1993-2018)	1.87**	1.31*	0.56**	0.85	0.74	0.11
	(2.19)	(1.81)	(2.50)	(1.15)	(0.99)	(0.25)

4. ROBUSTNESS TESTS

In this section, we examine the robustness of the main results. These sections are divided into three parts. 4.1 is the factor loading considering long-term momentum. 4.2 is the value-weighted results of 52-week high and low.

4.1 Factor Loading

A momentum study in the past has pointed out that if a stock's overall price has shown a clear upward trend over the past year, the stock will tend to continue to rise in the coming months. And vice versa. In order to prove that this momentum is not the factor that influences the outcome of 52-week highs and lows, we return the long-short portfolio returns by big and small companies linearly to the Carhart four-factor model. The regression results are shown in table 6.

Table 6 describes a linear regression of the long-short portfolio return to the Carhart four-factor model. We divide two panels to describe the regression of long-short portfolio return to Carhart four factors. The table contains t-value, unstandardized coefficients and adjusted r-square. The constants of both panels are essentially positive, and the t-test is also essentially significant. Meanwhile, the adjusted r-square of the linear regression model is very small. Combined with these factors, we can prove that the main results of this paper cannot be explained by Carhart four-factor model.

4.2 The Value-weighted Results

What we do in this part is the value-weighted result of 52-week high and low. Because value-weighted is weighted by market value, we can eliminate the influence of small companies by doing so. At the same time, it will further prove that our conclusion is reliable.

In appendix table 2, a supplement to table 3, we check the value-weighted results of American and Chinese stock markets, which is the same as table 3. Returns from the bottom and the top decile portfolios are only positively correlated with small firms of market value in the US stock market. The long-short portfolio returns are 1.25% (t-statistic = 5.63) and 1.22% (t-statistic = 3.94). On the contrary, Chinese are positively correlated with big firms. Its long-short portfolio return is 0.92% (t-statistic = 2.11). So far, we have found that regardless of whether it is equal-weighted or value-weighted, behavioral bias in the US stock market exists in small companies while the Chinese stock market exists in big companies.

Table 6: Regression of Big and Small Firms on 52-week High and Low

Panel A: Big Firms												
	52-week high						**52-week low**					
	The US mean return (1981-2018)		The US mean return (1994-2018)		China mean return (1994-2018)		The US mean return (1981-2018)		The US mean return (1994-2018)		China mean return (1994-2018)	
	t	B	t	B	t	B	t	B	t	B	t	B
Constant	0.984	0.002	0.945	0.003	2.446	0.008	-0.124	0.000	0.125	0.000	0.148	0.001
Mkt_rf	0.701	0.000	0.107	0.000	2.633	0.088	2.311	0.001	2.043	0.002	-0.389	-0.019
Smb	0.851	0.001	0.619	0.001	0.305	0.023	0.179	0.000	-0.010	-0.000	0.819	0.089
Hml	1.000	0.001	0.927	0.001	1.385	0.097	-0.326	0.000	-0.015	-0.000	0.169	0.017
Umd	-0.288	0.000	-0.345	0.000	-1.527	-0.089	-0.342	0.000	-0.066	-0.000	-1.508	-0.126
Adjusted R^2	-0.004		-0.009		0.025		0.008		0.004		-0.001	
Panel B: Small Firms												
	52-week high						**52-week low**					
	The US mean return (1981-2018)		The US mean return (1994-2018)		China mean return (1994-2018)		The US mean return (1981-2018)		The US mean return (1994-2018)		China mean return (1994-2018)	
	t	B	t	B	t	B	t	B	t	B	t	B
Constant	7.578	0.015	4.537	0.013	-0.533	-0.002	3.397	0.009	3.207	0.013	1.957	0.007
Mkt_rf	0.188	-0.000	0.132	0.000	2.788	0.116	3.015	0.002	2.314	0.002	2.243	0.080
Smb	2.974	0.002	2.465	0.002	0.802	0.075	1.480	0.001	0.794	0.001	2.642	0.211
Hml	-2.273	-0.002	-1.848	-0.002	0.776	0.067	-2.046	-0.002	-1.623	-0.002	-0.723	-0.052
Umd	-0.175	-0.000	-0.116	-0.000	1.426	0.102	-0.997	-0.001	-0.715	-0.001	0.762	0.047
Adjusted R^2	0.030		0.025		0.042		0.047		0.032		0.072	

In appendix table 4, a supplement to table 5, we check the value-weighted results of American and Chinese stock markets, which is the same as table 5. Returns from the bottom and the top decile portfolios are only positively correlated with small firms of market value in the US stock market. The long-short portfolio returns are 0.53% (t-statistic = 1.89) and 0.68% (t-statistic = 1.72). Meanwhile, Chinese are positively correlated with small firms. Its long-short portfolio return is 0.44% (t-statistic = 2.20). So far, we have found that regardless of whether it is equal-weighted or value-weighted, behavioral bias in the US and Chinese stock market exist in small companies.

