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Is Momentum Really Momentum? International Evidence

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Abstract

Novy-Marx (2010) finds that momentum is primarily driven by stock performance twelve to seven months prior to portfolio formation in the US market. We examine whether this finding holds in international stock markets. In particular, we investigate whether intermediate horizon past performance is more dominant than 52-week high momentum strategy and recent past performance with individual stock data in international markets. Our results indicate that the intermediate past, recent past, and the 52-week high momentum effects are prevalent in international markets. The intermediate horizon past performance during the last twelve to seven months dominates in most of the markets studied. The 52-week high momentum and the recent past performance during the last six to two months are highly correlated. However, they are not as important as stock performance during the last twelve to seven months.

JEL classification: G15; G12; G14

Keywords: Momentum; 52-week High; International Stock Markets

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1. Introduction

Many studies document that stock returns are predictable based on past price information. Among them, Jegadeesh and Titman (1993, JT henceforth) show that when stocks are ranked into deciles based on past medium-term returns, the top decile portfolio (winners) continues to outperform the bottom decile portfolio (losers) in a medium-term period; DeBondt and Thaler (1985) document long-term reversals of portfolio returns.[1] Moskowitz and Grinblatt (1999) claim that the medium-term momentum in individual stock returns is dominated by momentum in industry returns. Jegadeesh and Titman (2001) provide more recent evidence supporting the explanations of behavioral models, which incorporate both medium-term momentum and long-term reversals (e.g., Barberis, Shleifer, and Vishny [1998]; Daniel, Hirshleifer, and Subrahmanyam [1998]; and Hong and Stein [1999]) over risk-based explanations. In international markets, JT momentum has been documented by, among others, Rouwenhorst (1998, 1999), Chan, Hameed, and Tong (2000), Hameed and Kusnadi (2002), Griffin, Ji, and Martin (2003), Hong, Lee, and Swaminathan (2003), and Chui, Titman, and Wei (2003, 2010).

Past return is not the only way to construct momentum strategy. For example, different from that of JT, George and Hwang (2004, GH henceforth) propose an investing strategy based on the highest stock price in the previous 52 weeks. At the end of each month, GH rank stocks based on the ratio of the current price to the past 52-week high. They then construct a zero-investment portfolio from purchasing the top 30 percentile (winners) and selling the bottom 30 percentile (losers) stocks, and hold these positions for

[1] For ease of exposition, in this paper we use the phrase "medium-term" to describe the horizon of two to 12 months, and "long-term" to describe the horizon of 13 to 60 months. As in Novy-Marx (2010), we use "intermediate past" and "recent past" to describe the horizon of last twelve to seven months, and last six to two months, respectively.

a medium term of 6 or 12 months. GH find that this trading strategy generates profits comparable to those of the JT strategy. They also show that this 52-week high strategy explains a large portion of the JT momentum profits and that there are no return reversals in the long run, inconsistent with the predictions of behavioral models.

GH study is extended to international markets by Liu, Liu, and Ma (2010). They document that the 52-week high momentum strategy produces profits in 18 of the 20 markets in their sample, and the profits are significant in 10 markets. The 52-week high momentum profits exist independently from the Jegadeesh and Titman (1993) individual stock and Moskowitz and Grinblatt (1999) industry momentum strategies. These profits do not show reversals in the long run.

Momentum literally means that rising stocks tend to keep rising and falling stocks tend to keep falling. However, in a recent paper, Novy-Marx (2010) shows that in the US market, it is the intermediate horizon past performance during the last twelve to seven months, not the recent past performance during the last six to two months, that drives momentum in individual stocks. This means that the stock return predictability looks more like an "echo" than "momentum". The observed term structure of momentum information poses a challenge, which none of behavioral or rational models (e.g., Johnson [2002] and Sagi and Seasholes [2007]) can explain.

In this paper, we compare these different momentum strategies in international markets. In particular, we examine whether the intermediate horizon past performance is more dominant than 52-week high momentum strategy and recent past performance with individual stock data in international markets.

Our main findings are as follows. First, the intermediate past, the recent past, and the 52-week high momentum effects are all robust in international markets. In our sample of 20 major stock markets, nineteen, seventeen, and eighteen show profits from these three trading strategies, respectively. Among them, fourteen exhibit statistically significant profits from the intermediate past momentum strategy. Thirteen and twelve markets have statistically significant recent past and 52-week high momentum profits, respectively. Our results show that these three momentum effects tend to coexist in a market. In addition, we find that January effect has little effect on the intermediate momentum profits. However, the momentum profits from recent past and 52-week high strategies increase substantially once January is excluded.

Our second finding shows that, the strategy based on intermediate horizon past performance is more dominant than those based on recent past performance and the 52-week high. In the US market, the four factor adjusted returns from the intermediate past momentum strategy are still significant conditional on the recent past or the 52-week-high momentum strategies. In contrast, none of the four factor adjusted returns from the recent past and the 52-week high momentum strategies are significant when we control for stock returns during the past twelve to seven months. Similar findings also hold in most of other markets.

Third, we find that the returns of the recent past momentum strategy and the 52-week-high momentum strategy are highly correlated. In fact, there is a large overlapping of the stocks which perform well during the past six to two months and those which attain a high ratio of the price to their past 52-week high one month ago. In most of the markets,

the profits based on one momentum strategy are no longer significant conditional on another strategy.

The remainder of the paper is organized as follows. In Section 2, we discuss the data set used in our empirical analysis. In Section 3, we present empirical evidence of the different momentum profits in international markets. We examine the relation of the three momentum strategies by portfolio analysis and investigate their risk-adjusted returns to understand which strategy is the most dominant. Section 4 concludes.

2. Data

Our sample includes common stocks listed in 20 major stock markets around the world: Australia, Austria, Belgium, Canada, Denmark, France, Germany, Hong Kong, Italy, Japan, the Netherlands, Norway, Singapore, South Korea, Spain, Sweden, Switzerland, Taiwan, the United Kingdom, and the United States. This sample represents most of the developed countries and a few emerging markets. Prior literature has studied the JT momentum strategies in all the above markets.[2] We collect daily and monthly returns of the US market from CRSP, and the returns and market capitalization of individual stocks of all other markets from Datastream.[3] Datastream also provides variables such as market-to-book ratio, trading volume, the number of shares outstanding, and industry classifications designed by the FTSE. We include both listed and delisted

[2] See, for example, Griffin, Ji, and Martin (2003), Chui, Titman, and Wei (2010), and Liu, Liu, and Ma (2011).

[3] It is not unusual for international stock market data to have quality issues. We filter the data before we conduct empirical analysis. First, we follow the procedure in Ince and Porter (2006) to exclude investment instruments other than common stocks. Next, we delete all monthly observations from the end of the sample period (December 2006) until the first month with a nonzero return, and identify this month as the last trading month of the stocks. Third, we follow the procedure in Hong, Lee, and Swaminathan (2003) to filter the extreme values. In particular, we exclude stocks that are below 5 percentiles in terms of market capitalization in each market every month, and assign returns as missing for any stocks below the 1 percentile or above the 99 percentile of the return distribution in each month (day) for each market.

stocks in our sample and include a cross-listed stock only in its home country sample. We calculate stock returns in each country with local currency.

Table 1 displays the sample period and the number of stocks in each market as of January 2000. The starting dates for the different markets are the same as those in Griffin, Ji, and Martin (2003). We require that each market includes at least 50 stocks in each month. The ending date is December 2006 for all markets, except US. To be consistent with the data used in Novy-Marx (2010) study, we include US data spanning from January 1927 to December 2008. US market has the largest number (6,595) of stocks, more than the sum in Japan, the United Kingdom, and Germany, which are by far the most populated international stock markets in our sample – in January 2000, they have 3,270, 1,696, and 1,231 stocks respectively. On the other hand, the Austrian stock market only has 118 firms in January 2000.

We report the equal- and value-weighted average monthly returns and their standard deviations in the last four columns. The returns are calculated in local currency. The value-weighted monthly returns range from 0.51% to 1.66%, and the equal-weighted returns range from 0.68% to 1.67%. Hong Kong has the highest value-weighted mean return, while Australia has the highest equal-weighted mean return among all markets. Taiwan, South Korea, and Hong Kong are the most volatile markets in our sample, with standard deviations of both equal-weighted and value-weighted monthly returns well above 8% each month. For all other markets, this value ranges from 3.20% to 8.53% for equal-weighted returns and 4.26% to 7.01% for value-weighted returns. In general, emerging markets exhibit higher volatility than developed markets.

[Insert Table 1 here]

3. Empirical Evidence

3.1 The profits of different momentum strategies

We first study the profitability of the intermediate past, and the recent past, and the 52-week high momentum strategies in the 20 stock markets. Although previous studies have examined these strategies in a few individual markets, our paper presents a comprehensive view on whether these trading strategies are profitable in all major stock markets around the world. In particular, we examine whether the intermediate horizon past performance is more dominant in international markets.

We implement the intermediate past, the recent past, and the 52-week high momentum strategies investing strategy in each market. For the intermediate past momentum strategy, we construct the intermediate winner and loser portfolios based on returns over the past twelve to seven month returns, and assign the top 30 percentile as winners and the bottom 30 percentile as losers. For the recent past momentum strategy, we first rank individual stocks based on their returns over the previous five months, then form the winner and loser portfolios from the stocks in the top and bottom 30%, respectively. For the 52-week high momentum strategy, at the end of each month, we rank stocks based on the ratio of the current price to the past 52-week high. Then we construct a zero-investment portfolio by purchasing the top 30 percentile (winners) and selling the bottom 30 percentile (losers) stocks. For all three momentum strategies, we skip one month between the portfolio formation and holding period to account for the bid-ask bounce. To compare with Novy-Marx (2010), we fix the holding period at one

month and calculate the equally weighted and value-weighted average monthly returns for the winner and loser portfolios each month.[4]

We report the intermediate past momentum profits for each market in Table 2. Equal-weighted returns of winners and losers in all months are reported in the second and third columns, respectively, followed by WML (Winners minus Losers) representing momentum profits, and the Newey-West (1987) adjusted *t*-statistics.[5] The intermediate horizon past performance is a strong predictor of stock returns in the future. Twenty of the 20 stock markets in our sample exhibit positive momentum returns. The only exception is South Korea, where the past loser portfolio generates 0.38% higher returns than the winners each month. As in Novy-Marx (2010), the intermediate past winner portfolio generates 0.74% higher returns than the losers each month in the US market, which is strongly significant. Among the rest of international markets, thirteen have significantly positive momentum returns at the 5% level. They include Australia, Canada and almost all European countries, except Sweden. However, none of the Asian markets have significant momentum profits, and it is even negative in South Korea. Except US, when all the other 19 markets are pooled together, the intermediate past momentum strategy has an equal-weighted return of 0.83% per month, which has a highly significant t-statistic of 3.61. The results show that the intermediate past momentum profits are robust in international stock markets.

[Insert Table 2 here]

[4] In a typical strategy such as (6, 1, 6) in the momentum literature, we form the winner and loser portfolio based on stock returns in the previous six months. We then skip one month, hold the winner and loser portfolios for six months, and calculate the average monthly returns from six separate winner and loser portfolios each month.

[5] Following Newey and West (1994), we choose the number of lags to be the integer part of $4(T/100)^{2/9}$ for all of the 20 markets, where T is the number of time periods. Based on this formula, we use 4 lags for 10 markets and 5 lags for the remaining 10 markets to calculate the standard errors in our sample. We also explore other lag selection parameters and obtain qualitatively similar results.

Columns 5 to 7 of Table 2 report the value-weighted intermediate past momentum profits. All the markets show positive momentum profits. Among them, ten markets present statistically significant momentum profits at the 5% level, and these markets include Australia, Canada, US, and many European countries. In the US market, the intermediate past winner portfolio return is 1.11% higher than that of past losers each month on average, which is even higher than the equal-weighted momentum profits. When other markets are pooled together, the intermediate past momentum strategy has a value-weighted return of 0.66% per month, which is significant at the 5% level.

The last six columns in Table 2 show the equal-weighted and value-weighted intermediate past momentum profits when January is excluded.[6] As in the all month situation, there are still 19 markets with positive equal-weighted momentum profits; all markets have positive value-weighted momentum profits. The number of the markets with significant profits is 15 and 9, respectively. Although both the equal and value-weighted momentum profits are higher in US without the January returns, the January effect is not prevalent on many other markets for the intermediate recent past momentum strategy. When these markets are pooled together, their equal-weighted return from the intermediate past momentum strategy increases to 0.84% per month, while value-weighted return drops to 0.56% per month. Both of them are significant at the 5% level.

Table 3 shows the recent past momentum profits for each market, where the momentum strategy is based on stock returns during month 6 to month 2. As in Table 2, equal-weighted returns of winners and losers in all months are reported in columns 2 and 3, respectively, followed by WML (Winners minus Losers) representing momentum

[6] In Australia, the tax year ends in June. Therefore, "January" for Australia refers to July.

profits, and their *t*-statistics in brackets. Among the 20 markets, seventeen markets have positive recent past momentum profits, except Japan, South Korea, and Taiwan. Thirteen markets demonstrate significant momentum profits at the 5% level, including Australia, Canada, Hong Kong, US, and most of the European markets. This is consistent with the JT momentum literature when the momentum strategy is constructed based on stock returns in the recent six months. The value-weighted recent past momentum profits are normally smaller and there are six markets with negative momentum returns. Eight markets show significant momentum profits. Among them, seven have significantly positive equal-weighted momentum returns at the same time. The only exception is US, where the value-weighted return is significantly positive (0.55% per month on average, with a t-statistic of 2.44) and the equal-weighted return is insignificant (0.24% per month on average, with a t-statistic of 1.11). This indicates that the recent past momentum in the US market is not driven by the small stocks. In contrast, when all the international markets are pooled together except US, only the equal-weighted momentum return is significant (0.84% per month on average, with a t-statistic of 4.07); the value-weighted return is only 0.32% per month and insignificant.

[Insert Table 3 here]

Outside January, the recent past momentum profits increase in most of the markets. There are only one and three markets with negative equal- and value-weighted momentum profits, respectively. Fifteen markets exhibit positive and statistically significant equal-weighted momentum profits. Eight markets show significant value-weighted momentum profits. They are also the markets with significant equal-weighted momentum profits. In fact, these eight markets are the same with significant value-

weighted momentum profits in all months. A comparison of the equal and value-weighted momentum profits with and without January indicates that January effect does have impact on the profitability of the recent past momentum strategy as the momentum returns are higher in most of the markets. For example, the US market has a significant equal-weighted momentum return at 0.77% per month when January is excluded, which is significant at the 5% level. When the other international markets are combined together, both the equal- and value-weighted momentum returns are significant. They have monthly return of 1.03% and 0.54%, respectively. This is different from the intermediate past momentum strategy.

We report the 52-week high momentum profits for each market in Table 4. Consistent with Liu, Liu, and Ma (2010), eighteen of the 20 stock markets in our sample exhibit positive 52-week high momentum (equal-weighted) returns. Among them, twelve have significantly positive GH momentum returns at the 5% level in the international markets. They include ten European countries, Canada and the Hong Kong market. Although the momentum profits are not significant in the 1927 to 2008 sample in US, it is significant at the 5% level in the second half of the sample from 1968 to 2008, which is the study period in most of the momentum literature. The only markets with negative momentum returns are South Korea and Taiwan. Both of them have insignificant monthly return of -0.23%. When the international markets are pooled together, the 52-week high momentum strategy generates monthly return of 0.87%, which is strongly significant. The results show that the GH momentum profits are robust in international stock markets.

[Insert Table 4 here]

Columns 5 to 7 of Table 4 report the value-weighted 52-week high momentum profits. Similar as the equal-weighted momentum profits, there are 17 markets with positive momentum profits, except Austria, Japan, and Taiwan. However, only six markets present statistically significant momentum profits at the 5% level, including Australia, Canada, Denmark, France, Hong Kong, and Italy. Except Australia, the other five markets also have significant equal-weighted 52-week high momentum profits. When the international markets are pooled together, the value-weighted return of the 52-week high momentum strategy is 0.53% per month with a t-statistic of 1.86, which is significant at 10% level.

When January is excluded, the 52-week high momentum profits improve substantially in most of the markets. All the twenty markets have positive equal-weighted momentum profits. Among them, 16 markets show significant profits at the 5% level. Eighteen markets show positive value-weighted 52-week high momentum profits and six of them are significant. They are also the markets with statistically significant value-weighted momentum profits in all months. US market has the significantly equal-weighted return of 0.83% per month, while its value-weighted return is only 0.21% and insignificant. Both the equal- and value-weighted returns of the pooled market are significant. Their monthly returns are 1.19% and 0.73% on the average. The large difference between equal-weighted and value-weighted momentum profits indicates that the 52-week high momentum profits come from small stocks in most of the markets.

In sum, our results in Tables 2, 3, and 4 show that the intermediate past, the recent past and the 52-week high momentum effects are robust in international stock markets. Although the magnitude of the profits varies across different markets, the intermediate

past, the recent past, and the 52-week high momentum profits typically coexist in the same market, which suggests that they are likely to be correlated. The intermediate past momentum effect seems stronger as there are more markets with positive and/or significant intermediate past momentum returns. January effect is strong for the recent past and 52-week high momentum strategies. When January is excluded, more markets show positive and/or significant recent past and 52-week high momentum profits.

3.2 Comparison between the different momentum strategies

GH (2004) show that the 52-week high momentum strategy explains a large portion of the JT momentum profits using the U.S. data because the JT momentum profits are much smaller when they control for the 52-week high momentum strategy, but the 52-week high momentum profits still remain after controlling the JT momentum strategy. They argue that the nearness to the past 52-week high is a better predictor of future returns than past returns from the previous six months. In the international markets, Liu, Liu, and Ma (2010) find that the 52-week high momentum profits exist independently from the JT momentum strategy which is based on past returns in six or twelve months. It is important to disentangle these momentum strategies because it promotes understanding which measure is the best at predicting future returns and how we can improve profits from momentum investing. Our evidence in section 3.1 suggests that the intermediate past momentum strategy is stronger. To examine whether this momentum strategy is more dominant, we investigate this issue with international data using portfolio analysis. In the following analysis, we first compare these strategies in the US market, and then extend the investigation to all of the other international markets.

3.2.1. The US market

We first conduct two-way dependent sorting on the intermediate past and the 52-week high momentum strategies in the US market. The purpose is to understand whether the profits from one momentum strategy still exist conditional on the other and which strategy is dominant. In Table 5, we display the profitability of the 52-week high momentum strategy conditional on the intermediate momentum strategy. We first sort stocks into five groups by their past returns during month 12 to 7. Within each group, we further sort stocks into five subgroups based on the nearness to the past 52-week highs. We then measure the GH momentum profits within each of the intermediate past sorted groups by calculating the return difference between GH winners and losers.

When the sample is from January 1927 to December 2008, the 52-week high momentum return is significant only in the intermediate past loser portfolio. The return is 0.81% each month, with a t-statistic of 3.03. It is -0.20% in the intermediate past winner portfolio. There are more groups with significant risk-adjusted momentum returns from the Fama-French (1993) three-factor model. However, only the intermediate past loser portfolio has a significant 52-week high momentum return if the Carhart (1997) four-factor model is used to compute the risk-adjusted returns. In the most recent half of the sample from January 1968 to December 2008, the evidence is stronger. In fact, only the loser portfolio has the significant 52-week high momentum returns if we use the raw returns or FF-3 factor adjusted returns. When the risk-adjusted returns are based on the four factor model, none of the five intermediate past sorted portfolios has significant 52-week high momentum profits. Across the five portfolios, the average GH momentum profit is -0.07%, with a t-statistic of -0.58. The results in Table 5 indicate that the 52-

week momentum profits disappear in the US market once the intermediate past stock returns are controlled.

[Insert Table 5 here]

Table 6 displays the profits from the intermediate past momentum strategy within each 52-week high momentum sorted group. In the full sample, the intermediate past momentum profits are significant in all the five portfolios. The momentum return is 1.77% per month, with a t-statistic of 7.30 in the 52-week loser portfolio. The momentum profit declines when the price ratio relative to the 52-week high increases. However, even in the 52-week winner portfolio, the intermediate past momentum return is still highly significant (0.72% per month). The momentum profits are still significant in all the groups when the returns are adjusted with the FF three-factor model. Even when the returns are adjusted with the four-factor model, the momentum profits are significant at the 5% level in the 52-week-high sorted loser and winner portfolios. In the recent half sample, similar pattern appears. All the five 52-week high momentum sorted portfolios have significant intermediate past momentum profits, no matter stock returns are raw returns or adjusted with the three-factor model. When the four-factor model is used, there are still three groups with significant intermediate past momentum profits. The momentum return is the highest in the 52-week high sorted loser portfolio. Across the five groups, the average four-factor adjusted momentum profit is 0.54, with a significant t-stat of 3.96. The results indicate a strong intermediate past momentum effect when we control for the 52-week high momentum strategy.