5. CONCLUSION AND DISCUSSION

In this paper, we examine the reactions of investors to 52-week highs and lows in Chinese and US stock markets. Results show that investors in the US have a clear behavioral bias towards both 52-week high and 52-week low. Chinese investors have no such bias. But when we divide the size of the firms, we find that Chinese investors have behavioral biases for big companies with stock prices close to the 52-week high and small companies with stock prices close to the 52-week low. The reason is that retail investors believe that the stock prices of big companies will be difficult to continue to rise near the 52-week high, so they choose to sell. On the other hand, when the stock price approaches a 52-week low, they would think that small companies will be more volatile and the stock price may rebound. Therefore, retail investors would choose to continue to hold or even bargain.

In the future work, we can further demonstrate that our research and explanation are reasonable from the following perspectives: (1) divide the stock into two parts, state-owned and non-state-owned. (2) by looking for the trading data of Chinese retail investors or applying the research methods in this paper to other behavioral biases (such as the anchoring effect of retail investors on integers), the theory that Chinese investors tend to believe that the stock price of big companies is more stable can be further verified.

APPENDIX

For comparison, we also make four appendix tables. And the contents of all forms are handled in the same way as before.

Appendix Table 1: Decile Portfolio Value-weighted Returns

	Absolute Distance to 52-week-high, Value-weighted										
	Low	2	3	4	5	6	7	8	9	High	Low-High
The US mean return (1981-2018)	0.97***	0.94***	1.17***	1.02***	1.03***	1.12***	1.08***	1.06***	0.89***	0.96***	0.01
	(5.21)	(4.70)	(5.79)	(4.91)	(4.64)	(5.34)	(4.91)	(4.97)	(3.73)	(3.18)	(0.07)
The US mean return (1993-2018)	0.88***	0.81***	1.13***	0.82***	0.89***	0.98***	0.92***	0.93***	0.76**	0.83**	0.05
	(3.72)	(3.28)	(4.50)	(3.31)	(3.36)	(3.94)	(3.41)	(3.48)	(2.54)	(2.08)	(0.17)
China mean return (1993-2018)	1.52**	1.46**	1.22	1.35*	1.19*	0.88	0.29	0.63	0.41	0.55	0.97**
	(2.09)	(2.05)	(1.59)	(1.73)	(1.74)	(1.50)	(0.45)	(1.10)	(0.65)	(0.85)	(2.18)

Appendix Table 2: Long-Short Portfolio Returns for Big Firms and Small Firms

	Absolute Distance to 52-week-high, Value-weighted, Small Firms and Big Firms						
	Small Firm				Big Firm		
	Low	High	Low-High		Low	High	Low-High
The US mean return (1981-2018)	2.18***	0.93***	1.25***		0.93***	0.97***	-0.04
	(7.58)	(3.09)	(5.63)		(4.81)	(3.09)	(-0.19)
The US mean return (1993-2018)	2.16***	0.94**	1.22***		0.78***	0.84**	-0.06
	(6.54)	(2.52)	(3.94)		(3.27)	(2.04)	(-0.21)
China mean return (1993-2018)	1.28	1.49**	-0.21		1.08	0.16	0.92**
	(1.55)	(2.19)	(-0.39)		(1.41)	(0.25)	(2.11)

Appendix Table 3: Decile Portfolio Value-weighted Returns

	Absolute Distance to 52-week-low, Value-weighted										
	Low	2	3	4	5	6	7	8	9	High	Low-High
The US mean return (1981-2018)	1.61***	1.21***	1.32***	1.06***	1.03***	0.92***	0.83***	0.93***	0.98***	1.18***	0.43
	(5.82)	(4.47)	(5.54)	(4.36)	(4.67)	(4.18)	(3.19)	(4.03)	(3.88)	(4.28)	(1.63)
The US mean return (1993-2018)	1.50***	1.14***	1.19***	0.90***	0.91***	0.72***	0.60*	0.79***	0.99***	1.15***	0.35
	(4.11)	(3.28)	(4.23)	(2.90)	(3.33)	(2.69)	(1.84)	(2.74)	(3.04)	(3.26)	(0.96)
China mean return (1993-2018)	0.93	0.99	1.24*	0.95	1.50**	0.69	0.66	0.82	0.68	0.52	0.41
	(1.33)	(1.33)	(1.77)	(1.57)	(2.21)	(0.97)	(1.03)	(1.28)	(1.07)	(0.68)	(1.00)

Appendix Table 4: Long-Short Portfolio Returns for Big Firms and Small Firms

	Absolute Distance to 52-week-low, Value-weighted, Small Firms and Big Firms						
	Small Firm				Big Firm		
	Low	High	Low-High		Low	High	Low-High
The US mean return (1981-2018)	1.78***	1.25***	0.53*		1.45***	1.17***	0.28
	(4.97)	(5.03)	(1.89)		(5.70)	(4.29)	(1.24)
The US mean return (1993-2018)	1.80***	1.12***	0.68*		1.37***	1.11***	0.26
	(3.93)	(4.11)	(1.72)		(4.14)	(3.15)	(0.83)
China mean return (1993-2018)	1.61*	1.17	0.44**		0.81	0.51	0.30
	(1.91)	(1.62)	(2.20)		(1.14)	(0.65)	(0.61)

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