[Insert Table 6 here]

We then investigate the relation between the recent past and the 52-week high momentum strategies in the US market. We first sort stocks into quintiles according to their returns during the previous five months. Within each portfolio, we further divide it into five subgroups based on their price relative to 52-week high ratio. The momentum profits exist in the recent past loser and winner portfolios. They are 0.47% and 0.28%, respectively. None of them are significant. The momentum returns of the middle three groups are negative. None of them are significant, either.

At last, we reverse the order in the conditional sorting. We first sort stocks into five groups based on their price ratio, and then divide each portfolio into five subgroups based on the stock return in the past five months. This will help us to understand whether the recent past momentum effect is still there after we control for the 52-week momentum effect. We do find positive recent past momentum profits for each 52-week-sorted portfolios. However, when the returns are adjusted with the four-factor model, the average momentum return across these quintiles are negative (-0.14%) and no longer significant.

3.2.2. The international markets

We use the same approach to compare the intermediate past, recent past, and 52-week high momentum strategies in international markets. In Table 7, we examine the profitability of the 52-week high momentum strategy controlling for the intermediate past stock returns.[7] The results show that the GH 52-week high momentum strategy is significantly profitable only in five markets (Australia, Canada, Denmark, Hong Kong, and Netherlands). In contrast, Table 4 shows that there are 12 markets with significant

[7] We divide stocks into three portfolios in each dimension. This is different from what we did in US market, where stocks are sorted into quintiles. This is due to the much smaller number of stocks in the international markets.

52-week high momentum profits when the stocks are sorted only on the price relative to 52-week high. When the international markets are pooled together, the 52-week high momentum profit is not significant among all the intermediate past stock returns sorted groups. The evidence indicates that the 52-week high momentum effect is much weaker controlling for stock returns in the intermediate past.

[Insert Table 7 here]

Table 8 reverses the order of two-way sorting. We first sort stocks into tercile portfolios according to their 52-week-high ratios, and then further divide each of them into three subgroups based on stock returns from the past month 12 to month 7. The average intermediate past momentum profits are still very significant in nine markets when controlling for the 52-week momentum effect. This is similar as the one-way sorting momentum profits which are based on intermediate past stock returns only. The last row indicates the intermediate past momentum profits are very significant in the middle and winner subgroups conditional on the 52-week-high measure. When averaged across all the subgroups, the intermediate past momentum profit is 0.45% with a t-statistic of 2.70.

[Insert Table 8 here]

We then examine the relation between the recent past and the 52-week high momentum strategies in the international markets. After we control stock returns in the previous five months, the 52-week high momentum returns are significant only in five markets (Australia, Belgium, Canada, Hong Kong, and Italy). When we pool all markets together, the 52-week high momentum strategy generates positive returns in each of the

recent past return sorted subgroup, but the profit is significant in the middle recent past return tercile.

[Insert Table 9 here]

When we sort stocks into terciles based on their 52-week high ratios, and then further divide each of them into three subgroups based on stock returns from the past 5 months, Table 10 shows that on the average, seven markets produce significant recent past momentum profits across the three GH portfolios. When we consider the risk-adjusted returns, there are only 6 markets with significant recent past momentum profits on the average. They are Australia, Denmark, Netherlands, Norway, South Korea, and Sweden. The recent past momentum profit is very weak once we control for the 52-week high momentum. In fact, when we combine all the international markets, the recent past momentum strategy has the positive profit only in the 52-week winner subgroup. The average monthly return is 0.24% for this portfolio. It is insignificant with a t-statistic of 1.16.

[Insert Table 10 here]

Based on the above evidence, we conclude that the intermediate past momentum effect is more dominant in international stock markets. After controlling for the stock returns from Month 12 to 7, the 52-week high momonetum profits are much smaller. There is high correlation between the 52-week high momentum and recent past momentum strategies. Conditional on one of them, the other momentum effect is much weaker in the international markets.

4. Conclusion

Novy-Marx (2010) documents that strategies based on recent past performance are less profitable than strategies based on intermediate horizon past performance. His evidence from the US market implies that momentum is primarily driven by firms' performance tweleve to seven months prior to portfolio formation, not by a tendency of rising and falling stocks to keep rising and falling. George and Hwang (2004) find that an investing strategy based on the nearness to the past 52-week high generates comparable profits as the momentum strategy proposed by Jegadeesh and Titman (1993) and the Moskowitz and Grinblatt (1999) industrial momentum strategy in the U.S. market, and these profits do not revert in the long run. In this paper, we conduct a comprehensive study on these three momentum strategies in 20 major stock markets.

Our main findings are as follows. First, we find that the intermediate past, the recent past, and the 52-week high momentum profits are robust in international stock markets. There are 19, 17, and 18 markets in our sample with profitable intermediate past, the recent past, and 52-week high momentum strategies, respectively. Among them, fourteen, thirteen, and twleve have significantly positive profits. Second, the intermediate past momentum profits are not affected by the January effect. However, in most of the markets, the recent past and the 52-week high momentum profits increase substantially when January is excluded. Third, our portfolio analysis shows that the intermediate past monetum effect is the most dominant one among the three momentum strategies. The recent past and 52-week high momentum effects are weaker after controlling for stock performance twelve to seven months prior to portfolio formation. Fourth, the 52-week high momentum and the recent past momentum profits are highly correlated. When one

of the two momentum effects is controlled, the other momentum effect is not significant in most of the markets.

The dominance of the intermediate horizon past momentum strategy seems to suggest that it has more power than recent past performance and the 52-week high prediciting returns. Novy-Marx (2010) shows that the dominance of the intermediate past than recent past performance also applies to international equity indices, commodities and currencies. More importantly, this phenomenon cannot be explained by current rational or behavioral models. Therfore, it remains a puzzle. In the future research, we plan to investigate the price dynamics in the previous 12 months before the portfolio formation to better understand this puzzle and especially the relation between intermediate past, the recent past performance, and the 52-week high price for individual stocks in the international markets. We believe that this investigation leads to better understanding of momentum and draw general interest from academics and practitioners.

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Table 1

Summary statistics.

Market	Sample Period	No. of Stocks	EW Mean	EW Std	VW Mean	VW Std
Australia	1975.08-2006.12	892	1.67	5.51	1.33	5.30
Austria	1989.02-2006.12	118	0.89	4.11	0.92	5.57
Belgium	1975.08-2006.12	222	1.33	3.73	0.95	4.77
Canada	1975.08-2006.12	1053	1.39	4.86	1.11	4.46
Denmark	1988.12-2006.12	246	1.16	3.20	1.12	4.51
France	1975.08-2006.12	889	1.42	4.98	1.23	5.46
Germany	1975.08-2006.12	1231	0.68	3.94	0.75	4.56
Hong Kong	1984.02-2006.12	646	1.37	8.66	1.66	8.28
Italy	1975.08-2006.12	269	1.33	6.29	1.57	7.01
Japan	1975.08-2006.12	3270	0.75	5.38	0.63	4.92
Netherlands	1975.08-2006.12	197	1.13	4.38	1.17	4.56
Norway	1982.06-2006.12	210	1.65	5.93	1.41	6.26
Singapore	1983.09-2006.12	258	1.01	8.53	0.83	6.55
South Korea	1987.10-2006.12	957	1.50	9.99	0.94	8.85
Spain	1987.11-2006.12	149	1.24	5.29	0.87	5.44
Sweden	1984.06-2006.12	410	1.42	6.45	1.36	6.43
Switzerland	1975.08-2006.12	248	0.88	3.81	0.98	4.26
Taiwan	1989.08-2006.12	554	0.80	10.29	0.51	9.56
United Kingdom	1975.08-2006.12	1696	1.30	4.60	1.33	4.63
United States	1927.01-2008.12	6595	1.26	7.48	0.91	5.63

This table reports the sample of our study. The data are obtained from CRSP for the U.S. market and Datastream for international markets, where the available data across markets start on different dates. In the U.S. market, we included all common stocks traded on NYSE, AMEX and Nasdaq. Within each international market, we exclude firms whose market capitalization is below 5% of all stocks in each month. We also exclude stocks whose monthly (daily) return is below the 1 percentile or above the 99 percentile of the return distribution in each month (day). A cross-listed stock is only included in its home country sample. We require the number of stocks be greater than 50 in each month for all markets. "No. of Stocks" is the number of firms in each market as of January 2000. Monthly returns are reported in local currency and are expressed as percentages. The last four columns display the average monthly equal-weighted (EW Mean) and value-weighted (VW Mean) returns and standard deviations ("EW Std" and "VW Std") of all stocks in each market.

Table 2

Portfolio returns based on $r_{12,7}$ strategy.

	All Months						January Excluded					
	Equal-Weighted			Value-Weighted			Equal-Weighted			Value-Weighted		
Market	Winner	Loser	WML	Winner	Loser	WML	Winner	Loser	WML	Winner	Loser	WML
Australia	1.85(5.19)	1.21(2.85)	0.65(2.80)	1.51(4.88)	0.58(1.68)	0.93(4.18)	1.64(4.26)	0.74(1.70)	0.89(3.64)	1.44(4.47)	0.38(1.10)	1.05(4.62)
Austria	0.89(2.76)	0.17(0.50)	0.72(2.87)	1.12(2.81)	0.04(0.09)	1.09(2.46)	0.75(2.41)	0.10(0.29)	0.65(2.61)	1.18(2.88)	-0.07(-0.17)	1.25(2.87)
Belgium	1.79(7.53)	0.61(2.47)	1.18(7.20)	1.44(5.38)	0.71(2.34)	0.73(3.38)	1.66(6.96)	0.53(2.11)	1.13(6.80)	1.37(5.24)	0.61(2.07)	0.75(3.44)
Canada	1.78(5.49)	0.94(2.59)	0.84(4.45)	1.38(4.69)	0.45(1.34)	0.93(2.73)	1.58(4.96)	0.65(1.84)	0.93(5.18)	1.34(4.34)	0.36(1.08)	0.98(2.85)
Denmark	1.41(4.02)	0.81(2.14)	0.61(2.79)	1.17(3.34)	1.13(2.74)	0.04(0.12)	1.04(3.02)	0.48(1.26)	0.56(2.45)	0.90(2.40)	0.86(2.09)	0.04(0.12)
France	1.84(5.89)	0.98(2.82)	0.86(4.86)	1.56(4.88)	0.96(2.63)	0.60(2.73)	1.65(5.39)	0.75(2.10)	0.90(4.99)	1.41(4.41)	0.85(2.23)	0.55(2.45)
Germany	1.09(4.46)	0.23(0.70)	0.87(3.88)	1.06(3.68)	0.48(1.49)	0.57(2.43)	0.94(3.60)	0.08(0.22)	0.86(3.62)	0.98(3.39)	0.49(1.43)	0.50(2.02)
Hong Kong	1.62(3.19)	1.33(2.15)	0.29(0.97)	1.75(3.74)	1.11(2.07)	0.64(1.73)	1.60(3.29)	1.33(2.14)	0.27(0.85)	1.80(3.69)	1.14(2.06)	0.66(1.66)
Italy	1.84(4.59)	0.87(2.11)	0.98(5.96)	1.65(3.76)	0.72(1.82)	0.93(2.30)	1.59(3.97)	0.61(1.47)	0.98(5.80)	1.45(3.20)	0.49(1.22)	0.95(2.24)
Japan	0.86(2.73)	0.60(1.65)	0.25(1.47)	0.78(2.55)	0.46(1.37)	0.32(1.37)	0.59(1.90)	0.38(0.99)	0.21(1.11)	0.70(2.26)	0.32(0.90)	0.38(1.49)
Netherlands	1.65(5.76)	0.60(1.75)	1.05(5.02)	1.37(4.79)	0.80(2.18)	0.57(1.89)	1.36(4.90)	0.38(1.05)	0.99(4.56)	1.20(4.11)	0.79(2.03)	0.41(1.31)
Norway	2.06(4.30)	1.21(2.27)	0.85(2.75)	1.71(3.80)	1.04(1.95)	0.67(1.90)	1.59(3.40)	0.78(1.40)	0.81(2.52)	1.35(3.02)	0.77(1.40)	0.58(1.62)
Singapore	1.16(2.12)	0.91(1.34)	0.25(0.81)	1.05(2.28)	0.85(1.54)	0.21(0.51)	1.10(1.95)	0.93(1.30)	0.17(0.50)	0.89(1.92)	0.79(1.34)	0.11(0.25)
South Korea	1.17(1.89)	1.54(1.63)	-0.38(-0.68)	0.97(1.62)	0.83(1.16)	0.14(0.28)	0.58(0.81)	0.92(0.89)	-0.34(-0.63)	0.58(0.82)	0.53(0.63)	0.05(0.11)
Spain	1.44(3.64)	0.84(1.62)	0.59(2.07)	1.04(2.53)	0.88(1.79)	0.16(0.34)	1.07(2.90)	0.48(0.94)	0.60(2.15)	0.74(1.86)	0.74(1.48)	0.00(0.00)
Sweden	1.70(3.74)	1.18(1.86)	0.52(1.47)	1.67(3.61)	1.39(2.35)	0.28(0.64)	1.47(2.97)	0.82(1.23)	0.66(1.87)	1.52(2.96)	1.34(2.14)	0.18(0.41)
Switzerland	1.28(4.83)	0.54(1.83)	0.75(4.51)	1.24(4.49)	0.54(1.68)	0.70(3.42)	1.08(4.18)	0.40(1.35)	0.68(4.03)	1.12(3.97)	0.39(1.18)	0.73(3.39)
Taiwan	1.02(1.45)	0.51(0.70)	0.52(1.87)	0.76(1.07)	0.37(0.57)	0.38(1.00)	0.66(0.87)	0.06(0.08)	0.60(2.20)	0.53(0.66)	0.05(0.06)	0.48(1.16)
U.K.	1.75(6.29)	0.79(2.39)	0.96(6.55)	1.54(6.24)	0.99(3.28)	0.55(2.33)	1.49(5.23)	0.56(1.67)	0.93(6.22)	1.38(5.69)	0.95(3.10)	0.42(1.90)
Intl. Mkts	1.50(5.34)	0.67(1.79)	0.83(3.61)	1.24(4.70)	0.58(1.70)	0.66(2.78)	1.32(4.59)	0.48(1.19)	0.84(3.24)	1.19(4.36)	0.63(1.74)	0.56(2.17)
U.S.	1.71(5.78)	0.97(2.91)	0.74(4.13)	1.42(5.96)	0.31(1.17)	1.11(5.82)	1.32(4.34)	0.30(0.84)	1.02(5.42)	1.35(5.42)	0.11(0.40)	1.24(6.12)

The table displays the average one month portfolio returns of $r_{12,7}$ strategy. At the end of each month, stocks are ranked based on the cumulative returns 12 to 7 months (inclusive) prior to the current month. For the U.S. market, we define the winner (loser) portfolio as the top (bottom) quintile, while for the international markets, we use terciles. "Intl. Mkts" represents all international markets in our sample and is in U.S. Dollar term. We hold the zero-investment portfolio (purchasing winners and short selling losers) for one month. Equal- and value-weighted portfolio returns are calculated in all months and months excluding January. All returns are in percentages. The Newey-West adjusted *t*-statistics are in parentheses.

Table 3

Portfolio returns based on $r_{6,2}$ strategy.

	All Months						January Excluded					
	Equal-Weighted			Value-Weighted			Equal-Weighted			Value-Weighted		
Market	Winner	Loser	WML	Winner	Loser	WML	Winner	Loser	WML	Winner	Loser	WML
Australia	2.06(5.83)	1.03(2.41)	1.03(4.36)	1.59(5.35)	0.53(1.37)	1.07(3.59)	1.81(4.79)	0.57(1.26)	1.25(4.83)	1.41(4.52)	0.40(0.96)	1.02(3.14)
Austria	0.83(2.30)	0.38(1.11)	0.46(1.83)	0.37(0.76)	1.06(2.59)	-0.69(-1.44)	0.70(1.93)	0.30(0.84)	0.40(1.49)	0.28(0.55)	1.11(2.64)	-0.83(-1.60)
Belgium	1.68(7.01)	0.87(3.29)	0.81(4.19)	0.92(3.16)	1.12(3.62)	-0.20(-0.79)	1.55(6.22)	0.82(3.03)	0.73(3.69)	0.82(2.71)	1.18(3.76)	-0.36(-1.33)
Canada	1.80(5.39)	0.85(2.29)	0.95(4.57)	1.38(4.72)	0.63(2.20)	0.75(2.81)	1.58(4.86)	0.52(1.40)	1.06(4.69)	1.37(4.60)	0.58(1.98)	0.79(2.76)
Denmark	1.59(5.01)	0.53(1.41)	1.06(6.50)	1.52(3.54)	0.42(1.05)	1.10(3.62)	1.30(4.13)	0.09(0.25)	1.20(7.67)	1.30(2.78)	0.03(0.07)	1.27(3.96)
France	1.88(5.49)	1.01(3.10)	0.87(4.88)	1.53(4.65)	0.97(2.84)	0.56(2.77)	1.65(4.93)	0.75(2.25)	0.90(4.73)	1.41(4.24)	0.83(2.33)	0.58(2.69)
Germany	1.04(4.06)	0.34(1.03)	0.70(3.49)	0.90(2.93)	0.45(1.52)	0.45(2.09)	0.92(3.48)	0.12(0.29)	0.80(2.91)	0.89(2.78)	0.40(1.20)	0.49(2.12)
Hong Kong	1.72(3.10)	1.03(1.77)	0.69(2.56)	1.71(3.29)	1.06(2.00)	0.65(1.85)	1.73(3.16)	1.05(1.79)	0.68(2.16)	1.76(3.19)	1.19(2.09)	0.57(1.29)
Italy	1.81(4.26)	0.97(2.27)	0.84(4.39)	1.81(3.88)	0.96(2.04)	0.85(1.94)	1.48(3.51)	0.74(1.67)	0.74(3.79)	1.60(3.29)	0.77(1.57)	0.83(1.74)
Japan	0.73(2.24)	0.73(2.01)	0.00(-0.01)	0.67(2.14)	0.70(2.11)	-0.03(-0.11)	0.61(1.83)	0.36(0.94)	0.25(1.33)	0.68(2.11)	0.47(1.30)	0.21(0.71)
Netherlands	1.59(5.33)	0.69(2.11)	0.91(4.96)	1.42(5.17)	0.86(2.59)	0.56(2.10)	1.35(4.55)	0.38(1.12)	0.97(4.58)	1.43(4.89)	0.70(1.97)	0.73(2.40)
Norway	1.95(3.97)	1.00(1.83)	0.96(3.61)	1.40(2.94)	1.13(2.15)	0.27(0.84)	1.57(3.29)	0.42(0.74)	1.15(4.32)	1.14(2.40)	0.76(1.36)	0.38(1.15)
Singapore	1.18(2.08)	0.80(1.19)	0.38(1.02)	0.67(1.46)	1.09(1.95)	-0.41(-0.81)	1.16(1.96)	0.75(1.07)	0.41(1.07)	0.64(1.35)	0.97(1.64)	-0.32(-0.61)
South Korea	1.25(1.80)	1.40(1.62)	-0.15(-0.34)	0.76(1.17)	0.83(1.09)	-0.07(-0.17)	0.77(1.06)	0.60(0.62)	0.17(0.35)	0.49(0.62)	0.32(0.35)	0.17(0.36)
Spain	1.36(3.35)	0.92(1.90)	0.45(1.99)	1.05(2.31)	1.05(1.76)	0.00(0.00)	1.13(2.79)	0.41(0.90)	0.72(3.20)	0.96(1.99)	0.56(1.17)	0.40(0.98)
Sweden	1.92(3.90)	0.87(1.42)	1.05(3.32)	1.82(3.98)	0.94(1.62)	0.89(2.21)	1.79(3.54)	0.40(0.59)	1.39(3.56)	1.66(3.34)	0.78(1.23)	0.88(2.12)
Switzerland	1.13(4.26)	0.70(2.47)	0.43(2.77)	1.10(3.95)	0.86(2.95)	0.24(1.16)	0.98(3.67)	0.54(1.91)	0.44(2.73)	1.04(3.69)	0.70(2.37)	0.34(1.64)
Taiwan	0.61(0.92)	1.15(1.42)	-0.54(-1.16)	0.82(1.24)	1.01(1.38)	-0.19(-0.37)	0.37(0.53)	0.58(0.67)	-0.22(-0.44)	0.67(0.90)	0.61(0.73)	0.06(0.11)
U.K.	1.73(6.08)	0.88(2.57)	0.86(4.87)	1.35(5.48)	1.03(3.44)	0.32(1.62)	1.50(5.16)	0.58(1.68)	0.92(5.24)	1.26(5.03)	0.89(2.80)	0.37(1.72)
Intl. Mkts	1.52(4.75)	0.68(2.12)	0.84(4.07)	1.03(3.55)	0.71(2.24)	0.32(1.32)	1.42(4.26)	0.38(1.07)	1.03(4.21)	1.12(3.66)	0.58(1.69)	0.54(2.01)
U.S.	1.41(5.38)	1.17(3.24)	0.24(1.11)	1.04(4.90)	0.49(1.63)	0.55(2.44)	1.14(4.30)	0.37(0.96)	0.77(3.37)	1.01(4.59)	0.20(0.61)	0.81(3.33)

The table displays the average one month portfolio returns of $r_{6,2}$ strategy. At the end of each month, stocks are ranked based on the cumulative returns 6 to 2 months (inclusive) prior to the current month. For the U.S. market, we define the winner (loser) portfolio as the top (bottom) quintile, while for the international markets, we use terciles. "Intl. Mkts" represents all international markets in our sample except U.S. and is in U.S. Dollar term. We hold the zero-investment portfolio (purchasing winners and short selling losers) for one month. Equal- and value-weighted portfolio returns are calculated in all months and months excluding January. All returns are in percentages. The Newey-West adjusted *t*-statistics are in parentheses.

Table 4

Portfolio returns based on 52-week high strategy.

	All Months						January Excluded					
	Equal-Weighted			Value-Weighted			Equal-Weighted			Value-Weighted		
Market	Winner	Loser	WML	Winner	Loser	WML	Winner	Loser	WML	Winner	Loser	WML
Australia	1.84(7.99)	1.23(2.42)	0.61(1.75)	1.43(5.91)	0.19(0.39)	1.24(3.15)	1.75(7.21)	0.63(1.18)	1.12(3.03)	1.32(5.31)	-0.09(-0.17)	1.41(3.43)
Austria	0.82(4.20)	0.27(0.64)	0.55(1.91)	0.57(2.05)	0.60(1.16)	-0.04(-0.09)	0.75(3.90)	0.13(0.31)	0.62(2.13)	0.59(2.07)	0.62(1.19)	-0.03(-0.07)
Belgium	1.50(7.00)	0.89(3.22)	0.61(3.18)	1.09(4.14)	0.84(2.62)	0.25(1.07)	1.40(6.38)	0.79(2.80)	0.61(3.10)	1.01(3.85)	0.84(2.54)	0.17(0.72)
Canada	1.70(7.50)	0.95(2.19)	0.75(2.62)	1.26(5.49)	0.11(0.27)	1.14(3.31)	1.60(7.02)	0.51(1.19)	1.10(3.73)	1.29(5.39)	-0.12(-0.27)	1.40(3.81)
Denmark	1.51(5.48)	0.56(1.37)	0.94(3.99)	1.46(4.49)	0.71(1.70)	0.76(2.51)	1.31(4.75)	0.06(0.15)	1.25(5.35)	1.29(3.66)	0.32(0.70)	0.97(2.87)
France	1.81(6.27)	0.94(2.59)	0.87(4.24)	1.51(5.20)	0.84(2.10)	0.68(2.72)	1.67(5.92)	0.60(1.59)	1.07(4.76)	1.46(4.94)	0.62(1.49)	0.84(3.03)
Germany	1.06(5.85)	0.28(0.73)	0.79(2.87)	0.92(3.28)	0.62(1.87)	0.30(1.19)	1.01(5.38)	-0.03(-0.06)	1.04(2.93)	0.91(3.10)	0.45(1.24)	0.46(1.66)
Hong Kong	1.95(4.31)	0.88(1.35)	1.08(3.19)	1.79(4.00)	0.43(0.72)	1.36(3.79)	1.97(4.45)	0.90(1.38)	1.07(2.83)	1.85(3.92)	0.55(0.89)	1.30(3.06)
Italy	1.81(4.91)	0.94(2.11)	0.87(4.36)	1.74(4.59)	0.86(1.72)	0.88(2.16)	1.57(4.21)	0.66(1.47)	0.91(4.54)	1.57(3.95)	0.60(1.14)	0.96(2.16)
Japan	0.74(2.66)	0.68(1.71)	0.06(0.26)	0.60(2.21)	0.66(1.72)	-0.06(-0.23)	0.65(2.31)	0.29(0.70)	0.36(1.63)	0.61(2.26)	0.38(0.93)	0.23(0.77)
Netherlands	1.51(6.45)	0.66(1.75)	0.85(3.67)	1.29(4.94)	0.86(2.21)	0.43(1.49)	1.34(5.73)	0.31(0.78)	1.03(3.96)	1.26(4.53)	0.64(1.52)	0.62(1.95)
Norway	1.81(4.42)	1.20(1.94)	0.60(1.63)	1.39(3.33)	1.19(1.95)	0.19(0.46)	1.57(3.93)	0.51(0.81)	1.05(2.65)	1.18(2.82)	0.66(1.07)	0.51(1.18)
Singapore	1.22(2.63)	0.84(1.11)	0.38(0.87)	0.93(2.41)	0.86(1.30)	0.07(0.15)	1.21(2.57)	0.78(0.98)	0.44(0.95)	0.89(2.23)	0.66(0.95)	0.22(0.41)
South Korea	1.27(2.05)	1.51(1.62)	-0.23(-0.42)	0.66(1.18)	0.46(0.58)	0.20(0.43)	0.91(1.34)	0.64(0.63)	0.27(0.46)	0.33(0.49)	-0.20(-0.21)	0.53(1.00)
Spain	1.41(4.31)	0.77(1.41)	0.64(2.12)	0.96(3.00)	0.83(1.35)	0.13(0.25)	1.26(3.82)	0.20(0.38)	1.06(3.43)	0.89(2.70)	0.46(0.76)	0.42(0.86)
Sweden	1.87(4.76)	0.81(1.19)	1.06(2.48)	1.58(3.93)	1.15(1.70)	0.43(0.82)	1.85(4.42)	0.23(0.31)	1.62(3.33)	1.51(3.42)	0.89(1.27)	0.63(1.21)
Switzerland	1.10(5.02)	0.62(1.98)	0.48(2.56)	1.07(4.37)	0.68(2.20)	0.39(1.71)	0.98(4.48)	0.43(1.38)	0.54(2.79)	1.02(4.03)	0.56(1.77)	0.46(1.86)
Taiwan	0.77(1.29)	1.00(1.18)	-0.23(-0.55)	0.48(0.82)	1.09(1.32)	-0.61(-1.31)	0.60(0.94)	0.40(0.44)	0.20(0.44)	0.38(0.56)	0.60(0.63)	-0.22(-0.44)
U.K.	1.63(7.04)	0.77(2.03)	0.86(3.84)	1.31(5.78)	1.10(3.51)	0.21(0.93)	1.46(6.17)	0.45(1.17)	1.00(4.46)	1.25(5.45)	0.96(2.87)	0.29(1.24)
Intl. Mkts	1.48(5.73)	0.60(1.58)	0.87(3.44)	1.08(4.27)	0.55(1.50)	0.53(1.86)	1.42(5.32)	0.23(0.55)	1.19(3.93)	1.13(4.20)	0.40(0.98)	0.73(2.21)
U.S.	1.36(7.26)	1.27(3.24)	0.09(0.35)	0.98(6.28)	0.94(3.17)	0.03(0.17)	1.23(6.32)	0.39(0.95)	0.83(2.94)	0.98(5.99)	0.77(2.36)	0.21(0.96)

The table displays the average one month portfolio returns of the 52-week high strategy. At the end of each month, stocks are ranked based on the ratio of current stock price to the past 52-week high price. For the U.S. market, we define the winner (loser) portfolio as the top (bottom) quintile, while for the international markets, we use terciles. "Intl. Mkts" represents all international markets in our sample except U.S. and is in U.S. Dollar term. We hold the zero-investment portfolio (purchasing winners and short selling losers) for one month. Equal- and value-weighted portfolio returns are calculated in all months and months excluding January. All returns are in percentages. The Newey-West adjusted *t*-statistics are in parentheses.

Table 5

Comparison of the $r_{12,7}$ and the 52-week high strategies – returns on the 52-week high strategy conditional on $r_{12,7}$ groups.

	Panel A: Excess returns (1927-2008)					Panel A: Excess returns (1968-2008)				
	$r_{12,7}$-L	$r_{12,7}$-2	$r_{12,7}$-3	$r_{12,7}$-4	$r_{12,7}$-H	$r_{12,7}$-L	$r_{12,7}$-2	$r_{12,7}$-3	$r_{12,7}$-4	$r_{12,7}$-H
52-week-L	-0.59(-1.47)	0.16(0.50)	0.52(1.85)	0.61(2.26)	1.35(4.50)	-1.52(-3.07)	-0.27(-0.78)	0.14(0.46)	0.25(0.88)	0.82(2.41)
52-week-2	-0.23(-0.72)	0.33(1.21)	0.53(2.20)	0.77(3.25)	0.96(3.56)	-0.91(-2.21)	-0.11(-0.35)	0.43(1.60)	0.51(1.91)	0.61(1.84)
52-week-3	0.02(0.08)	0.41(1.67)	0.72(3.28)	0.71(3.40)	1.12(4.57)	-0.62(-1.70)	0.16(0.62)	0.49(2.15)	0.48(2.03)	0.76(2.52)
52-week-4	0.05(0.21)	0.40(1.97)	0.52(2.72)	0.80(4.22)	1.12(5.19)	-0.45(-1.42)	0.27(1.19)	0.24(1.12)	0.64(3.01)	0.88(3.23)
52-week-H	0.23(0.98)	0.36(1.80)	0.56(3.23)	0.71(4.19)	1.15(5.81)	-0.09(-0.31)	0.06(0.29)	0.35(1.74)	0.44(2.16)	1.01(3.84)
H - L	0.81(3.03)	0.21(1.04)	0.04(0.22)	0.10(0.58)	-0.20(-1.02)	1.43(3.89)	0.33(1.35)	0.22(1.07)	0.19(1.04)	0.20(0.97)
	Panel B: Alphas relative to three factors (1927-2008)					Panel B: Alphas relative to three factors (1968-2008)				
	$r_{12,7}$-L	$r_{12,7}$-2	$r_{12,7}$-3	$r_{12,7}$-4	$r_{12,7}$-H	$r_{12,7}$-L	$r_{12,7}$-2	$r_{12,7}$-3	$r_{12,7}$-4	$r_{12,7}$-H
52-week-L	-1.89(-8.51)	-0.93(-6.01)	-0.49(-4.11)	-0.31(-2.64)	0.42(2.82)	-2.02(-5.96)	-0.71(-3.32)	-0.32(-2.14)	-0.08(-0.63)	0.57(3.60)
52-week-2	-1.27(-7.96)	-0.64(-5.31)	-0.33(-3.32)	-0.05(-0.46)	0.13(0.99)	-1.46(-5.75)	-0.73(-4.07)	-0.16(-1.12)	0.08(0.63)	0.23(1.44)
52-week-3	-1.04(-6.35)	-0.46(-4.45)	-0.06(-0.66)	0.02(0.23)	0.37(3.25)	-1.19(-4.92)	-0.39(-2.80)	-0.03(-0.29)	0.04(0.41)	0.38(2.74)
52-week-4	-0.81(-6.51)	-0.28(-3.02)	-0.12(-1.62)	0.18(2.36)	0.50(4.72)	-0.98(-5.36)	-0.21(-1.79)	-0.24(-2.54)	0.20(2.07)	0.49(3.61)
52-week-H	-0.51(-4.28)	-0.28(-2.90)	0.03(0.35)	0.22(2.80)	0.67(6.03)	-0.50(-3.09)	-0.34(-3.02)	-0.03(-0.27)	0.08(0.77)	0.72(4.86)
H - L	1.38(6.01)	0.65(3.80)	0.52(3.49)	0.53(3.63)	0.25(1.49)	1.53(4.41)	0.37(1.59)	0.29(1.59)	0.16(0.97)	0.15(0.79)
	Panel C: Alphas relative to four factors (1927-2008)					Panel C: Alphas relative to four factors (1968-2008)				
	$r_{12,7}$-L	$r_{12,7}$-2	$r_{12,7}$-3	$r_{12,7}$-4	$r_{12,7}$-H	$r_{12,7}$-L	$r_{12,7}$-2	$r_{12,7}$-3	$r_{12,7}$-4	$r_{12,7}$-H
52-week-L	-0.77(-4.23)	-0.12(-0.97)	-0.10(-0.86)	-0.19(-1.53)	0.27(1.77)	-0.83(-3.11)	0.10(0.60)	0.01(0.06)	-0.08(-0.63)	0.36(2.27)
52-week-2	-0.48(-3.61)	0.02(0.18)	0.05(0.54)	0.07(0.66)	-0.16(-1.23)	-0.57(-2.85)	-0.06(-0.45)	0.28(2.39)	0.17(1.35)	0.01(0.04)
52-week-3	-0.14(-1.09)	0.08(0.91)	0.19(2.29)	-0.05(-0.64)	0.08(0.71)	-0.27(-1.53)	0.11(1.03)	0.20(2.03)	0.01(0.12)	0.16(1.16)
52-week-4	-0.22(-2.10)	0.00(0.05)	-0.06(-0.76)	0.00(0.00)	0.01(0.12)	-0.32(-2.26)	0.09(0.80)	-0.18(-1.84)	0.03(0.37)	0.07(0.59)
52-week-H	-0.26(-2.18)	-0.13(-1.28)	-0.11(-1.35)	-0.11(-1.50)	0.04(0.51)	-0.27(-1.70)	-0.28(-2.36)	-0.15(-1.58)	-0.25(-2.75)	0.16(1.43)
H - L	0.51(2.42)	-0.01(-0.04)	-0.01(-0.06)	0.08(0.55)	-0.23(-1.36)	0.56(1.82)	-0.37(-1.92)	-0.16(-0.95)	-0.17(-1.08)	-0.20(-1.13)

The table displays the result of double sorting in the U.S. market for both full sample period and the more recent half time period: we first sort stocks based on the $r_{12,7}$ criteria as described in Table 2. We then subdivide each $r_{12,7}$ group based on the 52-week high measure, as described in Table 4. The double sort creates 25 portfolios with balanced cells. Value-weighted returns are calculated for each portfolio and the 52-week high profits within each $r_{12,7}$ group. All returns are in percentages. The Newey-West adjusted *t*-statistics are in parentheses.

Table 6

Comparison of the $r_{12,7}$ and the 52-week high strategies – returns on the $r_{12,7}$ strategy conditional on 52-week high measures.

	Panel A: Excess returns (1927-2008)					Panel A: Excess returns (1968-2008)				
	52-week-L	52-week-2	52-week-3	52-week-4	52-week-H	52-week-L	52-week-2	52-week-3	52-week-4	52-week-H
$r_{12,7}$-L	-0.55(-1.45)	0.06(0.21)	0.21(0.90)	0.31(1.53)	0.37(2.14)	-1.39(-3.06)	-0.46(-1.43)	-0.14(-0.50)	0.05(0.20)	0.26(1.25)
$r_{12,7}$-2	-0.06(-0.18)	0.21(0.76)	0.52(2.33)	0.43(2.24)	0.44(2.84)	-0.86(-2.16)	-0.21(-0.67)	0.30(1.17)	0.29(1.41)	0.23(1.21)
$r_{12,7}$-3	0.12(0.38)	0.43(1.63)	0.61(2.72)	0.65(3.42)	0.55(3.55)	-0.57(-1.49)	0.22(0.75)	0.39(1.55)	0.44(2.11)	0.35(1.85)
$r_{12,7}$-4	0.69(2.15)	0.61(2.25)	0.75(3.22)	0.78(3.91)	0.88(5.31)	0.01(0.04)	0.23(0.78)	0.57(2.23)	0.61(2.65)	0.60(2.92)
$r_{12,7}$-H	1.22(3.77)	0.95(3.35)	1.05(3.95)	1.05(4.77)	1.10(5.65)	0.60(1.70)	0.66(1.99)	0.73(2.22)	0.82(2.98)	1.07(4.07)
H - L	1.77(7.30)	0.89(4.75)	0.84(4.92)	0.74(4.71)	0.72(5.08)	1.99(5.93)	1.12(4.40)	0.86(3.53)	0.77(3.76)	0.80(4.35)
	Panel B: Alphas relative to three factors 1927-2008					Panel B: Alphas relative to three factors (1968-2008)				
	52-week-L	52-week-2	52-week-3	52-week-4	52-week-H	52-week-L	52-week-2	52-week-3	52-week-4	52-week-H
$r_{12,7}$-L	-1.85(-9.60)	-0.88(-7.12)	-0.57(-5.34)	-0.37(-3.87)	-0.14(-1.61)	-1.93(-6.68)	-1.00(-5.40)	-0.65(-4.30)	-0.42(-3.46)	-0.08(-0.65)
$r_{12,7}$-2	-1.22(-6.93)	-0.77(-6.58)	-0.25(-2.71)	-0.21(-2.77)	-0.03(-0.36)	-1.35(-5.30)	-0.82(-4.65)	-0.28(-2.12)	-0.17(-1.73)	-0.14(-1.45)
$r_{12,7}$-3	-1.03(-6.43)	-0.51(-4.53)	-0.19(-1.99)	0.01(0.14)	0.10(1.37)	-1.07(-4.55)	-0.31(-2.00)	-0.14(-1.05)	0.01(0.14)	0.00(-0.04)
$r_{12,7}$-4	-0.43(-2.85)	-0.32(-2.71)	-0.06(-0.65)	0.13(1.65)	0.40(5.18)	-0.33(-1.73)	-0.22(-1.51)	0.09(0.78)	0.15(1.55)	0.23(2.17)
$r_{12,7}$-H	0.18(1.18)	0.01(0.11)	0.17(1.60)	0.37(3.78)	0.64(5.89)	0.31(1.87)	0.28(1.89)	0.29(2.00)	0.40(2.98)	0.76(5.29)
H - L	2.02(8.60)	0.89(4.71)	0.74(4.45)	0.74(4.85)	0.78(5.74)	2.24(6.69)	1.29(5.08)	0.94(4.02)	0.82(4.06)	0.84(4.69)
	Panel C: Alphas relative to four factors (1927-2008)					Panel C: Alphas relative to four factors (1968-2008)				
	52-week-L	52-week-2	52-week-3	52-week-4	52-week-H	52-week-L	52-week-2	52-week-3	52-week-4	52-week-H
$r_{12,7}$-L	-0.95(-5.79)	-0.36(-3.29)	-0.18(-1.85)	-0.22(-2.23)	-0.22(-2.50)	-1.01(-4.19)	-0.33(-2.32)	-0.19(-1.49)	-0.25(-2.06)	-0.16(-1.39)
$r_{12,7}$-2	-0.34(-2.34)	-0.17(-1.77)	0.10(1.13)	-0.08(-1.04)	-0.16(-2.19)	-0.46(-2.31)	-0.16(-1.22)	0.19(1.92)	-0.03(-0.27)	-0.26(-2.70)
$r_{12,7}$-3	-0.23(-1.70)	-0.07(-0.65)	0.16(1.81)	0.04(0.55)	-0.13(-1.92)	-0.17(-0.99)	0.11(0.77)	0.24(2.14)	0.10(1.09)	-0.19(-2.16)
$r_{12,7}$-4	0.15(1.10)	-0.06(-0.51)	0.12(1.25)	0.05(0.60)	0.04(0.68)	0.12(0.68)	-0.02(-0.11)	0.24(2.16)	0.09(0.94)	-0.10(-1.14)
$r_{12,7}$-H	0.21(1.36)	-0.07(-0.51)	0.08(0.69)	0.05(0.50)	0.04(0.49)	0.22(1.28)	0.13(0.85)	0.15(1.02)	0.02(0.21)	0.22(2.08)
H - L	1.17(5.33)	0.30(1.63)	0.26(1.61)	0.26(1.80)	0.26(2.11)	1.23(4.29)	0.46(2.21)	0.34(1.61)	0.27(1.52)	0.39(2.38)

The table displays the result of double sorting in the U.S. market for both full sample period and the more recent half time period: we first sort stocks based on 52-week high measure, as described in Table 4. We then subdivide each 52-week high group based on the $r_{12,7}$ criteria as described in Table 2. The double sort creates 25 portfolios with balanced cells. Value-weighted returns are calculated for each portfolio and the 52-week high profits within each $r_{12,7}$ group. All returns are in percentages. The Newey-West adjusted *t*-statistics are in parentheses.

Table 7

Comparison of the $r_{12,7}$ and the 52-week high strategies in international markets – returns of the 52-week high conditional on $r_{12,7}$.

	Panel A: Excess returns				Panel B: Alphas relative to three factors			
Market	$r_{12,7}$ Loser	$r_{12,7}$ Middle	$r_{12,7}$ Winner	Average	$r_{12,7}$ Loser	$r_{12,7}$ Middle	$r_{12,7}$ Winner	Average
Australia	1.05(2.61)	0.67(2.27)	0.94(3.09)	0.89(3.59)	1.76(4.26)	1.04(3.35)	1.40(4.41)	1.40(5.69)
Austria	0.29(0.62)	-0.86(-1.70)	0.54(1.07)	-0.01(-0.02)	0.43(0.91)	-0.69(-1.49)	0.86(1.78)	0.20(0.67)
Belgium	0.02(0.05)	0.73(2.55)	0.43(1.35)	0.39(1.95)	-0.01(-0.03)	0.94(2.93)	0.34(0.92)	0.43(1.89)
Canada	1.36(3.52)	0.58(1.99)	0.71(1.93)	0.89(3.39)	1.96(4.41)	0.84(2.57)	1.43(3.43)	1.41(4.82)
Denmark	0.55(1.27)	1.09(2.71)	1.02(2.73)	0.89(3.20)	0.75(1.76)	1.33(3.45)	1.07(2.89)	1.05(4.04)
France	0.14(0.43)	0.30(1.02)	0.53(2.06)	0.32(1.46)	0.39(1.08)	0.57(1.84)	0.58(2.08)	0.51(2.18)
Germany	0.26(0.75)	0.16(0.56)	0.55(1.99)	0.32(1.41)	0.24(0.61)	0.15(0.46)	0.32(1.03)	0.24(0.95)
Hong Kong	0.36(0.84)	1.35(3.14)	0.98(1.84)	0.90(2.55)	0.70(1.73)	1.40(3.36)	1.38(2.76)	1.16(3.60)
Italy	0.47(0.93)	0.54(1.09)	0.14(0.33)	0.39(1.21)	0.34(0.63)	0.61(1.30)	0.11(0.23)	0.35(1.07)
Japan	0.09(0.33)	-0.30(-1.16)	-0.13(-0.46)	-0.11(-0.48)	0.27(0.89)	-0.20(-0.69)	0.15(0.49)	0.07(0.28)
Netherlands	0.30(0.71)	0.89(2.83)	0.72(2.07)	0.64(2.58)	0.46(0.75)	1.33(2.84)	0.32(0.58)	0.70(1.91)
Norway	0.64(1.22)	0.21(0.47)	-0.07(-0.16)	0.26(0.85)	0.96(1.82)	0.36(0.79)	0.04(0.09)	0.45(1.50)
Singapore	0.40(0.76)	0.52(1.12)	0.13(0.26)	0.35(0.89)	0.85(1.60)	0.70(1.51)	0.19(0.38)	0.58(1.57)
South Korea	0.81(1.26)	0.18(0.33)	0.19(0.32)	0.40(0.87)	1.86(2.34)	1.24(1.90)	0.90(1.39)	1.33(2.63)
Spain	-0.02(-0.03)	0.13(0.31)	0.03(0.05)	0.05(0.13)	0.32(0.61)	0.30(0.76)	0.14(0.31)	0.25(0.84)
Sweden	0.67(1.10)	0.44(0.92)	0.38(0.92)	0.50(1.31)	1.10(1.54)	1.02(1.96)	0.85(1.77)	0.99(2.32)
Switzerland	0.29(1.20)	0.16(0.78)	0.27(1.22)	0.24(1.47)	0.53(1.66)	0.09(0.33)	0.36(1.21)	0.32(1.52)
Taiwan	-0.06(-0.11)	-0.68(-1.43)	-0.36(-0.75)	-0.46(-1.12)	-0.14(-0.30)	-0.68(-1.59)	-0.36(-0.79)	-0.42(-1.17)
United Kingdom	0.24(0.89)	0.06(0.27)	0.03(0.13)	0.11(0.61)	0.22(0.85)	0.13(0.55)	0.00(0.00)	0.12(0.67)
Intl. Mkts	-0.14(-0.42)	0.41(1.80)	0.35(1.52)	0.21(0.93)				

This table reports returns of the 52-week high strategy conditional on the $r_{12,7}$ sorting. In each market each month, stocks are sorted into terciles by the cumulative returns 12 to 7 months (inclusive) prior to the current month. Each tercile is further divided by the past 52-week high measure into three groups. We skip one month between the sorting month and portfolio formation month. We display the average monthly returns of the 52-week high strategy (purchasing winners and selling losers) within each $r_{12,7}$ group, and the average returns of the three groups. In Panel A, we display the excess returns. In panel B, we display the alphas relative to Fama-French three factors. "Intl. Mkts" represents all international markets in our sample except U.S. and is in U.S. Dollar term. The Newey-West adjusted t-statistics are in parentheses.

Table 8

Comparison of the $r_{12,7}$ and the 52-week high strategies in international markets – returns of the $r_{12,7}$ conditional on the 52-week high measure.

Market	Panel A: Excess returns				Panel B: Alphas relative to three factors			
	52-week high Loser	52-week high Middle	52-week high Winner	Average	52-week high Loser	52-week high Middle	52-week high Winner	Average
Australia	0.16(0.41)	0.50(1.79)	0.39(1.68)	0.35(1.74)	0.23(0.56)	0.45(1.49)	0.54(2.16)	0.41(1.96)
Austria	0.83(1.66)	0.44(0.87)	0.71(1.66)	0.66(2.25)	0.95(1.88)	0.43(0.85)	0.78(1.88)	0.72(2.49)
Belgium	0.07(0.19)	0.77(2.91)	0.73(2.56)	0.52(3.11)	0.29(0.73)	0.82(2.66)	0.52(1.52)	0.54(2.81)
Canada	0.51(1.26)	0.72(2.49)	0.47(1.79)	0.57(2.45)	0.27(0.57)	0.59(1.91)	0.68(2.45)	0.51(2.03)
Denmark	-0.42(-0.91)	0.29(0.78)	0.59(1.85)	0.15(0.59)	-0.45(-0.98)	0.35(0.95)	0.52(1.63)	0.14(0.56)
France	-0.08(-0.24)	0.43(1.93)	0.66(3.14)	0.34(2.01)	-0.02(-0.07)	0.49(2.02)	0.67(2.92)	0.38(2.09)
Germany	0.30(0.85)	0.60(2.51)	0.37(1.87)	0.42(2.45)	0.51(1.25)	0.70(2.52)	0.36(1.67)	0.53(2.67)
Hong Kong	-0.40(-0.99)	0.33(0.79)	0.79(2.32)	0.24(0.94)	-0.49(-1.24)	0.21(0.52)	0.77(2.32)	0.16(0.66)
Italy	0.08(0.13)	0.64(1.24)	0.87(2.03)	0.53(1.65)	0.22(0.35)	0.50(0.95)	0.81(1.86)	0.51(1.53)
Japan	0.53(2.30)	0.46(2.40)	0.19(0.96)	0.40(2.42)	0.61(2.28)	0.62(2.83)	0.33(1.38)	0.52(2.77)
Netherlands	-0.09(-0.24)	0.66(2.25)	0.38(1.49)	0.32(1.71)	-0.09(-0.16)	0.63(1.42)	0.15(0.41)	0.23(0.79)
Norway	1.25(2.51)	0.77(2.00)	0.26(0.73)	0.76(2.70)	1.36(2.68)	0.90(2.30)	0.24(0.65)	0.83(2.92)
Singapore	0.34(0.76)	0.63(1.59)	0.39(1.03)	0.46(1.69)	0.85(1.91)	0.85(1.98)	0.46(1.30)	0.72(2.93)
South Korea	0.00(0.00)	0.06(0.12)	0.00(0.00)	0.02(0.06)	-0.10(-0.14)	-0.15(-0.22)	0.26(0.45)	0.00(0.01)
Spain	0.33(0.55)	0.73(1.47)	0.18(0.47)	0.41(1.34)	0.24(0.39)	0.62(1.25)	0.08(0.23)	0.31(1.02)
Sweden	-0.56(-1.06)	0.14(0.33)	0.62(1.86)	0.06(0.24)	-0.72(-1.16)	0.14(0.28)	0.79(2.06)	0.07(0.21)
Switzerland	0.57(2.42)	0.71(3.49)	0.64(3.16)	0.64(4.50)	0.71(2.24)	0.73(2.73)	0.54(1.95)	0.66(3.50)
Taiwan	1.30(2.54)	0.44(0.97)	0.35(0.86)	0.65(1.78)	1.27(2.50)	0.37(0.82)	0.33(0.85)	0.63(1.77)
United Kingdom	0.61(2.43)	0.61(2.88)	0.67(3.65)	0.63(4.05)	0.69(2.69)	0.67(3.08)	0.64(3.43)	0.67(4.19)
Intl. Mkts	0.12(0.46)	0.72(3.72)	0.52(3.11)	0.45(2.70)				

This table reports returns of the $r_{12,7}$ strategy conditional on the 52-week high sorting. In each market each month, stocks are sorted into terciles by the 52-week high measure. Each tercile is further divided by the cumulative returns 12 to 7 months (inclusive) prior to the current month into three groups. We skip one month between the sorting month and portfolio formation month. We display the average monthly returns of the $r_{12,7}$ strategy (purchasing winners and selling losers) within each 52-week high group, and the average returns of the three groups. In Panel A, we display the excess returns. In panel B, we display the alphas relative to Fama-French three factors. "Intl. Mkts" represents all international markets in our sample except U.S. and is in U.S. Dollar term. The Newey-West adjusted *t*-statistics are in parentheses.

Table 9

Comparison of the $r_{6,2}$ and the 52-week high strategies in international markets – returns of the 52-week high conditional on $r_{6,2}$.

	Panel A: Excess returns				Panel B: Alphas relative to three factors			
Market	$r_{6,2}$ Loser	$r_{6,2}$ Middle	$r_{6,2}$ Winner	Average	$r_{6,2}$ Loser	$r_{6,2}$ Middle	$r_{6,2}$ Winner	Average
Australia	0.73(1.78)	0.93(3.08)	0.32(1.13)	0.66(2.81)	1.68(4.04)	1.22(3.77)	0.74(2.53)	1.21(5.39)
Austria	-0.14(-0.26)	0.11(0.26)	-0.18(-0.41)	-0.07(-0.23)	0.17(0.32)	0.33(0.86)	0.08(0.21)	0.19(0.75)
Belgium	0.62(1.89)	0.28(1.06)	0.33(1.08)	0.41(2.23)	0.33(0.91)	0.31(1.09)	0.32(0.91)	0.32(1.59)
Canada	1.52(3.65)	0.54(1.70)	0.22(0.70)	0.76(3.08)	2.00(4.27)	0.97(2.77)	0.70(2.10)	1.22(4.61)
Denmark	0.43(0.94)	-0.15(-0.41)	-0.22(-0.54)	0.02(0.08)	0.67(1.50)	-0.03(-0.09)	-0.08(-0.19)	0.19(0.74)
France	0.21(0.68)	0.22(0.85)	0.56(1.99)	0.33(1.61)	0.59(1.76)	0.32(1.13)	0.92(3.19)	0.61(2.93)
Germany	0.09(0.28)	0.38(1.50)	-0.03(-0.12)	0.15(0.77)	0.17(0.45)	0.50(1.80)	0.09(0.33)	0.25(1.24)
Hong Kong	1.36(2.90)	0.79(1.81)	0.66(1.44)	0.94(2.73)	1.70(3.99)	1.06(2.66)	0.99(2.42)	1.25(4.38)
Italy	0.60(1.15)	0.54(1.32)	0.57(1.18)	0.57(1.97)	0.75(1.38)	0.59(1.40)	1.23(2.55)	0.85(3.08)
Japan	0.09(0.39)	0.04(0.16)	0.21(0.90)	0.11(0.61)	0.18(0.71)	0.22(0.88)	0.49(1.89)	0.30(1.51)
Netherlands	0.29(0.69)	0.04(0.12)	0.53(1.63)	0.29(1.22)	1.00(1.65)	0.00(0.00)	0.15(0.29)	0.38(1.07)
Norway	0.42(0.76)	-0.12(-0.31)	0.11(0.26)	0.14(0.44)	1.01(1.87)	0.05(0.13)	0.35(0.80)	0.47(1.56)
Singapore	1.02(2.26)	-0.13(-0.30)	0.19(0.49)	0.36(1.19)	1.12(2.69)	0.27(0.69)	0.54(1.44)	0.64(2.44)
South Korea	0.33(0.54)	0.64(1.28)	-0.22(-0.41)	0.25(0.61)	1.24(1.66)	1.36(2.37)	0.34(0.54)	0.98(2.10)
Spain	0.93(1.15)	0.41(0.93)	0.42(0.83)	0.59(1.62)	1.18(1.48)	0.61(1.47)	0.41(0.82)	0.73(2.20)
Sweden	0.76(1.21)	0.18(0.40)	-0.44(-1.08)	0.17(0.47)	1.21(1.69)	0.67(1.37)	-0.26(-0.57)	0.54(1.44)
Switzerland	0.27(1.10)	-0.07(-0.38)	0.42(1.88)	0.21(1.36)	0.41(1.28)	-0.10(-0.40)	0.87(2.87)	0.39(2.03)
Taiwan	-0.02(-0.05)	0.12(0.33)	0.23(0.49)	0.03(0.09)	-0.14(-0.32)	0.15(0.42)	0.24(0.54)	0.05(0.16)
United Kingdom	0.53(1.92)	-0.03(-0.14)	0.02(0.09)	0.17(0.98)	0.54(1.99)	0.05(0.20)	0.02(0.11)	0.20(1.21)
Intl. Mkts	0.17(0.59)	0.48(2.11)	0.35(1.61)	0.33(1.17)				

This table reports returns of the 52-week high strategy conditional on the $r_{6,2}$ sorting. In each market each month, stocks are sorted into terciles by the cumulative returns 6 to 2 months (inclusive) prior to the current month. Each tercile is further divided by the past 52-week high measure into three groups. We skip one month between the sorting month and portfolio formation month. We display the average monthly returns of the 52-week high strategy (purchasing winners and selling losers) within each $r_{6,2}$ group, and the average returns of the three groups. In Panel A, we display the excess returns. In panel B, we display the alphas relative to Fama-French three factors. "Intl. Mkts" represents all international markets in our sample except U.S. and is in U.S. Dollar term. The Newey-West adjusted t-statistics are in parentheses.

Table 10

Comparison of the $r_{6,2}$ and the 52-week high strategies in international markets – returns of the $r_{6,2}$ conditional on the 52-week high measure.

Market	Panel A: Excess returns				Panel B: Alphas relative to three factors			
	52-week high Loser	52-week high Middle	52-week high Winner	Average	52-week high Loser	52-week high Middle	52-week high Winner	Average
Australia	0.59(1.45)	0.83(2.68)	0.33(1.18)	0.58(2.51)	0.81(1.83)	0.85(2.55)	0.44(1.57)	0.70(2.89)
Austria	0.44(0.67)	-0.66(-1.61)	0.58(1.64)	0.12(0.35)	0.48(0.73)	-0.76(-1.85)	0.57(1.88)	0.10(0.30)
Belgium	-0.18(-0.53)	0.15(0.57)	-0.11(-0.42)	-0.05(-0.25)	-0.64(-1.69)	0.02(0.07)	-0.12(-0.39)	-0.24(-1.20)
Canada	0.78(1.95)	0.03(0.10)	0.49(1.73)	0.43(1.83)	0.82(1.77)	-0.04(-0.12)	0.37(1.29)	0.38(1.49)
Denmark	0.89(1.79)	0.70(1.76)	0.65(1.94)	0.75(2.86)	0.98(1.94)	0.59(1.47)	0.61(1.92)	0.73(2.76)
France	0.36(1.25)	0.17(0.69)	0.63(2.74)	0.39(2.37)	0.30(0.92)	0.02(0.06)	0.67(2.62)	0.33(1.84)
Germany	0.28(0.90)	0.45(2.03)	0.34(1.48)	0.36(1.99)	0.23(0.61)	0.29(1.14)	0.16(0.60)	0.22(1.08)
Hong Kong	0.54(1.38)	-0.52(-1.23)	0.02(0.05)	0.02(0.06)	0.47(1.18)	-0.67(-1.62)	-0.12(-0.33)	-0.11(-0.39)
Italy	-0.43(-0.90)	0.24(0.32)	0.65(1.45)	0.15(0.46)	-0.49(-1.03)	0.30(0.59)	0.44(1.02)	0.08(0.28)
Japan	-0.14(-0.57)	-0.16(-0.76)	0.33(1.49)	0.01(0.05)	-0.18(-0.59)	-0.08(-0.35)	0.51(2.02)	0.08(0.38)
Netherlands	0.74(1.89)	0.02(0.05)	0.76(2.64)	0.50(2.54)	1.29(2.04)	-0.09(-0.20)	1.05(2.51)	0.75(2.37)
Norway	1.27(2.35)	0.49(1.28)	0.37(0.99)	0.71(2.63)	1.51(2.73)	0.47(1.19)	0.32(0.89)	0.77(2.84)
Singapore	0.17(0.39)	0.02(0.04)	-0.30(-0.71)	-0.04(-0.12)	-0.03(-0.06)	0.06(0.14)	-0.62(-1.45)	-0.20(-0.63)
South Korea	-0.22(-0.36)	0.01(0.01)	0.15(0.29)	-0.02(-0.05)	0.91(1.22)	0.90(1.45)	1.20(1.92)	1.00(1.97)
Spain	0.00(0.00)	-0.51(-1.09)	0.27(0.67)	-0.08(-0.28)	0.00(0.00)	-0.38(-0.81)	0.08(0.19)	-0.10(-0.36)
Sweden	0.79(1.43)	0.60(1.46)	0.98(2.75)	0.79(2.45)	1.13(1.69)	0.78(1.60)	1.04(2.58)	0.98(2.53)
Switzerland	0.03(0.11)	-0.16(-0.82)	0.57(2.79)	0.14(1.05)	-0.31(-1.02)	-0.42(-1.62)	0.78(2.90)	0.02(0.10)
Taiwan	-0.49(-1.05)	-0.42(-0.95)	0.32(0.66)	-0.22(-0.64)	-0.55(-1.18)	-0.33(-0.77)	0.25(0.54)	-0.21(-0.63)
United Kingdom	-0.08(-0.31)	0.21(1.01)	0.52(2.58)	0.22(1.40)	-0.03(-0.13)	0.23(1.08)	0.45(2.25)	0.22(1.37)
Intl. Mkts	-0.21(-0.72)	-0.17(-0.83)	0.24(1.16)	-0.05(-0.25)				

This table reports returns of the $r_{6,2}$ strategy conditional on the 52-week high sorting. In each market each month, stocks are sorted into terciles by the 52-week high measure. Each tercile is further divided by the cumulative returns 6 to 2 months (inclusive) prior to the current month into three groups. We skip one month between the sorting month and portfolio formation month. We display the average monthly returns of the $r_{6,2}$ strategy (purchasing winners and selling losers) within each 52-week high group, and the average returns of the three groups. In Panel A, we display the excess returns. In panel B, we display the alphas relative to Fama-French three factors. "Intl. Mkts" represents all international markets in our sample except U.S. and is in U.S. Dollar term. The Newey-West adjusted *t*-statistics are in parentheses.